Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs

Preprint · January 2023

DOI: 10.13140/RG.2.2.28945.92007

Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs

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Abstract

In this research, new setting is introduced for new SuperHyperNotions, namely, a Failed SuperHyperStable and Neutrosophic Failed SuperHyperStable. Two different types of SuperHyperDefinitions are debut for them but the research goes further and the SuperHyperNotion, SuperHyperUniform, and SuperHyperClass based on that are well-defined and well-reviewed. The literature review is implemented in the whole of this research. For shining the elegancy and the significancy of this research, the comparison between this SuperHyperNotion with other SuperHyperNotions and fundamental SuperHyperNumbers are featured. The definitions are followed by the examples and the instances thus the clarifications are driven with different tools. The applications are figured out to make sense about the theoretical aspect of this ongoing research. The "Cancer's Recognitions" are the under research to figure out the challenges make sense about ongoing and upcoming research. The special case is up. The cells are viewed in the deemed ways. There are different types of them. Some of them are individuals and some of them are well-modeled by the group of cells. These types are all officially called "SuperHyperVertex" but the relations amid them all officially called "SuperHyperEdge". The frameworks "SuperHyperGraph" and "neutrosophic SuperHyperGraph" are chosen and elected to research about "Cancer's Recognitions". Thus these complex and dense SuperHyperModels open up some avenues to research on theoretical segments and "Cancer's Recognitions". Some avenues are posed to pursue this research. It's also officially collected in the form of some questions and some problems. Assume a SuperHyperGraph. Then a "Failed SuperHyperStable" $\mathcal{I}(NSHG)$ 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 "$\delta-$Failed SuperHyperStable" is a <u>maximal</u> Failed SuperHyperStable of SuperHyperVertices with <u>maximum</u> 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 $\delta-$Failed SuperHyperStable" is a <u>maximal</u> neutrosophic Failed SuperHyperStable of SuperHyperVertices with <u>maximum</u> 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". It's useful to define a "neutrosophic" version of a Failed SuperHyperStable. Since there's more ways to get type-results to make a Failed SuperHyperStable more understandable. For the sake of having neutrosophic Failed SuperHyperStable, there's a need to "redefine" the notion of a "Failed SuperHyperStable". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a Failed SuperHyperStable. It's redefined a neutrosophic Failed SuperHyperStable if the mentioned Table holds, concerning, "The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph" with the key points, "The Values of The Vertices & The Number of Position in Alphabet", "The Values of The SuperVertices&The maximum Values of Its Vertices", "The Values of The Edges&The maximum Values of Its Vertices", "The Values of The HyperEdges&The maximum Values of Its Vertices", "The Values of The SuperHyperEdges&The maximum Values of Its Endpoints". To get structural examples and instances, I'm going to introduce the next SuperHyperClass of SuperHyperGraph based on a Failed SuperHyperStable. It's the main. It'll be disciplinary to have the foundation of previous definition in the kind of SuperHyperClass. If there's a need to have all SuperHyperConnectivities until the Failed SuperHyperStable, then it's officially called a "Failed SuperHyperStable" but otherwise, it isn't a Failed SuperHyperStable. There are some instances about the clarifications for the main definition titled a "Failed SuperHyperStable". These two examples get more scrutiny and discernment since there are characterized in the disciplinary ways of the SuperHyperClass based on a Failed SuperHyperStable. For the sake of having a neutrosophic Failed SuperHyperStable, there's a need to "redefine" the notion of a "neutrosophic Failed SuperHyperStable" and a "neutrosophic Failed SuperHyperStable". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a neutrosophic SuperHyperGraph. It's redefined "neutrosophic SuperHyperGraph" if the intended Table holds. And a Failed SuperHyperStable are redefined to a "neutrosophic Failed SuperHyperStable" if the intended Table holds. It's useful to define "neutrosophic" version of SuperHyperClasses. Since there's more ways to get neutrosophic type-results to make a neutrosophic Failed SuperHyperStable more understandable. Assume a neutrosophic SuperHyperGraph. There are some neutrosophic SuperHyperClasses if the intended Table holds. Thus SuperHyperPath, SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are "neutrosophic SuperHyperPath", "neutrosophic SuperHyperCycle", "neutrosophic SuperHyperStar", "neutrosophic SuperHyperBipartite", "neutrosophic SuperHyperMultiPartite", and "neutrosophic SuperHyperWheel" if the intended Table holds. A SuperHyperGraph has a "neutrosophic Failed SuperHyperStable" where it's the strongest [the maximum neutrosophic value from all the Failed SuperHyperStable amid the maximum value amid all SuperHyperVertices from a Failed SuperHyperStable.] Failed SuperHyperStable. A graph is a SuperHyperUniform if it's a SuperHyperGraph and the number of elements of SuperHyperEdges are the same. Assume a neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows. It's SuperHyperPath if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions; it's SuperHyperCycle if it's only one SuperVertex as intersection amid two given SuperHyperEdges; it's SuperHyperStar it's only one SuperVertex as intersection amid all SuperHyperEdges; it's SuperHyperBipartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common; it's SuperHyperMultiPartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common; it's a SuperHyperWheel if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex. The SuperHyperModel proposes the specific designs and the specific architectures. The SuperHyperModel is officially called "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". In this SuperHyperModel, The "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperVertices" and the common and intended properties between "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperEdges". Sometimes, it's useful to have some degrees of determinacy, indeterminacy, and neutrality to have more precise SuperHyperModel which in this case the SuperHyperModel is called "neutrosophic". In the future research, the foundation will be based on the "Cancer's Recognitions" and the results and the definitions will be introduced in redeemed ways. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some SuperHyperGeneral SuperHyperModels. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the longest Failed SuperHyperStable or the strongest Failed SuperHyperStable in those neutrosophic SuperHyperModels. For the longest Failed SuperHyperStable, called Failed SuperHyperStable, and the strongest SuperHyperCycle, called neutrosophic Failed SuperHyperStable, some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperCycle. There isn't any formation of any SuperHyperCycle but literarily, it's the deformation of any SuperHyperCycle. It, literarily, deforms and it doesn't form. A basic familiarity with SuperHyperGraph theory and neutrosophic SuperHyperGraph theory are proposed.

Keywords: SuperHyperGraph, (Neutrosophic) Failed SuperHyperStable, Cancer's Recognition

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

1 Background

There are some researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them.

First article is titled "properties of SuperHyperGraph and neutrosophic SuperHyperGraph" in **Ref.** [1] by Henry Garrett (2022). It's first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal "Neutrosophic Sets and Systems" in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number, failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions.

The seminal paper and groundbreaking article is titled "neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs" in **Ref.** [2] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It's published in prestigious and fancy journal is entitled "Journal of Current Trends in Computer Science Research (JCTCSR)" with abbreviation "J Curr Trends Comp Sci Res" in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It's the breakthrough toward independent results based on initial background.

In some articles are titled "(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances" in **Ref.** [3] by Henry Garrett (2022), "(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses" in **Ref.** [4] by Henry Garrett (2022), "SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions" in **Ref.** [5] by Henry Garrett (2022), "Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments" in **Ref.** [6] by Henry Garrett (2022), "SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses" in **Ref.** [7] by Henry Garrett (2022), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [8] by Henry Garrett (2022), "(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs" in **Ref.** [9] by Henry Garrett (2022), "Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in **Ref.** [10] by Henry Garrett (2022), "(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [11] by Henry Garrett (2022), "Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [12] by Henry Garrett (2022), "Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph" in **Ref.** [13] by Henry Garrett (2022), "Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)" in **Ref.** [14] by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph.

Some studies and researches about neutrosophic graphs, are proposed as book in **Ref.** [15] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 2347 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

Also, some studies and researches about neutrosophic graphs, are proposed as book in **Ref.** [16] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3048 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd.

2 Motivation and Contributions

In this research, there are some ideas in the featured frameworks of motivations. I try to bring the motivations in the narrative ways. Some cells have been faced with some attacks from the situation which is caused by the cancer's attacks. In this case, there are some embedded analysis on the ongoing situations which in that, the cells could be labelled as some groups and some groups or individuals have excessive labels which all are raised from the behaviors to overcome the cancer's attacks. In the embedded situations, the individuals of cells and the groups of cells could be considered as "new groups". Thus it motivates us to find the proper SuperHyperModels for getting more proper analysis on this messy story. I've found the SuperHyperModels which are officially called "SuperHyperGraphs" and "Neutrosophic SuperHyperGraphs". In this SuperHyperModel, the cells and the groups of cells are defined as "SuperHyperVertices" and the relations between the individuals of cells and the groups of cells are defined as "SuperHyperEdges". Thus it's another motivation for us to do research on this SuperHyperModel based on the "Cancer's Recognitions". Sometimes, the situations get worst. The situation is passed from the certainty and precise style. Thus it's the beyond them. There are three descriptions, namely, the degrees of determinacy, indeterminacy and neutrality, for any object based on vague forms, namely, incomplete data, imprecise data, and uncertain analysis. The latter model could be considered on the previous SuperHyperModel. It's SuperHyperModel. It's SuperHyperGraph but it's officially called "Neutrosophic SuperHyperGraphs". The cancer is the disease but the model is going to figure out what's going on this phenomenon. The special case of this disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The recognition of the cancer could help to find some treatments for this disease. The SuperHyperGraph and neutrosophic SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognitions" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the forms of alliances' styles with the formation of the design and the architecture are formally called " Failed SuperHyperStable" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some general models. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the optimal Failed SuperHyperStable or the neutrosophic Failed SuperHyperStable in those neutrosophic SuperHyperModels. Some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperCycle. There isn't any formation of any SuperHyperCycle but literarily, it's the deformation of any SuperHyperCycle. It, literarily, deforms and it doesn't form.

Question 2.1. *How to define the SuperHyperNotions and to do research on them to find the " amount of Failed SuperHyperStable" of either individual of cells or the groups of cells based on the fixed cell or the fixed group of cells, extensively, the "amount of Failed SuperHyperStable" based on the fixed groups of cells or the fixed groups of group of cells?*

Question 2.2. *What are the best descriptions for the "Cancer's Recognitions" in terms of these messy and dense SuperHyperModels where embedded notions are illustrated?*

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

The framework of this research is as follows. In the beginning, I introduce basic definitions to clarify about preliminaries. In the subsection "Preliminaries", initial definitions about SuperHyperGraphs and neutrosophic SuperHyperGraph are deeply-introduced and in-depth-discussed. The elementary concepts are clarified and illustrated completely and sometimes review literature are applied to make sense about what's going to figure out about the upcoming sections. The main definitions and their clarifications alongside some results about new notions, Failed SuperHyperStable and neutrosophic Failed SuperHyperStable, are figured out in sections " Failed SuperHyperStable" and "Neutrosophic Failed SuperHyperStable". In the sense of tackling on getting results and in order to make sense about continuing the research, the ideas of SuperHyperUniform and Neutrosophic SuperHyperUniform are introduced and as their consequences, corresponded SuperHyperClasses are figured out to debut what's done in this section, titled "Results on SuperHyperClasses" and "Results on Neutrosophic SuperHyperClasses". As going back to origin of the notions, there are some smart steps toward the common notions to extend the new notions in new frameworks, SuperHyperGraph and Neutrosophic SuperHyperGraph, in the sections "Results on SuperHyperClasses" and "Results on Neutrosophic SuperHyperClasses". The starter research about the general SuperHyperRelations and as concluding and closing section of theoretical research are contained in the section "General Results". Some general SuperHyperRelations are fundamental and they are well-known as fundamental

SuperHyperNotions as elicited and discussed in the sections, “General Results”, “ Failed SuperHyperStable”, “Neutrosophic Failed SuperHyperStable”, “Results on SuperHyperClasses” and “Results on Neutrosophic SuperHyperClasses”. There are curious questions about what’s done about the SuperHyperNotions to make sense about excellency of this research and going to figure out the word “best” as the description and adjective for this research as presented in section, “ Failed SuperHyperStable”. The keyword of this research debut in the section “Applications in Cancer’s Recognitions” with two cases and subsections “Case 1: The Initial Steps Toward SuperHyperBipartite as SuperHyperModel” and “Case 2: The Increasing Steps Toward SuperHyperMultipartite as SuperHyperModel”. In the section, “Open Problems”, there are some scrutiny and discernment on what’s done and what’s happened in this research in the terms of “questions” and “problems” to make sense to figure out this research in featured style. The advantages and the limitations of this research alongside about what’s done in this research to make sense and to get sense about what’s figured out are included in the section, “Conclusion and Closing Remarks”.

