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SuperHyperGirth Type-Results on Extreme SuperHyperGirth Theory and (Neutrosophic) SuperHyperGraphs toward Cancer's Extreme Recognition

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Abstract: In this research, the extreme SuperHyperNotion, namely, extreme SuperHyperGirth, is up. E_1 and E_3 are some empty extreme SuperHyperEdges but E_2 is a loop extreme SuperHyperEdge and E_4 is an extreme SuperHyperEdge. Thus in the terms of extreme SuperHyperNeighbor, there's only one extreme SuperHyperEdge, namely, E_4. The extreme SuperHyperVertex, V_3 is extreme isolated means that there's no extreme SuperHyperEdge has it as an extreme endpoint. Thus the extreme SuperHyperVertex, V_3, is excluded in every given extreme SuperHyperGirth. $\mathcal{C}(NSHG) = \{E_i\}$ is an extreme SuperHyperGirth. $\mathcal{C}(NSHG) = jz^i$ is an extreme SuperHyperGirth SuperHyperPolynomial. $\mathcal{C}(NSHG) = \{V_i\}$ is an extreme R-SuperHyperGirth. $\mathcal{C}(NSHG) = jz^I$ is an extreme R-SuperHyperGirth SuperHyperPolynomial. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices], is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices], is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with the maximum extreme cardinality of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only four extreme SuperHyperVertices inside the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet includes only less than four extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices], doesn't have less than four SuperHyperVertices inside the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth isn't up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices], isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices], is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth and it's an extreme SuperHyperGirth . Since it 's the maximum extreme cardinality of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices inside the intended extreme SuperHyperSet, thus the obvious extreme SuperHyperGirth, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is: ,is the extreme SuperHyperSet, is: does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the extreme SuperHyperGirth

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the neutrosophic SuperHyperGirth , is only and only. A basic familiarity with extreme SuperHyperGirth theory, SuperHyperGraphs, and extreme SuperHyperGraphs theory are proposed.

Keywords: extreme SuperHyperGraph; (extreme) SuperHyperGirth; Cancer's extreme Recognition

AMS Subject Classification: 05C17; 05C22; 05E45

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1. Background

Fuzzy set in **Ref.** [63] by Zadeh (1965), intuitionistic fuzzy sets in **Ref.** [50] by Atanassov (1986), a first step to a theory of the intuitionistic fuzzy graphs in **Ref.** [60] by Shannon and Atanassov (1994), a unifying field in logics neutrosophy: neutrosophic probability, set and logic, rehoboth in **Ref.** [61] by Smarandache (1998), single-valued neutrosophic sets in **Ref.** [62] by Wang et al. (2010), single-valued neutrosophic graphs in **Ref.** [54] by Broumi et al. (2016), operations on single-valued neutrosophic graphs in **Ref.** [46] by Akram and Shahzadi (2017), neutrosophic soft graphs in **Ref.** [59] by Shah and Hussain (2016), bounds on the average and minimum attendance in preference-based activity scheduling in **Ref.** [48] by Aronshtam and Ilani (2022), investigating the recoverable robust single machine scheduling problem under interval uncertainty in **Ref.** [53] by Bold and Goerigk (2022), polyhedra associated with locating-dominating, open locating-dominating and locating total-dominating sets in graphs in **Ref.** [47] by G. Argiroffo et al. (2022), a Vizing-type result for semi-total domination in **Ref.** [49] by J. Asplund et al. (2020), total domination cover rubbling in **Ref.** [51] by R.A. Beeler et al. (2020), on the global total k-domination number of graphs in **Ref.** [52] by S. Bermudo et al. (2019), maker–breaker total domination game in **Ref.** [55] by V. Gledel et al. (2020), a new upper bound on the total domination number in graphs with minimum degree six in **Ref.** [56] by M.A. Henning, and A. Yeo (2021), effect of predomination and vertex removal on the game total domination number of a graph in **Ref.** [57] by V. Irsic (2019), hardness results of global total k-domination problem in graphs in **Ref.** [58] by B.S. Panda, and P. Goyal (2021), are studied.

Look at [41–45] for further researches on this topic. See the seminal researches [1–3]. The formalization of the notions on the framework of Extreme Failed SuperHyperClique theory, Neutrosophic Failed SuperHyperClique theory, and (Neutrosophic) SuperHyperGraphs theory at [4–38]. Two popular research books in Scribd in the terms of high readers, 2638 and 3363 respectively, on neutrosophic science is on [39,40].

2. General Extreme Results

For the SuperHyperGirth, extreme SuperHyperGirth, and the neutrosophic SuperHyperGirth, some general results are introduced.

Remark 2.1. Let remind that the neutrosophic SuperHyperGirth is "redefined" on the positions of the alphabets.

Corollary 2.2. *Assume extreme SuperHyperGirth. Then*

$$\begin{aligned}
&Neutrosophic\ SuperHyperGirth = \\
&\{theSuperHyperGirthoftheSuperHyperVertices \mid \\
&\max |SuperHyperOffensiveSuperHyper \\
&Clique|_{neutrosophiccardinalityamidthoseSuperHyperGirth.}\}
\end{aligned}$$

plus one extreme SuperHypeNeighbor to one. Where σ_i is the unary operation on the SuperHyperVertices of the SuperHyperGraph to assign the determinacy, the indeterminacy and the neutrality, for $i = 1, 2, 3$, respectively.

Corollary 2.3. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then the notion of neutrosophic SuperHyperGirth and SuperHyperGirth coincide.*

Corollary 2.4. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a neutrosophic SuperHyperGirth if and only if it's a SuperHyperGirth.*

Corollary 2.5. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a strongest SuperHyperCycle if and only if it's a longest SuperHyperCycle.*

Corollary 2.6. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then its neutrosophic SuperHyperGirth is its SuperHyperGirth and reversely.*

Corollary 2.7. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel) on the same identical letter of the alphabet. Then its neutrosophic SuperHyperGirth is its SuperHyperGirth and reversely.*

Corollary 2.8. *Assume a neutrosophic SuperHyperGraph. Then its neutrosophic SuperHyperGirth isn't well-defined if and only if its SuperHyperGirth isn't well-defined.*

Corollary 2.9. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph. Then its neutrosophic SuperHyperGirth isn't well-defined if and only if its SuperHyperGirth isn't well-defined.*

Corollary 2.10. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its neutrosophic SuperHyperGirth isn't well-defined if and only if its SuperHyperGirth isn't well-defined.*

Corollary 2.11. *Assume a neutrosophic SuperHyperGraph. Then its neutrosophic SuperHyperGirth is well-defined if and only if its SuperHyperGirth is well-defined.*

Corollary 2.12. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph. Then its neutrosophic SuperHyperGirth is well-defined if and only if its SuperHyperGirth is well-defined.*

Corollary 2.13. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its neutrosophic SuperHyperGirth is well-defined if and only if its SuperHyperGirth is well-defined.*

Proposition 2.14. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph. Then V is*

(i) : *the dual SuperHyperDefensive SuperHyperGirth;*
(ii) : *the strong dual SuperHyperDefensive SuperHyperGirth;*
(iii) : *the connected dual SuperHyperDefensive SuperHyperGirth;*
(iv) : *the δ-dual SuperHyperDefensive SuperHyperGirth;*
(v) : *the strong δ-dual SuperHyperDefensive SuperHyperGirth;*
(vi) : *the connected δ-dual SuperHyperDefensive SuperHyperGirth.*

Proposition 2.15. *Let $NTG : (V, E, \sigma, \mu)$ be a neutrosophic SuperHyperGraph. Then $\emptyset$ is*

(i) : *the SuperHyperDefensive SuperHyperGirth;*
(ii) : *the strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *the connected defensive SuperHyperDefensive SuperHyperGirth;*
(iv) : *the δ-SuperHyperDefensive SuperHyperGirth;*

(v) : *the strong δ-SuperHyperDefensive SuperHyperGirth;*
(vi) : *the connected δ-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.16. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph. Then an independent SuperHyperSet is*

(i) : *the SuperHyperDefensive SuperHyperGirth;*
(ii) : *the strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *the connected SuperHyperDefensive SuperHyperGirth;*
(iv) : *the δ-SuperHyperDefensive SuperHyperGirth;*
(v) : *the strong δ-SuperHyperDefensive SuperHyperGirth;*
(vi) : *the connected δ-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.17. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then V is a maximal*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : *$\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperGirth;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 2.18. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is a SuperHyperUniform SuperHyperWheel. Then V is a maximal*

(i) : *dual SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong dual SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected dual SuperHyperDefensive SuperHyperGirth;*
(iv) : *$\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperGirth;*
(v) : *strong $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperGirth;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 2.19. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then the number of*

(i) : *the SuperHyperGirth;*
(ii) : *the SuperHyperGirth;*
(iii) : *the connected SuperHyperGirth;*
(iv) : *the $\mathcal{O}(ESHG)$-SuperHyperGirth;*
(v) : *the strong $\mathcal{O}(ESHG)$-SuperHyperGirth;*
(vi) : *the connected $\mathcal{O}(ESHG)$-SuperHyperGirth.*

is one and it's only V. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 2.20. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel. Then the number of*

(i) : *the dual SuperHyperGirth;*
(ii) : *the dual SuperHyperGirth;*
(iii) : *the dual connected SuperHyperGirth;*
(iv) : *the dual $\mathcal{O}(ESHG)$-SuperHyperGirth;*
(v) : *the strong dual $\mathcal{O}(ESHG)$-SuperHyperGirth;*

(vi) : *the connected dual* $\mathcal{O}(ESHG)$*-SuperHyperGirth.*

is one and it's only V*. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 2.21. *Let* $ESHG : (V, E)$ *be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices is a*

(i) : *dual SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong dual SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected dual SuperHyperDefensive SuperHyperGirth;*
(iv) : $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth.*

Proposition 2.22. *Let* $ESHG : (V, E)$ *be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart is a*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : δ*-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* δ*-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* δ*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.23. *Let* $ESHG : (V, E)$ *be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then Then the number of*

(i) : *dual SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong dual SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected dual SuperHyperDefensive SuperHyperGirth;*
(iv) : $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperGirth.*

is one and it's only S*, a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 2.24. *Let* $ESHG : (V, E)$ *be a neutrosophic SuperHyperGraph. The number of connected component is* $|V - S|$ *if there's a SuperHyperSet which is a dual*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : *SuperHyperGirth;*
(v) : *strong 1-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected 1-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.25. *Let* $ESHG : (V, E)$ *be a neutrosophic SuperHyperGraph. Then the number is at most* $\mathcal{O}(ESHG)$ *and the neutrosophic number is at most* $\mathcal{O}_n(ESHG)$*.*

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Proposition 2.26. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperComplete. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1$ and the neutrosophic number is $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(ESHG:(V,E))}{2}} \subseteq V} \sigma(v)$, in the setting of dual*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.27. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is $\emptyset$. The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of dual*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : 0*-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* 0*-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* 0*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.28. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperComplete. Then there's no independent SuperHyperSet.*

Proposition 2.29. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperCycle/SuperHyperPath/SuperHyperWheel. The number is $\mathcal{O}(ESHG : (V, E))$ and the neutrosophic number is $\mathcal{O}_n(ESHG : (V, E))$, in the setting of a dual*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : $\mathcal{O}(ESHG : (V, E))$*-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* $\mathcal{O}(ESHG : (V, E))$*-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* $\mathcal{O}(ESHG : (V, E))$*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.30. *Let $ESHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperStar/complete SuperHyperBipartite/complete SuperHyperMultiPartite. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1$ and the neutrosophic number is $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(ESHG:(V,E))}{2}} \subseteq V} \sigma(v)$, in the setting of a dual*

(i) : *SuperHyperDefensive SuperHyperGirth;*
(ii) : *strong SuperHyperDefensive SuperHyperGirth;*
(iii) : *connected SuperHyperDefensive SuperHyperGirth;*
(iv) : $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth;*
(v) : *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth;*
(vi) : *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.31. *Let $\mathcal{NSHF} : (V, E)$ be a SuperHyperFamily of the ESHGs $: (V, E)$ neutrosophic SuperHyperGraphs which are from one-type SuperHyperClass which the result is obtained for the individuals. Then the results also hold for the SuperHyperFamily $\mathcal{NSHF} : (V, E)$ of these specific SuperHyperClasses of the neutrosophic SuperHyperGraphs.*

Proposition 2.32. *Let $ESHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. If S is a dual SuperHyperDefensive SuperHyperGirth, then $\forall v \in V \setminus S$, $\exists x \in S$ such that*

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(i) $v \in N_s(x)$;
(ii) $vx \in E$.

Proposition 2.33. *Let $ESHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. If S is a dual SuperHyperDefensive SuperHyperGirth, then*

(i) *S is SuperHyperDominating set;*
(ii) *there's $S \subseteq S'$ such that $|S'|$ is SuperHyperChromatic number.*

Proposition 2.34. *Let $ESHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. Then*

(i) $\Gamma \leq \mathcal{O}$;
(ii) $\Gamma_s \leq \mathcal{O}_n$.

Proposition 2.35. *Let $ESHG : (V, E)$ be a strong neutrosophic SuperHyperGraph which is connected. Then*

(i) $\Gamma \leq \mathcal{O} - 1$;
(ii) $\Gamma_s \leq \mathcal{O}_n - \Sigma_{i=1}^3 \sigma_i(x)$.

Proposition 2.36. *Let $ESHG : (V, E)$ be an odd SuperHyperPath. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) *$\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ and corresponded SuperHyperSet is $S = \{v_2, v_4, \cdots, v_{n-1}\}$;*
(iii) $\Gamma_s = \min\{\Sigma_{s \in S = \{v_2, v_4, \cdots, v_{n-1}\}} \Sigma_{i=1}^3 \sigma_i(s), \Sigma_{s \in S = \{v_1, v_3, \cdots, v_{n-1}\}} \Sigma_{i=1}^3 \sigma_i(s)\}$;
(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots, v_{n-1}\}$ and $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ are only a dual SuperHyperGirth.*

Proposition 2.37. *Let $ESHG : (V, E)$ be an even SuperHyperPath. Then*

(i) *the set $S = \{v_2, v_4, \cdots .v_n\}$ is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) *$\Gamma = \lfloor \frac{n}{2} \rfloor$ and corresponded SuperHyperSets are $\{v_2, v_4, \cdots .v_n\}$ and $\{v_1, v_3, \cdots .v_{n-1}\}$;*
(iii) $\Gamma_s = \min\{\Sigma_{s \in S = \{v_2, v_4, \cdots, v_n\}} \Sigma_{i=1}^3 \sigma_i(s), \Sigma_{s \in S = \{v_1, v_3, \cdots .v_{n-1}\}} \Sigma_{i=1}^3 \sigma_i(s)\}$;
(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots .v_n\}$ and $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ are only dual SuperHyperGirth.*

Proposition 2.38. *Let $ESHG : (V, E)$ be an even SuperHyperCycle. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_n\}$ is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) *$\Gamma = \lfloor \frac{n}{2} \rfloor$ and corresponded SuperHyperSets are $\{v_2, v_4, \cdots, v_n\}$ and $\{v_1, v_3, \cdots, v_{n-1}\}$;*
(iii) $\Gamma_s = \min\{\Sigma_{s \in S = \{v_2, v_4, \cdots, v_n\}} \sigma(s), \Sigma_{s \in S = \{v_1, v_3, \cdots, v_{n-1}\}} \sigma(s)\}$;
(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots, v_n\}$ and $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ are only dual SuperHyperGirth.*

Proposition 2.39. *Let $ESHG : (V, E)$ be an odd SuperHyperCycle. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) *$\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ and corresponded SuperHyperSet is $S = \{v_2, v_4, \cdots, v_{n-1}\}$;*
(iii) $\Gamma_s = \min\{\Sigma_{s \in S = \{v_2, v_4, \cdots .v_{n-1}\}} \Sigma_{i=1}^3 \sigma_i(s), \Sigma_{s \in S = \{v_1, v_3, \cdots .v_{n-1}\}} \Sigma_{i=1}^3 \sigma_i(s)\}$;
(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots .v_{n-1}\}$ and $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ are only dual SuperHyperGirth.*

Proposition 2.40. *Let $ESHG : (V, E)$ be SuperHyperStar. Then*

(i) *the SuperHyperSet $S = \{c\}$ is a dual maximal SuperHyperGirth;*
(ii) $\Gamma = 1$;
(iii) $\Gamma_s = \Sigma_{i=1}^3 \sigma_i(c)$;
(iv) *the SuperHyperSets $S = \{c\}$ and $S \subset S'$ are only dual SuperHyperGirth.*

Proposition 2.41. *Let $ESHG : (V, E)$ be SuperHyperWheel. Then*

(i) *the SuperHyperSet* $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ *is a dual maximal SuperHyperDefensive SuperHyperGirth;*
(ii) $\Gamma = |\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}|$;
(iii) $\Gamma_s = \Sigma_{\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}} \Sigma_{i=1}^{3} \sigma_i(s)$;
(iv) *the SuperHyperSet* $\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ *is only a dual maximal SuperHyperDefensive SuperHyperGirth.*

Proposition 2.42. *Let $ESHG : (V, E)$ be an odd SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$;
(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$;
(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is only a dual SuperHyperDefensive SuperHyperGirth.*

Proposition 2.43. *Let $ESHG : (V, E)$ be an even SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive SuperHyperGirth;*
(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$;
(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$;
(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is only a dual maximal SuperHyperDefensive SuperHyperGirth.*

Proposition 2.44. *Let $\mathcal{NSHF} : (V, E)$ be a m-SuperHyperFamily of neutrosophic SuperHyperStars with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{c_1, c_2, \cdots, c_m\}$ *is a dual SuperHyperDefensive SuperHyperGirth for* $\mathcal{NSHF}$;
(ii) $\Gamma = m$ *for* $\mathcal{NSHF} : (V, E)$;
(iii) $\Gamma_s = \Sigma_{i=1}^{m} \Sigma_{j=1}^{3} \sigma_j(c_i)$ *for* $\mathcal{NSHF} : (V, E)$;
(iv) *the SuperHyperSets* $S = \{c_1, c_2, \cdots, c_m\}$ *and* $S \subset S'$ *are only dual SuperHyperGirth for* $\mathcal{NSHF} : (V, E)$.

