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Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in the Setting of (Neutrosophic) SuperHyperGraphs

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Extreme SuperHyperClique as The Firm Scheme of Confrontation Under Cancer's Recognition as the Model In The Setting Of (Neutrosophic) SuperHyperGraphs

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Abstract: In this research, new setting is introduced for assuming a SuperHyperGraph. Then a "SuperHyperClique" $\mathcal{C}(NSHG)$ for a neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. Assume a SuperHyperGraph. Then an "$\delta-$SuperHyperClique" is a maximal SuperHyperClique of SuperHyperVertices with maximum cardinality such that either of the following expressions hold for the (neutrosophic) 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 first Expression, holds if S is an "$\delta-$SuperHyperOffensive". And the second Expression, holds if S is an "$\delta-$SuperHyperDefensive"; a"neutrosophic $\delta-$SuperHyperClique" is a maximal neutrosophic SuperHyperClique of SuperHyperVertices with maximum neutrosophic cardinality such that either of the following 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 first Expression, holds if S is a "neutrosophic $\delta-$SuperHyperOffensive". And the second Expression, holds if S is a "neutrosophic $\delta-$SuperHyperDefensive". A basic familiarity with Extreme SuperHyperClique theory, SuperHyperGraphs, and Neutrosophic SuperHyperGraphs theory are proposed.

Keywords: (Neutrosophic) SuperHyperGraph, Extreme SuperHyperClique, Cancer's Extreme Recognition

MSC: AMS Subject Classification: 05C17, 05C22, 05E45

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1. Background

Fuzzy set in **Ref.** [56] by Zadeh (1965), intuitionistic fuzzy sets in **Ref.** [43] by Atanassov (1986), a first step to a theory of the intuitionistic fuzzy graphs in **Ref.** [53] by Shannon and Atanassov (1994), a unifying field in logics neutrosophy: neutrosophic probability, set and logic, rehoboth in **Ref.** [54] by Smarandache (1998), single-valued neutrosophic sets in **Ref.** [55] by Wang et al. (2010), single-valued neutrosophic graphs in **Ref.** [47] by Broumi et al. (2016), operations on single-valued neutrosophic graphs in **Ref.** [39] by Akram and Shahzadi (2017), neutrosophic soft graphs in **Ref.** [52] by Shah and Hussain (2016), bounds on the average and minimum attendance in preference-based activity scheduling in **Ref.** [41] by Aronshtam and Ilani (2022), investigating the recoverable robust single machine scheduling problem under interval uncertainty in **Ref.** [46] by Bold and Goerigk (2022), polyhedra associated with locating-dominating, open locating-dominating and locating total-dominating sets in graphs in **Ref.** [40] by G. Argiroffo et al. (2022), a Vizing-type result for semi-total domination in **Ref.** [42] by J. Asplund et al. (2020), total domination cover rubbling in **Ref.** [44] by R.A. Beeler et al. (2020), on the global total k-domination number of graphs in **Ref.** [45] by S. Bermudo et al. (2019), maker–breaker total domination game in **Ref.** [48] by V. Gledel et al. (2020), a new upper bound on the total domination number in graphs with minimum degree six in **Ref.** [49] 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.** [50] by V. Irsic (2019), hardness results of global total k-domination problem in graphs in **Ref.** [51] by B.S. Panda, and P. Goyal (2021), are studied. Look at [34–38] 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 [4–31]. Two popular research books in Scribd in the terms of high readers, 2638 and 3363 respectively, on neutrosophic science is on [32,33].

Definition 1 ((neutrosophic) SuperHyperClique). *Assume a SuperHyperGraph. Then*

(i) *an* ***extreme SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an extreme SuperHyperGraph* $NSHG : (V, E)$ *is an extreme type-SuperHyperSet of the extreme SuperHyperVertices with* ***the maximum extreme cardinality*** *of an extreme SuperHyperSet S of the extreme SuperHyperVertices such that there's an amount of extreme SuperHyperEdges amid an amount of extreme SuperHyperVertices given by that extreme SuperHyperSet of the extreme SuperHyperVertices; it's also called an extreme* $(z, -)-$*SuperHyperClique* ***extreme SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an extreme SuperHyperGraph* $NSHG : (V, E)$ *if it's an extreme type-SuperHyperSet of the extreme SuperHyperVertices with* ***the maximum extreme cardinality*** *of an extreme SuperHyperSet S of the extreme SuperHyperVertices such that there's z extreme SuperHyperEdge amid an amount of extreme SuperHyperVertices given by that extreme SuperHyperSet of the extreme SuperHyperVertices; it's also called an extreme* $(-, x)-$*SuperHyperClique* ***extreme SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an extreme SuperHyperGraph* $NSHG : (V, E)$ *if it's an extreme type-SuperHyperSet of the extreme SuperHyperVertices with* ***the maximum extreme cardinality*** *of an extreme SuperHyperSet S of the extreme SuperHyperVertices such that there's an amount of extreme SuperHyperEdges amid x extreme SuperHyperVertices given by that extreme SuperHyperSet of the extreme SuperHyperVertices; it's also called an extreme* $(z, x)-$*SuperHyperClique* ***extreme SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an extreme SuperHyperGraph* $NSHG : (V, E)$ *if it's an extreme type-SuperHyperSet of the extreme SuperHyperVertices with* ***the maximum extreme cardinality*** *of an extreme SuperHyperSet S of the extreme SuperHyperVertices such that there's z extreme SuperHyperEdges amid x extreme SuperHyperVertices given by that extreme SuperHyperSet of the extreme SuperHyperVertices; it's also the extreme extension of the extreme notion of the extreme clique in the extreme graphs to the extreme SuperHyperNotion of the extreme SuperHyperClique in the extreme SuperHyperGraphs where in the extreme setting of the graphs, there's an extreme* $(1, 2)-$*SuperHyperClique since an extreme graph is an extreme SuperHyperGraph;*

(ii) *an* ***neutrosophic SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an neutrosophic SuperHyperGraph* $NSHG : (V, E)$ *is an neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperVertices with* ***the maximum neutrosophic cardinality*** *of an neutrosophic SuperHyperSet S of the neutrosophic SuperHyperVertices such that there's an amount of neutrosophic SuperHyperEdges amid an amount of neutrosophic SuperHyperVertices given by that neutrosophic SuperHyperSet of the neutrosophic SuperHyperVertices; it's also called an neutrosophic* $(z, -)-$*SuperHyperClique* ***neutrosophic SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an neutrosophic SuperHyperGraph* $NSHG : (V, E)$ *if it's an neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperVertices with* ***the maximum neutrosophic cardinality*** *of an neutrosophic SuperHyperSet S of the neutrosophic SuperHyperVertices such that there's z neutrosophic SuperHyperEdge amid an amount of neutrosophic SuperHyperVertices given by that neutrosophic SuperHyperSet of the neutrosophic SuperHyperVertices; it's also called an neutrosophic* $(-, x)-$*SuperHyperClique* ***neutrosophic SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an neutrosophic SuperHyperGraph* $NSHG : (V, E)$ *if it's an neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperVertices with* ***the maximum neutrosophic cardinality*** *of an neutrosophic SuperHyperSet S of the neutrosophic SuperHyperVertices such that there's an amount of neutrosophic SuperHyperEdges amid x neutrosophic SuperHyperVertices given by that neutrosophic SuperHyperSet of the neutrosophic SuperHyperVertices; it's also called an neutrosophic* $(z, x)-$*SuperHyperClique* ***neutrosophic SuperHyperClique*** $\mathcal{C}(NSHG)$ *for an neutrosophic SuperHyperGraph* $NSHG$:

*(V, E) if it's an neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperVertices with **the maximum neutrosophic cardinality** of an neutrosophic SuperHyperSet S of the neutrosophic SuperHyperVertices such that there's z neutrosophic SuperHyperEdges amid x neutrosophic SuperHyperVertices given by that neutrosophic SuperHyperSet of the neutrosophic SuperHyperVertices; it's also the neutrosophic extension of the neutrosophic notion of the neutrosophic clique in the neutrosophic graphs to the neutrosophic SuperHyperNotion of the neutrosophic SuperHyperClique in the neutrosophic SuperHyperGraphs where in the neutrosophic setting of the graphs, there's an neutrosophic $(1, 2)-$SuperHyperClique since an neutrosophic graph is an extreme SuperHyperGraph;*

Proposition 1. *An extreme clique in an extreme graph is an extreme $(1, 2)-$SuperHyperClique in that extreme SuperHyperGraph. And reverse of that statement doesn't hold.*

Proposition 2. *A neutrosophic clique in a neutrosophic graph is a neutrosophic $(1, 2)-$SuperHyperClique in that neutrosophic SuperHyperGraph. And reverse of that statement doesn't hold.*

Proposition 3. *Assume an extreme $(x, z)-$SuperHyperClique in an extreme SuperHyperGraph. For all $z_i \leq z, x_i \leq x$, it's an extreme $(x_i, z_i)-$SuperHyperClique in that extreme SuperHyperGraph.*

Proposition 4. *Assume a neutrosophic $(x, z)-$SuperHyperClique in a neutrosophic SuperHyperGraph. For all $z_i \leq z, x_i \leq x$, it's a neutrosophic $(x_i, z_i)-$SuperHyperClique in that neutrosophic SuperHyperGraph.*

Definition 2. *((neutrosophic)$\delta-$SuperHyperClique).*
Assume a SuperHyperGraph. Then

(i) *an $\delta-$**SuperHyperClique** is a maximal of SuperHyperVertices with a maximum cardinality such that either of the following expressions hold for the (neutrosophic) cardinalities of SuperHyperNeighbors of $s \in S$:*

$$|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta; \tag{1.1}$$
$$|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta. \tag{1.2}$$

*The Expression (1.1), holds if S is an $\delta-$**SuperHyperOffensive**. And the Expression (1.2), holds if S is an $\delta-$**SuperHyperDefensive**;*

(ii) *a **neutrosophic** $\delta-$**SuperHyperClique** is a maximal neutrosophic of SuperHyperVertices with maximum neutrosophic cardinality such that either of the following expressions hold for the neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:*

$$|S \cap N(s)|_{neutrosophic} > |S \cap (V \setminus N(s))|_{neutrosophic} + \delta; \tag{1.3}$$
$$|S \cap N(s)|_{neutrosophic} < |S \cap (V \setminus N(s))|_{neutrosophic} + \delta. \tag{1.4}$$

*The Expression (1.3), holds if S is a **neutrosophic** $\delta-$**SuperHyperOffensive**. And the Expression (1.4), holds if S is a **neutrosophic** $\delta-$**SuperHyperDefensive**.*

2. Extreme SuperHyperClique

Example 5. Assume the SuperHyperGraphs in the Figures (1), (2), (3), (4), (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), (15), (16), (17), (18), (19), and (20).

- On the Figure (1), the extreme SuperHyperNotion, namely, extreme SuperHyperClique, 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, **isn't** contained in every given extreme SuperHyperClique. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. $\{V_1, V_2, V_4\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_4\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_4\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_4\}$.

- On the Figure (2), the SuperHyperNotion, namely, SuperHyperClique, is up. E_1 and E_3 SuperHyperClique are some empty SuperHyperEdges but E_2 is 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 SuperHyperVertex, V_3, is contained in every given SuperHyperClique. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. $\{V_1, V_2, V_4\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is

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a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_4\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_4\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_4\}$.

- On the Figure (3), the SuperHyperNotion, namely, SuperHyperClique, 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. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. $\{V_1, V_2, V_4\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_4\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_4\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is up. The obvious simple

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extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_4\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_4\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_4\}$.