3 Preliminaries

In this subsection, the basic material which is used in this research, is presented. Also, the new ideas and their clarifications are elicited.

Definition 3.1 (Neutrosophic Set)**.** (**Ref.** [18],Definition 2.1,p.87).

Let X be a space of points (objects) with generic elements in X denoted by x; then the **neutrosophic set** A (NS A) is an object having the form

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$$

where the functions $T, I, F : X \to]^-0, 1^+[$ define respectively the a **truth-membership function**, an **indeterminacy-membership function**, and a **falsity-membership function** of the element $x \in X$ to the set A with the condition

$$^-0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3^+.$$

The functions $T_A(x), I_A(x)$ and $F_A(x)$ are real standard or nonstandard subsets of $]^-0, 1^+[$.

Definition 3.2 (Single Valued Neutrosophic Set)**.** (**Ref.** [21],Definition 6,p.2).

Let X be a space of points (objects) with generic elements in X denoted by x. A **single valued neutrosophic set** A (SVNS A) is characterized by truth-membership function $T_A(x)$, an indeterminacy-membership function $I_A(x)$, and a falsity-membership function $F_A(x)$. For each point x in X, $T_A(x), I_A(x), F_A(x) \in [0, 1]$. A SVNS A can be written as

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}.$$

Definition 3.3. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$T_A(X) = \min[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = \min[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = \min[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 3.4. The **support** of $X \subset A$ of the single valued neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \; T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 3.5 (Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.** [20],Definition 3,p.291).

Assume V' is a given set. A **neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(i) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued neutrosophic subsets of V';

(ii) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}, \ (i = 1, 2, \ldots, n)$;

(iii) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued neutrosophic subsets of V;

(iv) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}, \ (i' = 1, 2, \ldots, n')$;

(v) $V_i \neq \emptyset, \ (i = 1, 2, \ldots, n)$;

(vi) $E_{i'} \neq \emptyset, \ (i' = 1, 2, \ldots, n')$;

(vii) $\sum_i supp(V_i) = V, \ (i = 1, 2, \ldots, n)$;

$(viii)$ $\sum_{i'} supp(E_{i'}) = V, \ (i' = 1, 2, \ldots, n')$;

(ix) and the following conditions hold:

$$T'_V(E_{i'}) \leq \min[T_{V'}(V_i), T_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$I'_V(E_{i'}) \leq \min[I_{V'}(V_i), I_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$\text{and } F'_V(E_{i'}) \leq \min[F_{V'}(V_i), F_{V'}(V_j)]_{V_i, V_j \in E_{i'}}$$

where $i' = 1, 2, \ldots, n'$.

Here the neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the neutrosophic SuperHyperVertices (NSHV) V_j are single valued neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the neutrosophic SuperHyperVertex (NSHV) V_i to the neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 3.6 (Characterization of the Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.** [20],Section 4,pp.291-292).

Assume a neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the neutrosophic SuperHyperVertices (NSHV) V_i of neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(i) If $|V_i| = 1$, then V_i is called **vertex**;

(ii) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(iii) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(iv) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(v) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(vi) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

If we choose different types of binary operations, then we could get hugely diverse types of general forms of neutrosophic SuperHyperGraph (NSHG).

Definition 3.7 (t-norm). (**Ref.** [19], Definition 5.1.1, pp.82-83).
A binary operation $\otimes : [0,1] \times [0,1] \to [0,1]$ is a ***t*-norm** if it satisfies the following for $x, y, z, w \in [0,1]$:

(i) $1 \otimes x = x$;

(ii) $x \otimes y = y \otimes x$;

(iii) $x \otimes (y \otimes z) = (x \otimes y) \otimes z$;

(iv) If $w \leq x$ and $y \leq z$ then $w \otimes y \leq x \otimes z$.

Definition 3.8. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$ (with respect to t-norm T_{norm}):

$$T_A(X) = T_{norm}[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = T_{norm}[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = T_{norm}[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 3.9. The **support** of $X \subset A$ of the single valued neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \ T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 3.10. (General Forms of Neutrosophic SuperHyperGraph (NSHG)).
Assume V' is a given set. A **neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(i) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued neutrosophic subsets of V';

(ii) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}$, $(i = 1, 2, \ldots, n)$;

(iii) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued neutrosophic subsets of V;

(iv) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}$, $(i' = 1, 2, \ldots, n')$;

(v) $V_i \neq \emptyset$, $(i = 1, 2, \ldots, n)$;

(vi) $E_{i'} \neq \emptyset$, $(i' = 1, 2, \ldots, n')$;

(vii) $\sum_i supp(V_i) = V$, $(i = 1, 2, \ldots, n)$;

(viii) $\sum_{i'} supp(E_{i'}) = V$, $(i' = 1, 2, \ldots, n')$.

Here the neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the neutrosophic SuperHyperVertices (NSHV) V_j are single valued neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the neutrosophic SuperHyperVertex (NSHV) V_i to the neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 3.11 (Characterization of the Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.** [20],Section 4,pp.291-292).

Assume a neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the neutrosophic SuperHyperVertices (NSHV) V_i of neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(i) If $|V_i| = 1$, then V_i is called **vertex**;

(ii) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(iii) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(iv) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(v) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(vi) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

This SuperHyperModel is too messy and too dense. Thus there's a need to have some restrictions and conditions on SuperHyperGraph. The special case of this SuperHyperGraph makes the patterns and regularities.

Definition 3.12. A graph is **SuperHyperUniform** if it's SuperHyperGraph and the number of elements of SuperHyperEdges are the same.

To get more visions on , the some SuperHyperClasses are introduced. It makes to have more understandable.

Definition 3.13. Assume a neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows.

(i). It's **SuperHyperPath** if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions;

(ii). it's **SuperHyperCycle** if it's only one SuperVertex as intersection amid two given SuperHyperEdges;

(iii). it's **SuperHyperStar** it's only one SuperVertex as intersection amid all SuperHyperEdges;

(iv). it's **SuperHyperBipartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common;

(v). it's **SuperHyperMultiPartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common;

(vi). it's **SuperHyperWheel** if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex.

Definition 3.14. Let an ordered pair $S = (V, E)$ be a neutrosophic SuperHyperGraph (NSHG) S. Then a sequence of neutrosophic SuperHyperVertices (NSHV) and neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s$$

is called a **neutrosophic SuperHyperPath** (NSHP) from neutrosophic SuperHyperVertex (NSHV) V_1 to neutrosophic SuperHyperVertex (NSHV) V_s if either of following conditions hold:

(i) $V_i, V_{i+1} \in E_{i'}$;

(ii) there's a vertex $v_i \in V_i$ such that $v_i, V_{i+1} \in E_{i'}$;

(iii) there's a SuperVertex $V'_i \in V_i$ such that $V'_i, V_{i+1} \in E_{i'}$;

(iv) there's a vertex $v_{i+1} \in V_{i+1}$ such that $V_i, v_{i+1} \in E_{i'}$;

(v) there's a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V_i, V'_{i+1} \in E_{i'}$;

(vi) there are a vertex $v_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $v_i, v_{i+1} \in E_{i'}$;

(vii) there are a vertex $v_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $v_i, V'_{i+1} \in E_{i'}$;

$(viii)$ there are a SuperVertex $V'_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $V'_i, v_{i+1} \in E_{i'}$;

(ix) there are a SuperVertex $V'_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V'_i, V'_{i+1} \in E_{i'}$.

Definition 3.15. (Characterization of the Neutrosophic SuperHyperPaths).
Assume a neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. A neutrosophic SuperHyperPath (NSHP) from neutrosophic SuperHyperVertex (NSHV) V_1 to neutrosophic SuperHyperVertex (NSHV) V_s is sequence of neutrosophic SuperHyperVertices (NSHV) and neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s,$$

could be characterized as follow-up items.

(i) If for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| = 2$, then NSHP is called **path**;

(ii) if for all $E_{j'}$, $|E_{j'}| = 2$, and there's V_i, $|V_i| \geq 1$, then NSHP is called **SuperPath**;

(iii) if for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| \geq 2$, then NSHP is called **HyperPath**;

(iv) if there are $V_i, E_{j'}$, $|V_i| \geq 1, |E_{j'}| \geq 2$, then NSHP is called **SuperHyperPath**.

Definition 3.16. ((neutrosophic) Failed SuperHyperStable).
Assume a SuperHyperGraph. Then

(i) a **Failed SuperHyperStable** $\mathcal{I}(NSHG)$ for a 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;

Table 1. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (3.20)

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

(ii) a **neutrosophic Failed SuperHyperStable** $\mathcal{I}_n(NSHG)$ for a neutrosophic SuperHyperGraph $NSHG:(V,E)$ is the maximum neutrosophic cardinality of a neutrosophic SuperHyperSet S of neutrosophic SuperHyperVertices such that there's a neutrosophic SuperHyperVertex to have a neutrosophic SuperHyperEdge in common.

Definition 3.17. ((neutrosophic)$\delta-$Failed SuperHyperStable).
Assume a SuperHyperGraph. Then

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

$$|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta; \quad (3.1)$$
$$|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta. \quad (3.2)$$

The Expression (3.1), holds if S is an $\delta-$**SuperHyperOffensive**. And the Expression (3.2), holds if S is an $\delta-$**SuperHyperDefensive**;

(ii) a **neutrosophic** $\delta-$**Failed SuperHyperStable** 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 $s \in S$:

$$|S \cap N(s)|_{neutrosophic} > |S \cap (V \setminus N(s))|_{neutrosophic} + \delta; \quad (3.3)$$
$$|S \cap N(s)|_{neutrosophic} < |S \cap (V \setminus N(s))|_{neutrosophic} + \delta. \quad (3.4)$$

The Expression (3.3), holds if S is a **neutrosophic** $\delta-$**SuperHyperOffensive**. And the Expression (3.4), holds if S is a **neutrosophic** $\delta-$**SuperHyperDefensive**.

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

Definition 3.18. Assume a neutrosophic SuperHyperGraph. It's redefined **neutrosophic SuperHyperGraph** if the Table (1) holds.

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

Definition 3.19. Assume a neutrosophic SuperHyperGraph. There are some **neutrosophic SuperHyperClasses** if the Table (2) holds. Thus SuperHyperPath, SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and

Table 2. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph, Mentioned in the Definition (3.19)

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

Table 3. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (3.20)

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

SuperHyperWheel, are **neutrosophic SuperHyperPath**, **neutrosophic SuperHyperCycle**, **neutrosophic SuperHyperStar**, **neutrosophic SuperHyperBipartite**, **neutrosophic SuperHyperMultiPartite**, and **neutrosophic SuperHyperWheel** if the Table (2) holds.

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

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

Definition 3.20. Assume a Failed SuperHyperStable. It's redefined a **neutrosophic Failed SuperHyperStable** if the Table (3) holds.

4 Extreme Failed SuperHyperStable

Example 4.1. 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 SuperHyperNotion, namely, Failed SuperHyperStable, is up. E_1 and E_3 Failed SuperHyperStable 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 Failed SuperHyperStable. All the following SuperHyperSet of SuperHyperVertices is the simple type-SuperHyperSet of the Failed SuperHyperStable. $\{V_3, V_1, V_2\}$. The SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1, V_2\}$, is corresponded to a Failed SuperHyperStable $\mathcal{I}(NSHG)$ for a SuperHyperGraph $NSHG : (V, E)$ is <u>**the maximum cardinality**</u> of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only **three** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex. But the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1, V_2\}$, is corresponded to a Failed SuperHyperStable $\mathcal{I}(NSHG)$ for a SuperHyperGraph $NSHG : (V, E)$ is the SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** they are corresponded to a **Failed SuperHyperStable**. Since it**'s** **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_3, V_1, V_2\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_3, V_1, V_2\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_3, V_1, V_2\}$, is the SuperHyperSet, $\{V_3, V_1, V_2\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. It's interesting to mention that the only obvious simple type-SuperHyperSet of the neutrosophic Failed SuperHyperStable amid those obvious simple type-SuperHyperSets of the Failed SuperHyperStable, is only $\{V_3, V_4, V_2\}$.