Proposition 2.45. *Let $\mathcal{NSHF} : (V, E)$ be an m-SuperHyperFamily of odd SuperHyperComplete SuperHyperGraphs with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual maximal SuperHyperDefensive SuperHyperGirth for* $\mathcal{NSHF}$;
(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *for* $\mathcal{NSHF} : (V, E)$;
(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$ *for* $\mathcal{NSHF} : (V, E)$;
(iv) *the SuperHyperSets* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *are only a dual maximal SuperHyperGirth for* $\mathcal{NSHF} : (V, E)$.

Proposition 2.46. *Let $\mathcal{NSHF} : (V, E)$ be a m-SuperHyperFamily of even SuperHyperComplete SuperHyperGraphs with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive SuperHyperGirth for* $\mathcal{NSHF} : (V, E)$;
(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *for* $\mathcal{NSHF} : (V, E)$;
(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$ *for* $\mathcal{NSHF} : (V, E)$;
(iv) *the SuperHyperSets* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *are only dual maximal SuperHyperGirth for* $\mathcal{NSHF} : (V, E)$.

Proposition 2.47. *Let $ESHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. Then following statements hold;*

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(i) *if* $s \geq t$ *and a SuperHyperSet* S *of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperGirth, then* S *is an s-SuperHyperDefensive SuperHyperGirth;*
(ii) *if* $s \leq t$ *and a SuperHyperSet* S *of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperGirth, then* S *is a dual s-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.48. *Let* $ESHG : (V, E)$ *be a strong neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if* $s \geq t + 2$ *and a SuperHyperSet* S *of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperGirth, then* S *is an s-SuperHyperPowerful SuperHyperGirth;*
(ii) *if* $s \leq t$ *and a SuperHyperSet* S *of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperGirth, then* S *is a dual s-SuperHyperPowerful SuperHyperGirth.*

Proposition 2.49. *Let* $ESHG : (V, E)$ *be a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if* $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is an r-SuperHyperDefensive SuperHyperGirth;*
(iv) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is a dual r-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.50. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an r-SuperHyperDefensive SuperHyperGirth;*
(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual r-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.51. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperGirth;*
(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.52. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) *if* $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperGirth;*
(iv) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.53. *Let $ESHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < 2$ *if* $ESHG : (V, E))$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth.*

Proposition 2.54. *Let $ESHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then following statements hold;*

(i) *if* $\forall a \in S,\ |N_s(a) \cap S| < 2$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth;*
(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperGirth;*
(iv) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperGirth.*

3. Motivation and Contributions

In this research, there are some ideas in the featured frameworks of motivations. I try to bring the motivations in the narrative ways.

Question 3.1. *How to define the SuperHyperNotions and to do research on them to find the " amount of SuperHyperGirth" of either individual of cells or the groups of cells based on the fixed cell or the fixed group of cells, extensively, the "amount of SuperHyperGirth" based on the fixed groups of cells or the fixed groups of group of cells?*

Question 3.2. *What are the best descriptions for the "Cancer's Recognition" in terms of these messy and dense SuperHyperModels where embedded notions are illustrated?*

It's motivation to find notions to use in this dense model is titled "SuperHyperGraphs". Thus it motivates us to define different types of " SuperHyperGirth" and "extreme SuperHyperGirth" on "SuperHyperGraph" and "extreme SuperHyperGraph". Then the research has taken more motivations to define SuperHyperClasses and to find some connections amid this SuperHyperNotion with other SuperHyperNotions. It motivates us to get some instances and examples to make clarifications about the framework of this research. The general results and some results about some connections are some avenues to make key point of this research, "Cancer's Recognition", more understandable and more clear.

Definition 3.3. ((extreme) SuperHyperGirth).
Assume a SuperHyperGraph. Then

(i) an **extreme SuperHyperGirth** $\mathcal{C}(NSHG)$ for an extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum extreme cardinality of an extreme SuperHyperSet S of high extreme cardinality of the extreme SuperHyperEdges in the consecutive extreme sequence of extreme SuperHyperEdges and extreme SuperHyperVertices such that they form the extreme SuperHyperCycle;
(ii) a **neutrosophic SuperHyperGirth** $\mathcal{C}(NSHG)$ for a neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum neutrosophic cardinality of the extreme SuperHyperEdges of a neutrosophic SuperHyperSet S of high neutrosophic cardinality consecutive neutrosophic SuperHyperEdges and neutrosophic SuperHyperVertices such that they form the neutrosophic SuperHyperCycle;
(iii) an **extreme SuperHyperGirth SuperHyperPolynomial** $\mathcal{C}(NSHG)$ for an extreme SuperHyperGraph $NSHG : (V, E)$ is the extreme SuperHyperPolynomial contains the extreme coefficients defined as the extreme number of the maximum extreme cardinality of the extreme SuperHyperEdges of an extreme SuperHyperSet S of high extreme cardinality consecutive extreme SuperHyperEdges and extreme SuperHyperVertices such that they form the extreme SuperHyperCycle and the extreme power is corresponded to its extreme coefficient;

(iv) a **neutrosophic SuperHyperGirth SuperHyperPolynomial** $\mathcal{C}(NSHG)$ for an neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the neutrosophic SuperHyperPolynomial contains the neutrosophic coefficients defined as the neutrosophic number of the maximum neutrosophic cardinality of the neutrosophic SuperHyperEdges of a neutrosophic SuperHyperSet S of high neutrosophic cardinality consecutive neutrosophic SuperHyperEdges and neutrosophic SuperHyperVertices such that they form the neutrosophic SuperHyperCycle and the neutrosophic power is corresponded to its neutrosophic coefficient;

(v) an **extreme R-SuperHyperGirth** $\mathcal{C}(NSHG)$ for an extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum extreme cardinality of an extreme SuperHyperSet S of high extreme cardinality of the extreme SuperHyperVertices in the consecutive extreme sequence of extreme SuperHyperEdges and extreme SuperHyperVertices such that they form the extreme SuperHyperCycle;

(vi) a **neutrosophic R-SuperHyperGirth** $\mathcal{C}(NSHG)$ for a neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum neutrosophic cardinality of the extreme SuperHyperVertices of a neutrosophic SuperHyperSet S of high neutrosophic cardinality consecutive neutrosophic SuperHyperEdges and neutrosophic SuperHyperVertices such that they form the neutrosophic SuperHyperCycle;

(vii) an **extreme R-SuperHyperGirth SuperHyperPolynomial** $\mathcal{C}(NSHG)$ for an extreme SuperHyperGraph $NSHG : (V, E)$ is the extreme SuperHyperPolynomial contains the extreme coefficients defined as the extreme number of the maximum extreme cardinality of the extreme SuperHyperVertices of an extreme SuperHyperSet S of high extreme cardinality consecutive extreme SuperHyperEdges and extreme SuperHyperVertices such that they form the extreme SuperHyperCycle and the extreme power is corresponded to its extreme coefficient;

$(viii)$ a **neutrosophic SuperHyperGirth SuperHyperPolynomial** $\mathcal{C}(NSHG)$ for an neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the neutrosophic SuperHyperPolynomial contains the neutrosophic coefficients defined as the neutrosophic number of the maximum neutrosophic cardinality of the neutrosophic SuperHyperVertices of a neutrosophic SuperHyperSet S of high neutrosophic cardinality consecutive neutrosophic SuperHyperEdges and neutrosophic SuperHyperVertices such that they form the neutrosophic SuperHyperCycle and the neutrosophic power is corresponded to its neutrosophic coefficient.

Definition 3.4. ((extreme/neutrosophic)$\delta-$SuperHyperGirth).
Assume a SuperHyperGraph. Then

(i) an $\delta-$**SuperHyperGirth** is an extreme kind of extreme SuperHyperGirth such that either of the following expressions hold for the extreme cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta;$$
$$|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta.$$

The Expression (3.1), holds if S is an $\delta-$**SuperHyperOffensive**. And the Expression (3.1), holds if S is an $\delta-$**SuperHyperDefensive**;

(ii) an **neutrosophic** $\delta-$**SuperHyperGirth** is a neutrosophic kind of neutrosophic SuperHyperGirth such that either of the following neutrosophic expressions hold for the neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)|_{neutrosophic} > |S \cap (V \setminus N(s))|_{neutrosophic} + \delta;$$
$$|S \cap N(s)|_{neutrosophic} < |S \cap (V \setminus N(s))|_{neutrosophic} + \delta.$$

The Expression (3.1), holds if S is an **neutrosophic** $\delta-$**SuperHyperOffensive**. And the Expression (3.1), holds if S is an **neutrosophic** $\delta-$**SuperHyperDefensive**.

For the sake of having an neutrosophic SuperHyperGirth, there's a need to "**redefine**" the notion of "neutrosophic SuperHyperGraph". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

Definition 3.5. Assume an neutrosophic SuperHyperGraph. It's redefined **neutrosophic SuperHyperGraph** if the Table 1 holds.

Table 1. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The neutrosophic SuperHyperGraph Mentioned in the Definition (3.7)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

It's useful to define a "neutrosophic" version of SuperHyperClasses. Since there's more ways to get neutrosophic type-results to make a neutrosophic more understandable.

Definition 3.6. Assume an neutrosophic SuperHyperGraph. There are some **neutrosophic SuperHyperClasses** if the Table 2 holds. Thus neutrosophic SuperHyperPath , SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are **neutrosophic SuperHyperPath** , **neutrosophic SuperHyperCycle**, **neutrosophic SuperHyperStar**, **neutrosophic SuperHyperBipartite**, **neutrosophic SuperHyperMultiPartite**, and **neutrosophic SuperHyperWheel** if the Table 2 holds.

Table 2. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The neutrosophic SuperHyperGraph, Mentioned in the Definition (3.6)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

It's useful to define a "neutrosophic" version of a neutrosophic SuperHyperGirth. Since there's more ways to get type-results to make a neutrosophic SuperHyperGirth more neutrosophicly understandable.

For the sake of having a neutrosophic SuperHyperGirth, there's a need to "**redefine**" the neutrosophic notion of "neutrosophic SuperHyperGirth". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

Definition 3.7. Assume a SuperHyperGirth. It's redefined an **extreme SuperHyperGirth** if the Table 3 holds.

Table 3. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The neutrosophic SuperHyperGraph Mentioned in the Definition (3.7)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

4. Results on Extreme SuperHyperClasses

The previous extreme approaches apply on the upcoming extreme results on extreme SuperHyperClasses.

Proposition 4.1. *Assume a connected extreme SuperHyperPath $ESHP : (V, E)$. Then an extreme quasi-R-SuperHyperGirth-style with the maximum extreme SuperHyperCardinality is an extreme SuperHyperSet of the interior extreme SuperHyperVertices.*

Proposition 4.2. *Assume a connected extreme SuperHyperPath $ESHP : (V, E)$. Then an extreme quasi-R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with only no extreme exceptions in the form of interior extreme SuperHyperVertices from the unique extreme SuperHyperEdges not excluding only any interior extreme SuperHyperVertices from the extreme unique SuperHyperEdges. an extreme quasi-R-SuperHyperGirth has the extreme number of all the interior extreme SuperHyperVertices. Also,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}\\
&= \{E_{2i-1}\}_{i=1}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}\\
&= 2z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^s + bz^t.
\end{aligned}$$

Example 4.3. In the Figure 2, the connected extreme SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The extreme SuperHyperSet, in the extreme SuperHyperModel (2), is the SuperHyperGirth.

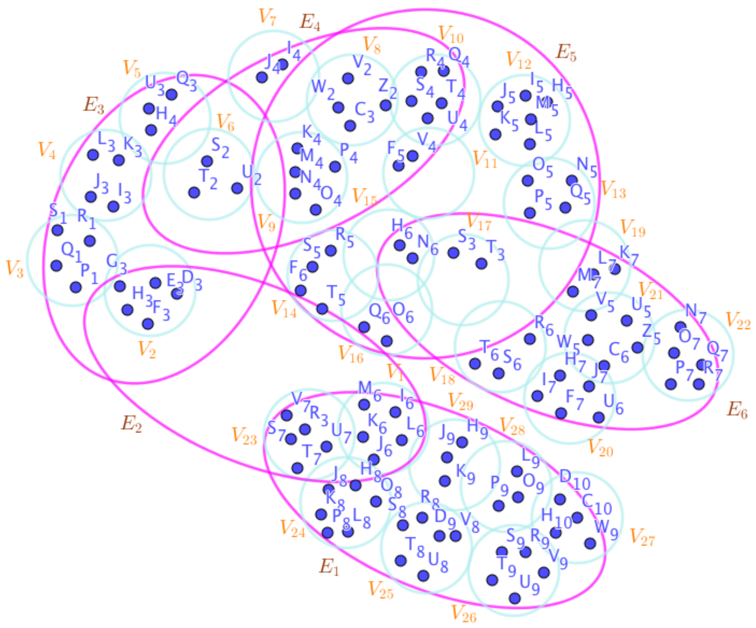

Figure 1. an extreme SuperHyperPath Associated to the Notions of extreme SuperHyperGirth in the Example (4.5)

Proposition 4.4. *Assume a connected extreme SuperHyperCycle $ESHC : (V, E)$. Then an extreme quasi-R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with only no extreme exceptions on the form of interior extreme SuperHyperVertices from the same extreme SuperHyperNeighborhoods not excluding any extreme SuperHyperVertex. an extreme quasi-R-SuperHyperGirth has the extreme half number of all the extreme SuperHyperEdges in the terms of the maximum extreme cardinality. Also,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}\\
&= \{E_{2i-1}\}_{i=1}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}\\
&= 2z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^s + bz^t.
\end{aligned}$$

Example 4.5. In the Figure 2, the connected extreme SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The extreme SuperHyperSet, in the extreme SuperHyperModel (2), is the SuperHyperGirth.