- On the Figure (4), the SuperHyperNotion, namely, a SuperHyperClique, 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 $\{N, V_1, V_2, V_3, F\}$. The following extreme SuperHyperSet of extreme SuperHyperVertices is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. $\{V_1, V_2, V_3, N, F\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, N, F\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_3, N, F\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_3, N, F\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_3, N, F\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_3, N, F\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. $\{V_1, V_2, V_3, N, F\}$ is an extreme$(2, 5)-$SuperHyperClique. $\{V_4, H\}$ is an extreme$(2, -)-$SuperHyperClique. $\{V_1, V_2, V_3, N, F\}$ is an extreme$(-, 5)-$SuperHyperClique. As the maximum extreme cardinality of the extreme SuperHyperSet of the extreme SuperHyperVertices is the matter, $\{V_1, V_2, V_3, N, F\}$ is an extreme SuperHyperClique; since it has five extreme SuperHyperVertices with satisfying on the at least extreme conditions over both of the extremeSuperHyperVertices and the extreme SuperHyperEdges.
- On the Figure (5), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2, V_3, V_4, V_5\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme

SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_4, V_5\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_3, V_4, V_5\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_3, V_4, V_5\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_3, V_4, V_5\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_3, V_4, V_5\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_3, V_4, V_5\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ is mentioned as the SuperHyperModel $ESHG : (V, E)$ in the Figure (5).

- On the Figure (6), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_5, V_6\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$, is an extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$. There're only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique isn't up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, does has less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **isn't** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, **isn't** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. But the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There is only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_5, V_6\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_5, V_6\}$, isn't up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_5, V_6\}$, is the extreme SuperHyperSet, $\{V_5, V_6\}$, does includes only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSets of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_5, V_6\}, \{V_6, V_7\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling of the Figure (6). It's also, an extreme free-triangle SuperHyperModel. But all only obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are

$$\{V_5, V_{15}\}, \{V_8, V_9\}, \{V_7, V_8\}, \{V_5, V_6\}, \{V_6, V_7\}\}.$$

- On the Figure (7), the SuperHyperNotion, namely, extreme SuperHyperClique $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$ 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 SuperHyperClique. $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ of depicted SuperHyperModel as the Figure (7). But

$$\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$$
$$\{V_4, V, V_6, V_7, V_{13}\}$$

are the only obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperVertices.

- On the Figure (8), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets

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of the extreme SuperHyperClique, is only $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ of depicted SuperHyperModel as the Figure (7). But

$$\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$$
$$\{V_4, V, V_6, V_7, V_{13}\}$$

are the only obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperVertices in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ of dense SuperHyperModel as the Figure (8).

- On the Figure (9), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_5, V_6\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$, is an extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$. There're only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique isn't up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, does has less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **isn't** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_5, V_6\}$, **isn't** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. But the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_5, V_6\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There is only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_5, V_6\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_5, V_6\}$, isn't up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_5, V_6\}$, is the extreme SuperHyperSet, $\{V_5, V_6\}$, does includes only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSets of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_5, V_6\}, \{V_6, V_7\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ with a illustrated SuperHyperModeling of the Figure (6). It's also, an extreme free-triangle SuperHyperModel. But all only obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are

$$\{V_5, V_{15}\}, \{V_8, V_9\}, \{V_7, V_8\}, \{V_5, V_6\}, \{V_6, V_7\}\}$$

in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ with a messy SuperHyperModeling of the Figure (9).

- On the Figure (10), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, is the extreme SuperHyperSet, $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ of depicted SuperHyperModel as the Figure (7). But

$$\{V_8, V_9, V_{10}, V_{11}, V_{14}\}$$
$$\{V_4, V, V_6, V_7, V_{13}\}$$

are the only obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperVertices in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ of highly-embedding-connected SuperHyperModel as the Figure (10).

- On the Figure (11), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2, V_3\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique.

The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_3\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_3\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_3\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_3\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_1, V_2, V_3\}$ and $\{V_4, V_5, V_6\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But also, the only obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_1, V_2, V_3\}$ and $\{V_4, V_5, V_6\}$ in a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure (12), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2, V_3, V_7, V_8\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them

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up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3, V_7, V_8\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_3, V_7, V_8\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_3, V_7, V_8\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_3, V_7, V_8\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_3, V_7, V_8\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_3, V_7, V_8\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ in highly-multiple-connected-style SuperHyperModel On the Figure (12) and it's also, the only obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_2, V_3, V_7, V_8\}$ in a connected extreme SuperHyperGraph $ESHG : (V, E)$

- On the Figure (13), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2, V_3\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$. There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2, V_3\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2, V_3\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2, V_3\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2, V_3\}$, is the extreme SuperHyperSet, $\{V_1, V_2, V_3\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_1, V_2, V_3\}$ and $\{V_4, V_5, V_6\}$ in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But also, the only obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_1, V_2, V_3\}$ and $\{V_4, V_5, V_6\}$ in a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure (14), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2\}$. The extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$, is an extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$. There're only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2\}$, does has less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **isn't** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2\}$, **isn't** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2\}$, is the extreme SuperHyperSet, $\{V_1, V_2\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, are only $\{V_1, V_2\}$ and $\{V_1, V_3\}$. But the only obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperVertices, are only $\{V_1, V_2\}$ and $\{V_1, V_3\}$. It's noted that this extreme SuperHyperGraph $ESHG : (V, E)$ is a extreme graph $G : (V, E)$ thus the notions in both settings are coincided.
- On the Figure (15), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. $\{V_1, V_2\}$. The extreme SuperHyperSet of extreme SuperHyperVertices,

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$\{V_1, V_2\}$, is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$, is an extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$. There're only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2\}$, does has less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **isn't** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, $\{V_1, V_2\}$, **isn't** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, $\{V_1, V_2\}$, is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, $\{V_1, V_2\}$. Thus the non-obvious extreme SuperHyperClique, $\{V_1, V_2\}$, is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, $\{V_1, V_2\}$, is the extreme SuperHyperSet, $\{V_1, V_2\}$, doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only $\{V_1, V_5\}$. But the only obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperVertices, are only

$$\{V_1, V_2\},$$
$$\{V_2, V_3\},$$
$$\{V_3, V_4\},$$
$$\{V_4, V_6\},$$
$$\{V_5, V_1\}.$$

It's noted that this extreme SuperHyperGraph $ESHG : (V, E)$ is a extreme graph $G : (V, E)$ thus the notions in both settings are coincided. In a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ as Linearly-Connected SuperHyperModel On the Figure (15).

- On the Figure (16), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. corresponded to the SuperHyperEdge E_4 The extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is an extreme type-SuperHyperSet with **the maximum extreme cardinality** of an extreme SuperHyperSet

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S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 Thus the non-obvious extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is the extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only corresponded to the neutrosophic SuperHyperEdge E_4 in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But the only obvious simple extreme type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets, is only corresponded to the extreme SuperHyperEdge E_4 in a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure (17), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. corresponded to the SuperHyperEdge E_4 The extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 Thus the non-obvious extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is the extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only corresponded to the neutrosophic SuperHyperEdge E_4 in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But the only obvious simple extreme type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets, is only corresponded to the extreme SuperHyperEdge E_4 in a connected extreme SuperHyperGraph $ESHG : (V, E)$. In a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$ as Linearly-over-packed SuperHyperModel is featured On the Figure (17).

- On the Figure (18), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. corresponded to the SuperHyperEdge E_4 The extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_4 is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme

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SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 Thus the non-obvious extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, corresponded to the SuperHyperEdge E_4 is the extreme SuperHyperSet, corresponded to the SuperHyperEdge E_4 doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only corresponded to the neutrosophic SuperHyperEdge E_4 in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But the only obvious simple extreme type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets, is only corresponded to the extreme SuperHyperEdge E_4 in a connected extreme SuperHyperGraph $ESHG : (V, E)$. In a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$.

- On the Figure (19), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. corresponded to the SuperHyperEdge E_9 The extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_9 is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, corresponded to the SuperHyperEdge E_9 Thus the non-obvious extreme SuperHyperClique, corresponded to the SuperHyperEdge E_9 is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, corresponded to the SuperHyperEdge E_9 is the extreme SuperHyperSet, corresponded to the SuperHyperEdge E_9 doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only corresponded to the neutrosophic SuperHyperEdge E_9 in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But the only obvious simple extreme type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets, is only corresponded to the extreme SuperHyperEdge E_9 in a connected extreme SuperHyperGraph $ESHG : (V, E)$.

- On the Figure (20), the SuperHyperNotion, namely, SuperHyperClique, 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 SuperHyperClique. corresponded to the SuperHyperEdge E_6 The extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 is the simple extreme type-SuperHyperSet of the extreme SuperHyperClique. The extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 is an extreme 3-SuperHyperClique $\mathcal{C}(ESHG)$ for a 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 an extreme SuperHyperEdge amid any 3 extreme SuperHyperVertices given by the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 There're not only **two** extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious extreme SuperHyperClique is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique is a extreme SuperHyperSet **includes** only **two** extreme SuperHyperVertices. But the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 doesn't have less than three SuperHyperVertices **inside** the intended extreme SuperHyperSet. Thus the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique **is** up. To sum them up, the extreme SuperHyperSet of extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 **is** the non-obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique. Since the extreme SuperHyperSet of the extreme SuperHyperVertices, corresponded to the SuperHyperEdge E_6 is a extreme SuperHyperClique $\mathcal{C}(ESHG)$ for a extreme SuperHyperGraph $ESHG : (V, E)$ is the extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any z SuperHyperVertices given by that extreme type-SuperHyperSet **and** it's an extreme **SuperHyperClique**. Since it**'s the maximum extreme cardinality** of a extreme SuperHyperSet S of extreme SuperHyperVertices such that there's an extreme SuperHyperEdge for any two extreme SuperHyperVertices given by that extreme type-SuperHyperSet. There isn't only less than three extreme SuperHyperVertices **inside** the intended extreme SuperHyperSet, corresponded to the SuperHyperEdge E_6 Thus the non-obvious extreme SuperHyperClique, corresponded to the SuperHyperEdge E_6 is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, corresponded to the SuperHyperEdge E_6 is the extreme SuperHyperSet, corresponded to the SuperHyperEdge E_6 doesn't include only less than three SuperHyperVertices in a connected extreme SuperHyperGraph $ESHG : (V, E)$. It's interesting to mention that the only obvious simple neutrosophic type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets of the extreme SuperHyperClique, is only corresponded to the neutrosophic SuperHyperEdge E_6 in a connected neutrosophic SuperHyperGraph $ESHG : (V, E)$. But the only obvious simple extreme type-SuperHyperSet of the neutrosophic SuperHyperClique amid those obvious simple extreme type-SuperHyperSets, is only corresponded to the extreme SuperHyperEdge E_6 in a connected extreme SuperHyperGraph $ESHG : (V, E)$.