- On the Figure (2), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. E_1 and E_3 Failed SuperHyperStable 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 Failed SuperHyperStable. All the following SuperHyperSet of SuperHyperVertices is the simple type-SuperHyperSet of the Failed SuperHyperStable. $\{V_3, V_1, V_2\}$. The SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1, V_2\}$, is corresponded to a Failed SuperHyperStable $\mathcal{I}(NSHG)$ for a 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. There're only **three** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex. But the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1, V_2\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1, V_2\}$, is corresponded to a Failed SuperHyperStable $\mathcal{I}(NSHG)$ for a SuperHyperGraph $NSHG : (V, E)$ is the SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a

SuperHyperEdge in common **and** they are corresponded to a **Failed SuperHyperStable**. Since it**'s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_3, V_1, V_2\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_3, V_1, V_2\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_3, V_1, V_2\}$, is the SuperHyperSet, $\{V_3, V_1, V_2\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. It's interesting to mention that the only obvious simple type-SuperHyperSet of the neutrosophic Failed SuperHyperStable amid those obvious simple type-SuperHyperSets of the Failed SuperHyperStable, is only $\{V_3, V_4, V_1\}$.

- On the Figure (3), the SuperHyperNotion, namely, Failed SuperHyperStable, 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 SuperHyperSet of SuperHyperVertices, $\{V_3, V_2\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_3, V_2\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only **two** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_3, V_2\}$, doesn't have less than two SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_3, V_2\}$,**is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_3, V_2\}$, is corresponded to a Failed SuperHyperStable $\mathcal{I}(NSHG)$ for a SuperHyperGraph $NSHG : (V, E)$ is the SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** they are **Failed SuperHyperStable**. Since it**'s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSets, $\{V_3, V_2\}$, Thus the non-obvious Failed SuperHyperStable, $\{V_3, V_2\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_3, V_2\}$, is the SuperHyperSet, $\{V_3, V_2\}$, don't include only more than one SuperHyperVertex in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. It's interesting to mention that the only obvious simple type-SuperHyperSets of the neutrosophic Failed SuperHyperStable amid those obvious simple type-SuperHyperSets of the Failed SuperHyperStable, is only $\{V_3, V_2\}$.

- On the Figure (4), the SuperHyperNotion, namely, a Failed SuperHyperStable, 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 SuperHyperSet of SuperHyperVertices, $\{V_2, V_4, V_1\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_4, V_1\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only **three** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex since it **doesn't form** any kind of pairs titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_4, V_1\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_4, V_1\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_4, V_1\}$, is the SuperHyperSet Ss of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_4, V_1\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_4, V_1\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_2, V_4, V_1\}$, is a SuperHyperSet, $\{V_2, V_4, V_1\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (5), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only **one** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex thus it doesn't form any kind of pairs titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. **and** it's **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, is a SuperHyperSet, $\{V_2, V_6, V_9, V_{15}, V_{10}\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ is mentioned as the SuperHyperModel $NSHG : (V, E)$ in the Figure (5).

- On the Figure (6), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is **the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only **one** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex doesn't form any kind of pairs titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

Thus the non-obvious Failed SuperHyperStable,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is a SuperHyperSet,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ with a illustrated SuperHyperModeling of the Figure (6).

- On the Figure (7), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There's only **one** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_5, V_9, V_7\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_5, V_9, V_7\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,$\{V_2, V_5, V_9, V_7\}$, is a SuperHyperSet, $\{V_2, V_5, V_9, V_7\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ of depicted SuperHyperModel as the Figure (7).

- On the Figure (8), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There's only **one** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_9, V_7\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_5, V_9, V_7\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_5, V_9, V_7\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,$\{V_2, V_5, V_9, V_7\}$, is a SuperHyperSet, $\{V_2, V_5, V_9, V_7\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ of dense SuperHyperModel as the Figure (8).

- On the Figure (9), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},\\ V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},\\ V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is **the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only **only** SuperHyperVertex **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **one** SuperHyperVertex doesn't form any kind of pairs titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},\\ V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},\\ V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices,

$$\{V_2, V_4, V_6, V_8, V_{10},\\ V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\}.$$

Thus the non-obvious Failed SuperHyperStable,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

is a SuperHyperSet,

$$\{V_2, V_4, V_6, V_8, V_{10},$$
$$V_{22}, V_{19}, V_{17}, V_{15}, V_{13}, V_{11}\},$$

doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ with a messy SuperHyperModeling of the Figure (9).

- On the Figure (10), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_8, V_7\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_8, V_7\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_8\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_8, V_7\}$,**is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_8, V_7\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_5, V_8, V_7\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_5, V_8, V_7\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,

$\{V_2, V_5, V_8, V_7\}$, is a SuperHyperSet, $\{V_2, V_5, V_8, V_7\}$, doesn't include only more than one SuperHyperVertex in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ of highly-embedding-connected SuperHyperModel as the Figure (10).

- On the Figure (11), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_5\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_6\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only less than **one** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices don't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_6\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_6\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_6\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_5, V_6\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_5, V_6\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_2, V_5, V_6\}$, is a SuperHyperSet, $\{V_2, V_5, V_6\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (12), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, is **the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, is the SuperHyperSet Ss of

SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** they are **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,$\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, is a SuperHyperSet, $\{V_4, V_5, V_6, V_9, V_{10}, V_2\}$, doesn't include only more than one SuperHyperVertex in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ in highly-multiple-connected-style SuperHyperModel On the Figure (12).

- On the Figure (13), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_6\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_6\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're not only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices don't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_6\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_2, V_5, V_6\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_2, V_5, V_6\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_2, V_5, V_6\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_2, V_5, V_6\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_2, V_5, V_6\}$, is a SuperHyperSet, $\{V_2, V_5, V_6\}$, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (14), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_3, V_1\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_3, V_1\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_3, V_1\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_3, V_1\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_3, V_1\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_3, V_1\}$, is a SuperHyperSet, $\{V_3, V_1\}$, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (15), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_5, V_2, V_6, V_4\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_5, V_2, V_6, V_4\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices,$\{V_5, V_2, V_6, V_4\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_5, V_2, V_6, V_4\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_5, V_2, V_6, V_4\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_5, V_2, V_6, V_4\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_5, V_2, V_6, V_4\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_5, V_2, V_6, V_4\}$, is a SuperHyperSet, $\{V_5, V_2, V_6, V_4\}$, doesn't include only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ as Linearly-Connected SuperHyperModel On the Figure (15).
- On the Figure (16), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the

Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it's **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is a SuperHyperSet, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (17), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it's **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet,$\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is a SuperHyperSet, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$ as Linearly-over-packed SuperHyperModel is featured On the Figure (17).

- On the Figure (18), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, **is** the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than two SuperHyperVertices **inside** the intended SuperHyperSet, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$. Thus the non-obvious Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, is a SuperHyperSet, $\{V_1, V_3, V_7, V_{13}, V_{22}, V_{18}\}$, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$

- On the Figure (19), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}}.$$

Thus the non-obvious Failed SuperHyperStable,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is a SuperHyperSet,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

- On the Figure (20), the SuperHyperNotion, namely, Failed SuperHyperStable, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  is the simple type-SuperHyperSet of the Failed SuperHyperStable. The SuperHyperSet of the SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  is **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There're only less than **two** SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious Failed SuperHyperStable **is** up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable is a SuperHyperSet **includes** only less than **two** SuperHyperVertices doesn't form any kind of pairs are titled to SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. But the SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

  doesn't have less than two SuperHyperVertices **inside** the intended SuperHyperSet. Thus the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable **is** up. To sum them up, the SuperHyperSet of SuperHyperVertices,

  $$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

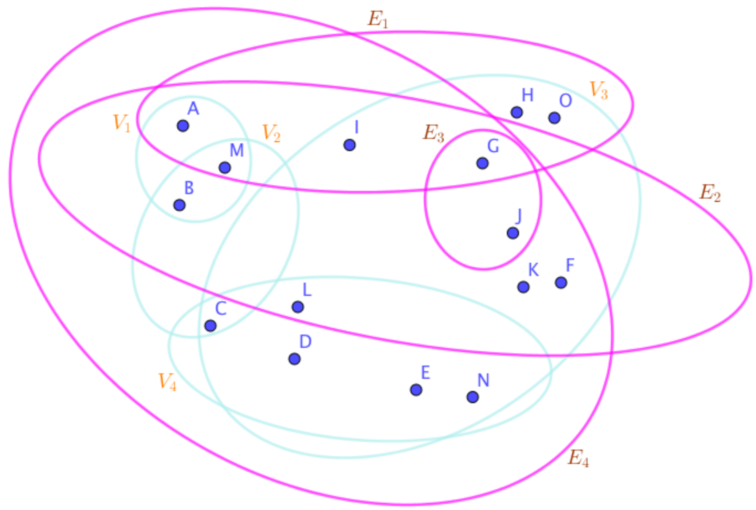

Figure 1. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

is the non-obvious simple type-SuperHyperSet of the Failed SuperHyperStable. Since the SuperHyperSet of the SuperHyperVertices,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is the SuperHyperSet Ss of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common **and** it's a **Failed SuperHyperStable**. Since it'**s** **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. There aren't only less than two SuperHyperVertices **inside** the intended SuperHyperSet,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}}.$$

Thus the non-obvious Failed SuperHyperStable,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable,

$$\{\text{interior SuperHyperVertices}\}_{\text{the number of SuperHyperEdges}},$$

is a SuperHyperSet, does includes only less than two SuperHyperVertices in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$.

Proposition 4.2. *Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Then in the worst case, literally, $V \setminus V \setminus \{x, z\}$, is a Failed SuperHyperStable. In other words, the least cardinality, the lower sharp bound for the cardinality, of a Failed SuperHyperStable is the cardinality of $V \setminus V \setminus \{x, z\}$.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that