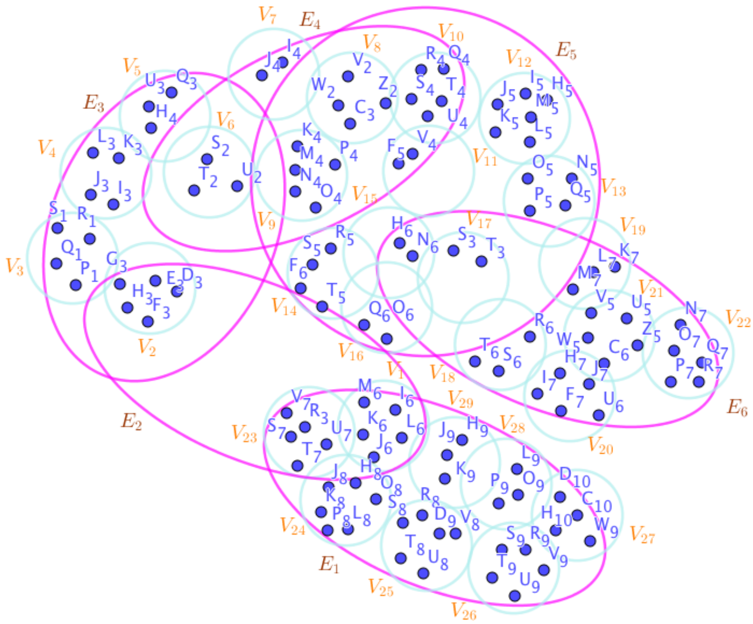

Figure 2. an extreme SuperHyperPath Associated to the Notions of extreme SuperHyperGirth in the Example (4.5)

Proposition 4.6. *Assume a connected extreme SuperHyperCycle $ESHC : (V, E)$. Then an extreme quasi-R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with only no extreme exceptions on the form of interior extreme SuperHyperVertices from the same extreme SuperHyperNeighborhoods not excluding any extreme SuperHyperVertex. an extreme quasi-R-SuperHyperGirth has the extreme half number of all the extreme SuperHyperEdges in the terms of the maximum extreme cardinality. Also,*

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}$$
$$= \{E_{2i-1}\}_{i=1}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}$$
$$= 2z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^s + bz^t.$$

Example 4.7. In the Figure 3, the connected extreme SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained extreme SuperHyperSet, in the extreme SuperHyperModel (3), is the extreme SuperHyperGirth.

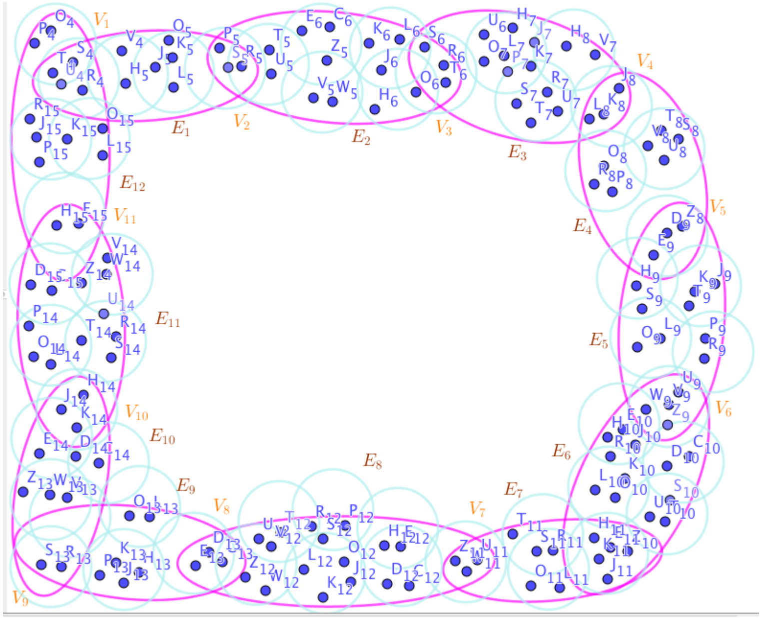

Figure 3. an extreme SuperHyperCycle Associated to the extreme Notions of extreme SuperHyperGirth in the extreme Example (4.7)

Proposition 4.8. *Assume a connected extreme SuperHyperStar* $ESHS : (V, E)$*. Then an extreme quasi-R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices, corresponded to an extreme SuperHyperEdge. an extreme quasi-R-SuperHyperGirth has the extreme number of the extreme cardinality of the one extreme SuperHyperEdge. Also,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}\\
&= \{E \in E_{ESHG:(V,E)}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}\\
&= \sum_{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}} z^{|E|_{extreme\ Cardinality}\ |\ E:\in E_{ESHG:(V,E)}}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}, \ldots.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^s + z^t +, \ldots.
\end{aligned}$$

Example 4.9. In the Figure 5, the connected extreme SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained extreme SuperHyperSet, by the Algorithm in previous extreme result, of the extreme SuperHyperVertices of the connected extreme SuperHyperStar $ESHS : (V, E)$, in the extreme SuperHyperModel (5), is the extreme SuperHyperGirth.

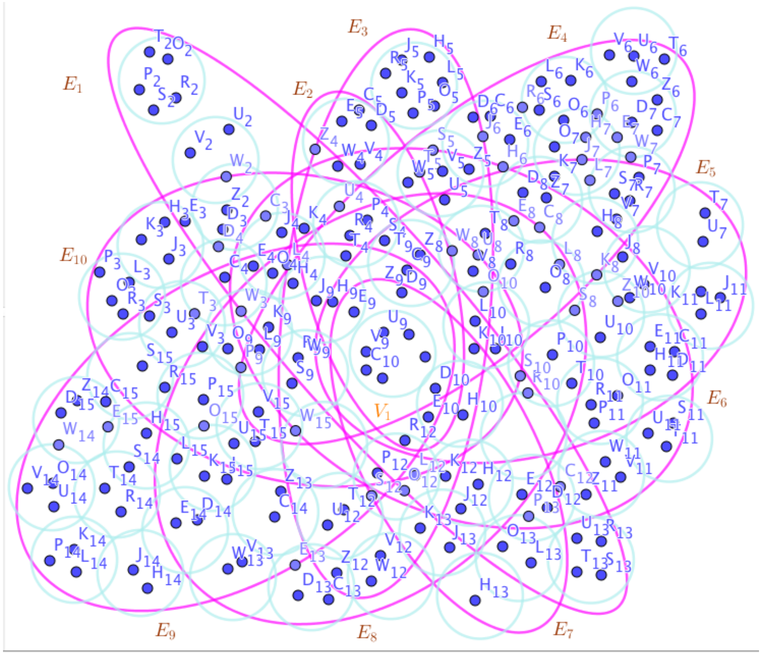

Figure 4. an extreme SuperHyperStar Associated to the extreme Notions of extreme SuperHyperGirth in the extreme Example (4.11)

Proposition 4.10. *Assume a connected extreme SuperHyperBipartite $ESHB : (V, E)$. Then an extreme R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with no extreme exceptions in the form of interior extreme SuperHyperVertices titled extreme SuperHyperNeighbors. an extreme R-SuperHyperGirth has the extreme maximum number of on extreme cardinality of the minimum SuperHyperPart minus those have common extreme SuperHyperNeighbors and not unique extreme SuperHyperNeighbors. Also,*

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}$$
$$= \{E_{2i-1}\}_{i=1}^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}$$
$$= z^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^{s}.$$

Example 4.11. In the Figure 5, the connected extreme SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained extreme SuperHyperSet, by the Algorithm in previous extreme result, of the extreme SuperHyperVertices of the connected extreme SuperHyperStar $ESHS : (V, E)$, in the extreme SuperHyperModel (5), is the extreme SuperHyperGirth.

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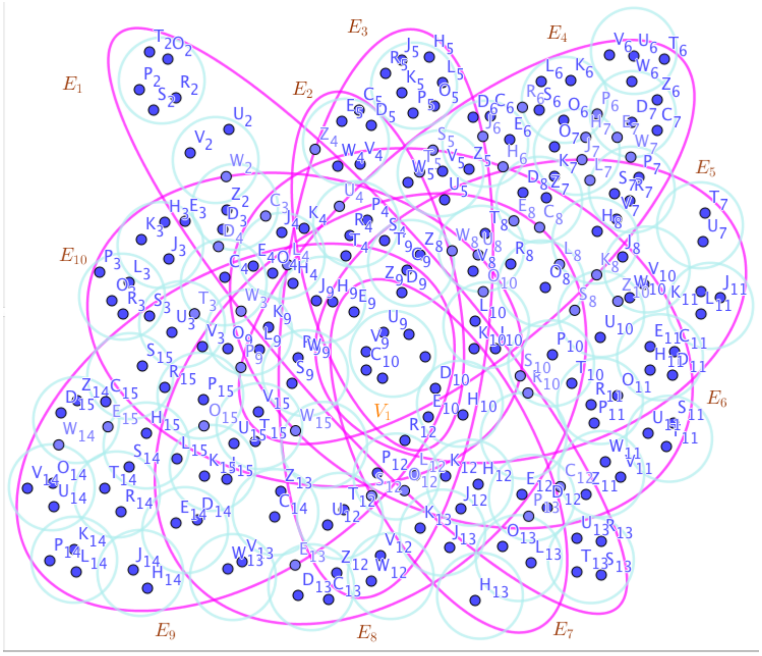

Figure 5. an extreme SuperHyperStar Associated to the extreme Notions of extreme SuperHyperGirth in the extreme Example (4.11)

Proposition 4.12. *Assume a connected extreme SuperHyperBipartite $ESHB : (V, E)$. Then an extreme R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with no extreme exceptions in the form of interior extreme SuperHyperVertices titled extreme SuperHyperNeighbors. an extreme R-SuperHyperGirth has the extreme maximum number of on extreme cardinality of the minimum SuperHyperPart minus those have common extreme SuperHyperNeighbors and not unique extreme SuperHyperNeighbors. Also,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}\\
&= \{E_{2i-1}\}_{i=1}^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}\\
&= z^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^{s}.
\end{aligned}$$

Example 4.13. In the extreme Figure 6, the connected extreme SuperHyperBipartite $ESHB : (V, E)$, is extreme highlighted and extreme featured. The obtained extreme SuperHyperSet, by the extreme Algorithm in previous extreme result, of the extreme SuperHyperVertices of the connected extreme SuperHyperBipartite $ESHB : (V, E)$, in the extreme SuperHyperModel (6), is the extreme SuperHyperGirth.

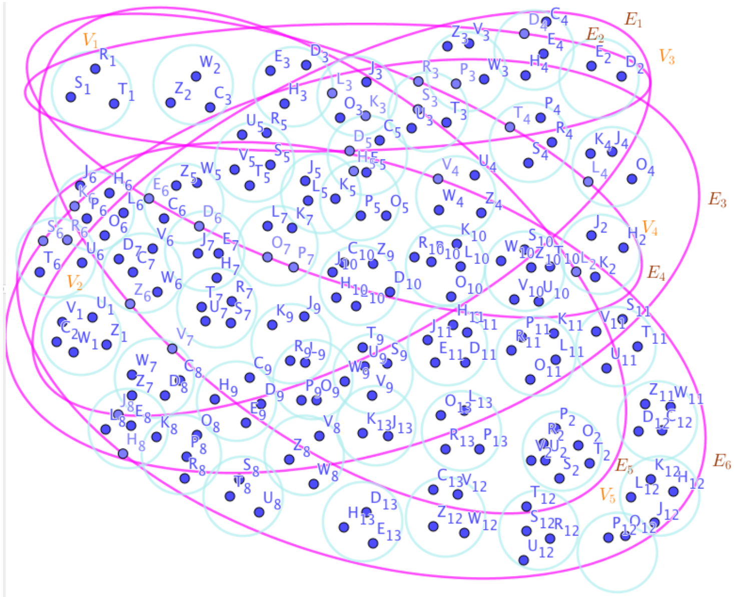

Figure 6. an extreme SuperHyperBipartite extreme Associated to the extreme Notions of extreme SuperHyperGirth in the Example (4.13)

Proposition 4.14. *Assume a connected extreme SuperHyperMultipartite $ESHM : (V, E)$. Then an extreme R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with only no extreme exception in the extreme form of interior extreme SuperHyperVertices from an extreme SuperHyperPart and only no exception in the form of interior SuperHyperVertices from another SuperHyperPart titled "SuperHyperNeighbors" with neglecting and ignoring more than some of them aren't SuperHyperNeighbors to all. an extreme R-SuperHyperGirth has the extreme maximum number on all the extreme summation on the extreme cardinality of the all extreme SuperHyperParts form some SuperHyperEdges minus those make extreme SuperHypeNeighbors to some not all or not unique. Also,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} \\
&= \{E_{2i-1}\}_{i=1}^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}. \\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} \\
&= z^{\min |P_{ESHG:(V,E)}|_{extreme\ Cardinality}}. \\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}. \\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^{s}.
\end{aligned}$$

Example 4.15. In the Figure 7, the connected extreme SuperHyperMultipartite $ESHM : (V, E)$, is highlighted and extreme featured. The obtained extreme SuperHyperSet, by the Algorithm in previous extreme result, of the extreme SuperHyperVertices of the connected extreme SuperHyperMultipartite $ESHM : (V, E)$, in the extreme SuperHyperModel (7), is the extreme SuperHyperGirth.

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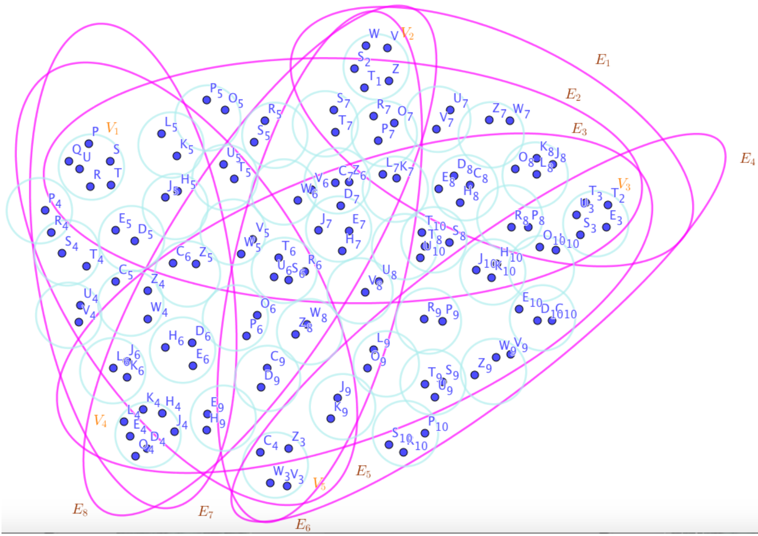

Figure 7. an extreme SuperHyperMultipartite Associated to the Notions of extreme SuperHyperGirth in the Example (4.15)

Proposition 4.16. *Assume a connected extreme SuperHyperWheel $ESHW : (V, E)$. Then an extreme R-SuperHyperGirth is an extreme SuperHyperSet of the interior extreme SuperHyperVertices, excluding the extreme SuperHyperCenter, with only no exception in the form of interior extreme SuperHyperVertices from same extreme SuperHyperEdge with the exclusion on extreme SuperHypeNeighbors to some of them and not all. an extreme R-SuperHyperGirth has the extreme maximum number on all the extreme number of all the extreme SuperHyperEdges don't have common extreme SuperHyperNeighbors. Also,*

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth}$$
$$= \{E_{2i-1}\}_{i=1}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial}$$
$$= 2z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{extreme\ Cardinality}}{2} \rfloor}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = az^s + bz^t.$$

Example 4.17. In the extreme Figure 8, the connected extreme SuperHyperWheel $NSHW : (V, E)$, is extreme highlighted and featured. The obtained extreme SuperHyperSet, by the Algorithm in previous result, of the extreme SuperHyperVertices of the connected extreme SuperHyperWheel $ESHW : (V, E)$, in the extreme SuperHyperModel (8), is the extreme SuperHyperGirth.

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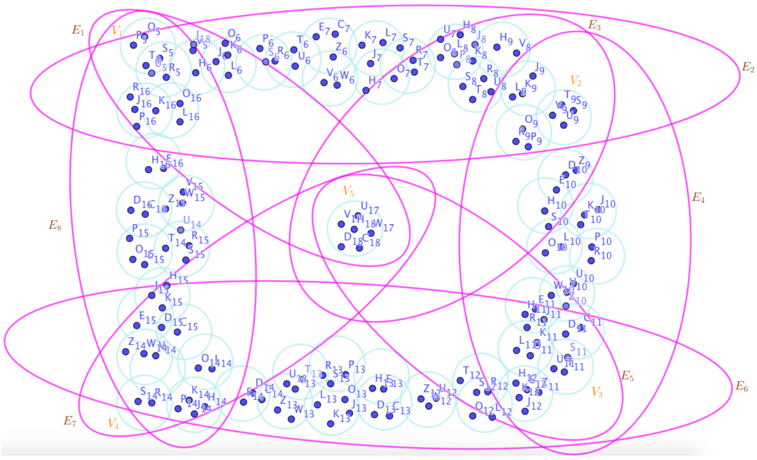

Figure 8. an extreme SuperHyperWheel extreme Associated to the extreme Notions of extreme SuperHyperGirth in the extreme Example (4.17)

5. Extreme SuperHyperGirth

The extreme SuperHyperNotion, namely, extreme SuperHyperGirth, is up. Thus the non-obvious extreme SuperHyperGirth, S is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not: S is an extreme SuperHyperSet, not: S does includes only less than four extreme SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only S in a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. But all only non-obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth amid those obvious[non-obvious] simple extreme type-SuperHyperSets, are S. A connected extreme SuperHyperGraph $ESHG : (V, E)$ as a linearly-over-packed SuperHyperModel is featured on the Figures.