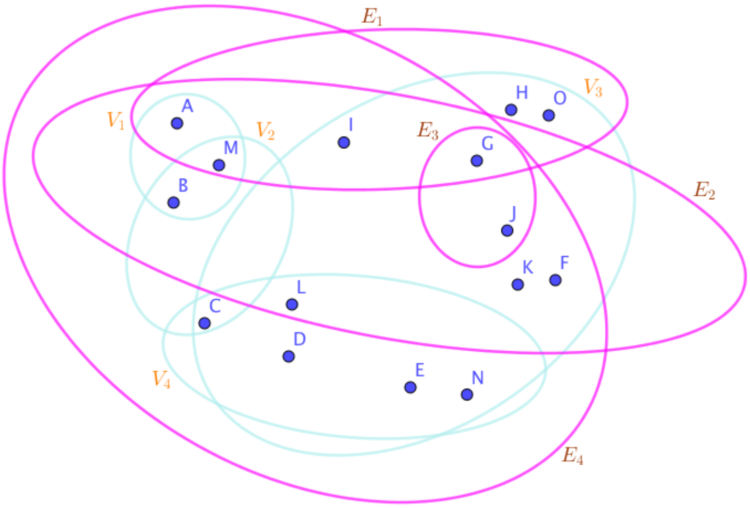

Figure 1. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

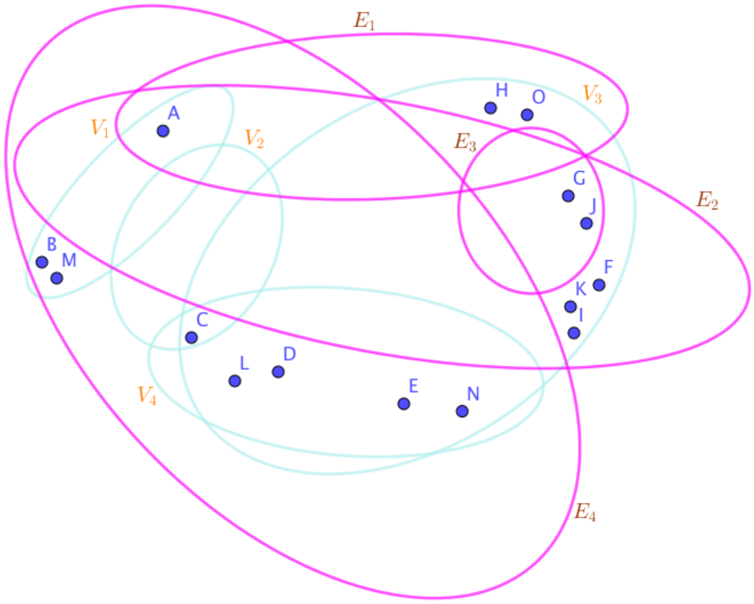

Figure 2. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

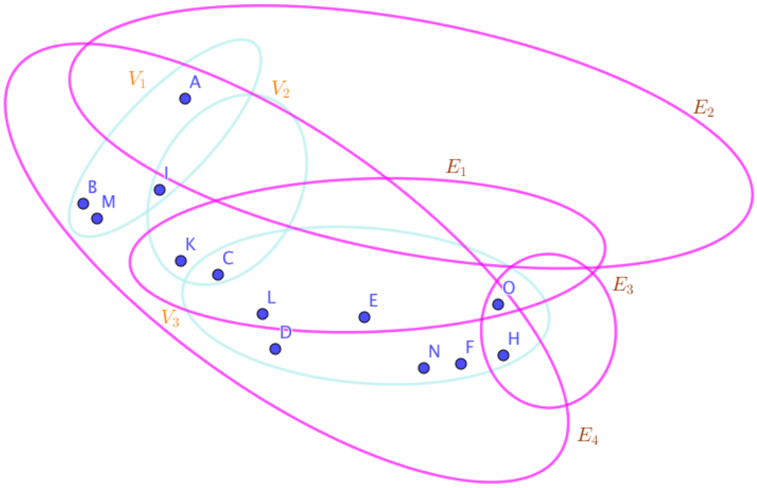

Figure 3. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

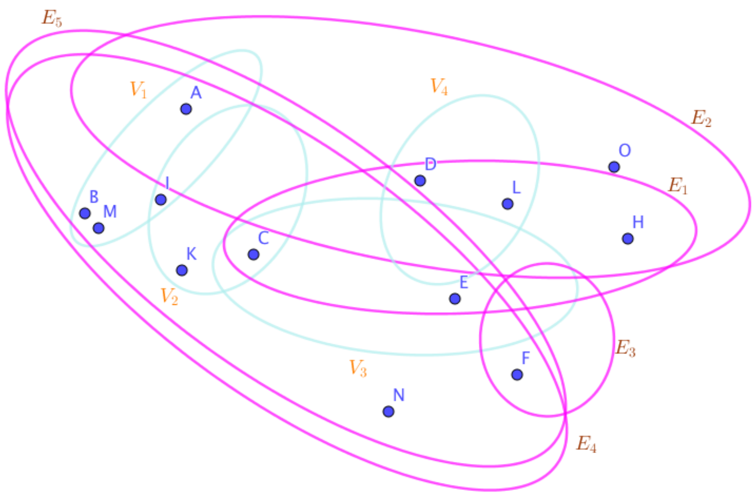

Figure 4. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

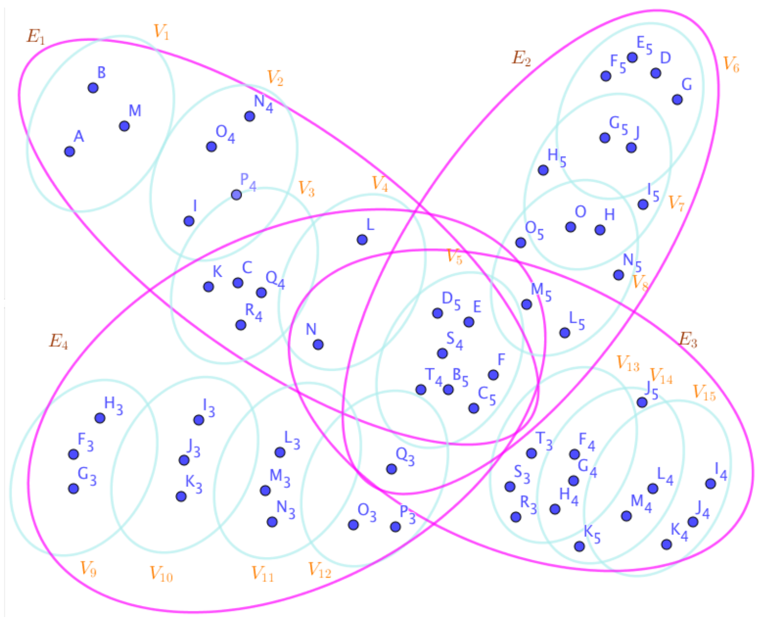

Figure 5. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

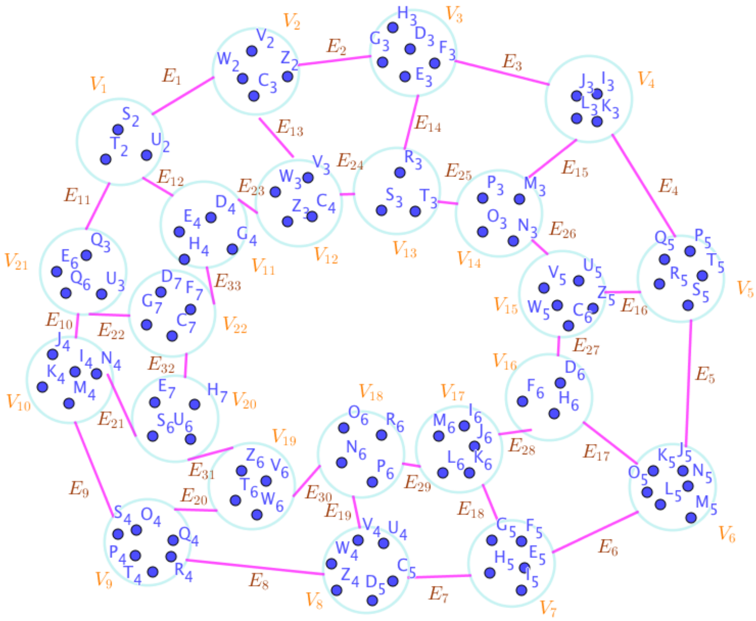

Figure 6. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

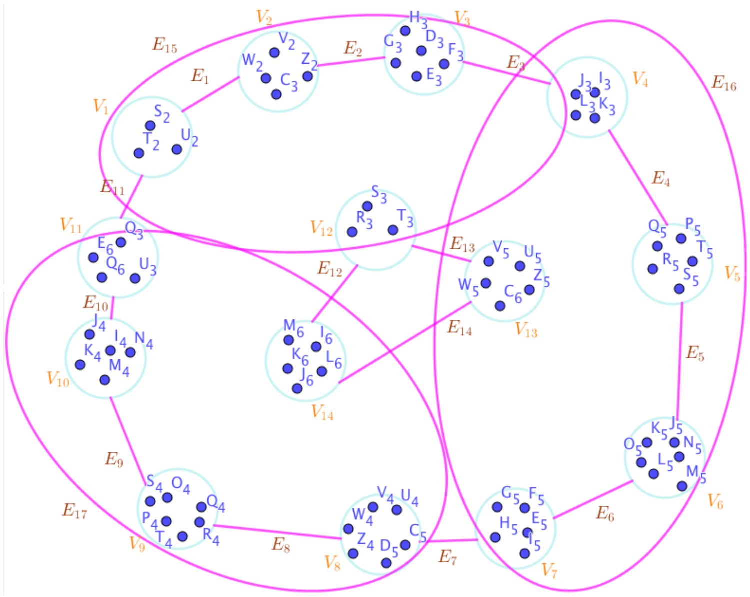

Figure 7. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

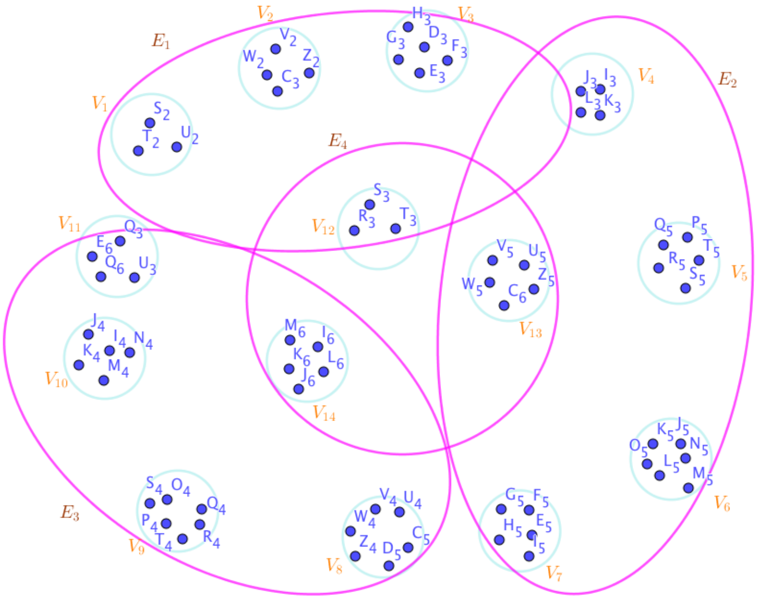

Figure 8. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

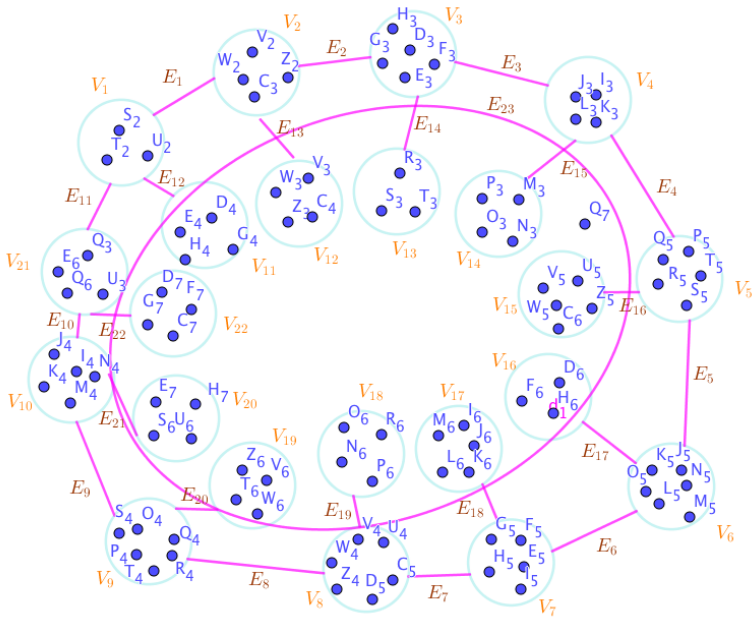

Figure 9. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

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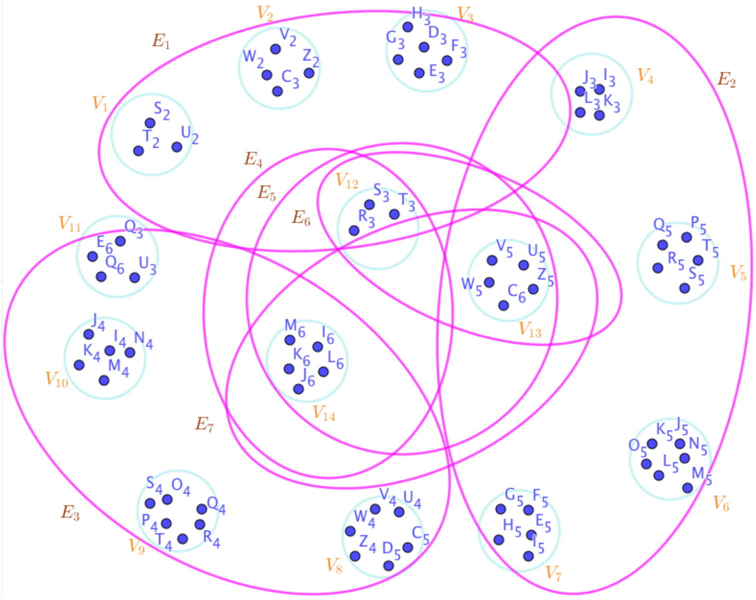