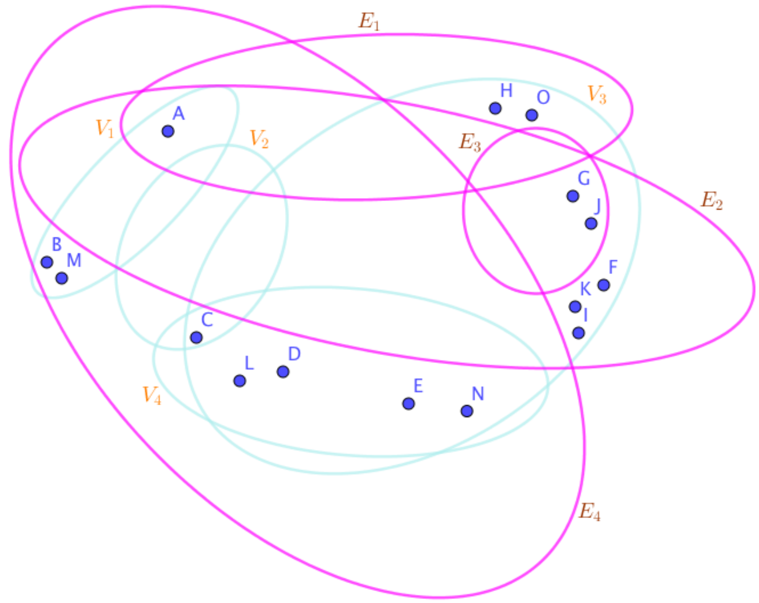

Figure 2. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

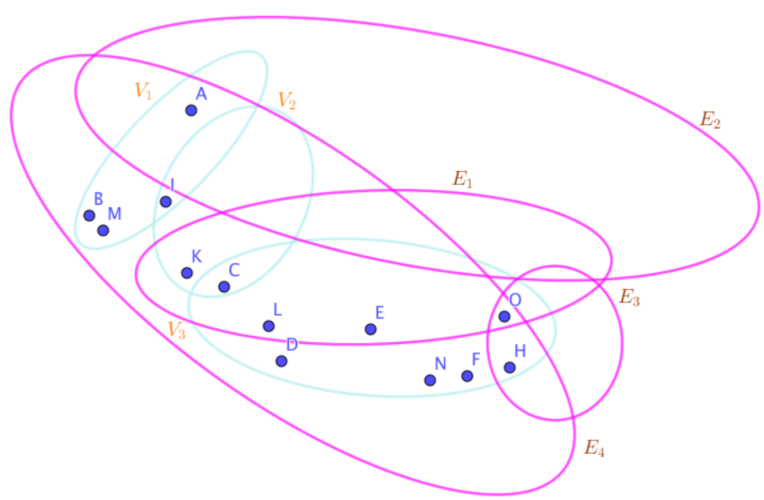

Figure 3. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

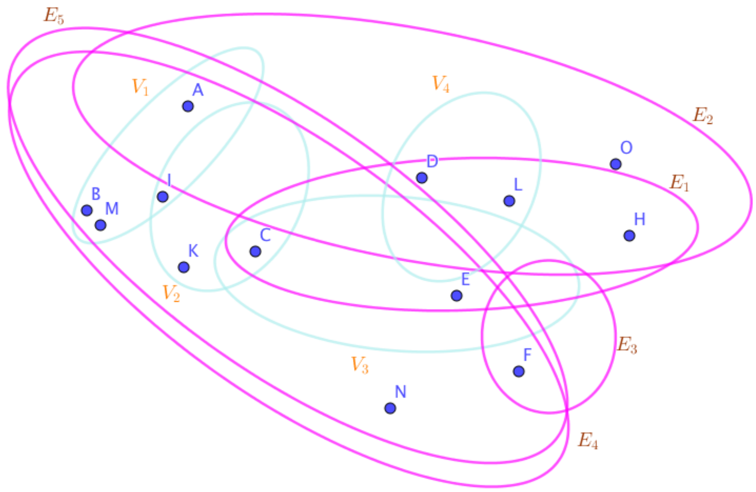

Figure 4. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

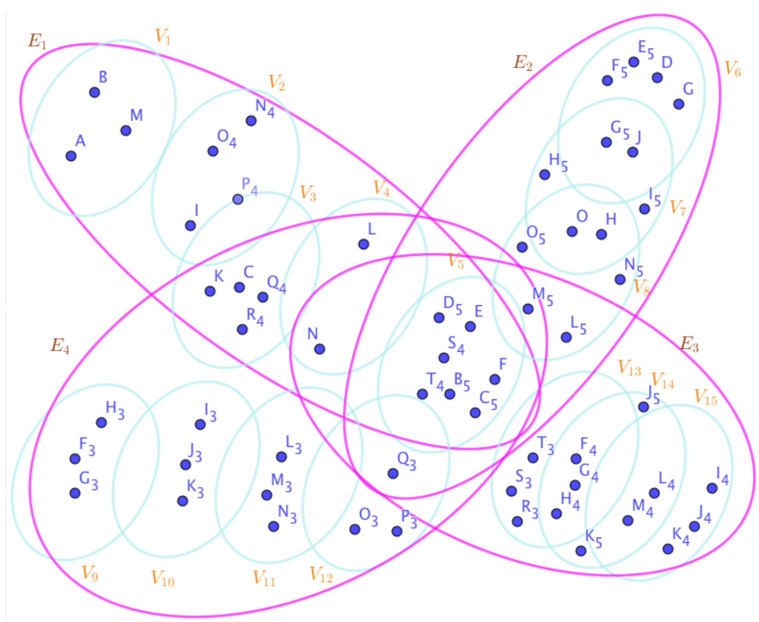

Figure 5. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

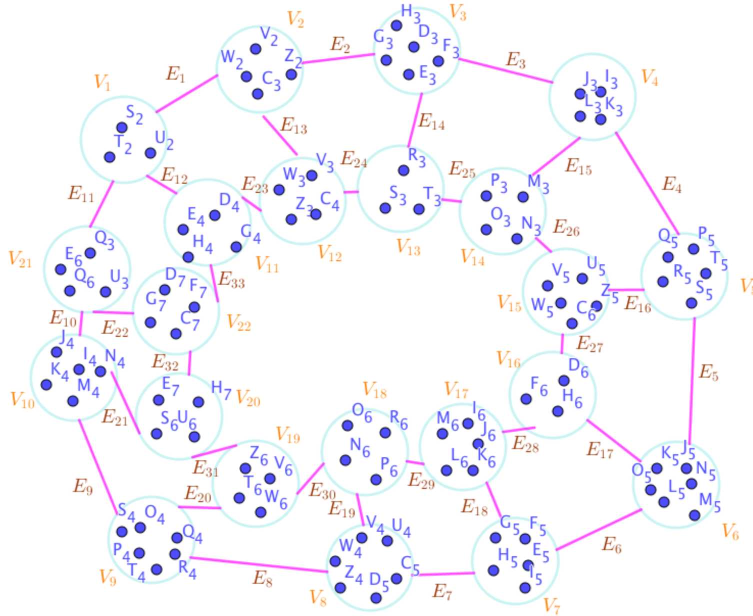

Figure 6. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

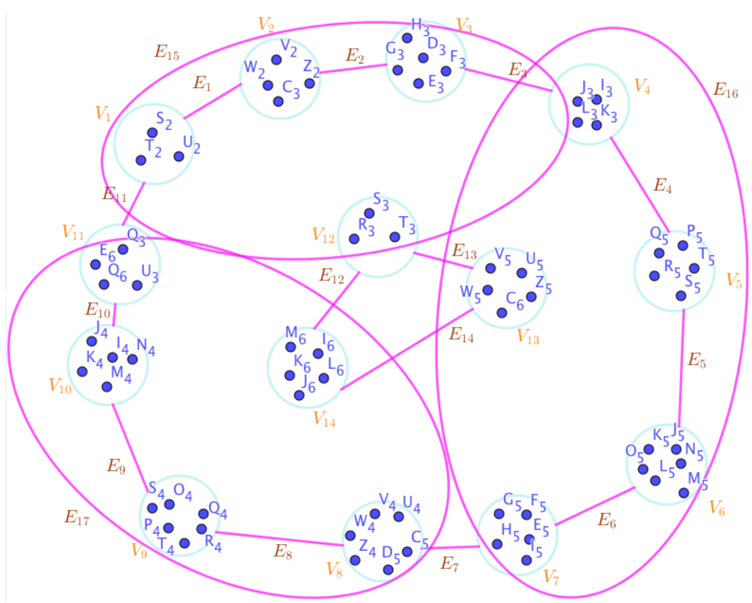

Figure 7. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

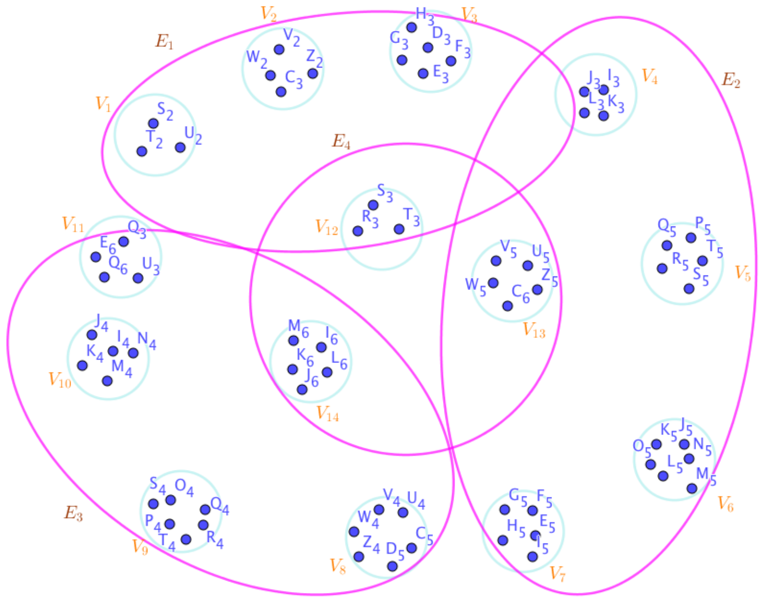

Figure 8. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

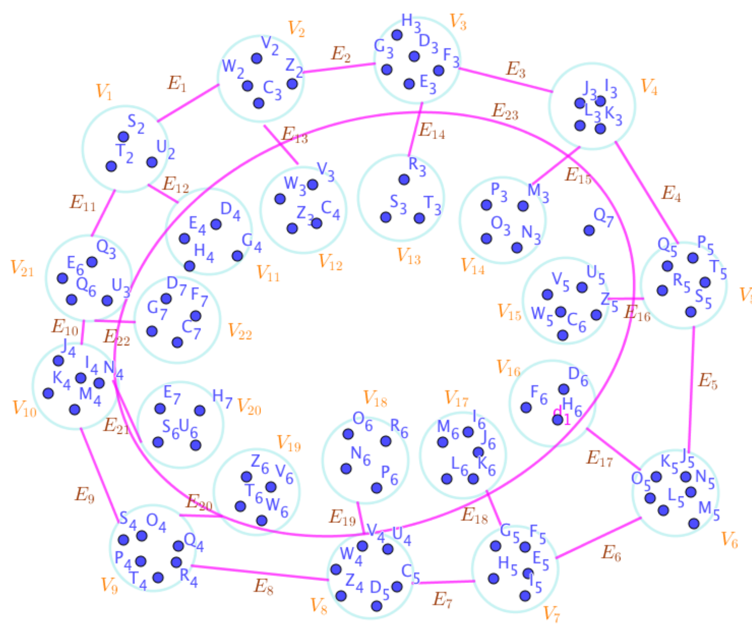

Figure 9. The SuperHyperGraphs Associated to the Notions of Failed SuperHyperStable in the Example (4.1)