Example 5.1. Assume the SuperHyperGraphs in the Figures 9–28.

- On the Figure 9, the extreme SuperHyperNotion, namely, extreme SuperHyperGirth, is up. E_1 and E_3 are some empty extreme SuperHyperEdges but E_2 is a loop extreme SuperHyperEdge and E_4 is an extreme SuperHyperEdge. Thus in the terms of extreme SuperHyperNeighbor, there's only one extreme SuperHyperEdge, namely, E_4. The extreme SuperHyperVertex, V_3 is extreme isolated means that there's no extreme SuperHyperEdge has it as an extreme endpoint. Thus the extreme SuperHyperVertex, V_3, **is** excluded in every given extreme SuperHyperGirth.

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

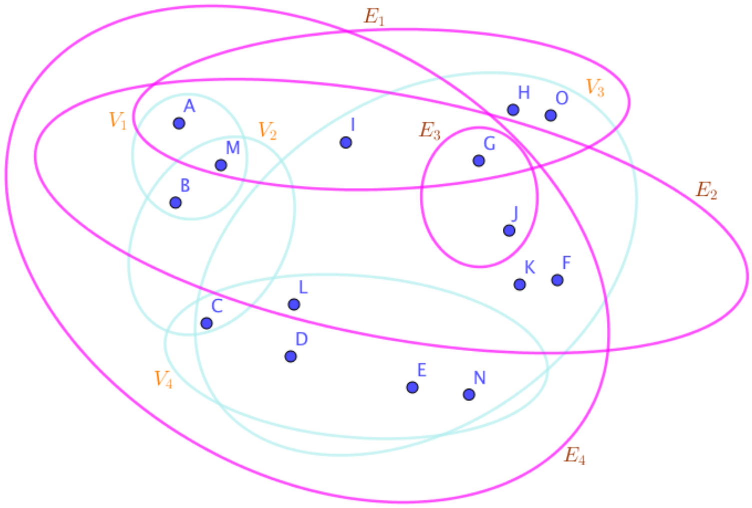

Figure 9. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

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Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Thus the obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is the extreme SuperHyperSet, is:

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

- On the Figure 10, the SuperHyperNotion, namely, SuperHyperGirth, is up. E_1, E_2 and E_3 are some empty SuperHyperEdges but E_2 isn't a loop SuperHyperEdge and E_4 is a SuperHyperEdge. Thus in the terms of SuperHyperNeighbor, there's only one SuperHyperEdge, namely, E_4. The SuperHyperVertex, V_3 is isolated means that there's no SuperHyperEdge has it as an endpoint. Thus the extreme SuperHyperVertex, V_3, **is** excluded in every given extreme SuperHyperGirth.

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 3z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

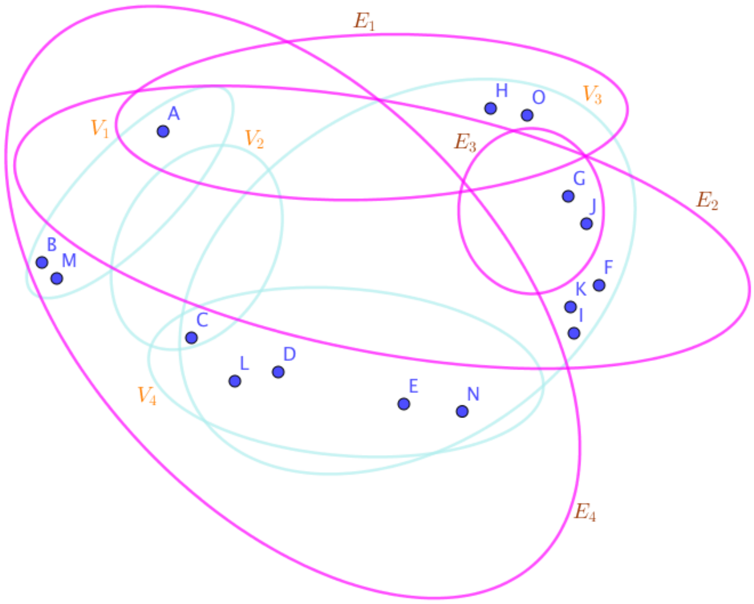

Figure 10. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less

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than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Thus the obvious extreme SuperHyperGirth,

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is the extreme SuperHyperSet, is:

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

- On the Figure 11, the SuperHyperNotion, namely, SuperHyperGirth, is up. E_1, E_2 and E_3 are some empty SuperHyperEdges but E_4 is a SuperHyperEdge. Thus in the terms of SuperHyperNeighbor, there's only one SuperHyperEdge, namely, E_4.

$\mathcal{C}(NSHG) = \{E_4\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1, V_2, V_4\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z^3$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

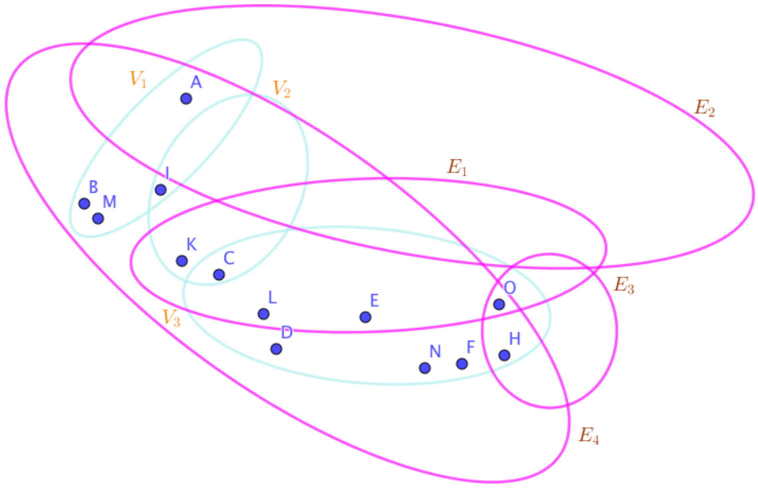

Figure 11. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Thus the obvious extreme SuperHyperGirth,

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is the extreme SuperHyperSet, is:

$\mathcal{C}(NSHG) = \{E_2\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_1\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = z$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

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"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG) = \{E_2\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_1\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = z \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

- On the Figure 12, the SuperHyperNotion, namely, a SuperHyperGirth, is up. There's no empty SuperHyperEdge but E_3 are a loop SuperHyperEdge on $\{F\}$, and there are some SuperHyperEdges, namely, E_1 on $\{H, V_1, V_3\}$, alongside E_2 on $\{O, H, V_4, V_3\}$ and E_4, E_5 on $\{N, V_1, V_2, V_3, F\}$.

$$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_2, F\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_2, F\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\} \text{ is an extreme SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme SuperHyperGirth SuperHyperPolynomial.}$$
$$\mathcal{C}(NSHG) = \{V_2, F\} \text{ is an extreme R-SuperHyperGirth.}$$
$$\mathcal{C}(NSHG) = 4z^2 \text{ is an extreme R-SuperHyperGirth SuperHyperPolynomial.}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less

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than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

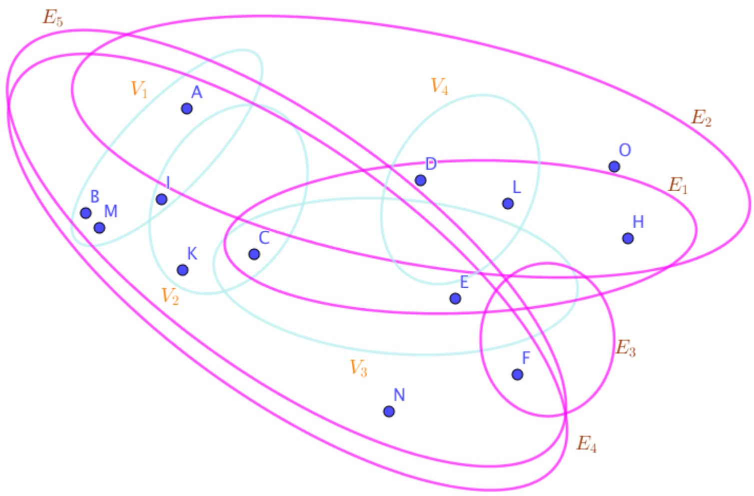

Figure 12. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme

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sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Thus the obvious extreme SuperHyperGirth,

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Is the extreme SuperHyperSet, is:

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$\mathcal{C}(NSHG) = \{F, E_3, V_2, E_4, F\}$ is an extreme SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme SuperHyperGirth SuperHyperPolynomial.
$\mathcal{C}(NSHG) = \{V_2, F\}$ is an extreme R-SuperHyperGirth.
$\mathcal{C}(NSHG) = 4z^2$ is an extreme R-SuperHyperGirth SuperHyperPolynomial.

- On the Figure 13, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth.

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme

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SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Thus the obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Is the extreme SuperHyperSet, is:

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-SuperHyperGirth SuperHyperPolynomial}} = 0.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth}} = \{\}.$$
$$\mathcal{C}(NSHG)_{\text{extreme Quasi-R-SuperHyperGirth SuperHyperPolynomial}} = 0.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ is mentioned as the SuperHyperModel $ESHG : (V, E)$ in the Figure 13.

- On the Figure 14, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge.

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$

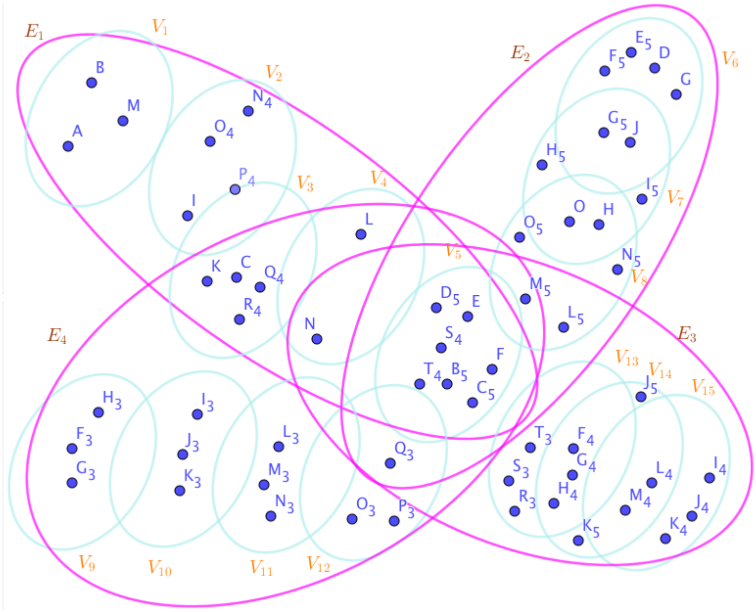

Figure 13. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

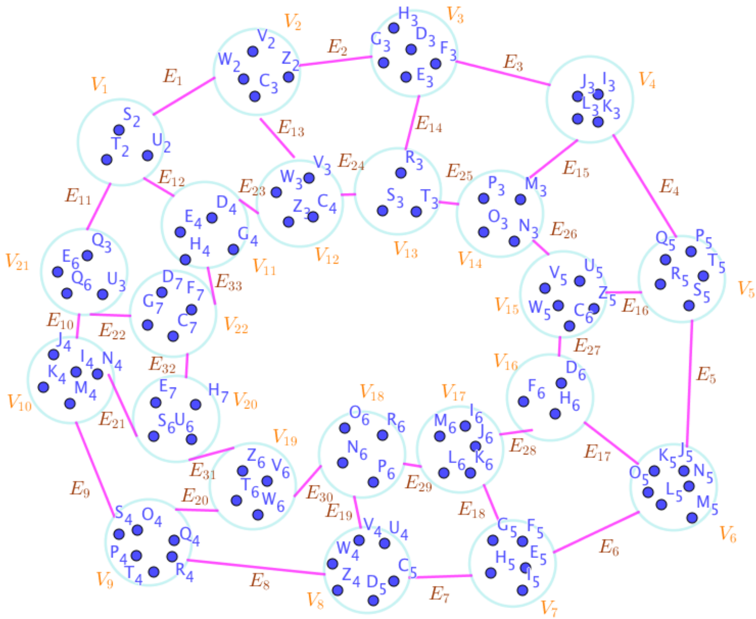

Figure 14. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme

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SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme

SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Is the extreme SuperHyperSet, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

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is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_i, E_i, V_6, E_{17}, V_{16}\}_{i=2}^{5} \cup \{V_i, E_{i+12}, E_{12}, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 22z^{12}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i, V_6, V_{16}\}_{i=2}^{5} \cup \{V_i, V_1\}_{i=11}^{15}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 22z^{12}.
\end{aligned}$$

- On the Figure 15, the SuperHyperNotion, namely, SuperHyperGirth, is up. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^{6}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^{7}.
\end{aligned}$$

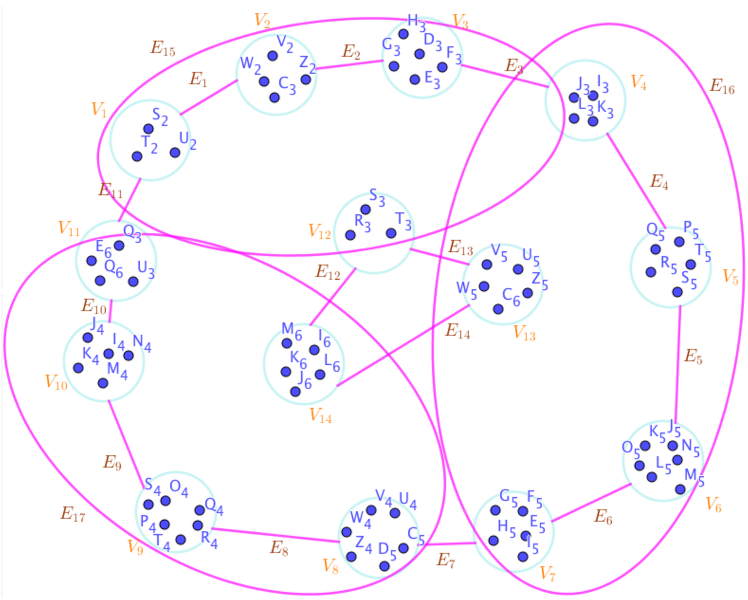

Figure 15. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme

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SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

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Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\}
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\}
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.$$

Is the extreme SuperHyperSet, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\}
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_8, E_{17}, V_{14}, E_{12}, V_{12}, E_{15}, V_3, E_3, V_4, E_{16}, V_7, E_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 6z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_8, V_{14}, V_{12}, V_3, V_4, V_7, V_8\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 6z^7.
\end{aligned}$$

- On the Figure 16, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

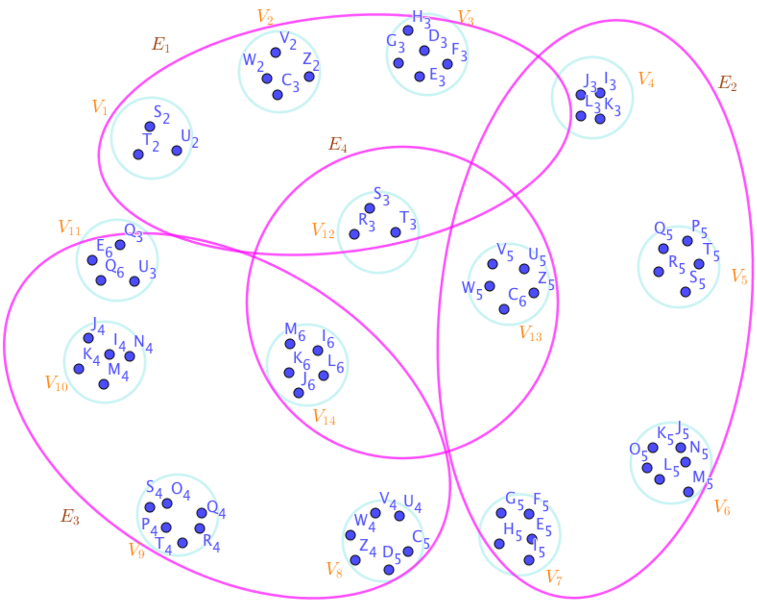

Figure 16. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Thus the obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the extreme SuperHyperSet, is:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ of dense SuperHyperModel as the Figure 16.