Figure 10. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

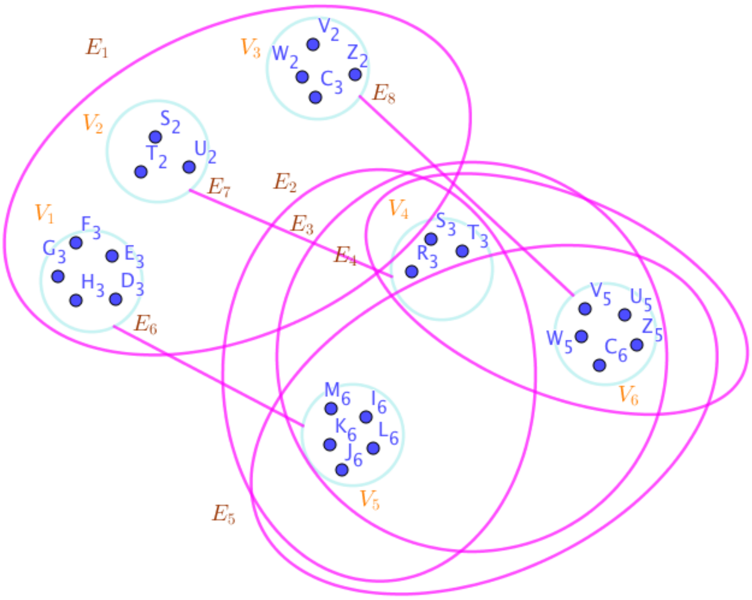

Figure 11. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

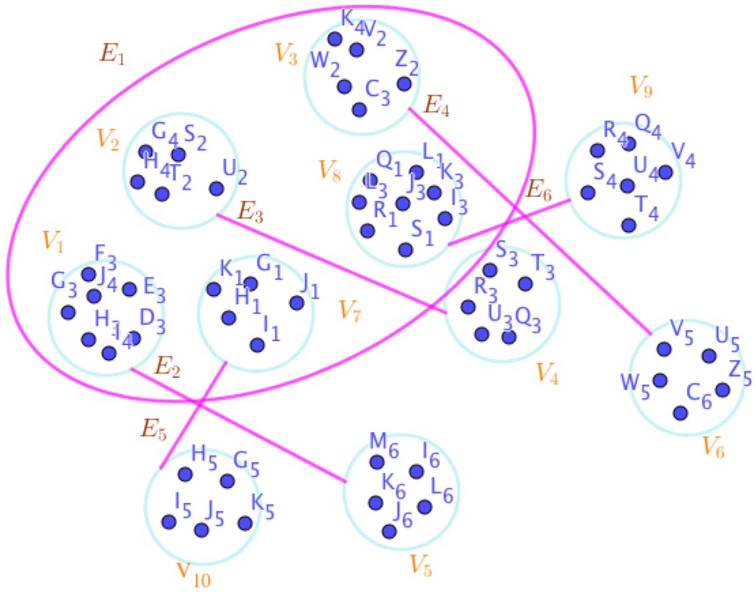

Figure 12. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

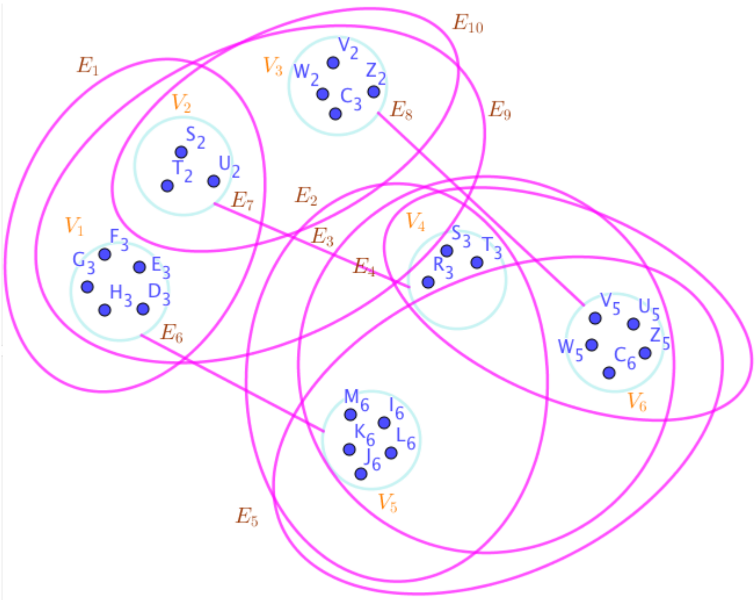

Figure 13. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

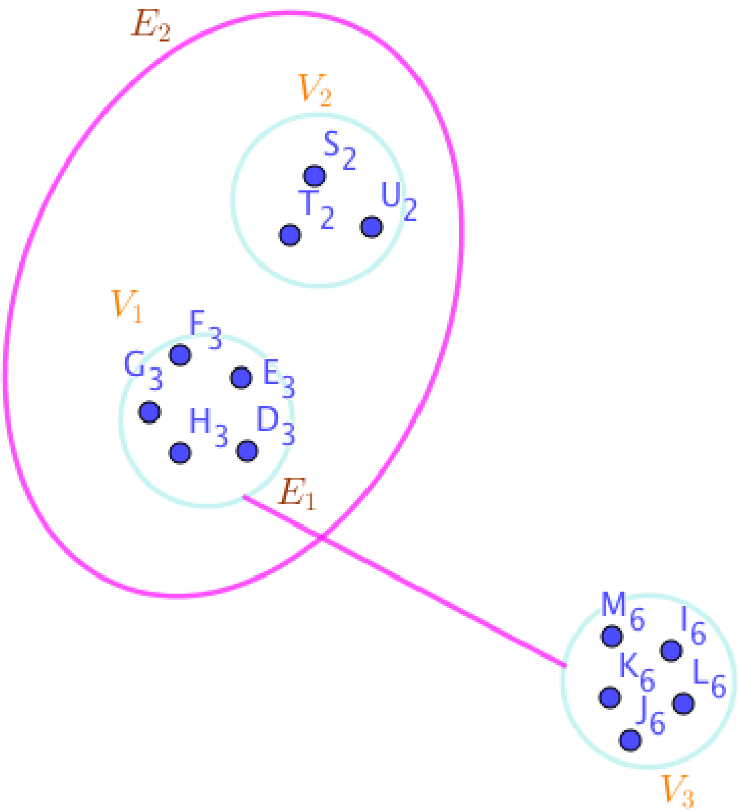

Figure 14. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

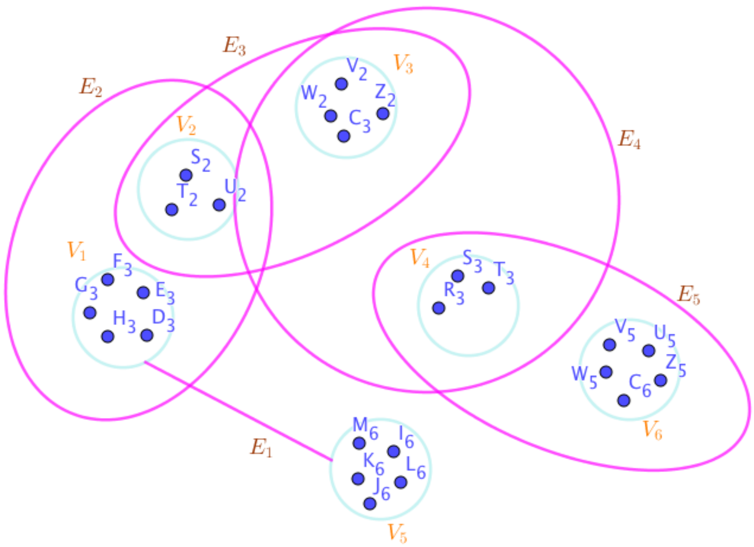

Figure 15. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

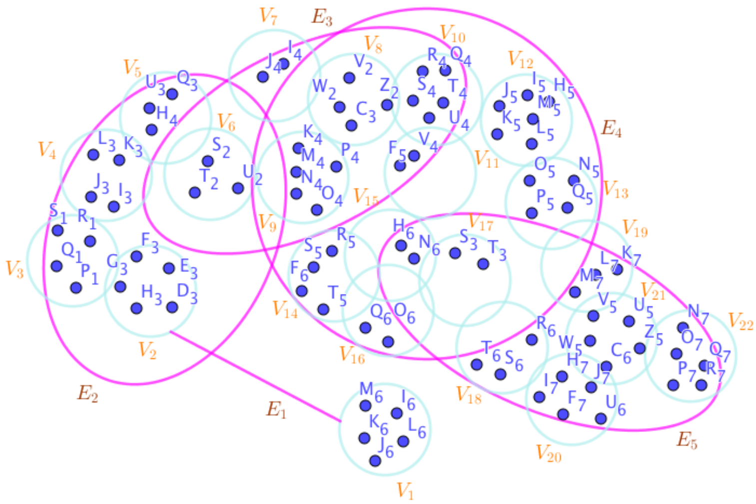

Figure 16. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

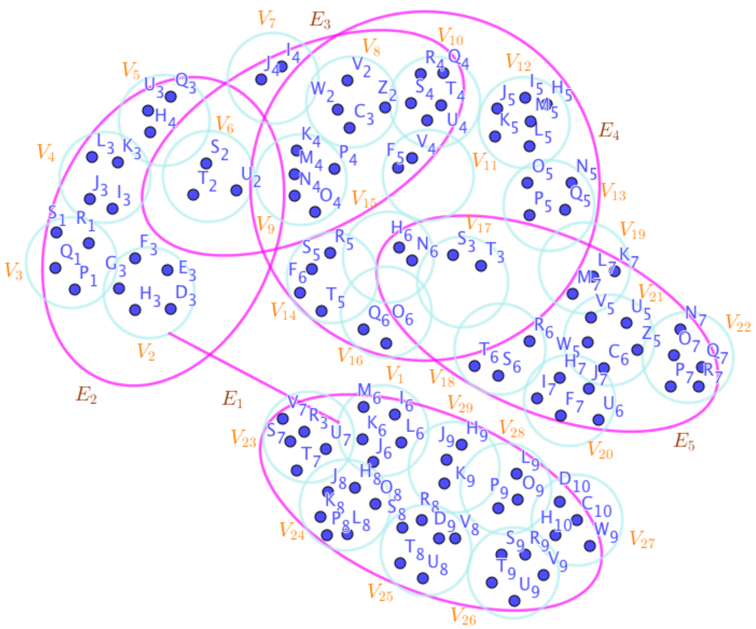

Figure 17. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

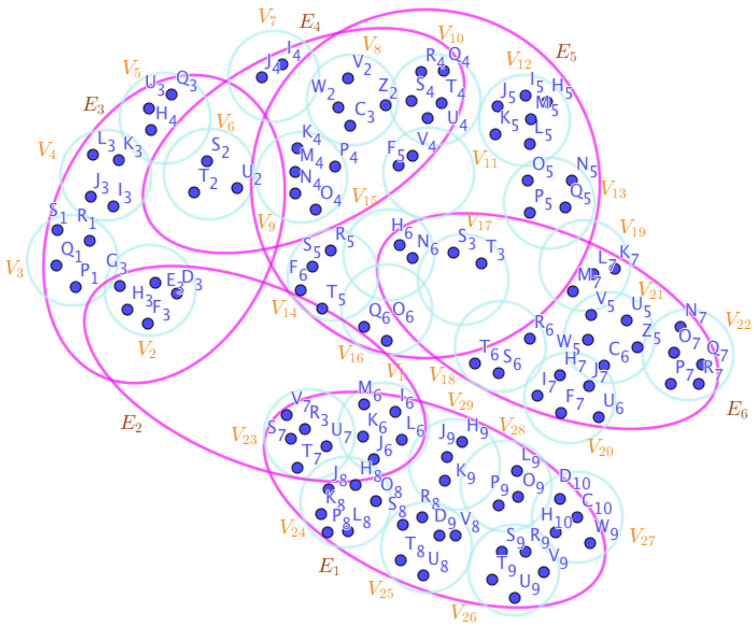

Figure 18. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

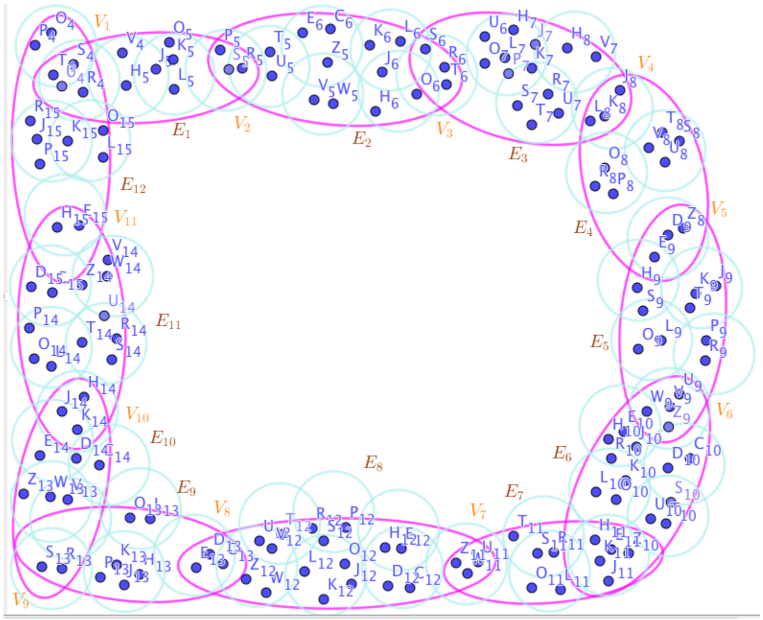

Figure 19. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

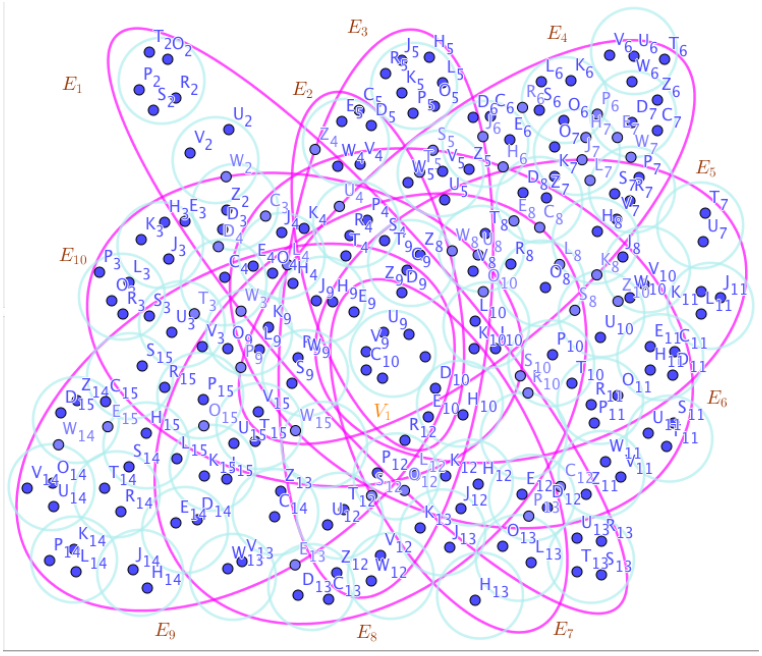

Figure 20. The SuperHyperGraphs Associated to the Notions of SuperHyperClique in the Example (5).

Proposition 6. *Assume a connected loopless neutrosophic SuperHyperGraph $ESHG : (V, E)$. Then in the worst case, literally, $V \setminus V \setminus \{x, z\}$, is a SuperHyperClique. In other words, the least cardinality, the lower sharp bound for the cardinality, of a SuperHyperClique is the cardinality of $V \setminus V \setminus \{x, z\}$.*

Proof. Assume a connected loopless neutrosophic SuperHyperGraph $ESHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ isn't a SuperHyperClique since neither amount of extreme SuperHyperEdges nor amount of SuperHyperVertices where amount refers to the extreme number of SuperHyperVertices(-/SuperHyperEdges) more than one. Let us consider the extreme SuperHyperSet $V \setminus V \setminus \{x, y, z\}$. This extreme SuperHyperSet of the extreme SuperHyperVertices has the eligibilities to propose some amount of extreme SuperHyperEdges for some amount of the extreme SuperHyperVertices taken from the mentioned extreme SuperHyperSet and it has the maximum extreme cardinality amid those extreme type-SuperHyperSets but the minimum case of 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 $V \setminus V \setminus \{x, y, z\}$ of the extreme SuperHyperVertices implies at least on-triangle style is up but sometimes the extreme SuperHyperSet $V \setminus V \setminus \{x, y, z\}$ of the extreme SuperHyperVertices is free-triangle and it doesn't make a contradiction to the supposition on the connected loopless neutrosophic SuperHyperGraph $ESHG : (V, E)$. Thus the minimum case never happens in the generality of the connected loopless neutrosophic SuperHyperGraphs. Thus if we assume in the worst case, literally, $V \setminus V \setminus \{x, y, z\}$, is a SuperHyperClique. In other words, the least cardinality, the lower sharp bound for the cardinality, of a SuperHyperClique is the cardinality of $V \setminus V \setminus \{x, y, z\}$. Then we've lost some connected loopless neutrosophic SuperHyperClasses of the connected loopless neutrosophic SuperHyperGraphs titled free-triangle. It's the contradiction to that fact on the generality. There are some counterexamples to deny this statement. One of them comes from the setting of the graph titled path and cycle are well-known classes in that setting and they could be considered as the examples for the tight bound of $V \setminus V \setminus \{x, z\}$. Let $V \setminus V \setminus \{z\}$ in mind. There's no necessity on the SuperHyperEdge since we need at least two SuperHyperVertices to form a SuperHyperEdge. It doesn't withdraw the principles of the main definition since there's no condition to be satisfied but the condition is on the existence of the SuperHyperEdge instead of acting on the SuperHyperVertices. In other words, if there's a SuperHyperEdge, then the extreme SuperHyperSet has the necessary

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condition for the intended definition to be applied. Thus the $V \setminus V \setminus \{z\}$ is withdrawn not by the conditions of the main definition but by the necessity of the pre-condition on the usage of the main definition. □

Proposition 7. *Assume a simple neutrosophic SuperHyperGraph* $ESHG : (V, E)$*. Then the extreme number of SuperHyperClique has, the least cardinality, the lower sharp bound for cardinality, is the extreme cardinality of* $V \setminus V \setminus \{x, z\}$ *if there's a SuperHyperClique with the least cardinality, the lower sharp bound for cardinality.*