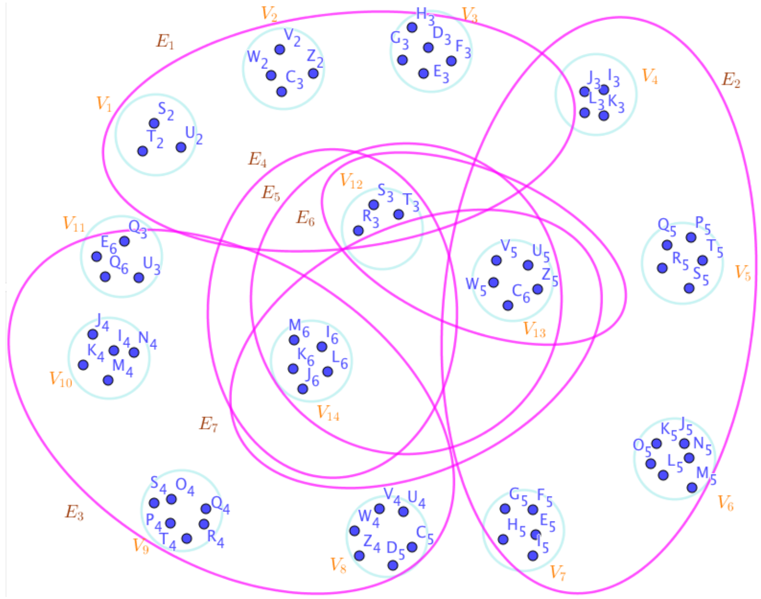

Figure 10. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

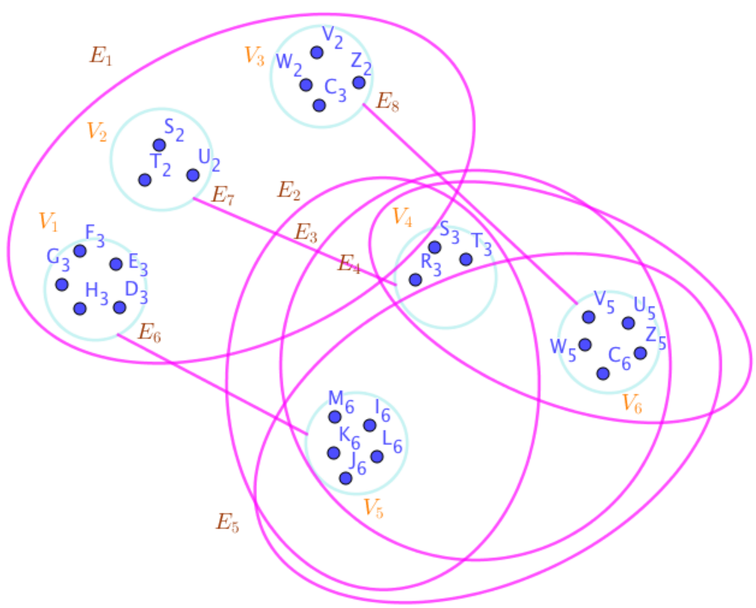

Figure 11. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

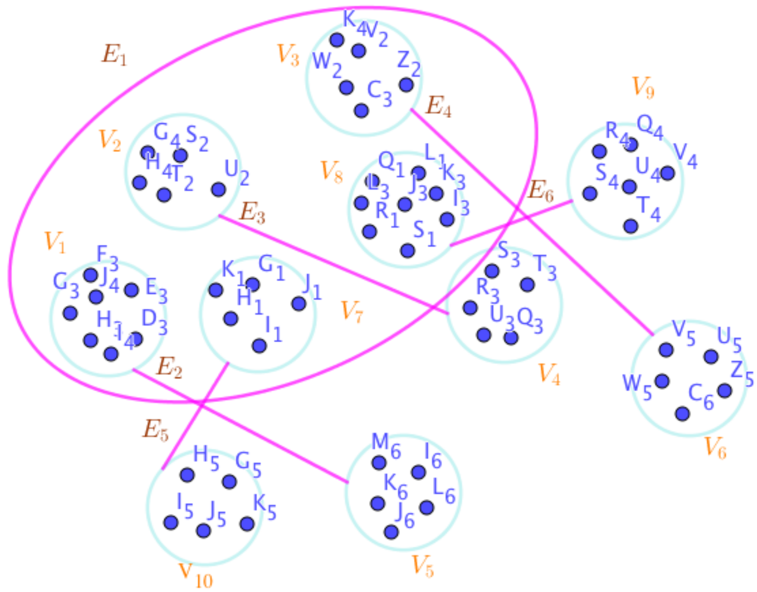

Figure 12. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

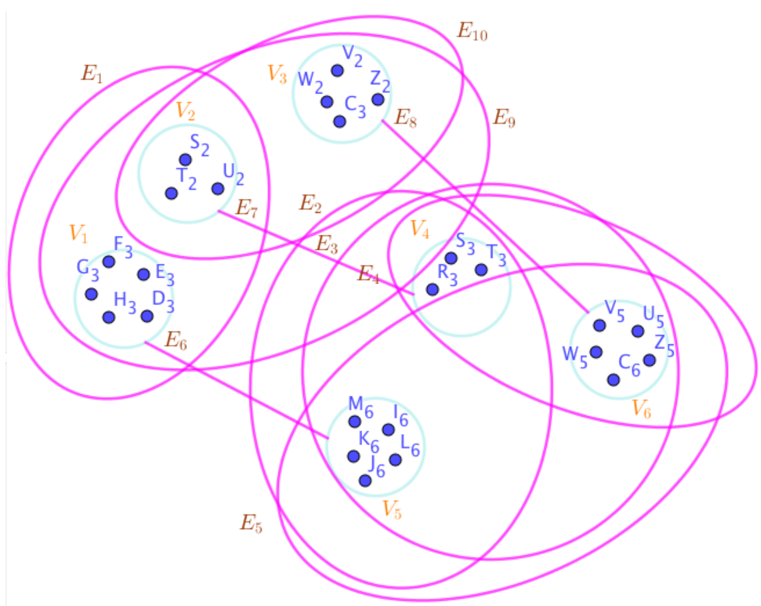

Figure 13. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

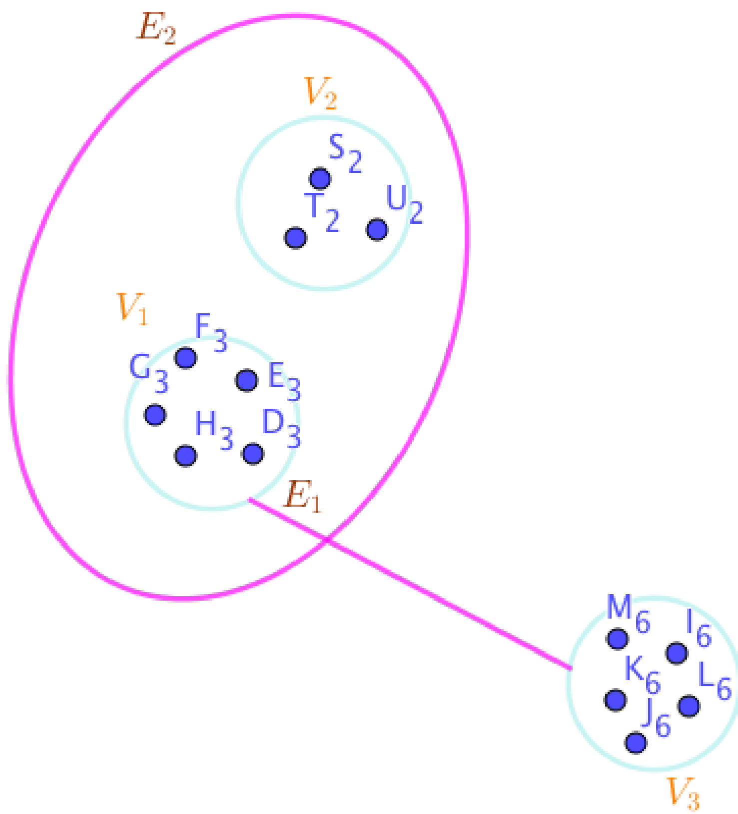

Figure 14. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

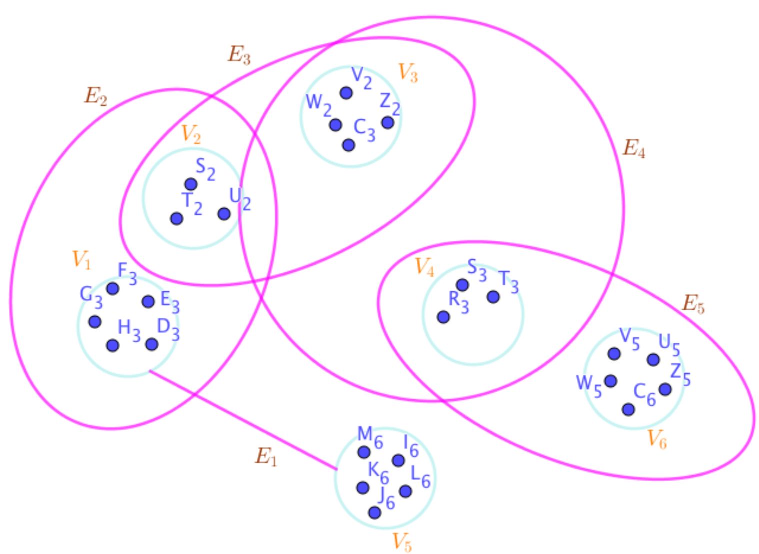

Figure 15. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

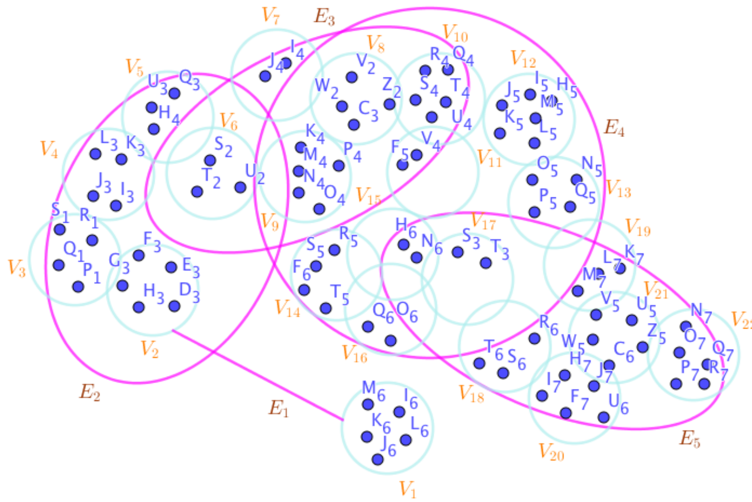

Figure 16. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

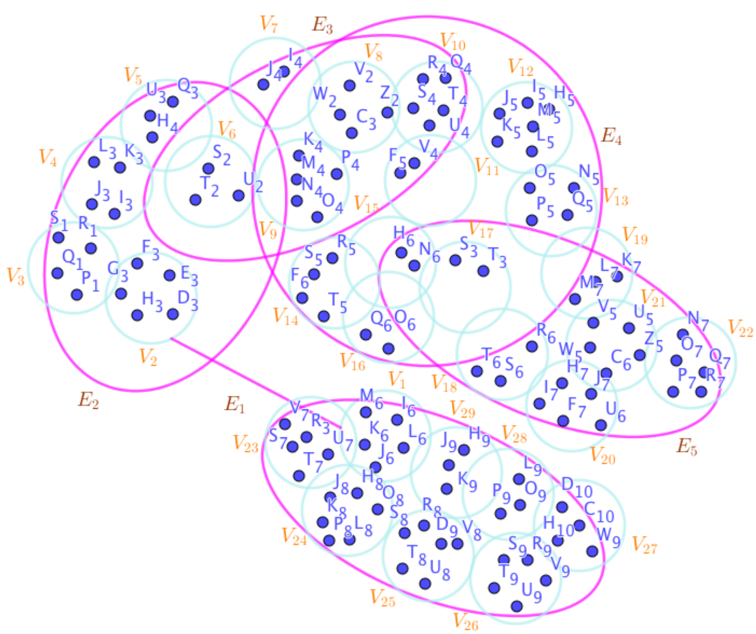

Figure 17. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

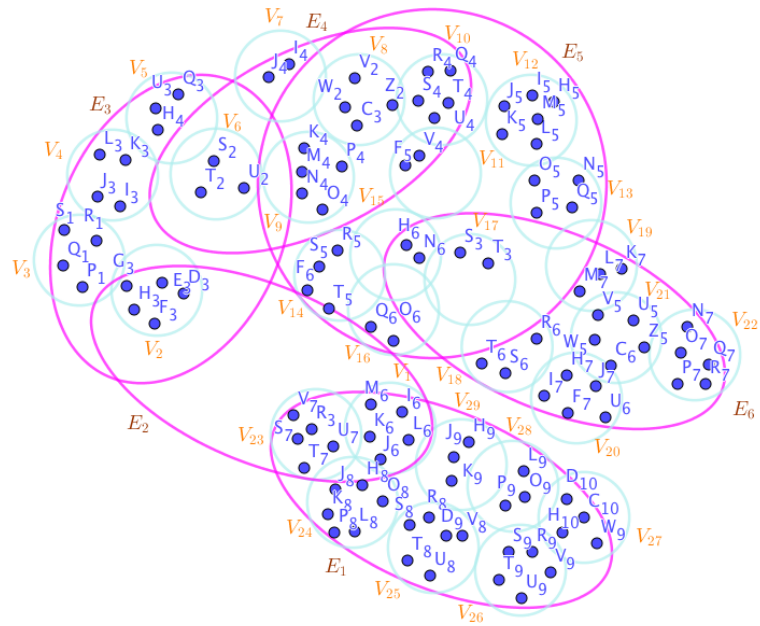

Figure 18. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

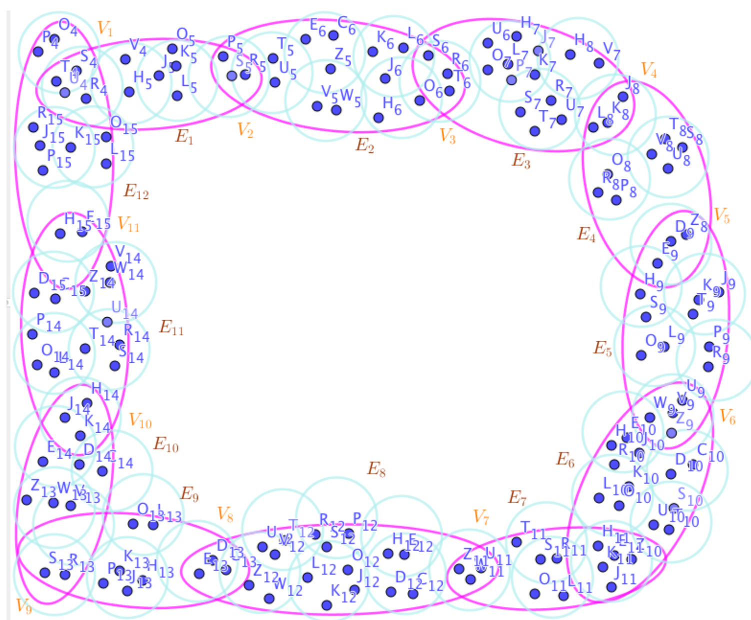

Figure 19. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

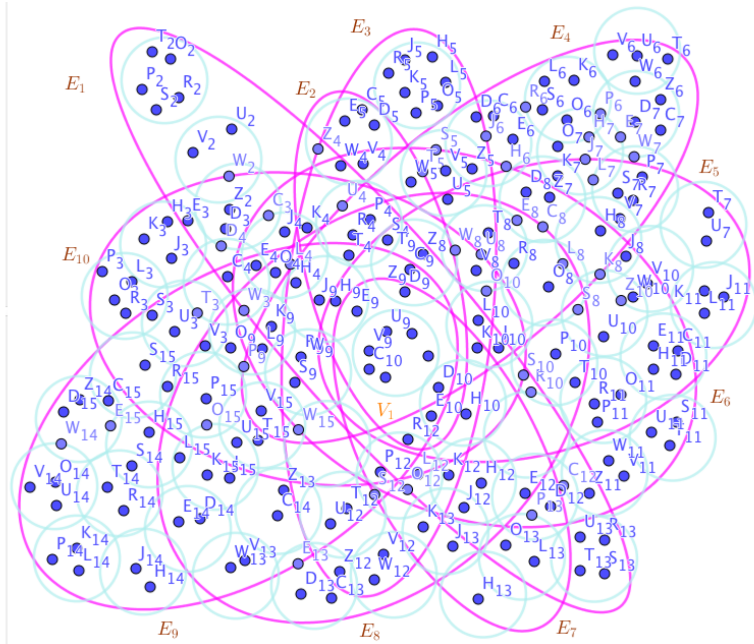

Figure 20. The SuperHyperGraphs Associated to the Notions of Failed SuperHyper-Stable in the Example (4.1)

there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. □

Proposition 4.3. *Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Then the extreme number of Failed SuperHyperStable 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 Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, the extreme number of Failed SuperHyperStable 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 Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. □

Proposition 4.4. *Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. If a SuperHyperEdge has z SuperHyperVertices, then $z - 2$ number of those interior SuperHyperVertices from that SuperHyperEdge exclude to any Failed SuperHyperStable.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Let a SuperHyperEdge has z SuperHyperVertices. Consider $z - 2$ number of those SuperHyperVertices from that SuperHyperEdge exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperEdge has z

SuperHyperVertices, then $z-2$ number of those interior SuperHyperVertices from that SuperHyperEdge exclude to any Failed SuperHyperStable. □

Proposition 4.5. *Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. There's only one SuperHyperEdge has only less than three distinct interior SuperHyperVertices inside of any given Failed SuperHyperStable. In other words, there's only an unique SuperHyperEdge has only two distinct SuperHyperVertices in a Failed SuperHyperStable.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider some numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. The SuperHyperSet of the SuperHyperVertices $V\setminus V\setminus\{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V\setminus V\setminus\{x,y,z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG:(V,E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V\setminus V\setminus\{x,z\}$. Thus the obvious Failed SuperHyperStable, $V\setminus V\setminus\{x,z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V\setminus V\setminus\{x,z\}$, **is** a SuperHyperSet, $V\setminus V\setminus\{x,z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. Since the SuperHyperSet of the SuperHyperVertices $V\setminus V\setminus\{x,z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$, there's only one SuperHyperEdge has only less than three distinct interior SuperHyperVertices inside of any given Failed SuperHyperStable. In other words, there's only an unique SuperHyperEdge has only two distinct SuperHyperVertices in a Failed SuperHyperStable. □

Proposition 4.6. *Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. The all interior SuperHyperVertices belong to any Failed SuperHyperStable if for any of them, there's no other corresponded SuperHyperVertex such that the two interior SuperHyperVertices are mutually SuperHyperNeighbors with an exception once.*

Proof. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. The SuperHyperSet of the SuperHyperVertices $V\setminus V\setminus\{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, the all interior SuperHyperVertices belong to any Failed SuperHyperStable if for any of them, there's no other corresponded SuperHyperVertex such that the two interior SuperHyperVertices are mutually SuperHyperNeighbors with an exception once. □