- On the Figure 17, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth.

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

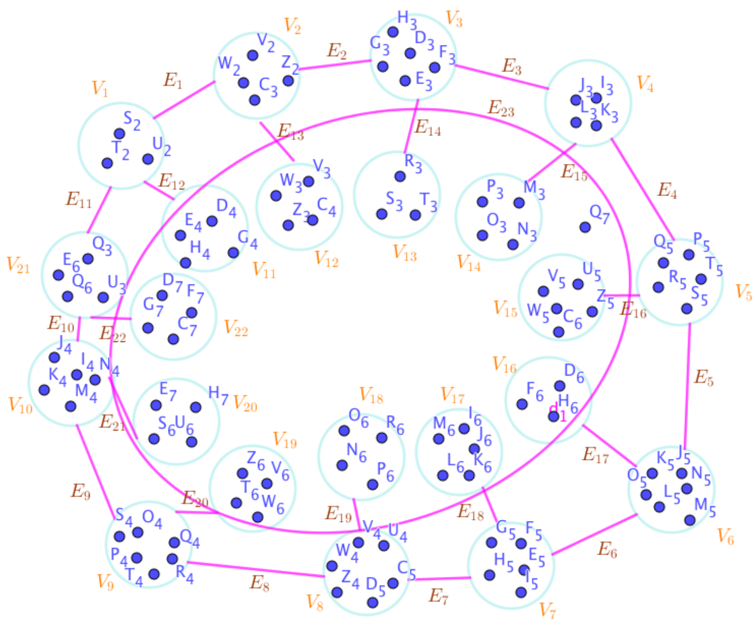

Figure 17. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

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Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5}\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5}\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5}\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5}\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme

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sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Is the extreme SuperHyperSet, is not:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{V_i, E_i, V_6, E_{17}, V_{16}, d_1, V_1\}_{i=2}^{5} \mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 11z^8.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_1, V_i, V_{16}, V_1\}_{i=2}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 11z^8.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ of highly-embedding-connected SuperHyperModel as the Figure 17.

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- On the Figure 18, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

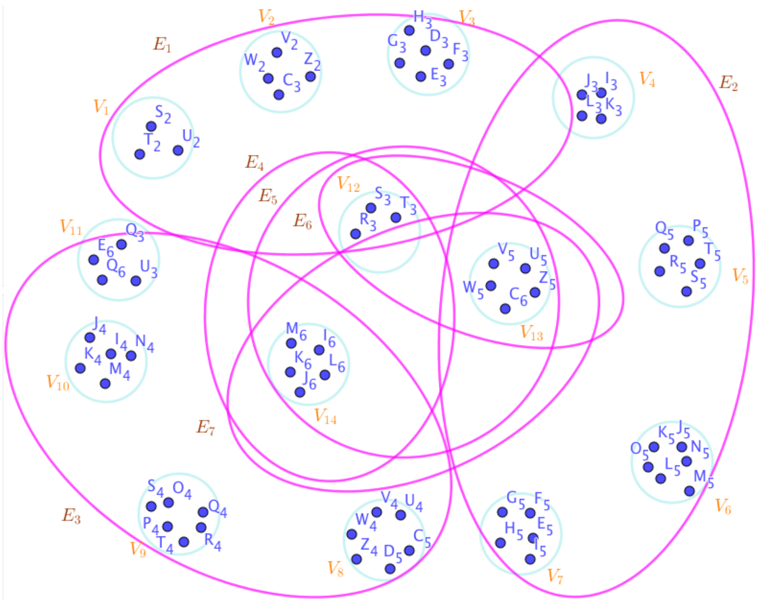

Figure 18. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Is the extreme SuperHyperSet, is:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_{14}, E_4, V_{12}, E_6, V_{13}, E_7, V_{14}\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^3.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_{14}V_{12}, V_{13}, V_{14}\}$$

$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^4.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ of dense SuperHyperModel as the Figure 18.

- On the Figure 19, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_1, V_5, V_6, V_4, V_2, V_1\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.$$

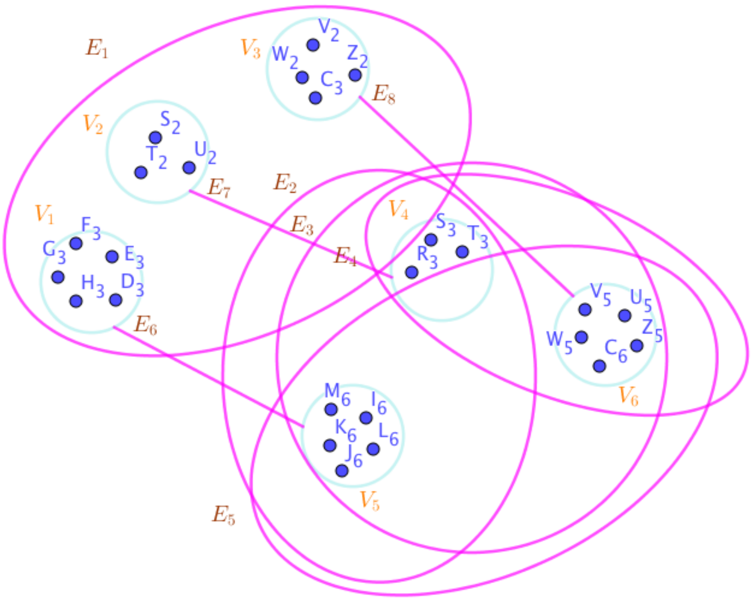

Figure 19. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} =$$
$$\{V_1, V_5, V_6, V_4, V_2, V_1\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

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Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

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Is the extreme SuperHyperSet, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_6, V_5, E_5, V_6, E_4, V_4, E_7, V_2, E_1, V_1\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 3z^5. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \\
&\{V_1, V_5, V_6, V_4, V_2, V_1\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 3z^6.
\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure 20, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. There's only one extreme SuperHyperEdges between any given extreme amount of extreme SuperHyperVertices. Thus there isn't any extreme SuperHyperGirth at all. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\} \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

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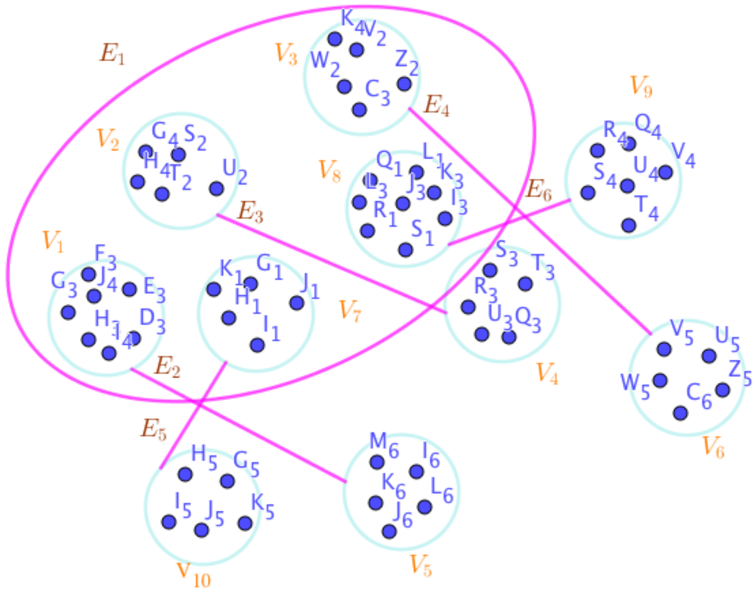

Figure 20. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

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Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.$$

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Is the extreme SuperHyperSet, is not:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \{\}\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{\}\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure 21, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =\\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =\\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}.\\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

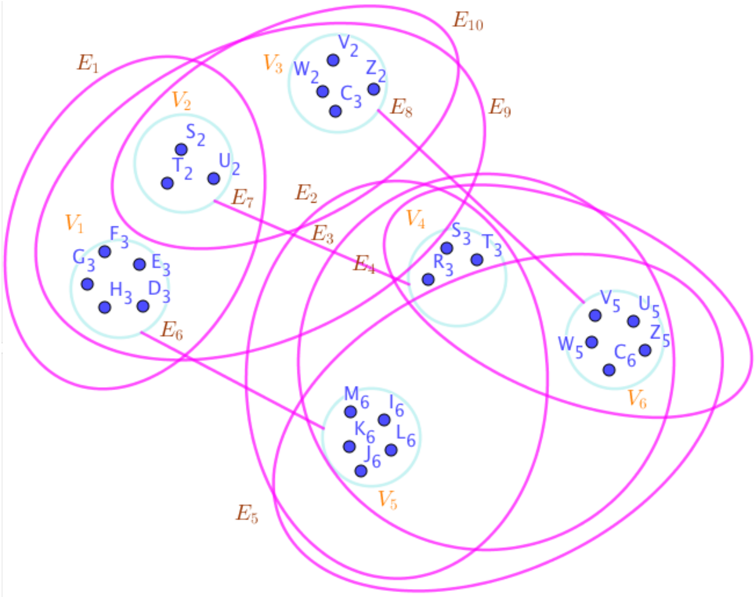

Figure 21. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =$$
$$\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}.$$
$$\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} = \\
&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}. \\
&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^{6}. \\
&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\begin{aligned}&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =\\&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.\\&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.\end{aligned}$$

Is the extreme SuperHyperSet, is not:

$$\begin{aligned}&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =\\&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.\\&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}&\mathcal{C}(NSHG)_{extremeSuperHyperGirth} =\\&\{V_1, E_1, V_2, E_{10}, V_3, E_8, V_6, E_4, V_4, E_2, V_5, E_6, V_1\}.\\&\mathcal{C}(NSHG)_{extremeSuperHyperGirthSuperHyperPolynomial} = z^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirth} = \{V_i\}_{i=1}^6.\\&\mathcal{C}(NSHG)_{extremeR-SuperHyperGirthSuperHyperPolynomial} = z^6.\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure 22, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0\end{aligned}$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme

type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

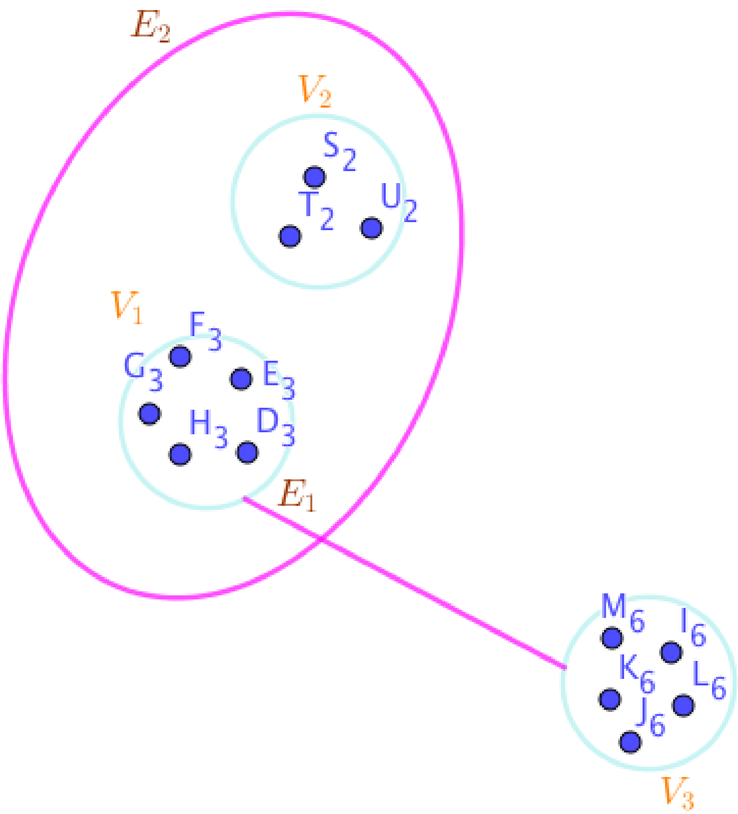

Figure 22. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Is the extreme SuperHyperSet, is:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's noted that this extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme graph $G : (V, E)$ thus the notions in both settings are coincided.

- On the Figure 23, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme

type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

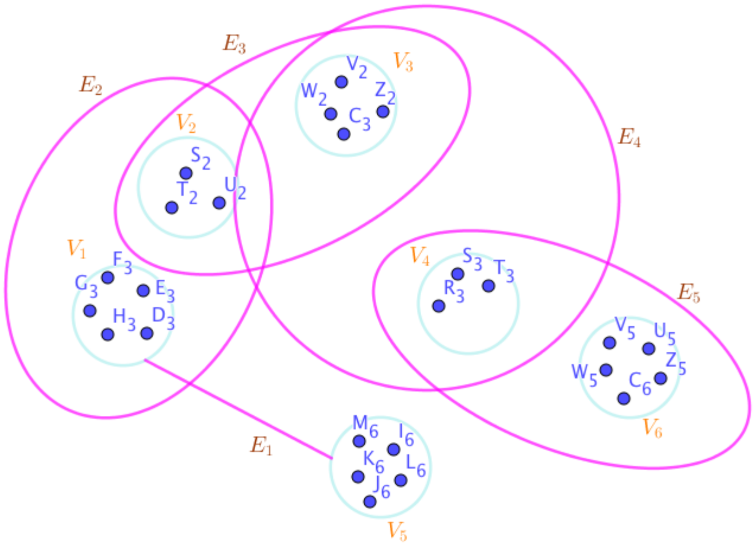

Figure 23. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme

SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Is the extreme SuperHyperSet, is:

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirth} = \{\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.
\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's noted that this extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme graph $G : (V, E)$ thus the notions in both settings are coincided. In a connected extreme SuperHyperGraph $ESHG : (V, E)$ as Linearly-Connected SuperHyperModel On the Figure 23.