Proof. The extreme structure of the extreme SuperHyperClique decorates the extreme SuperHyperVertices have received complete 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 minimum extreme groups of extreme SuperHyperVertices have perfect extreme connections inside 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 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 SuperHyperClique. 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 a extreme SuperHyperGraph, there's at least one extreme SuperHyperEdge thus there's at least a extreme SuperHyperClique has the extreme cardinality two. Thus, a extreme SuperHyperClique has the extreme cardinality at least two. Assume a extreme SuperHyperSet $V \setminus V \setminus \{z\}$. This extreme SuperHyperSet isn't a extreme SuperHyperClique 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 SuperHyperClique" 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 $V \setminus V \setminus \{x, y, z\}$ comes up. This extreme case implies having the extreme style of on-triangle extreme style on the every extreme elements of this extreme SuperHyperSet. Precisely, the extreme SuperHyperClique is the extreme SuperHyperSet of the extreme SuperHyperVertices such that any extreme amount of the extreme SuperHyperVertices are on-triangle extreme style. The extreme cardinality of the v SuperHypeSet $V \setminus V \setminus \{x, y, z\}$ is the maximum in comparison to the extreme SuperHyperSet $V \setminus V \setminus \{z, x\}$ 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 a extreme SuperHyperClass of a extreme SuperHyperGraph has no on-triangle extreme style amid any amount of its extreme SuperHyperVertices. This extreme setting of the extreme SuperHyperModel proposes an extreme SuperHyperSet has only two extreme SuperHyperVertices such that there's extreme amount of extreme SuperHyperEdges involving these two 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 $V \setminus V \setminus \{z, x\}$ has the maximum extreme cardinality such that $V \setminus V \setminus \{z, x\}$ contains some extreme SuperHyperVertices such that there's amount extreme SuperHyperEdges for amount of extreme SuperHyperVertices taken from the extreme SuperHyperSet $V \setminus V \setminus \{z, x\}$. It means that the extreme SuperHyperSet of the extreme SuperHyperVertices $V \setminus V \setminus \{z, x\}$. is an extreme SuperHyperClique for the extreme SuperHyperGraph as used extreme background in the extreme terms of worst extreme case and the lower extreme bound occurred in the specific extreme SuperHyperClasses of the extreme SuperHyperGraphs which are extreme free-triangle. □

Proposition 8. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique.*

Proof. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

But with the slightly differences,

$$\text{extreme SuperHyperClique} = \{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i, j = 1, 2, \ldots, z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j, \}.$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. □

Proposition 9. *Assume a connected non-obvious extreme SuperHyperGraph $ESHG : (V, E)$. There's only one extreme SuperHyperEdge has only less than three distinct interior extreme SuperHyperVertices inside of any given extreme quasi-SuperHyperClique. In other words, there's only an unique extreme SuperHyperEdge has only two distinct extreme SuperHyperVertices in an extreme quasi-SuperHyperClique.*

Proof. The obvious SuperHyperGraph has no 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 amount of extreme SuperHyperEdges for amount of extreme SuperHyperVertices 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 two extreme SuperHyperVertices. Thus it forms an extreme quasi-SuperHyperClique where the extreme completion of the extreme incidence is up in that. Thus it's, literarily, an extreme embedded SuperHyperClique. 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 three extreme SuperHyperVertices are included in the minimum extreme style of the embedded extreme SuperHyperClique. 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 connections inside the extreme SuperHyperSet pose the extreme SuperHyperClique. 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 SuperHyperClique, 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 SuperHyperClique. The extreme SuperHyperClique with the exclusion of the exclusion of two extreme SuperHyperVertices and with other terms, the extreme SuperHyperClique with the inclusion of two extreme SuperHyperVertices is a extreme quasi-SuperHyperClique. To sum them up, in a connected non-obvious extreme SuperHyperGraph $ESHG : (V, E)$, there's only one extreme SuperHyperEdge has only less than three distinct interior extreme SuperHyperVertices inside of any given extreme quasi-SuperHyperClique. In other words, there's only an unique extreme SuperHyperEdge has only two distinct extreme SuperHyperVertices in an extreme quasi-SuperHyperClique. □

Proposition 10. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. The all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all.*

Proof. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

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To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\
&\cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid \\
&S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= z_{\text{Extreme Number}} \mid \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.
\end{aligned}
$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.
\end{aligned}
$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.
\end{aligned}
$$

And then,

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.
\end{aligned}
$$

To get more visions in the closer look-up, there's an overall overlook.