Proposition 4.7. *Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The any Failed SuperHyperStable only contains all interior SuperHyperVertices and all exterior SuperHyperVertices where there's any of them has no SuperHyperNeighbors in and there's no SuperHyperNeighborhoods in with an exception once but everything is possible about SuperHyperNeighborhoods and SuperHyperNeighbors out.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of

SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$, the any Failed SuperHyperStable only contains all interior SuperHyperVertices and all exterior SuperHyperVertices where there's any of them has no SuperHyperNeighbors in and there's no SuperHyperNeighborhoods in with an exception once but everything is possible about SuperHyperNeighborhoods and SuperHyperNeighbors out. □

Remark 4.8. The words " Failed SuperHyperStable" and "SuperHyperDominating" both refer to the maximum type-style. In other words, they both refer to the maximum number and the SuperHyperSet with the maximum cardinality.

Proposition 4.9. *Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. Consider a SuperHyperDominating. Then a Failed SuperHyperStable is either out with one additional member.*

Proof. Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. Consider a SuperHyperDominating. By applying the Proposition (4.7), the results are up. Thus on a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$, and in a SuperHyperDominating, a Failed SuperHyperStable is either out with one additional member. □

5 Results on Extreme SuperHyperClasses

Proposition 5.1. *Assume a connected SuperHyperPath $NSHP:(V,E)$. Then a Failed SuperHyperStable-style with the maximum SuperHyperCardinality is a SuperHyperSet of the interior SuperHyperVertices.*

Proposition 5.2. *Assume a connected SuperHyperPath $NSHP:(V,E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices from the common SuperHyperEdges excluding only two interior SuperHyperVertices from the common SuperHyperEdges. a Failed SuperHyperStable has the number of all the interior SuperHyperVertices minus their SuperHyperNeighborhoods plus one.*

Proof. Assume a connected SuperHyperPath $NSHP:(V,E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG:(V,E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x,y,z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG:(V,E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet,

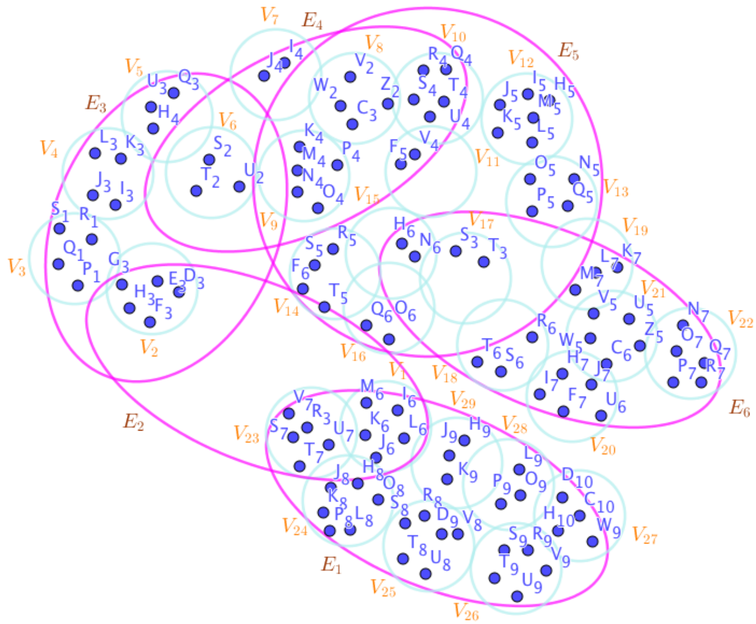

Figure 21. A SuperHyperPath Associated to the Notions of Failed SuperHyperStable in the Example (5.3)

$V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperPath $NSHP : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices from the common SuperHyperEdges excluding only two interior SuperHyperVertices from the common SuperHyperEdges. a Failed SuperHyperStable has the number of all the interior SuperHyperVertices minus their SuperHyperNeighborhoods plus one. □

Example 5.3. In the Figure (21), the connected SuperHyperPath $NSHP : (V, E)$, is highlighted and featured. The SuperHyperSet, $\{V_{27}, V_2, V_7, V_{12}, V_{22}, V_{25}\}$, of the SuperHyperVertices of the connected SuperHyperPath $NSHP : (V, E)$, in the SuperHyperModel (21), is the Failed SuperHyperStable.

Proposition 5.4. *Assume a connected SuperHyperCycle $NSHC : (V, E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices from the same SuperHyperNeighborhoods excluding one SuperHyperVertex. a Failed SuperHyperStable has the number of all the SuperHyperEdges plus one and the lower bound is the half number of all the SuperHyperEdges plus one.*

Proof. Assume a connected SuperHyperCycle $NSHC : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality.

Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperCycle $NSHC : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices from the same SuperHyperNeighborhoods excluding one SuperHyperVertex. a Failed SuperHyperStable has the number of all the SuperHyperEdges plus one and the lower bound is the half number of all the SuperHyperEdges plus one. □

Example 5.5. In the Figure (22), the connected SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected SuperHyperCycle $NSHC : (V, E)$, in the SuperHyperModel (22),

$$
\begin{aligned}
&\{\{P_{13}, J_{13}, K_{13}, H_{13}\},\\
&\{Z_{13}, W_{13}, V_{13}\}, \{U_{14}, T_{14}, R_{14}, S_{14}\},\\
&\{P_{15}, J_{15}, K_{15}, R_{15}\},\\
&\{J_5, O_5, K_5, L_5\}, \{J_5, O_5, K_5, L_5\}, V_3,\\
&\{U_6, H_7, J_7, K_7, O_7, L_7, P_7\}, \{T_8, U_8, V_8, S_8\},\\
&\{T_9, K_9, J_9\}, \{H_{10}, J_{10}, E_{10}, R_{10}, W_9\},\\
&\{S_{11}, R_{11}, O_{11}, L_{11}\},\\
&\{U_{12}, V_{12}, W_{12}, Z_{12}, O_{12}\},\\
&\{S_7, T_7, R_7, U_7\}\},
\end{aligned}
$$

is the Failed SuperHyperStable.