- On the Figure 24, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme

type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less

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than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}
$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}
$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}
$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}
$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

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$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme

SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
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$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

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$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

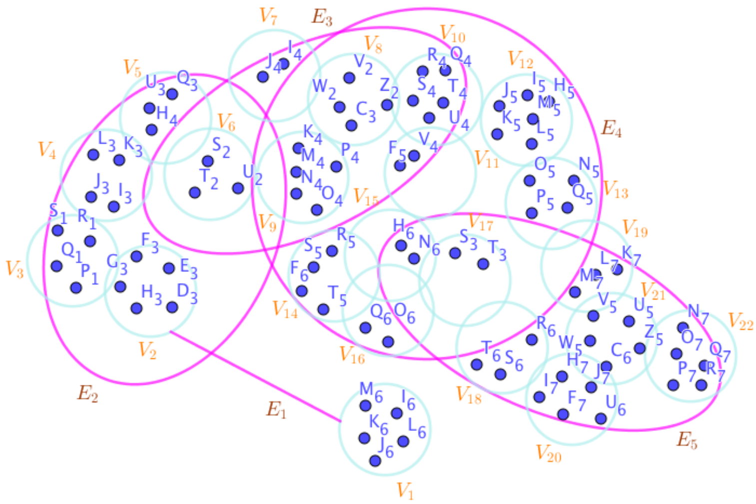

Figure 24. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

- On the Figure 25, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
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&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

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Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$
\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, V_{11}, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_8, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_9, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_{11}, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_8, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_9, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_{10}, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{15} V_{17}, V_{15}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{17}, V_{15}, V_{17}\}.\\
\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} &= 14z^3.
\end{aligned}
$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$
\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_9, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{10}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{11}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_8, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{10}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{11}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}
$$

$$
\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_9, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{10}, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}
$$

$$
\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_8, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{10}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{11}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}
$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Is an extreme SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, V_{11}, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_8, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_9, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, V_{11}, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_8, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_9, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, V_{10}, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{15} V_{17}, V_{15}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{17}, V_{15}, V_{17}\}.\\
\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} &= 14z^3.
\end{aligned}$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_9, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{10}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{11}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_8, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{10}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{11}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_9, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{10}, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_8, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{10}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{11}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.
\end{aligned}$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 28z^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 14z^3.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

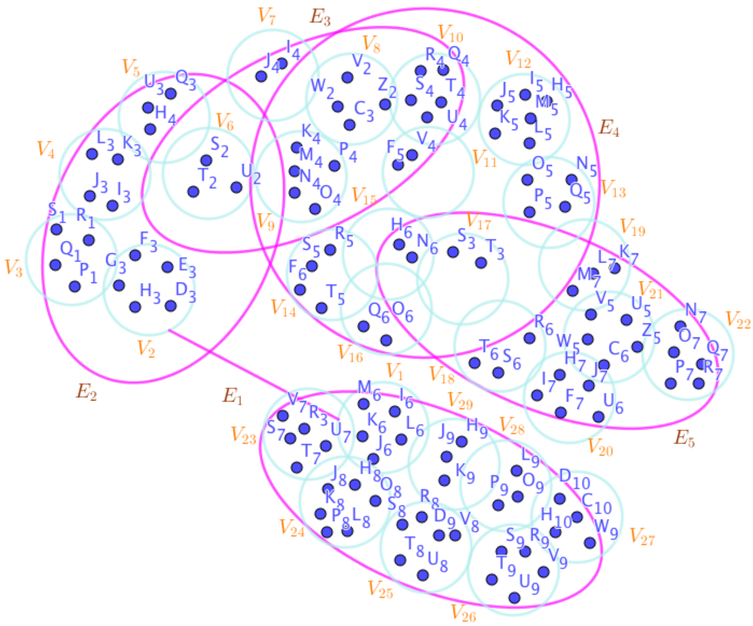

Figure 25. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

- On the Figure 26, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.
\end{aligned}$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme

type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.
\end{aligned}
$$

Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}
$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}
$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_9, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{10}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_3, V_{11}, E_4, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_8, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{10}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_3, V_{11}, E_4, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_9, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{10}, E_3, V_8\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_8, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{10}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_9, E_4, V_{11}, E_3, V_9\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} &= \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.
\end{aligned}
$$

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.
\end{aligned}
$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}
$$

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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

erHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_9, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{10}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_3, V_{11}, E_4, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_8, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{10}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_3, V_{11}, E_4, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_8, E_4, V_{10}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_9, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_3, V_{11}, E_4, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_8, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_9, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_3, V_{10}, E_4, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_9, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{10}, E_3, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, E_4, V_{11}, E_3, V_8\}.$$

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$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_8, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{10}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, E_4, V_{11}, E_3, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_8, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_9, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, E_4, V_{11}, E_3, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_8, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_9, E_3, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, E_4, V_{10}, E_3, V_{11}\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_4, V_{17}, E_5, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_4, V_{15}, E_5, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15}, E_5, V_{17}, E_4, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, E_5, V_{15}, E_4, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_{23}, E_2, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_1, V_2, E_2, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_2, V_{23}, E_1, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, E_2, V_1, E_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 32^2.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_9, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{10}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_8, V_{11}, V_8\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_8, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{10}, V_9\}.$$

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_9, V_{11}, V_9\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_8, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_9, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{10}, V_{11}, V_{10}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_8, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_9, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{11}, V_{10}, V_{11}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{15} V_{17}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{17}, V_{15}, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_{23}, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_{23}, V_1, V_{23}\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 16z^3.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

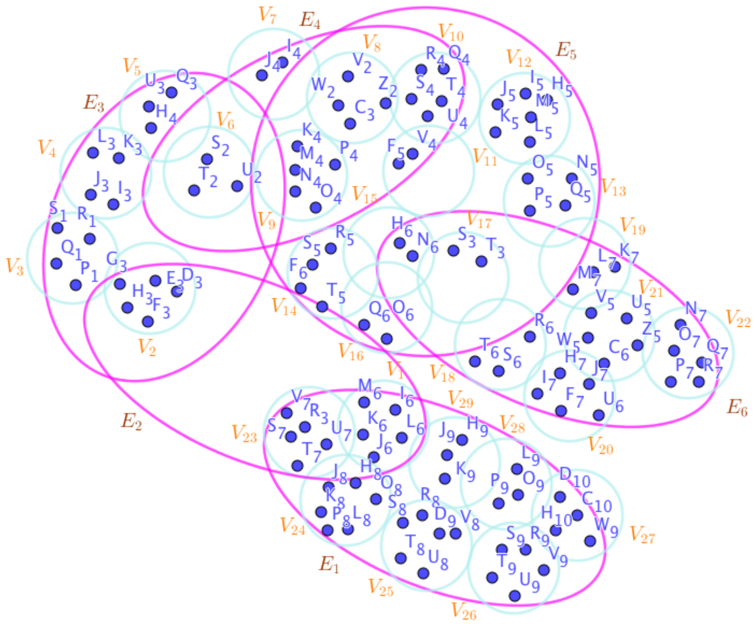

Figure 26. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

- On the Figure 27, the SuperHyperNotion, namely, SuperHyperGirth, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

is the simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. The following extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices] is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the extreme type-SuperHyperSet of the extreme SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

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Is an **extreme SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive sequence of the extreme SuperHyperVertices and the extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth isn't up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only less than **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Does has less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is:

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

is only and only

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = 0.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.

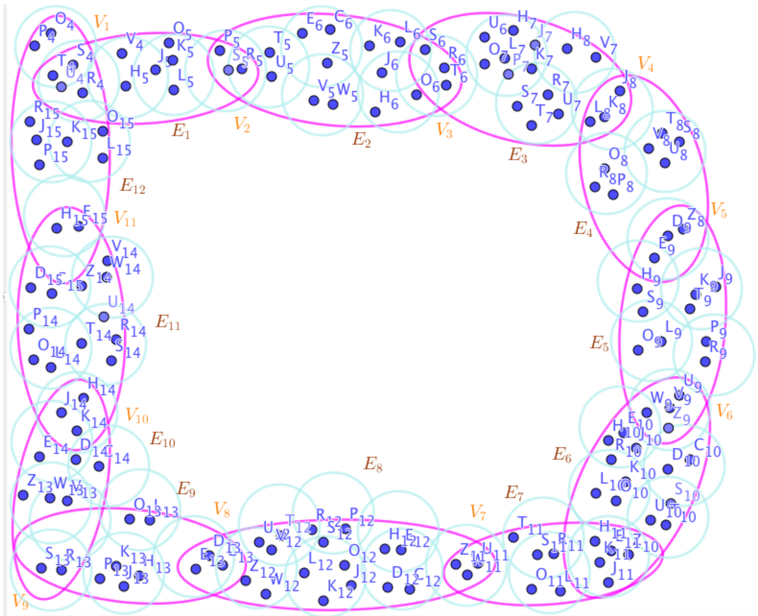

Figure 27. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

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- On the Figure 28, the SuperHyperNotion, namely, SuperHyperGirth, is up.

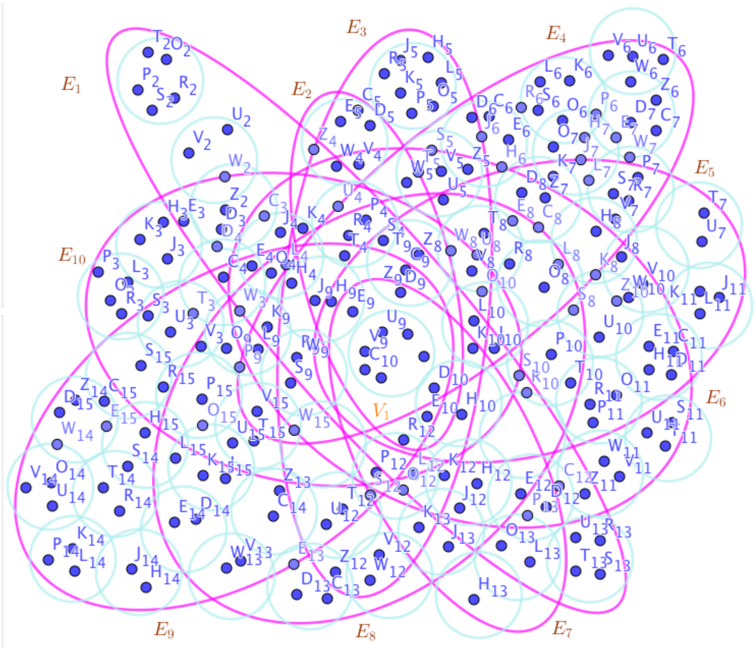

Figure 28. The SuperHyperGraphs Associated to the Notions of SuperHyperGirth in the Example (5.1)

Proposition 5.2. *Assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.
\end{aligned}$$

Is an extreme type-result-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme type-result-SuperHyperGirth is the cardinality of

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.
\end{aligned}$$

Proof. Assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{V_1, V_2, V_3, V_4, V_1\}$ isn't an extreme quasi-type-result-SuperHyperGirth since neither extreme amount of extreme SuperHyperEdges nor extreme amount of extreme SuperHyperVertices where extreme amount refers to the extreme number of extreme SuperHyperVertices(-/SuperHyperEdges) more than one to form any extreme kind of extreme consecutive consequence as the extreme icon and extreme generator of the extreme SuperHyperCycle in the terms of the extreme longest form. Let us consider the extreme SuperHyperSet

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

This extreme SuperHyperSet of the extreme SuperHyperVertices has the eligibilities to propose property such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth but the maximum extreme cardinality indicates that these extreme type-SuperHyperSets couldn't give us the extreme lower bound in the term of extreme sharpness. In other words, the extreme SuperHyperSet

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

Of the extreme SuperHyperVertices implies at least on-quasi-triangle style is up but sometimes the extreme SuperHyperSet

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

Of the extreme SuperHyperVertices is free-quasi-triangle and it doesn't make a contradiction to the supposition on the connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Thus the minimum case never happens in the generality of the connected loopless extreme SuperHyperGraphs. Thus if we assume in the worst case, literally,

$$V \setminus V \setminus \{V_1, V_2, V_3, V_4, V_1\}$$

Is an extreme quasi-type-result-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the extreme cardinality, of an extreme extreme quasi-type-result-SuperHyperGirth is the cardinality of

$$V \setminus V \setminus \{V_1, V_2, V_3, V_4, V_1\}.$$

Then we've lost some connected loopless extreme SuperHyperClasses of the connected loopless extreme SuperHyperGraphs titled free-triangle, on-triangle, and their quasi-types but the extreme quasi-type-result-SuperHyperGirth is only up in this extreme quasi-type-result-SuperHyperGirth. It's the contradiction to that fact on the extreme generality. There are some counterexamples to deny this statement. One of them comes from the setting of the graph titled path and star as the counterexamples-classes or reversely direction cycle as the examples-classes, are well-known classes in that setting and they could be considered as the examples-classes and counterexamples-classes for the tight bound of

$$V \setminus V \setminus \{V_1, V_2, V_3, V_4, V_1\}.$$

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Let $V \setminus V \setminus \{z, z'\}$ in mind. There's no extreme necessity on the extreme SuperHyperEdge since we need at least three extreme SuperHyperVertices to form an extreme SuperHyperEdge. It doesn't withdraw the extreme principles of the main extreme definition since there's no extreme condition to be satisfied but the extreme condition is on the extreme existence of the extreme SuperHyperEdge instead of acting on the extreme SuperHyperVertices. In other words, if there are three extreme SuperHyperEdges, then the extreme SuperHyperSet has the necessary condition for the intended extreme definition to be extremely applied. Thus the $V \setminus V \setminus \{z, z'\}$ is withdrawn not by the extreme conditions of the main extreme definition but by the extreme necessity of the extreme pre-condition on the extreme usage of the main extreme definition.
To make sense with the precise extreme words in the terms of "R-', the follow-up extreme illustrations are extremely coming up.
The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth, instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There are not only **four** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **four** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Doesn't have less than four SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far four extreme SuperHyperEdges. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **isn't** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Isn't the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperEdges[SuperHyperVertices],

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices[SuperHyperEdges] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperEdges[SuperHyperVertices] such that there's only one extreme consecutive extreme sequence of extreme SuperHyperVertices and extreme SuperHyperEdges form only one extreme SuperHyperCycle. There are not only less than four extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

Thus the non-obvious extreme SuperHyperGirth,

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

Is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, is not:

$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.$$
$$\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.$$

Does includes only less than four SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only simple extreme type-SuperHyperSet called the

"extreme SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

neutrosophic SuperHyperGirth,

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is only and only

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.
\end{aligned}$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme girth embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.
To sum them up, assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally,

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.
\end{aligned}$$

Is an extreme type-result-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme type-result-SuperHyperGirth is the cardinality of

$$\begin{aligned}
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirthSuperHyperPolynomial} = z^4.\\
&\mathcal{C}(NSHG)_{extremeQuasi-SuperHyperGirth} = \{V_1, V_2, V_3, V_4, V_1\}.\\
&\mathcal{C}(NSHG)_{extremeR-Quasi-SuperHyperGirthSuperHyperPolynomial} = z^5.
\end{aligned}$$

□

Proposition 5.3. *Assume a simple extreme SuperHyperGraph $ESHG : (V, E)$. Then the extreme number of type-result-R-SuperHyperGirth has, the least extreme cardinality, the lower sharp extreme bound for extreme cardinality, is the extreme cardinality of*

$$V \setminus V \setminus \{a_E, b_{E'}, c_{E''}, c_{E'''}\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

If there's an extreme type-result-R-SuperHyperGirth with the least extreme cardinality, the lower sharp extreme bound for cardinality.

Proof. The extreme structure of the extreme type-result-R-SuperHyperGirth decorates the extreme SuperHyperVertices don't have received any extreme connections so as this extreme style implies different versions of extreme SuperHyperEdges with the maximum extreme cardinality in the terms of extreme SuperHyperVertices are spotlight. The lower extreme bound is to have the maximum extreme groups of extreme SuperHyperVertices have perfect extreme connections inside each of SuperHyperEdges and the outside of this extreme SuperHyperSet doesn't matter but regarding the connectedness of the used extreme SuperHyperGraph arising from its extreme properties taken from the fact that it's simple. If there's no more than one extreme SuperHyperVertex in the targeted extreme SuperHyperSet, then there's no extreme connection. Furthermore, the extreme existence of one extreme SuperHyperVertex has no extreme effect to talk about the extreme R-SuperHyperGirth. Since at least two extreme SuperHyperVertices involve to make a title in the extreme background of the extreme SuperHyperGraph. The extreme SuperHyperGraph is obvious if it has no extreme SuperHyperEdge but at least two extreme SuperHyperVertices make the extreme version of extreme SuperHyperEdge. Thus in the extreme setting of non-obvious extreme SuperHyperGraph, there are at least one extreme SuperHyperEdge. It's necessary to mention that the word "Simple" is used as extreme adjective for the initial extreme SuperHyperGraph, induces there's no extreme appearance of the loop extreme version of the extreme SuperHyperEdge and this extreme SuperHyperGraph is said to be loopless. The extreme adjective "loop" on the basic extreme framework engages one extreme SuperHyperVertex but it never happens in this extreme setting. With these extreme bases, on an extreme SuperHyperGraph, there's at least one extreme SuperHyperEdge thus there's at least an extreme R-SuperHyperGirth has the extreme cardinality of an extreme SuperHyperEdge. Thus, an extreme R-SuperHyperGirth has the extreme cardinality at least an extreme SuperHyperEdge. Assume an extreme SuperHyperSet $V \setminus V \setminus \{z\}$. This extreme SuperHyperSet isn't an extreme R-SuperHyperGirth since either the extreme SuperHyperGraph is an obvious extreme SuperHyperModel thus it never happens since there's no extreme usage of this extreme framework and even more there's no extreme connection inside or the extreme SuperHyperGraph isn't obvious and as its consequences, there's an extreme contradiction with the term "extreme R-SuperHyperGirth" since the maximum extreme cardinality never happens for this extreme style of the extreme SuperHyperSet and beyond that there's no extreme connection inside as mentioned in first extreme case in the forms of drawback for this selected extreme SuperHyperSet. Let

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots, a_{E'}, b_{E'}, c_{E'}, \ldots\}_{E,E'=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}$$

Comes up. This extreme case implies having the extreme style of on-quasi-triangle extreme style on the every extreme elements of this extreme SuperHyperSet. Precisely, the extreme R-SuperHyperGirth is the extreme SuperHyperSet of the extreme SuperHyperVertices such that some extreme amount of the extreme SuperHyperVertices are on-quasi-triangle extreme style. The extreme cardinality of the v SuperHypeSet