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\
&\cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid \\
&S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, \\
&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= 2\}.
\end{aligned}
$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.
Thus, let $z_{\text{Extreme Number}}, N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

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$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. □

Proposition 11. *Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out.*

Proof. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Remark 1. *The words " extreme SuperHyperClique" and "extreme SuperHyperDominating" both refer to the maximum extreme type-style. In other words, they either refer to the maximum extreme SuperHyperNumber or to the minimum extreme SuperHyperNumber and the extreme SuperHyperSet either with the maximum extreme SuperHyperCardinality or with the minimum extreme SuperHyperCardinality.*

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Proposition 12. *Assume a connected extreme SuperHyperGraph $ESHG : (V,E)$. Consider an extreme SuperHyperDominating. Then an extreme SuperHyperClique has only one extreme representative in.*

Proof. Assume a connected extreme SuperHyperGraph $ESHG : (V,E)$. Consider an extreme SuperHyperDominating. By applying the Proposition (11), the extreme results are up. Thus on a connected extreme SuperHyperGraph $ESHG : (V,E)$, and in an extreme SuperHyperDominating, an extreme SuperHyperClique has only one extreme representative in. □

3. Results on Extreme SuperHyperClasses

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

Proposition 13. *Assume a connected extreme SuperHyperPath $ESHP : (V,E)$. Then an extreme SuperHyperClique-style with the maximum extreme SuperHyperCardinality is an extreme SuperHyperSet of the interior extreme SuperHyperVertices.*

Proposition 14. *Assume a connected extreme SuperHyperPath $ESHP : (V,E)$. Then an extreme SuperHyperClique 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 SuperHyperClique has the extreme number of all the interior extreme SuperHyperVertices without any minus on SuperHyperNeighborhoods.*

Proof. Assume a connected SuperHyperPath $ESHP : (V,E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\begin{aligned}&\text{extreme SuperHyperClique} = \\ &\{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.\end{aligned}$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$\begin{aligned}&[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid \\ &S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, \\ &|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\ &= z_{\text{Extreme Number}}\}.\end{aligned}$$

As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\ &\cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid \\ &S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, \\ &|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\ &= z_{\text{Extreme Number}}\}.\end{aligned}$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} =\\&\{S \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} =\\&\cup_{z_{\text{Extreme Number}}}\{S_{\text{Extreme SuperHyperSet}} \mid\\&S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}},\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\&= z_{\text{Extreme Number}} \mid\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.\end{aligned}$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} =\\&\{S \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.\end{aligned}$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} =\\&\{S \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.\end{aligned}$$

And then,

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} =\\&\{S \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.\end{aligned}$$

To get more visions in the closer look-up, there's an overall overlook.

$$\begin{aligned}&G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} =\\&\cup_{z_{\text{Extreme Number}}}\{S_{\text{Extreme SuperHyperSet}} \mid\\&S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}},\\&|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\&= 2\}.\end{aligned}$$

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$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

Thus, let $z_{\text{Extreme Number}}, N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\
&\cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid \\
&|N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= z_{\text{Extreme Number}} \mid \\
&|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.
\end{aligned}
$$

And with go back to initial structure,

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\
&\cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid \\
&|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} \\
&= 2\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \\
&\cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid \\
&|N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} \\
&= z_{\text{Extreme Number}} \mid \\
&|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} \\
&= 2\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} \\
&= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.
\end{aligned}
$$

$$
\begin{aligned}
&G_{\text{Extreme SuperHyperClique}} = \\
&\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid \\
&|N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.
\end{aligned}
$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 15. In the Figure (21), the connected extreme SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The extreme SuperHyperSet, corresponded to E_5, V_{E_5}, of the extreme SuperHyperVertices of the connected extreme SuperHyperPath $ESHP : (V, E)$, in the extreme SuperHyperModel (21), is the SuperHyperClique.

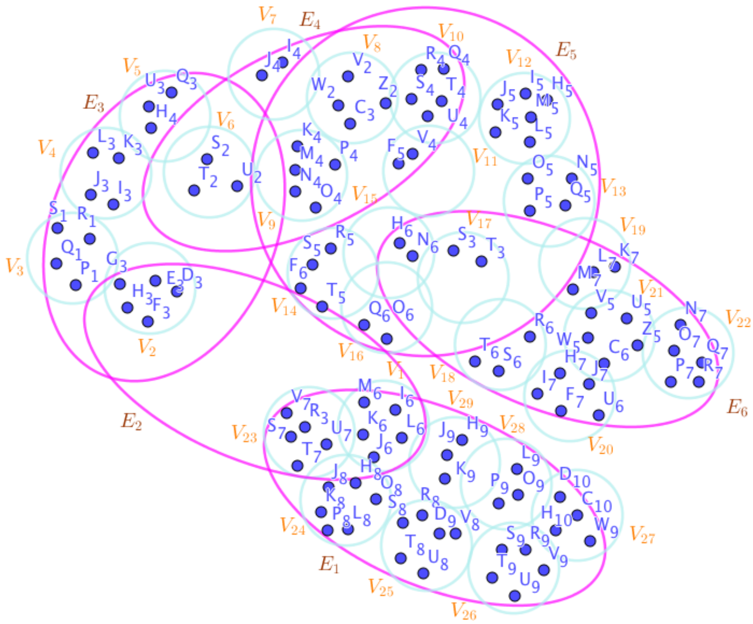

Figure 21. An extreme SuperHyperPath Associated to the Notions of extreme SuperHyperClique in the Example (15).

Proposition 16. *Assume a connected extreme SuperHyperCycle $ESHC : (V, E)$. Then an extreme SuperHyperClique is a 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 SuperHyperClique has the extreme number of all the extreme SuperHyperEdges in the terms of the maximum extreme cardinality.*

Proof. Assume a connected SuperHyperCycle $ESHC : (V, E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\text{extreme SuperHyperClique} = \{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

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As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

And then,

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

To get more visions in the closer look-up, there's an overall overlook.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

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Thus, let $z_{\text{Extreme Number}}$, $N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 17. In the Figure (22), the connected extreme SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained extreme SuperHyperSet, , corresponded to E_8, V_{E_8}, by the Algorithm in previous result, of the extreme SuperHyperVertices of the connected extreme SuperHyperCycle

$NSHC : (V, E)$, in the extreme SuperHyperModel (22), corresponded to E_5, V_{E_8}, is the extreme SuperHyperClique.

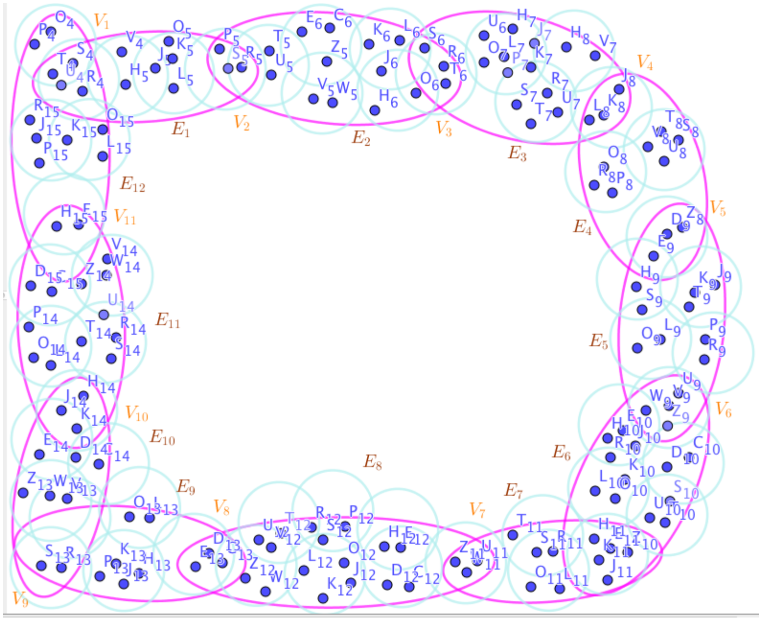

Figure 22. An extreme SuperHyperCycle Associated to the extreme Notions of extreme SuperHyperClique in the extreme Example (17).

Proposition 18. *Assume a connected extreme SuperHyperStar $ESHS : (V, E)$. Then an extreme SuperHyperClique is an extreme SuperHyperSet of the interior extreme SuperHyperVertices, not extreme excluding the extreme SuperHyperCenter, with only all extreme exceptions in the extreme form of interior extreme SuperHyperVertices from common extreme SuperHyperEdge, extreme including only one extreme SuperHyperEdge. An extreme SuperHyperClique has the extreme number of the extreme cardinality of the one extreme SuperHyperEdge.*

Proof. Assume a connected SuperHyperStar $ESHS : (V, E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\text{extreme SuperHyperClique} = \{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

And then,

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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To get more visions in the closer look-up, there's an overall overlook.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

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Thus, let $z_{\text{Extreme Number}}$, $N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} =$$
$$\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid$$
$$|N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}}$$
$$= \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} =$$
$$\{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid$$
$$|N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 19. In the Figure (23), the connected extreme SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained extreme SuperHyperSet, by the Algorithm in previous extreme result,

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of the extreme SuperHyperVertices of the connected extreme SuperHyperStar $ESHS : (V, E)$, in the extreme SuperHyperModel (23), , corresponded to E_5, V_{E_5}, is the extreme SuperHyperClique.

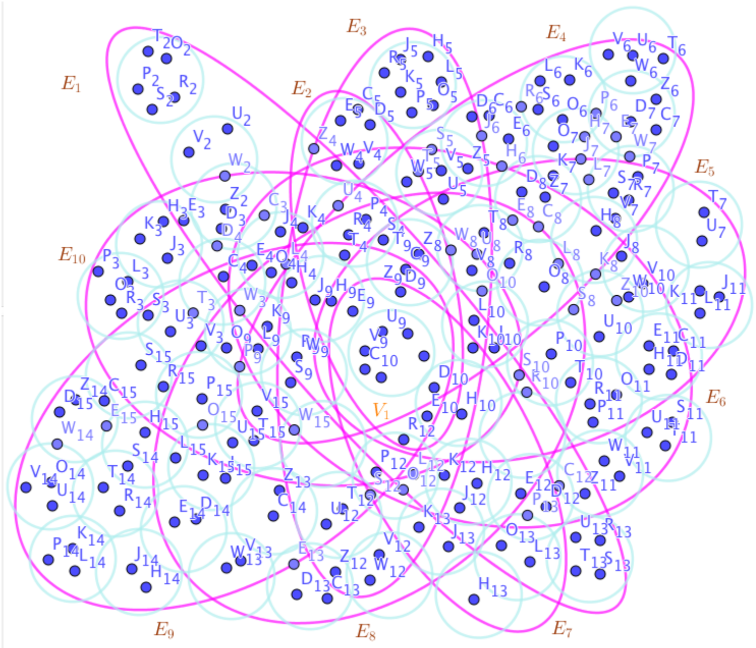

Figure 23. An extreme SuperHyperStar Associated to the extreme Notions of extreme SuperHyperClique in the extreme Example (19).

Proposition 20. *Assume a connected extreme SuperHyperBipartite $ESHB : (V, E)$. Then an extreme SuperHyperClique is an extreme SuperHyperSet of the interior extreme SuperHyperVertices with no any extreme exceptions in the form of interior extreme SuperHyperVertices titled extreme SuperHyperNeighbors with only no exception. An extreme SuperHyperClique has the extreme maximum number of on extreme cardinality of the first SuperHyperPart plus extreme SuperHyperNeighbors.*

Proof. Assume a connected extreme SuperHyperBipartite $ESHB : (V, E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

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This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\begin{aligned}&\text{extreme SuperHyperClique} =\\ &\{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.\end{aligned}$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$\begin{aligned}&[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid\\ &S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}},\\ &|S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}}\\ &= z_{\text{Extreme Number}}\}.\end{aligned}$$

As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

And then,

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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To get more visions in the closer look-up, there's an overall overlook.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

Thus, let $z_{\text{Extreme Number}}$, $N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

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$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 21. In the extreme Figure (24), 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

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SuperHyperBipartite $ESHB : (V, E)$, in the extreme SuperHyperModel (24), , corresponded to E_6, V_{E_6}, is the extreme SuperHyperClique.