Proposition 5.6. *Assume a connected SuperHyperStar $NSHS : (V, E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices, excluding the SuperHyperCenter, with only all exceptions in the form of interior SuperHyperVertices from common SuperHyperEdge, excluding only one SuperHyperVertex. a Failed SuperHyperStable has the number of the cardinality of the second SuperHyperPart plus one.*

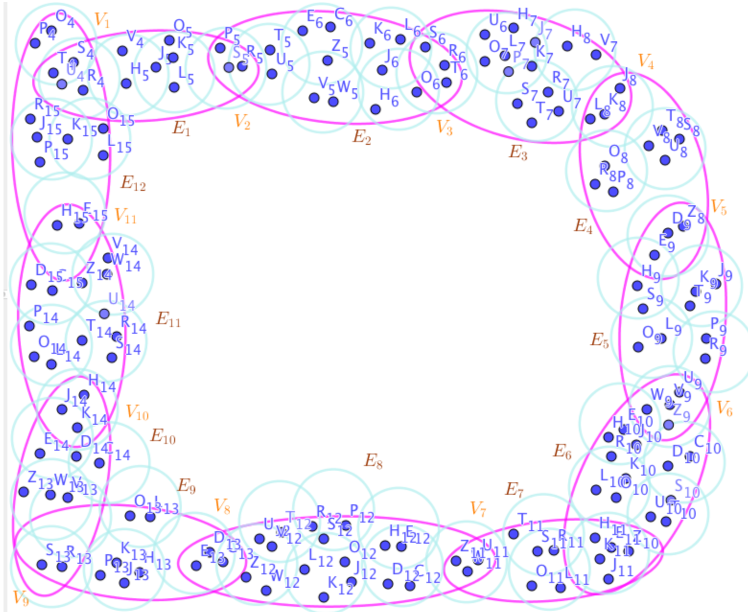

Figure 22. A SuperHyperCycle Associated to the Notions of Failed SuperHyperStable in the Example (5.5)

Proof. Assume a connected SuperHyperStar $NSHS : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperStar $NSHS : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices, excluding the SuperHyperCenter, with only all exceptions in the form of interior SuperHyperVertices from common SuperHyperEdge, excluding only one

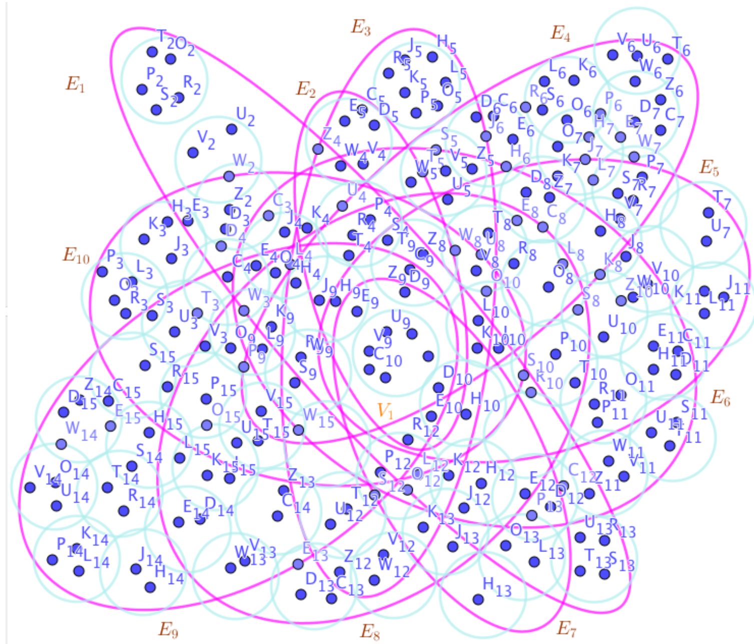

Figure 23. A SuperHyperStar Associated to the Notions of Failed SuperHyperStable in the Example (5.7)

SuperHyperVertex. a Failed SuperHyperStable has the number of the cardinality of the second SuperHyperPart plus one. □

Example 5.7. In the Figure (23), the connected SuperHyperStar $NSHS : (V, E)$, is highlighted and featured. The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected SuperHyperStar $NSHS : (V, E)$, in the SuperHyperModel (23),

$$\begin{aligned}
&\{\{V_{14}, O_{14}, U_{14}\},\\
&\{W_{14}, D_{15}, Z_{14}, C_{15}, E_{15}\},\\
&\{P_3, O_3, R_3, L_3, S_3\}, \{P_2, T_2, S_2, R_2, O_2\},\\
&\{O_6, O_7, K_7, P_6, H_7, J_7, E_7, L_7\},\\
&\{J_8, Z_{10}, W_{10}, V_{10}\}, \{W_{11}, V_{11}, Z_{11}, C_{12}\},\\
&\{U_{13}, T_{13}, R_{13}, S_{13}\}, \{H_{13}\},\\
&\{E_{13}, D_{13}, C_{13}, Z_{12}\}, \}
\end{aligned}$$

is the Failed SuperHyperStable.

Proposition 5.8. *Assume a connected SuperHyperBipartite $NSHB : (V, E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices titled SuperHyperNeighbors with only one exception. a Failed SuperHyperStable has the number of the cardinality of the first SuperHyperPart multiplies with the cardinality of the second SuperHyperPart plus one.*

Proof. Assume a connected SuperHyperBipartite $NSHB : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices.

Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperBipartite $NSHB : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only all exceptions in the form of interior SuperHyperVertices titled SuperHyperNeighbors with only one exception. a Failed SuperHyperStable has the number of the cardinality of the first SuperHyperPart multiplies with the cardinality of the second SuperHyperPart plus one. □

Example 5.9. In the Figure (24), the connected SuperHyperBipartite $NSHB : (V, E)$, is highlighted and featured. The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected SuperHyperBipartite $NSHB : (V, E)$, in the SuperHyperModel (24),

$$\{V_1, \{C_4, D_4, E_4, H_4\},$$
$$\{K_4, J_4, L_4, O_4\}, \{W_2, Z_2, C_3\}, \{C_{13}, Z_{12}, V_{12}, W_{12}\},$$

is the Failed SuperHyperStable.

Proposition 5.10. *Assume a connected SuperHyperMultipartite $NSHM : (V, E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only one exception in the form of interior SuperHyperVertices from a SuperHyperPart and only one exception in the form of interior SuperHyperVertices from another SuperHyperPart titled "SuperHyperNeighbors" with neglecting and ignoring one of them. a Failed SuperHyperStable has the number of all the summation on the cardinality of the all SuperHyperParts form distinct SuperHyperEdges plus one.*

Proof. Assume a connected SuperHyperMultipartite $NSHM : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a

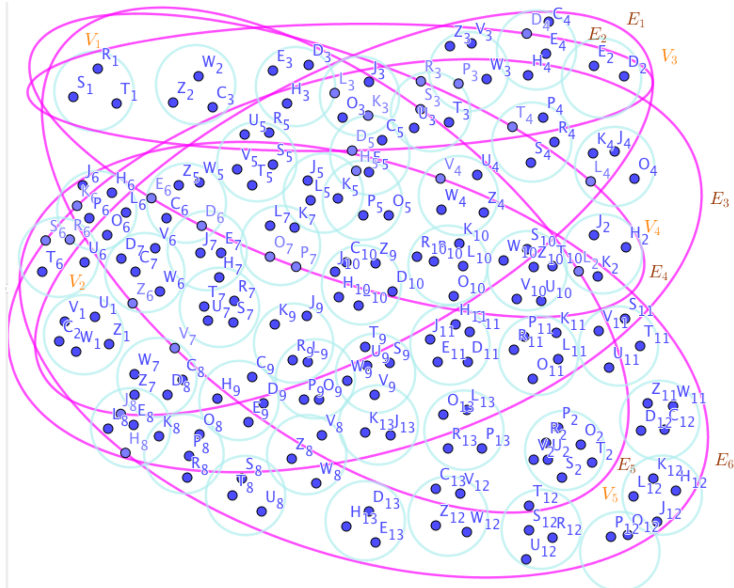

Figure 24. A SuperHyperBipartite Associated to the Notions of Failed SuperHyperStable in the Example (5.9)

SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".]. There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperMultipartite $NSHM : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices with only one exception in the form of interior SuperHyperVertices from a SuperHyperPart and only one exception in the form of interior SuperHyperVertices from another SuperHyperPart titled "SuperHyperNeighbors" with neglecting and ignoring one of them. a Failed SuperHyperStable has the number of all the summation on the cardinality of the all SuperHyperParts form distinct SuperHyperEdges plus one. □

Example 5.11. In the Figure (25), the connected SuperHyperMultipartite $NSHM : (V, E)$, is highlighted and featured. The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected

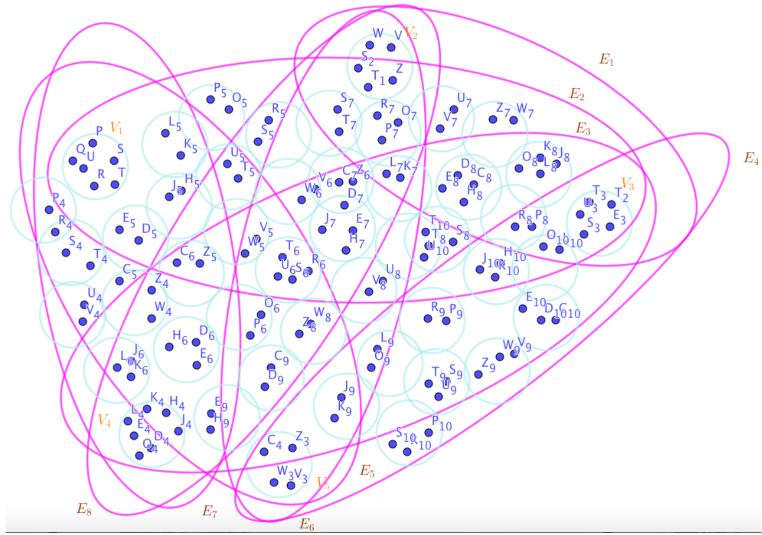

Figure 25. A SuperHyperMultipartite Associated to the Notions of Failed SuperHyperStable in the Example (5.11)

SuperHyperMultipartite $NSHM : (V, E)$,

$$\{\{\{L_4, E_4, O_4, D_4, J_4, K_4, H_4\},$$
$$\{S_{10}, R_{10}, P_{10}\},$$
$$\{Z_7, W_7\}, \{U_7, V_7\}\},$$

in the SuperHyperModel (25), is the Failed SuperHyperStable.

Proposition 5.12. *Assume a connected SuperHyperWheel $NSHW : (V, E)$. Then a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices, excluding the SuperHyperCenter, with only one exception in the form of interior SuperHyperVertices from same SuperHyperEdge with the exclusion once. a Failed SuperHyperStable has the number of all the number of all the SuperHyperEdges have no common SuperHyperNeighbors for a SuperHyperVertex with the exclusion once.*

Proof. Assume a connected SuperHyperWheel $NSHW : (V, E)$. Let a SuperHyperEdge has some SuperHyperVertices. Consider all numbers of those SuperHyperVertices from that SuperHyperEdge excluding more than two distinct SuperHyperVertices, exclude to any given SuperHyperSet of the SuperHyperVertices. Consider there's a Failed SuperHyperStable with the least cardinality, the lower sharp bound for cardinality. Assume a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ is a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common but it isn't a Failed SuperHyperStable. Since it doesn't have **the maximum cardinality** of a SuperHyperSet S of SuperHyperVertices such that there's a SuperHyperVertex to have a SuperHyperEdge in common. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, y, z\}$ is the maximum cardinality of a SuperHyperSet S of SuperHyperVertices but it isn't a Failed SuperHyperStable. Since it **doesn't do** the procedure such that such that there's a SuperHyperVertex to have a SuperHyperEdge in common. [there'er at least three SuperHyperVertices inside implying there's, sometimes in the connected neutrosophic SuperHyperGraph $NSHG : (V, E)$, a SuperHyperVertex, titled its SuperHyperNeighbor, to that SuperHyperVertex in the SuperHyperSet S so as S doesn't do "the procedure".].