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots, a_{E'}, b_{E'}, c_{E'}, \ldots\}_{E,E'=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}$$

Is the maximum in comparison to the extreme SuperHyperSet

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

But the lower extreme bound is up. Thus the minimum extreme cardinality of the maximum extreme cardinality ends up the extreme discussion. The first extreme term refers to the extreme setting of the extreme SuperHyperGraph but this key point is enough since there's an extreme SuperHyperClass of an extreme SuperHyperGraph has no on-quasi-triangle extreme style amid some amount of its extreme SuperHyperVertices. This extreme setting of the extreme SuperHyperModel proposes an extreme SuperHyperSet has only some amount extreme SuperHyperVertices from one extreme SuperHyperEdge such that there's no extreme amount of extreme SuperHyperEdges more than one involving these some amount of these extreme SuperHyperVertices. The extreme cardinality of this extreme SuperHyperSet is the maximum and the extreme case is occurred in the minimum extreme situation. To sum them up, the extreme SuperHyperSet

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Has the maximum extreme cardinality such that

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Contains some extreme SuperHyperVertices such that there's distinct-covers-order-amount extreme SuperHyperEdges for amount of extreme SuperHyperVertices taken from the extreme SuperHyperSet

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

It means that the extreme SuperHyperSet of the extreme SuperHyperVertices

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an extreme R-SuperHyperGirth for the extreme SuperHyperGraph as used extreme background in the extreme terms of worst extreme case and the common theme of the lower extreme bound occurred in the specific extreme SuperHyperClasses of the extreme SuperHyperGraphs which are extreme free-quasi-triangle.
To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge amid some extreme SuperHyperVertices instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There's not only **one** extreme SuperHyperVertex **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **one** extreme SuperHyperVertex. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

doesn't have less than two SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far an SuperHyperEdge. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$(V \setminus V \setminus \{x, z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x, z\}) \cup \{zy\}$$

is an extreme R-SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some amount extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth. There isn't only less than two extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Thus the non-obvious extreme R-SuperHyperGirth,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is up. The non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the extreme SuperHyperSet, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

does includes only less than two SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme R-SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

extreme R-SuperHyperGirth,

is only and only

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme stable embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.
To sum them up, assume a simple extreme SuperHyperGraph $ESHG : (V, E)$. Then the extreme number of R-SuperHyperGirth has, the least cardinality, the lower sharp bound for cardinality, is the extreme cardinality of

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

If there's a R-SuperHyperGirth with the least cardinality, the lower sharp bound for cardinality. □

Proposition 5.4. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z extreme SuperHyperVertices, then the extreme cardinality of the extreme R-SuperHyperGirth is at least*

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\}).$$

It's straightforward that the extreme cardinality of the extreme R-SuperHyperGirth is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges with the maximum number of the extreme SuperHyperEdges. In other words, the maximum number of the extreme SuperHyperEdges contains the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperGirth in some cases but the maximum number of the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme R-SuperHyperGirth.

Proof. Assume an extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least no extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme R-SuperHyperGirth. Those extreme SuperHyperVertices are potentially included in an extreme style-R-SuperHyperGirth. Formally, consider

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\}).$$

Are the extreme SuperHyperVertices of an extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$. Thus

$$Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z.$$

where the $\sim$ isn't an equivalence relation but only the symmetric relation on the extreme SuperHyperVertices of the extreme SuperHyperGraph. The formal definition is as follows.

$$Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z$$

if and only if Z_i and Z_j are the extreme SuperHyperVertices and there's only and only one extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ in the terms of extreme R-SuperHyperGirth is

$$\{a_E, b_E, c_E, \ldots, z_E\}.$$

This definition coincides with the definition of the extreme R-SuperHyperGirth but with slightly differences in the maximum extreme cardinality amid those extreme type-SuperHyperSets of the extreme SuperHyperVertices. Thus the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$\max_{z} |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

and

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is formalized with mathematical literatures on the extreme R-SuperHyperGirth. Let $Z_i \overset{E}{\sim} Z_j$, be defined as Z_i and Z_j are the extreme SuperHyperVertices belong to the extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

Or

$$\{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

But with the slightly differences,

$$\begin{aligned} &\text{extreme R-SuperHyperGirth} = \\ &\{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}. \end{aligned}$$

$$\begin{aligned} &\text{extreme R-SuperHyperGirth} = \\ &V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}. \end{aligned}$$

Thus $E \in E_{ESHG:(V,E)}$ is an extreme quasi-R-SuperHyperGirth where $E \in E_{ESHG:(V,E)}$ is fixed that means $E_x = E \in E_{ESHG:(V,E)}$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperGirth, $E_x = E \in E_{ESHG:(V,E)}$ could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z extreme SuperHyperVertices, then the extreme cardinality of the extreme R-SuperHyperGirth is at least

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\}).$$

It's straightforward that the extreme cardinality of the extreme R-SuperHyperGirth is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges with the maximum number of the extreme SuperHyperEdges. In other words, the maximum number of the extreme SuperHyperEdges contains the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperGirth in some cases but the maximum number of the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme R-SuperHyperGirth.
To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up.
The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge amid some extreme SuperHyperVertices instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There's not only **one** extreme SuperHyperVertex **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **one** extreme SuperHyperVertex. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

doesn't have less than two SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far an SuperHyperEdge. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$(V \setminus V \setminus \{x, z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x, z\}) \cup \{zy\}$$

is an extreme R-SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some amount extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth. There isn't only less than two extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Thus the non-obvious extreme R-SuperHyperGirth,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is up. The non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the extreme SuperHyperSet, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

does includes only less than two SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme R-SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

extreme R-SuperHyperGirth,

is only and only

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme stable embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.
To sum them up, assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is an extreme R-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme R-SuperHyperGirth is the cardinality of

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z extreme SuperHyperVertices, then the extreme cardinality of the extreme R-SuperHyperGirth is at least

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\}).$$

It's straightforward that the extreme cardinality of the extreme R-SuperHyperGirth is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges with the maximum number of the extreme SuperHyperEdges. In other words, the maximum number of the extreme SuperHyperEdges contains the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperGirth in some cases but the maximum number of the extreme

SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme R-SuperHyperGirth. □

Proposition 5.5. *Assume a connected non-obvious extreme SuperHyperGraph* $ESHG : (V, E)$. *There's only one extreme SuperHyperEdge* $E \in E_{ESHG:(V,E)}$ *has only the maximum possibilities of the distinct interior extreme SuperHyperVertices inside of any given extreme quasi-R-SuperHyperGirth minus all extreme SuperHypeNeighbor to some of them but not all of them. In other words, there's only an unique extreme SuperHyperEdge* $E \in E_{ESHG:(V,E)}$ *has only two distinct extreme SuperHyperVertices in an extreme quasi-R-SuperHyperGirth, minus all extreme SuperHypeNeighbor to some of them but not all of them.*

Proof. The obvious SuperHyperGraph has no extreme SuperHyperEdges. But the non-obvious extreme SuperHyperModel is up. The quasi-SuperHyperModel addresses some issues about the extreme optimal SuperHyperObject. It specially delivers some remarks on the extreme SuperHyperSet of the extreme SuperHyperVertices such that there's distinct amount of extreme SuperHyperEdges for distinct amount of extreme SuperHyperVertices up to all taken from that extreme SuperHyperSet of the extreme SuperHyperVertices but this extreme SuperHyperSet of the extreme SuperHyperVertices is either has the maximum extreme SuperHyperCardinality or it doesn't have maximum extreme SuperHyperCardinality. In a non-obvious SuperHyperModel, there's at least one extreme SuperHyperEdge containing at least all extreme SuperHyperVertices. Thus it forms an extreme quasi-R-SuperHyperGirth where the extreme completion of the extreme incidence is up in that. Thus it's, literarily, an extreme embedded R-SuperHyperGirth. The SuperHyperNotions of embedded SuperHyperSet and quasi-SuperHyperSet coincide. In the original setting, these types of SuperHyperSets only don't satisfy on the maximum SuperHyperCardinality. Thus the embedded setting is elected such that those SuperHyperSets have the maximum extreme SuperHyperCardinality and they're extreme SuperHyperOptimal. The less than two distinct types of extreme SuperHyperVertices are included in the minimum extreme style of the embedded extreme R-SuperHyperGirth. The interior types of the extreme SuperHyperVertices are deciders. Since the extreme number of SuperHyperNeighbors are only affected by the interior extreme SuperHyperVertices. The common connections, more precise and more formal, the perfect unique connections inside the extreme SuperHyperSet for any distinct types of extreme SuperHyperVertices pose the extreme R-SuperHyperGirth. Thus extreme exterior SuperHyperVertices could be used only in one extreme SuperHyperEdge and in extreme SuperHyperRelation with the interior extreme SuperHyperVertices in that extreme SuperHyperEdge. In the embedded extreme SuperHyperGirth, there's the usage of exterior extreme SuperHyperVertices since they've more connections inside more than outside. Thus the title "exterior" is more relevant than the title "interior". One extreme SuperHyperVertex has no connection, inside. Thus, the extreme SuperHyperSet of the extreme SuperHyperVertices with one SuperHyperElement has been ignored in the exploring to lead on the optimal case implying the extreme R-SuperHyperGirth. The extreme R-SuperHyperGirth with the exclusion of the exclusion of all extreme SuperHyperVertices in one extreme SuperHyperEdge and with other terms, the extreme R-SuperHyperGirth with the inclusion of all extreme SuperHyperVertices in one extreme SuperHyperEdge, is an extreme quasi-R-SuperHyperGirth. To sum them up, in a connected non-obvious extreme SuperHyperGraph $ESHG : (V, E)$. There's only one extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only the maximum possibilities of the distinct interior extreme SuperHyperVertices inside of any given extreme quasi-R-SuperHyperGirth minus all extreme SuperHypeNeighbor to some of them but not all of them. In other words, there's only an unique extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only two distinct extreme SuperHyperVertices in an extreme quasi-R-SuperHyperGirth, minus all extreme SuperHypeNeighbor to some of them but not all of them.
To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up.

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The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge amid some extreme SuperHyperVertices instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There's not only **one** extreme SuperHyperVertex **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **one** extreme SuperHyperVertex. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

doesn't have less than two SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far an SuperHyperEdge. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$(V \setminus V \setminus \{x, z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x, z\}) \cup \{zy\}$$

is an extreme R-SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s** **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some amount extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the

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extreme SuperHyperGirth. There isn't only less than two extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

Thus the non-obvious extreme R-SuperHyperGirth,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

is up. The non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

Is the extreme SuperHyperSet, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

does includes only less than two SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme R-SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

extreme R-SuperHyperGirth,

is only and only

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme stable embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.
To sum them up, assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

is an extreme R-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme R-SuperHyperGirth is the cardinality of

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E\in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E\in E_{ESHG:(V,E)}\}\}}.$$

To sum them up, in a connected non-obvious extreme SuperHyperGraph $ESHG : (V, E)$. There's only one extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only the maximum possibilities of the distinct interior extreme SuperHyperVertices inside of any given extreme quasi-R-SuperHyperGirth minus all extreme SuperHypeNeighbor to some of them but not all of them. In other words, there's only an unique extreme SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only two distinct extreme SuperHyperVertices in an extreme quasi-R-SuperHyperGirth, minus all extreme SuperHypeNeighbor to some of them but not all of them. □

Proposition 5.6. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. The all interior extreme SuperHyperVertices belong to any extreme quasi-R-SuperHyperGirth if for any of them, and any of other corresponded extreme SuperHyperVertex, some interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all minus all extreme SuperHypeNeighbors to any amount of them.*

Proof. The main definition of the extreme R-SuperHyperGirth has two titles. an extreme quasi-R-SuperHyperGirth and its corresponded quasi-maximum extreme R-SuperHyperCardinality are two titles in the terms of quasi-R-styles. For any extreme number, there's an extreme quasi-R-SuperHyperGirth with that quasi-maximum extreme SuperHyperCardinality in the terms of the embedded extreme SuperHyperGraph. If there's an embedded extreme SuperHyperGraph, then the extreme quasi-SuperHyperNotions lead us to take the collection of all the extreme quasi-R-SuperHyperGirths for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperGirth ends up but this essence starts up in the terms of the extreme quasi-R-SuperHyperGirth, again and more in the operations of collecting all the extreme quasi-R-SuperHyperGirths acted on the all possible used formations of the extreme SuperHyperGraph to achieve one extreme number. This extreme number is
considered as the equivalence class for all corresponded quasi-R-SuperHyperGirths. Let $z_{\text{extreme Number}}, S_{\text{extreme SuperHyperSet}}$ and $G_{\text{extreme SuperHyperGirth}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperGirth. Then

$$[z_{\text{extreme Number}}]_{\text{extreme Class}} = \{S_{\text{extreme SuperHyperSet}} \mid S_{\text{extreme SuperHyperSet}} = G_{\text{extreme SuperHyperGirth}}, |S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} = z_{\text{extreme Number}}\}.$$

As its consequences, the formal definition of the extreme SuperHyperGirth is re-formalized and redefined as follows.

$$G_{\text{extreme SuperHyperGirth}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \cup_{z_{\text{extreme Number}}} \{S_{\text{extreme SuperHyperSet}} \mid S_{\text{extreme SuperHyperSet}} = G_{\text{extreme SuperHyperGirth}}, |S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} = z_{\text{extreme Number}}\}.$$

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To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperGirth.

$$\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{S_{\text{extreme SuperHyperSet}} \mid \\
&S_{\text{extreme SuperHyperSet}} = G_{\text{extreme SuperHyperGirth}}, \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= z_{\text{extreme Number}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperGirth poses the upcoming expressions.

$$\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

And then,

$$\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

To get more visions in the closer look-up, there's an overall overlook.

$$\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{S_{\text{extreme SuperHyperSet}} \mid \\
&S_{\text{extreme SuperHyperSet}} = G_{\text{extreme SuperHyperGirth}}, \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

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$$
\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{S_{\text{extreme SuperHyperSet}} \mid \\
&S_{\text{extreme SuperHyperSet}} = G_{\text{extreme SuperHyperGirth}}, \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= z_{\text{extreme Number}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} = \\
&\{S \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|S_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}
$$

Now, the extension of these types of approaches is up. Since the new term, "extreme SuperHyperNeighborhood", could be redefined as the collection of the extreme SuperHyperVertices such that any amount of its extreme SuperHyperVertices are incident to an extreme SuperHyperEdge. It's, literarily, another name for "extreme Quasi-SuperHyperGirth" but, precisely, it's the generalization of "extreme Quasi-SuperHyperGirth" since "extreme Quasi-SuperHyperGirth" happens "extreme SuperHyperGirth" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperGirth" in an extreme SuperHyperGraph as initial framework and preliminarily background since there are some ambiguities about the extreme SuperHyperCardinality arise from it. To get orderly keywords, the terms, "extreme SuperHyperNeighborhood", "extreme Quasi-SuperHyperGirth", and "extreme SuperHyperGirth" are up.
Thus, let $z_{\text{extreme Number}}, N_{\text{extreme SuperHyperNeighborhood}}$ and $G_{\text{extreme SuperHyperGirth}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperGirth and the new terms are up.

$$
\begin{aligned}
&G_{\text{extreme SuperHyperGirth}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{N_{\text{extreme SuperHyperNeighborhood}} \mid \\
&|N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}
$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{N_{\text{extreme SuperHyperNeighborhood}} \mid \\
&\ |N_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= z_{\text{extreme Number}} \mid \\
&|N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|N_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} = \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}}\}.
\end{aligned}$$