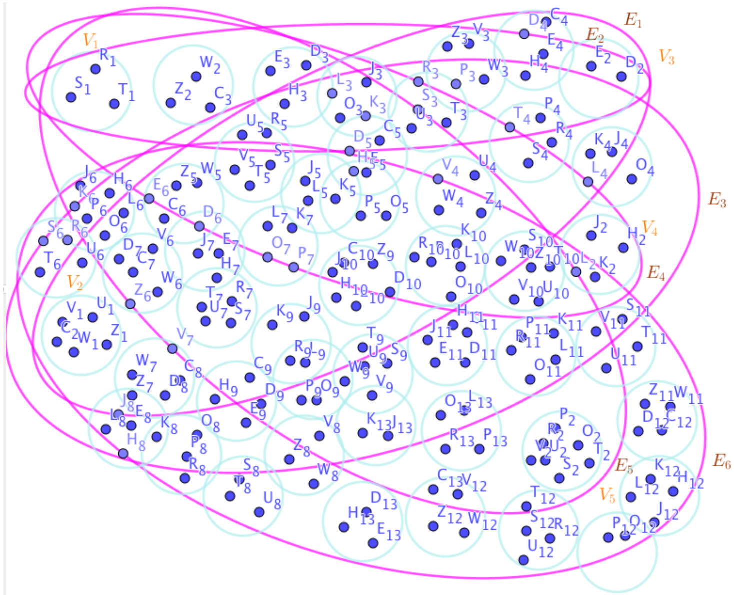

Figure 24. An extreme SuperHyperBipartite extreme Associated to the extreme Notions of extreme SuperHyperClique in the Example (21).

Proposition 22. *Assume a connected extreme SuperHyperMultipartite $ESHM : (V, E)$. Then an extreme SuperHyperClique 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 one of them. An extreme SuperHyperClique has the extreme maximum number on all the extreme summation on the extreme cardinality of the all extreme SuperHyperParts form one SuperHyperEdges not plus any.*

Proof. Assume a connected extreme SuperHyperMultipartite $NSHM : (V, E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_z |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\text{extreme SuperHyperClique} = \{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

And then,

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

To get more visions in the closer look-up, there's an overall overlook.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

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Thus, let $z_{\text{Extreme Number}}$, $N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 23. In the Figure (25), 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

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$ESHM : (V, E)$, , corresponded to E_3, V_{E_3}, in the extreme SuperHyperModel (25), is the extreme SuperHyperClique.

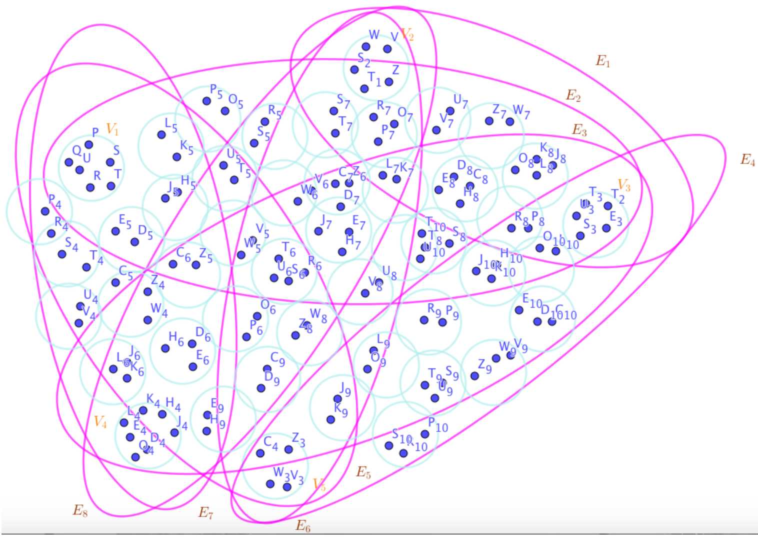

Figure 25. An extreme SuperHyperMultipartite Associated to the Notions of extreme SuperHyperClique in the Example (23).

Proposition 24. *Assume a connected extreme SuperHyperWheel $ESHW : (V, E)$. Then an extreme SuperHyperClique is an extreme SuperHyperSet of the interior extreme SuperHyperVertices, not excluding the extreme SuperHyperCenter, with only no exception in the form of interior extreme SuperHyperVertices from same extreme SuperHyperEdge with not the exclusion. An extreme SuperHyperClique has the extreme maximum number on all the extreme number of all the extreme SuperHyperEdges have common extreme SuperHyperNeighbors inside for an extreme SuperHyperVertex with the not exclusion.*

Proof. Assume a connected extreme SuperHyperWheel $ESHW : (V, E)$. Assume an extreme SuperHyperEdge has z extreme number of the extreme SuperHyperVertices. Then every extreme SuperHyperVertex has at least one extreme SuperHyperEdge with others in common. Thus those extreme SuperHyperVertices have the eligibles to be contained in an extreme SuperHyperClique. Those extreme SuperHyperVertices are potentially included in an extreme style-SuperHyperClique. Formally, consider

$$\{Z_1, Z_2, \ldots, Z_z\}$$

are the extreme SuperHyperVertices of an extreme SuperHyperEdge. 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 an extreme SuperHyperEdge between the extreme SuperHyperVertices Z_i and Z_j. The other definition for the extreme SuperHyperEdge in the terms of extreme SuperHyperClique is

$$\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i, j = 1, 2, \ldots, z\}.$$

This definition coincides with the definition of the extreme SuperHyperClique 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,

$$\max_{z} |\{Z_1, Z_2, \ldots, Z_z \mid Z_i \sim Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}|_{\text{extreme cardinality}},$$

is formalized with mathematical literatures on the extreme SuperHyperClique. 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. Thus,

$$E = \{Z_1, Z_2, \ldots, Z_z \mid Z_i \overset{E}{\sim} Z_j,\ i \neq j,\ i,j = 1,2,\ldots,z\}.$$

But with the slightly differences,

$$\text{extreme SuperHyperClique} = \{Z_1, Z_2, \ldots, Z_z \mid \forall i \neq j,\ i,j = 1,2,\ldots,z,\ \exists E_x,\ Z_i \overset{E_x}{\sim} Z_j,\}.$$

Thus E is an extreme quasi-SuperHyperClique where E is fixed that means $E_x = E$. for all extreme intended SuperHyperVertices but in an extreme SuperHyperClique, E_x could be different and it's not unique. To sum them up, in a connected extreme SuperHyperGraph $ESHG : (V, E)$. If an extreme SuperHyperEdge has z extreme SuperHyperVertices, then the extreme cardinality of the extreme SuperHyperClique is at least z. It's straightforward that the extreme cardinality of the extreme SuperHyperClique is at least the maximum extreme number of extreme SuperHyperVertices of the extreme SuperHyperEdges. In other words, the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices are renamed to extreme SuperHyperClique in some cases but the extreme SuperHyperEdge with the maximum extreme number of extreme SuperHyperVertices, has the extreme SuperHyperVertices are contained in an extreme SuperHyperClique. The main definition of the extreme SuperHyperClique has two titles. An extreme quasi-SuperHyperClique and its corresponded quasi-maximum extreme SuperHyperCardinality are two titles in the terms of quasi-styles. For any extreme number, there's an extreme quasi-SuperHyperClique 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-SuperHyperCliques for all extreme numbers less than its extreme corresponded maximum number. The essence of the extreme SuperHyperClique ends up but this essence starts up in the terms of the extreme quasi-SuperHyperClique, again and more in the operations of collecting all the extreme quasi-SuperHyperCliques 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-SuperHyperCliques. Let $z_{\text{Extreme Number}}$, $S_{\text{Extreme SuperHyperSet}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperSet and an extreme SuperHyperClique. Then

$$[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

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As its consequences, the formal definition of the extreme SuperHyperClique is re-formalized and redefined as follows.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}}\}.$$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the extreme SuperHyperClique.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

In more concise and more convenient ways, the modified definition for the extreme SuperHyperClique poses the upcoming expressions.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

To translate the statement to this mathematical literature, the formulae will be revised.

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

And then,

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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To get more visions in the closer look-up, there's an overall overlook.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}} \{S_{\text{Extreme SuperHyperSet}} \mid S_{\text{Extreme SuperHyperSet}} = G_{\text{Extreme SuperHyperClique}}, |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{S \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |S_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

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-SuperHyperClique" but, precisely, it's the generalization of "extreme Quasi-SuperHyperClique" since "extreme Quasi-SuperHyperClique" happens "extreme SuperHyperClique" in an extreme SuperHyperGraph as initial framework and background but "extreme SuperHyperNeighborhood" may not happens "extreme SuperHyperClique" 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-SuperHyperClique", and "extreme SuperHyperClique" are up.

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Thus, let $z_{\text{Extreme Number}}$, $N_{\text{Extreme SuperHyperNeighborhood}}$ and $G_{\text{Extreme SuperHyperClique}}$ be an extreme number, an extreme SuperHyperNeighborhood and an extreme SuperHyperClique and the new terms are up.

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}}\}.$$

And with go back to initial structure,

$$G_{\text{Extreme SuperHyperClique}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}}[z_{\text{Extreme Number}}]_{\text{Extreme Class}} = \cup_{z_{\text{Extreme Number}}}\{N_{\text{Extreme SuperHyperNeighborhood}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = z_{\text{Extreme Number}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperNeighborhood}}|_{\text{Extreme Cardinality}} = \max_{[z_{\text{Extreme Number}}]_{\text{Extreme Class}}} z_{\text{Extreme Number}} = 2\}.$$

$$G_{\text{Extreme SuperHyperClique}} = \{N_{\text{Extreme SuperHyperNeighborhood}} \in \cup_{z_{\text{Extreme Number}}} [z_{\text{Extreme Number}}]_{\text{Extreme Class}} \mid |N_{\text{Extreme SuperHyperSet}}|_{\text{Extreme Cardinality}} = 2\}.$$

Thus, in a connected extreme SuperHyperGraph $ESHG : (V, E)$, the all interior extreme SuperHyperVertices belong to any extreme quasi-SuperHyperClique if for any of them, and any of other corresponded extreme SuperHyperVertex, the two interior extreme SuperHyperVertices are mutually extreme SuperHyperNeighbors with no extreme exception at all. Assume a connected extreme SuperHyperGraph $ESHG : (V, E)$. Let an extreme SuperHyperEdge $ESHE$ 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 SuperHyperClique 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 in common but it isn't an extreme SuperHyperClique. 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 a some SuperHyperVertices in common. 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 SuperHyperClique. Since it **doesn't do** the extreme procedure such that such that there's an extreme SuperHyperEdge to have some extreme SuperHyperVertices in common [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 SuperHyperClique, V_{ESHE} is up. The obvious simple extreme type-SuperHyperSet of the extreme SuperHyperClique, V_{ESHE}, **is** a 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 a extreme SuperHyperSet S of extreme SuperHyperVertices **such that** there's an extreme SuperHyperEdge to have an extreme SuperHyperVertex in common. Thus, a connected extreme SuperHyperGraph $ESHG : (V, E)$. The any extreme SuperHyperClique 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 but everything is possible about extreme SuperHyperNeighborhoods and extreme SuperHyperNeighbors out. □

Example 25. In the extreme Figure (**??**), the connected extreme SuperHyperWheel $NSHW : (V, E)$, is extreme highlighted and featured. The obtained extreme SuperHyperSet, by the Algorithm in previous

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result, of the extreme SuperHyperVertices of the connected extreme SuperHyperWheel $ESHW : (V, E)$, , corresponded to E_5, V_{E_6}, in the extreme SuperHyperModel (**??**), is the extreme SuperHyperClique.

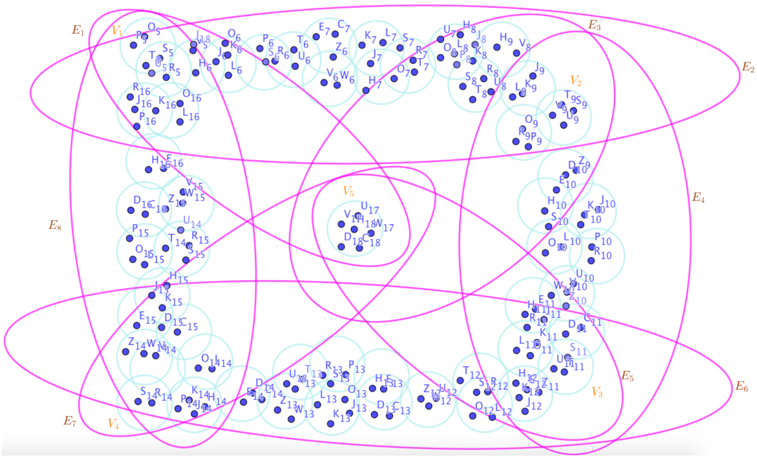

Figure 26. An extreme SuperHyperWheel extreme Associated to the extreme Notions of extreme SuperHyperClique in the extreme Example (25).

4. General Extreme Results

For the extreme SuperHyperClique, extreme SuperHyperClique, and the extreme SuperHyperClique, some general results are introduced.

Remark 2. *Let remind that the extreme SuperHyperClique is "redefined" on the positions of the alphabets.*

Corollary 26. *Assume extreme SuperHyperClique. Then*

$$extreme\ extremeSuperHyperClique = \{theextremeSuperHyperCliqueoftheSuperHyperVertices \mid \max |SuperHyperOffensiveSuperHyper Clique|_{extremecardinalityamidthoseextremeSuperHyperClique.}\}$$

plus one 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 27. *Assume a extreme SuperHyperGraph on the same identical letter of the alphabet. Then the notion of extreme SuperHyperClique and extreme SuperHyperClique coincide.*

Corollary 28. *Assume a extreme SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a extreme SuperHyperClique if and only if it's a extreme SuperHyperClique.*

Corollary 29. *Assume a extreme 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 30. *Assume SuperHyperClasses of a extreme SuperHyperGraph on the same identical letter of the alphabet. Then its extreme SuperHyperClique is its extreme SuperHyperClique and reversely.*

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Corollary 31. *Assume a extreme SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel) on the same identical letter of the alphabet. Then its extreme SuperHyperClique is its extreme SuperHyperClique and reversely.*

Corollary 32. *Assume a extreme SuperHyperGraph. Then its extreme SuperHyperClique isn't well-defined if and only if its extreme SuperHyperClique isn't well-defined.*

Corollary 33. *Assume SuperHyperClasses of a extreme SuperHyperGraph. Then its extreme SuperHyperClique isn't well-defined if and only if its extreme SuperHyperClique isn't well-defined.*

Corollary 34. *Assume a extreme SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its extreme SuperHyperClique isn't well-defined if and only if its extreme SuperHyperClique isn't well-defined.*

Corollary 35. *Assume a extreme SuperHyperGraph. Then its extreme SuperHyperClique is well-defined if and only if its extreme SuperHyperClique is well-defined.*

Corollary 36. *Assume SuperHyperClasses of a extreme SuperHyperGraph. Then its extreme SuperHyperClique is well-defined if and only if its extreme SuperHyperClique is well-defined.*

Corollary 37. *Assume a extreme SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its extreme SuperHyperClique is well-defined if and only if its extreme SuperHyperClique is well-defined.*

Proposition 38. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph. Then V is*

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

Proposition 39. *Let $NTG : (V, E, \sigma, \mu)$ be a extreme SuperHyperGraph. Then $\emptyset$ is*

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

Proposition 40. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph. Then an independent SuperHyperSet is*

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

Proposition 41. *Let $ESHG : (V, E)$ be a extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then V is a maximal*

(i) : *SuperHyperDefensive extreme SuperHyperClique;*

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

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 42. *Let* $ESHG : (V, E)$ *be a extreme SuperHyperGraph which is a SuperHyperUniform SuperHyperWheel. Then* V *is a maximal*

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

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 43. *Let* $ESHG : (V, E)$ *be a extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then the number of*

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

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

Proposition 44. *Let* $ESHG : (V, E)$ *be a extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel. Then the number of*

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

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

Proposition 45. *Let* $ESHG : (V, E)$ *be a extreme 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 extreme SuperHyperClique;*
$(ii):$ *strong dual SuperHyperDefensive extreme SuperHyperClique;*
$(iii):$ *connected dual SuperHyperDefensive extreme SuperHyperClique;*
$(iv):$ $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive extreme SuperHyperClique;*
$(v):$ *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive extreme SuperHyperClique;*
$(vi):$ *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive extreme SuperHyperClique.*

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Proposition 46. *Let $ESHG : (V, E)$ be a extreme 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 extreme SuperHyperClique;*
(ii) : *strong SuperHyperDefensive extreme SuperHyperClique;*
(iii) : *connected SuperHyperDefensive extreme SuperHyperClique;*
(iv) : *δ-SuperHyperDefensive extreme SuperHyperClique;*
(v) : *strong δ-SuperHyperDefensive extreme SuperHyperClique;*
(vi) : *connected δ-SuperHyperDefensive extreme SuperHyperClique.*

Proposition 47. *Let $ESHG : (V, E)$ be a extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then Then the number of*

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

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

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

Proposition 49. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph. Then the number is at most $\mathcal{O}(ESHG)$ and the extreme number is at most $\mathcal{O}_n(ESHG)$.*

Proposition 50. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph which is SuperHyperComplete. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1$ and the extreme 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 extreme SuperHyperClique;*
(ii) : *strong SuperHyperDefensive extreme SuperHyperClique;*
(iii) : *connected SuperHyperDefensive extreme SuperHyperClique;*
(iv) : *$(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique;*
(v) : *strong $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique;*
(vi) : *connected $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique.*

Proposition 51. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph which is $\emptyset$. The number is 0 and the extreme number is 0, for an independent SuperHyperSet in the setting of dual*

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

Proposition 52. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph which is SuperHyperComplete. Then there's no independent SuperHyperSet.*

Proposition 53. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph which is SuperHyperCycle/SuperHyperPath/SuperHyperWheel. The number is $\mathcal{O}(ESHG : (V, E))$ and the extreme number is $\mathcal{O}_n(ESHG : (V, E))$, in the setting of a dual*

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

Proposition 54. *Let $ESHG : (V, E)$ be a extreme SuperHyperGraph which is SuperHyperStar/complete SuperHyperBipartite/complete SuperHyperMultiPartite. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1$ and the extreme 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 extreme SuperHyperClique;*
(ii) : *strong SuperHyperDefensive extreme SuperHyperClique;*
(iii) : *connected SuperHyperDefensive extreme SuperHyperClique;*
(iv) : *$(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique;*
(v) : *strong $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique;*
(vi) : *connected $(\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1)$-SuperHyperDefensive extreme SuperHyperClique.*

Proposition 55. *Let $\mathcal{NSHF} : (V, E)$ be a SuperHyperFamily of the ESHGs : (V, E) extreme 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 extreme SuperHyperGraphs.*

Proposition 56. *Let $ESHG : (V, E)$ be a strong extreme SuperHyperGraph. If S is a dual SuperHyperDefensive extreme SuperHyperClique, then $\forall v \in V \setminus S$, $\exists x \in S$ such that*

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

Proposition 57. *Let $ESHG : (V, E)$ be a strong extreme SuperHyperGraph. If S is a dual SuperHyperDefensive extreme SuperHyperClique, then*

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

Proposition 58. *Let $ESHG : (V, E)$ be a strong extreme SuperHyperGraph. Then*

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

Proposition 59. *Let ESHG : (V, E) be a strong extreme 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 60. *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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 61. *Let ESHG : (V, E) be an even SuperHyperPath. Then*

(i) *the set* $S = \{v_2, v_4, \cdots .v_n\}$ *is a dual SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 62. *Let ESHG : (V, E) be an even SuperHyperCycle. Then*

(i) *the SuperHyperSet* $S = \{v_2, v_4, \cdots, v_n\}$ *is a dual SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 63. *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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 64. *Let ESHG : (V, E) be SuperHyperStar. Then*

(i) *the SuperHyperSet* $S = \{c\}$ *is a dual maximal extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 65. *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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 66. *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 extreme SuperHyperClique;*

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(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 extreme SuperHyperClique.*

Proposition 67. *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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 68. *Let* $\mathcal{NSHF} : (V, E)$ *be a m-SuperHyperFamily of extreme SuperHyperStars with common extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{c_1, c_2, \cdots, c_m\}$ *is a dual SuperHyperDefensive extreme SuperHyperClique 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 extreme SuperHyperClique for* $\mathcal{NSHF} : (V, E)$.

Proposition 69. *Let* $\mathcal{NSHF} : (V, E)$ *be an m-SuperHyperFamily of odd SuperHyperComplete SuperHyperGraphs with common extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual maximal SuperHyperDefensive extreme SuperHyperClique 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 extreme SuperHyperClique for* $\mathcal{NSHF} : (V, E)$.

Proposition 70. *Let* $\mathcal{NSHF} : (V, E)$ *be a m-SuperHyperFamily of even SuperHyperComplete SuperHyperGraphs with common extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive extreme SuperHyperClique 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 extreme SuperHyperClique for* $\mathcal{NSHF} : (V, E)$.

Proposition 71. *Let ESHG* : (V, E) *be a strong extreme SuperHyperGraph. Then following statements hold;*

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

Proposition 72. *Let ESHG* : (V, E) *be a strong extreme SuperHyperGraph. Then following statements hold;*

(i) *if* $s \geq t + 2$ *and a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive extreme SuperHyperClique, then S is an s-SuperHyperPowerful extreme SuperHyperClique;*

(ii) *if* $s \leq t$ *and a SuperHyperSet* S *of SuperHyperVertices is a dual t-SuperHyperDefensive extreme SuperHyperClique, then* S *is a dual s-SuperHyperPowerful extreme SuperHyperClique.*

Proposition 73. *Let* $ESHG : (V, E)$ *be a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique;*
(iii) *if* $\forall a \in S, |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is an r-SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 74. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique;*
(iii) $\forall a \in S, |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an r-SuperHyperDefensive extreme SuperHyperClique;*
(iv) $\forall a \in V \setminus S, |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual r-SuperHyperDefensive extreme SuperHyperClique.*

Proposition 75. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique;*
(iii) $\forall a \in S, |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an* $(\mathcal{O} - 1)$*-SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 76. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*
(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 extreme SuperHyperClique;*
(iii) *if* $\forall a \in S, |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is* $(\mathcal{O} - 1)$*-SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

Proposition 77. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*

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

Proposition 78. *Let* $ESHG : (V, E)$ *is a[an] [r-]SuperHyperUniform-strong-extreme 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 extreme SuperHyperClique;*
(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive extreme SuperHyperClique;*
(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive extreme SuperHyperClique;*
(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 extreme SuperHyperClique.*

5. Extreme Problems and Extreme Questions

In what follows, some "Extreme problems" and some "Extreme questions" are Extremely proposed.

The SuperHyperClique and the Extreme SuperHyperClique are Extremely defined on a real-world Extreme application, titled "Cancer's Extreme recognitions".

Question 79. *Which the else Extreme SuperHyperModels could be defined based on Cancer's Extreme recognitions?*

Question 80. *Are there some Extreme SuperHyperNotions related to SuperHyperClique and the Extreme SuperHyperClique?*

Question 81. *Are there some Extreme Algorithms to be defined on the Extreme SuperHyperModels to compute them Extremely?*

Question 82. *Which the Extreme SuperHyperNotions are related to beyond the SuperHyperClique and the Extreme SuperHyperClique?*

Problem 83. *The SuperHyperClique and the Extreme SuperHyperClique do Extremely a Extreme SuperHyperModel for the Cancer's Extreme recognitions and they're based Extremely on Extreme SuperHyperClique, are there else Extremely?*

Problem 84. *Which the fundamental Extreme SuperHyperNumbers are related to these Extreme SuperHyperNumbers types-results?*

Problem 85. *What's the independent research based on Cancer's Extreme recognitions concerning the multiple types of Extreme SuperHyperNotions?*

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