And with go back to initial structure,

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{N_{\text{extreme SuperHyperNeighborhood}} \mid \\
&\ |N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} = \\
&\cup_{z_{\text{extreme Number}}} \{N_{\text{extreme SuperHyperNeighborhood}} \mid \\
&\ |N_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= z_{\text{extreme Number}} \mid \\
&|N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|N_{\text{extreme SuperHyperNeighborhood}}|_{\text{extreme Cardinality}} \\
&= \max_{[z_{\text{extreme Number}}]_{\text{extreme Class}}} z_{\text{extreme Number}} \\
&= \max \left\{ |E| \mid E \in E_{ESHG:(V,E)} \right\}\}.
\end{aligned}$$

$$\begin{aligned}
&\mathcal{G}_{\text{extreme SuperHyperGirth}} = \\
&\{N_{\text{extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{extreme Number}}} [z_{\text{extreme Number}}]_{\text{extreme Class}} \mid \\
&|N_{\text{extreme SuperHyperSet}}|_{\text{extreme Cardinality}} \\
&= \max \Big\{ |E| \mid E \in E_{ESHG:(V,E)} \Big\} \}.
\end{aligned}$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V,E)$. The all interior extreme SuperHyperVertices belong to any extreme quasi-R-SuperHyperGirth if for any of them, and any of other corresponded extreme SuperHyperVertex, some interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all minus all extreme SuperHypeNeighbors to any amount of them.
To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up.
The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V,E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge amid some extreme SuperHyperVertices instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There's not only **one** extreme SuperHyperVertex **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **one** extreme SuperHyperVertex. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

doesn't have less than two SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far an SuperHyperEdge. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E| = \max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$(V \setminus V \setminus \{x,z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x,z\}) \cup \{zy\}$$

is an extreme R-SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V,E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it**'s the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some amount extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth. There isn't only less than two extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Thus the non-obvious extreme R-SuperHyperGirth,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is up. The non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the extreme SuperHyperSet, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

does includes only less than two SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V,E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme R-SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

extreme R-SuperHyperGirth,

is only and only

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V,E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme stable embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V,E)$.
To sum them up, assume a connected loopless extreme SuperHyperGraph $ESHG : (V,E)$. Then in the worst case, literally,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

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is an extreme R-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme R-SuperHyperGirth is the cardinality of

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. The all interior extreme SuperHyperVertices belong to any extreme quasi-R-SuperHyperGirth if for any of them, and any of other corresponded extreme SuperHyperVertex, some interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all minus all extreme SuperHypeNeighbors to any amount of them. □

Proposition 5.7. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Any extreme R-SuperHyperGirth only contains all interior extreme SuperHyperVertices and all exterior extreme SuperHyperVertices from the unique extreme SuperHyperEdge where there's any of them has all possible extreme SuperHyperNeighbors in and there's all extreme SuperHyperNeighborhoods in with no exception minus all extreme SuperHypeNeighbors to some of them not all of them but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out.*

Proof. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE : E \in E_{ESHG:(V,E)}$ has some extreme SuperHyperVertices r. Consider all extreme numbers of those extreme SuperHyperVertices from that extreme SuperHyperEdge excluding excluding more than r distinct extreme SuperHyperVertices, exclude to any given extreme SuperHyperSet of the extreme SuperHyperVertices. Consider there's an extreme R-SuperHyperGirth with the least cardinality, the lower sharp extreme bound for extreme cardinality. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. The extreme SuperHyperSet of the extreme SuperHyperVertices $V_{ESHE} \setminus \{z\}$ is an extreme SuperHyperSet S of the extreme SuperHyperVertices such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices uniquely but it isn't an extreme R-SuperHyperGirth. Since it doesn't have **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge to have some SuperHyperVertices uniquely. The extreme SuperHyperSet of the extreme SuperHyperVertices $V_{ESHE} \cup \{z\}$ is the maximum extreme cardinality of an extreme SuperHyperSet S of extreme SuperHyperVertices but it isn't an extreme R-SuperHyperGirth. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices uniquely [there are at least one extreme SuperHyperVertex outside implying there's, sometimes in the connected extreme SuperHyperGraph $ESHG : (V, E)$, an extreme SuperHyperVertex, titled its extreme SuperHyperNeighbor, to that extreme SuperHyperVertex in the extreme SuperHyperSet S so as S doesn't do "the extreme procedure".]. There's only **one** extreme SuperHyperVertex **outside** the intended extreme SuperHyperSet, $V_{ESHE} \cup \{z\}$, in the terms of extreme SuperHyperNeighborhood. Thus the obvious extreme R-SuperHyperGirth, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth, V_{ESHE}, **is** an extreme SuperHyperSet, V_{ESHE}, **includes** only **all** extreme SuperHyperVertices does forms any kind of extreme pairs are titled extreme SuperHyperNeighbors in a connected extreme SuperHyperGraph $ESHG : (V, E)$. Since the extreme SuperHyperSet of the extreme SuperHyperVertices V_{ESHE}, is the **maximum extreme SuperHyperCardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices uniquely. Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. Any extreme R-SuperHyperGirth only contains all interior extreme SuperHyperVertices and all exterior extreme SuperHyperVertices from the unique extreme SuperHyperEdge where there's any of them has all possible extreme SuperHyperNeighbors in and there's all extreme SuperHyperNeighborhoods in with no exception minus all extreme SuperHypeNeighbors to some of them not all of them but

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everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out.
To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up.
The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth.

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

The extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. The extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is an **extreme R-SuperHyperGirth** $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge amid some extreme SuperHyperVertices instead of all given by **extreme SuperHyperGirth** is related to the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

There's not only **one** extreme SuperHyperVertex **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperGirth is up. The obvious simple extreme type-SuperHyperSet called the extreme SuperHyperGirth is an extreme SuperHyperSet **includes** only **one** extreme SuperHyperVertex. But the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

doesn't have less than two SuperHyperVertices **inside** the intended extreme SuperHyperSet since they've come from at least so far an SuperHyperEdge. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the non-obvious simple extreme type-SuperHyperSet of the extreme R-SuperHyperGirth. Since the extreme SuperHyperSet of the extreme SuperHyperVertices,

$$(V \setminus V \setminus \{x, z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x, z\}) \cup \{zy\}$$

is an extreme R-SuperHyperGirth $\mathcal{C}(ESHG)$ for an extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth **and** it's an extreme **SuperHyperGirth**. Since it'**s the maximum extreme cardinality** of an extreme SuperHyperSet S of extreme SuperHyperVertices such that there's no an extreme SuperHyperEdge for some amount extreme SuperHyperVertices instead of all given by that extreme type-SuperHyperSet called the extreme SuperHyperGirth. There isn't only less than two extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Thus the non-obvious extreme R-SuperHyperGirth,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is up. The non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperGirth, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

Is the extreme SuperHyperSet, not:

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

does includes only less than two SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple extreme type-SuperHyperSet called the

"extreme R-SuperHyperGirth"

amid those obvious[non-obvious] simple extreme type-SuperHyperSets called the

extreme R-SuperHyperGirth,

is only and only

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling. It's also, not only an extreme free-triangle embedded SuperHyperModel and an extreme on-triangle embedded SuperHyperModel but also it's an extreme stable embedded SuperHyperModel. But all only non-obvious simple extreme type-SuperHyperSets of the extreme R-SuperHyperGirth amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperGirth, are

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

In a connected extreme SuperHyperGraph $ESHG : (V, E)$.
To sum them up, assume a connected loopless extreme SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally,

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

is an extreme R-SuperHyperGirth. In other words, the least cardinality, the lower sharp bound for the cardinality, of an extreme R-SuperHyperGirth is the cardinality of

$$V \setminus V \setminus \{a_E, b_E, c_E, \ldots\}_{E=\{E \in E_{ESHG:(V,E)} \mid |E|=\max\{|E| \mid E \in E_{ESHG:(V,E)}\}\}}.$$

To sum them up, assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Any extreme

R-SuperHyperGirth only contains all interior extreme SuperHyperVertices and all exterior extreme SuperHyperVertices from the unique extreme SuperHyperEdge where there's any of them has all possible extreme SuperHyperNeighbors in and there's all extreme SuperHyperNeighborhoods in with no exception minus all extreme SuperHypeNeighbors to some of them not all of them but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Remark 5.8. The words " extreme SuperHyperGirth" and "extreme SuperHyperDominating" both refer to the maximum extreme type-style. In other words, they refer to the maximum extreme SuperHyperNumber and the extreme SuperHyperSet with the maximum extreme SuperHyperCardinality.

Proposition 5.9. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Consider an extreme SuperHyperDominating. Then an extreme SuperHyperGirth has the members poses only one extreme representative in an extreme quasi-SuperHyperDominating.*

Proof. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Consider an extreme SuperHyperDominating. By applying the Proposition (5.7), the extreme results are up. Thus on a connected extreme SuperHyperGraph $ESHG : (V, E)$. Consider an extreme SuperHyperDominating. Then an extreme SuperHyperGirth has the members poses only one extreme representative in an extreme quasi-SuperHyperDominating. □

References

1. Henry Garrett, "*Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph*", Neutrosophic Sets and Systems 49 (2022) 531-561 (doi: 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/NeutrosophicSuperHyperGraph34.pdf). (https://digitalrepository.unm.edu/nss_journal/vol49/iss1/34).
2. Henry Garrett, "*Neutrosophic Co-degree and Neutrosophic Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Neutrosophic Hypergraphs*", J Curr Trends Comp Sci Res 1(1) (2022) 06-14.
3. Henry Garrett, "*Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes*", J Math Techniques Comput Math 1(3) (2022) 242-263.
4. Garrett, Henry. "*0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph.*" CERN European Organization for Nuclear Research - Zenodo, Nov. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.5281/zenodo.6319942. https://oa.mg/work/10.5281/zenodo.6319942
5. Garrett, Henry. "*0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs.*" CERN European Organization for Nuclear Research - Zenodo, Feb. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.13140/rg.2.2.35241.26724. https://oa.mg/work/10.13140/rg.2.2.35241.26724
6. Henry Garrett, "*Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010308 (doi: 10.20944/preprints202301.0308.v1).
7. Henry Garrett, "*Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition*", Preprints 2023, 2023010282 (doi: 10.20944/preprints202301.0282.v1).
8. Henry Garrett, "*Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010267 (doi: 10.20944/preprints202301.0267.v1).
9. Henry Garrett, "*The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph*", Preprints 2023, 2023010265 (doi: 10.20944/preprints202301.0265.v1).
10. Henry Garrett, "*Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010262,(doi: 10.20944/preprints202301.0262.v1).

11. Henry Garrett, "*Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010240 (doi: 10.20944/preprints202301.0240.v1).
12. Henry Garrett, "*Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010224, (doi: 10.20944/preprints202301.0224.v1).
13. Henry Garrett, "*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).
14. Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).
15. Henry Garrett, "*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond*", Preprints 2023, 2023010044
16. Henry Garrett, "*(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well- SuperHyperModelled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010043 (doi: 10.20944/preprints202301.0043.v1).
17. Henry Garrett, "*Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).
18. Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).
19. Henry Garrett, "*(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances*", Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1).
20. Henry Garrett, "*(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses*", Preprints 2022, 2022120540 (doi: 10.20944/preprints202212.0540.v1).
21. Henry Garrett, "*SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions*", Preprints 2022, 2022120500 (doi: 10.20944/preprints202212.0500.v1).
22. Henry Garrett, "*Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments*", Preprints 2022, 2022120324 (doi: 10.20944/preprints202212.0324.v1).
23. Henry Garrett, "*SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses*", Preprints 2022, 2022110576 (doi: 10.20944/preprints202211.0576.v1).
24. Henry Garrett,"*SuperHyperMatching By (R-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs*", ResearchGate 2023,(doi: 10.13140/RG.2.2.35061.65767).
25. Henry Garrett,"*The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.18494.15680).
26. Henry Garrett,"*Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.32530.73922).
27. Henry Garrett,"*Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.15897.70243).
28. Henry Garrett,"*Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.30092.80004).
29. Henry Garrett,"*Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique*", ResearchGate 2023, (doi: 10.13140/RG.2.2.23172.19849).

30. Henry Garrett,"*Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.17385.36968).
31. Henry Garrett, "*Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.28945.92007).
32. Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", ResearchGate 2023, (doi: 10.13140/RG.2.2.11447.80803).
33. Henry Garrett, "*(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.35774.77123).
34. Henry Garrett, "*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond*", ResearchGate 2022, (doi: 10.13140/RG.2.2.36141.77287).
35. Henry Garrett, "*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.29430.88642).
36. Henry Garrett, "*Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.11369.16487).
37. Henry Garrett, "*Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph*", ResearchGate 2022 (doi: 10.13140/RG.2.2.29173.86244).
38. Henry Garrett, "*Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)*", ResearchGate 2022 (doi: 10.13140/RG.2.2.25385.88160).
39. Henry Garrett, (2022). "*Beyond Neutrosophic Graphs*", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 979-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).
40. Henry Garrett, (2022). "*Neutrosophic Duality*", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).
41. F. Smarandache, "*Extension of HyperGraph to n-SuperHyperGraph and to Plithogenic n-SuperHyperGraph, and Extension of HyperAlgebra to n-ary (Classical-/Neutro-/Anti-) HyperAlgebra*", Neutrosophic Sets and Systems 33 (2020) 290-296. (doi: 10.5281/zenodo.3783103).
42. M. Akram et al., "*Single-valued neutrosophic Hypergraphs*", TWMS J. App. Eng. Math. 8 (1) (2018) 122-135.
43. S. Broumi et al., "*Single-valued neutrosophic graphs*", Journal of New Theory 10 (2016) 86-101.
44. H. Wang et al., "*Single-valued neutrosophic sets*", Multispace and Multistructure 4 (2010) 410-413.
45. H.T. Nguyen and E.A. Walker, "*A First course in fuzzy logic*", CRC Press, 2006.
46. M. Akram, and G. Shahzadi, "*Operations on Single-Valued Neutrosophic Graphs*", Journal of uncertain systems 11 (1) (2017) 1-26.
47. G. Argiroffo et al., "*Polyhedra associated with locating-dominating, open locating-dominating and locating total-dominating sets in graphs*", Discrete Applied Mathematics (2022). (https://doi.org/10.1016/j.dam.2022.06.025.)
48. L. Aronshtam, and H. Ilani, "*Bounds on the average and minimum attendance in preference-based activity scheduling*", Discrete Applied Mathematics 306 (2022) 114-119. (https://doi.org/10.1016/j.dam.2021.09.024.)
49. J. Asplund et al., "*A Vizing-type result for semi-total domination*", Discrete Applied Mathematics 258 (2019) 8-12. (https://doi.org/10.1016/j.dam.2018.11.023.)
50. K. Atanassov, "*Intuitionistic fuzzy sets*", Fuzzy Sets Syst. 20 (1986) 87-96.
51. R.A. Beeler et al., "*Total domination cover rubbling*", Discrete Applied Mathematics 283 (2020) 133-141. (https://doi.org/10.1016/j.dam.2019.12.020.)
52. S. Bermudo et al., "*On the global total k-domination number of graphs*", Discrete Applied Mathematics 263 (2019) 42-50. (https://doi.org/10.1016/j.dam.2018.05.025.)
53. M. Bold, and M. Goerigk, "*Investigating the recoverable robust single machine scheduling problem under interval uncertainty*", Discrete Applied Mathematics 313 (2022) 99-114. (https://doi.org/10.1016/j.dam.2022.02.005.)
54. S. Broumi et al., "*Single-valued neutrosophic graphs*", Journal of New Theory 10 (2016) 86-101.

55. V. Gledel et al., "*Maker–Breaker total domination game*", Discrete Applied Mathematics 282 (2020) 96-107. (https://doi.org/10.1016/j.dam.2019.11.004.)
56. M.A. Henning, and A. Yeo, "*A new upper bound on the total domination number in graphs with minimum degree six*", Discrete Applied Mathematics 302 (2021) 1-7. (https://doi.org/10.1016/j.dam.2021.05.033.)
57. V. Irsic, "*Effect of predomination and vertex removal on the game total domination number of a graph*", Discrete Applied Mathematics 257 (2019) 216-225. (https://doi.org/10.1016/j.dam.2018.09.011.)
58. B.S. Panda, and P. Goyal, "*Hardness results of global total k-domination problem in graphs*", Discrete Applied Mathematics (2021). (https://doi.org/10.1016/j.dam.2021.02.018.)
59. N. Shah, and A. Hussain, "*Neutrosophic soft graphs*", Neutrosophic Set and Systems 11 (2016) 31-44.
60. A. Shannon and K.T. Atanassov, "*A first step to a theory of the intuitionistic fuzzy graphs*", Proceeding of FUBEST (Lakov, D., Ed.) Sofia (1994) 59-61.
61. F. Smarandache, "*A Unifying field in logics neutrosophy: Neutrosophic probability, set and logic, Rehoboth:* " American Research Press (1998).
62. H. Wang et al., "*Single-valued neutrosophic sets*", Multispace and Multistructure 4 (2010) 410-413.
63. L. A. Zadeh, "*Fuzzy sets*", Information and Control 8 (1965) 338-354.