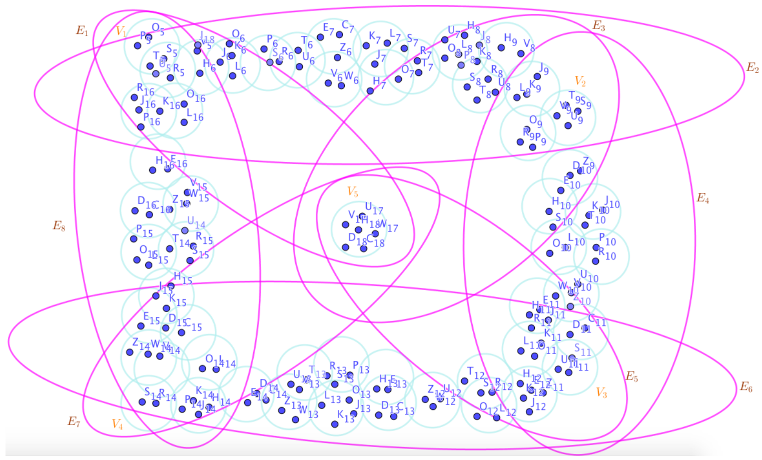

Figure 26. A SuperHyperWheel Associated to the Notions of Failed SuperHyperStable in the Example (5.13)

There're only **two** SuperHyperVertices **inside** the intended SuperHyperSet, $V \setminus V \setminus \{x, z\}$. Thus the obvious Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, is up. The obvious simple type-SuperHyperSet of the Failed SuperHyperStable, $V \setminus V \setminus \{x, z\}$, **is** a SuperHyperSet, $V \setminus V \setminus \{x, z\}$, **includes** only **two** SuperHyperVertices doesn't form any kind of pairs are titled SuperHyperNeighbors in a connected neutrosophic SuperHyperGraph $NSHG : (V, E)$. Since the SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{x, z\}$, is the **maximum cardinality** of a SuperHyperSet S of SuperHyperVertices **such that** $V(G)$ there's a SuperHyperVertex to have a SuperHyperEdge in common. Thus, in a connected SuperHyperWheel $NSHW : (V, E)$, a Failed SuperHyperStable is a SuperHyperSet of the interior SuperHyperVertices, excluding the SuperHyperCenter, with only one exception in the form of interior SuperHyperVertices from same SuperHyperEdge with the exclusion once. a Failed SuperHyperStable has the number of all the number of all the SuperHyperEdges have no common SuperHyperNeighbors for a SuperHyperVertex with the exclusion once. □

Example 5.13. In the Figure (26), the connected SuperHyperWheel $NSHW : (V, E)$, is highlighted and featured. The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected SuperHyperWheel $NSHW : (V, E)$,

$$\begin{aligned}
&\{V_5,\\
&\{Z_{13}, W_{13}, U_{13}, V_{13}, O_{14}\},\\
&\{T_{10}, K_{10}, J_{10}\},\\
&\{E_7, C_7, Z_6\}, \{K_7, J_7, L_7\},\\
&\{T_{14}, U_{14}, R_{15}, S_{15}\}\},
\end{aligned}$$

in the SuperHyperModel (26), is the Failed SuperHyperStable.

6 General Extreme Results

For the Failed SuperHyperStable, and the neutrosophic Failed SuperHyperStable, some general results are introduced.

Remark 6.1. Let remind that the neutrosophic Failed SuperHyperStable is "redefined" on the positions of the alphabets.

Corollary 6.2. *Assume Failed SuperHyperStable. Then*

$$\begin{aligned}&Neutrosophic\ FailedSuperHyperStable=\\&\{theFailedSuperHyperStableoftheSuperHyperVertices\mid\\&\max|SuperHyperDefensiveSuperHyper\\&Stable|_{neutrosophiccardinalityamidthoseFailedSuperHyperStable.}\}\end{aligned}$$

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 6.3. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then the notion of neutrosophic Failed SuperHyperStable and Failed SuperHyperStable coincide.*

Corollary 6.4. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a neutrosophic Failed SuperHyperStable if and only if it's a Failed SuperHyperStable.*

Corollary 6.5. *Assume a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a strongest SuperHyperCycle if and only if it's a longest SuperHyperCycle.*

Corollary 6.6. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then its neutrosophic Failed SuperHyperStable is its Failed SuperHyperStable and reversely.*

Corollary 6.7. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel) on the same identical letter of the alphabet. Then its neutrosophic Failed SuperHyperStable is its Failed SuperHyperStable and reversely.*

Corollary 6.8. *Assume a neutrosophic SuperHyperGraph. Then its neutrosophic Failed SuperHyperStable isn't well-defined if and only if its Failed SuperHyperStable isn't well-defined.*

Corollary 6.9. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph. Then its neutrosophic Failed SuperHyperStable isn't well-defined if and only if its Failed SuperHyperStable isn't well-defined.*

Corollary 6.10. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its neutrosophic Failed SuperHyperStable isn't well-defined if and only if its Failed SuperHyperStable isn't well-defined.*

Corollary 6.11. *Assume a neutrosophic SuperHyperGraph. Then its neutrosophic Failed SuperHyperStable is well-defined if and only if its Failed SuperHyperStable is well-defined.*

Corollary 6.12. *Assume SuperHyperClasses of a neutrosophic SuperHyperGraph. Then its neutrosophic Failed SuperHyperStable is well-defined if and only if its Failed SuperHyperStable is well-defined.*

Corollary 6.13. *Assume a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its neutrosophic Failed SuperHyperStable is well-defined if and only if its Failed SuperHyperStable is well-defined.*

Proposition 6.14. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph. Then V is*

(i) : *the dual SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *the strong dual SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *the connected dual SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *the δ-dual SuperHyperDefensive Failed SuperHyperStable;*

(v) : *the strong δ-dual SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *the connected δ-dual SuperHyperDefensive Failed SuperHyperStable.*

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph. Consider V. All SuperHyperMembers of V have at least one SuperHyperNeighbor inside the SuperHyperSet more than SuperHyperNeighbor out of SuperHyperSet. Thus,

(i). V is the dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in V,\ |N(a) \cap V| > |N(a) \cap (V \setminus V)| \equiv \\
&\forall a \in V,\ |N(a) \cap V| > |N(a) \cap \emptyset| \equiv \\
&\forall a \in V,\ |N(a) \cap V| > |\emptyset| \equiv \\
&\forall a \in V,\ |N(a) \cap V| > 0 \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(ii). V is the strong dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_s(a) \cap S| > |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in V,\ |N_s(a) \cap V| > |N_s(a) \cap (V \setminus V)| \equiv \\
&\forall a \in V,\ |N_s(a) \cap V| > |N_s(a) \cap \emptyset| \equiv \\
&\forall a \in V,\ |N_s(a) \cap V| > |\emptyset| \equiv \\
&\forall a \in V,\ |N_s(a) \cap V| > 0 \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iii). V is the connected dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_c(a) \cap S| > |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in V,\ |N_c(a) \cap V| > |N_c(a) \cap (V \setminus V)| \equiv \\
&\forall a \in V,\ |N_c(a) \cap V| > |N_c(a) \cap \emptyset| \equiv \\
&\forall a \in V,\ |N_c(a) \cap V| > |\emptyset| \equiv \\
&\forall a \in V,\ |N_c(a) \cap V| > 0 \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iv). V is the δ-dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (N(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (N(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V)| > \delta.
\end{aligned}$$

(v). V is the strong δ-dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (N_s(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (N_s(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V)| > \delta.
\end{aligned}$$

(vi). V is connected δ-dual Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (N_c(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (N_c(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V)| > \delta.
\end{aligned}$$

□

Proposition 6.15. *Let $NTG : (V, E, \sigma, \mu)$ be a neutrosophic SuperHyperGraph. Then $\emptyset$ is*

(i) : *the SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *the strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *the connected defensive SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *the δ-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *the strong δ-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *the connected δ-SuperHyperDefensive Failed SuperHyperStable.*

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph. Consider $\emptyset$. All SuperHyperMembers of $\emptyset$ have no SuperHyperNeighbor inside the SuperHyperSet less than SuperHyperNeighbor out of SuperHyperSet. Thus,

(i). $\emptyset$ is the SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in \emptyset,\ |N(a) \cap \emptyset| < |N(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < |N(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ 0 < |N(a) \cap V| \equiv \\
&\forall a \in \emptyset,\ 0 < |N(a) \cap V| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(ii). $\emptyset$ is the strong SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_s(a) \cap S| < |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in \emptyset,\ |N_s(a) \cap \emptyset| < |N_s(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < |N_s(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_s(a) \cap V| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_s(a) \cap V| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iii). $\emptyset$ is the connected SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_c(a) \cap S| < |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in \emptyset,\ |N_c(a) \cap \emptyset| < |N_c(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < |N_c(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_c(a) \cap V| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_c(a) \cap V| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iv). $\emptyset$ is the δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N(a) \cap \emptyset) - (N(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N(a) \cap \emptyset) - (N(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

(v). $\emptyset$ is the strong δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_s(a) \cap \emptyset) - (N_s(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_s(a) \cap \emptyset) - (N_s(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

(vi). $\emptyset$ is the connected δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_c(a) \cap \emptyset) - (N_c(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_c(a) \cap \emptyset) - (N_c(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

□

Proposition 6.16. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph. Then an independent SuperHyperSet is*

(i) : *the SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *the strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *the connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *the δ-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *the strong δ-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *the connected δ-SuperHyperDefensive Failed SuperHyperStable.*

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph. Consider S. All SuperHyperMembers of S have no SuperHyperNeighbor inside the SuperHyperSet less than SuperHyperNeighbor out of SuperHyperSet. Thus,

(i). An independent SuperHyperSet is the SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |\emptyset| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ 0 < |N(a) \cap V| \equiv \\
&\forall a \in S,\ 0 < |N(a)| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(ii). An independent SuperHyperSet is the strong SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_s(a) \cap S| < |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N_s(a) \cap S| < |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |\emptyset| < |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ 0 < |N_s(a) \cap V| \equiv \\
&\forall a \in S,\ 0 < |N_s(a)| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iii). An independent SuperHyperSet is the connected SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_c(a) \cap S| < |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N_c(a) \cap S| < |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |\emptyset| < |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ 0 < |N_c(a) \cap V| \equiv \\
&\forall a \in S,\ 0 < |N_c(a)| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

(iv). An independent SuperHyperSet is the δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V))| < \delta \equiv \\
&\forall a \in S,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

(v). An independent SuperHyperSet is the strong δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V))| < \delta \equiv \\
&\forall a \in S,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

(vi). An independent SuperHyperSet is the connected δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V))| < \delta \equiv \\
&\forall a \in S,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

□

Proposition 6.17. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then V is a maximal*

(i) : SuperHyperDefensive Failed SuperHyperStable;

(ii) : strong SuperHyperDefensive Failed SuperHyperStable;

(iii) : connected SuperHyperDefensive Failed SuperHyperStable;

(iv) : $\mathcal{O}(NSHG)$-SuperHyperDefensive Failed SuperHyperStable;

(v) : strong $\mathcal{O}(NSHG)$-SuperHyperDefensive Failed SuperHyperStable;

(vi) : connected $\mathcal{O}(NSHG)$-SuperHyperDefensive Failed SuperHyperStable;

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph which is a SuperHyperUniform SuperHyperCycle/SuperHyperPath.

(i). Consider one segment is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $2t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperCycle, $|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 2t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap (V \setminus (V \setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |\{z_1, z_2, \ldots, z_{t-1}\}| < \\
&|\{x_1, x_2, \ldots, x_{t-1}\})| \equiv \\
&\exists y \in S,\ t - 1 < t - 1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ isn't SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperCycle.

Consider one segment, with two segments related to the SuperHyperLeaves as exceptions, is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $2t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperPath, $|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 2t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap (V \setminus (V \setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |\{z_1, z_2, \ldots, z_{t-1}\}| < \\
&|\{x_1, x_2, \ldots, x_{t-1}\})| \equiv \\
&\exists y \in S,\ t-1 < t-1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ isn't SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperPath.

(ii), (iii) are obvious by (i).

(iv). By (i), $|V|$ is maximal and it's a SuperHyperDefensive Failed SuperHyperStable. Thus it's $|V|$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.18. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph which is a SuperHyperUniform SuperHyperWheel. Then V is a maximal*

(i) : *dual SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong dual SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected dual SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *$\mathcal{O}(NSHG)$-dual SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong $\mathcal{O}(NSHG)$-dual SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected $\mathcal{O}(NSHG)$-dual SuperHyperDefensive Failed SuperHyperStable;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel.

(i). Consider one segment is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $3t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperWheel,

$|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 3t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a)\cap S| < |N(a)\cap (V\setminus S)| \equiv\\
&\forall a \in S,\ |N(a)\cap S| < |N(a)\cap (V\setminus S)| \equiv\\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V\setminus \{x_i\}_{i=1}^{t},\\
&\ |N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}))\cap S| <\\
&|N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}))\cap (V\setminus (V\setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv\\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V\setminus \{x_i\}_{i=1}^{t},\\
&\ |N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}))\cap S| <\\
&|N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}))\cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv\\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V\setminus \{x_i\}_{i=1}^{t},\\
&\ |\{z_1, z_2, \ldots, z_{t-1}, z'_1, z'_2, \ldots, z'_t\}| < |\{x_1, x_2, \ldots, x_{t-1}\})| \equiv\\
&\exists y \in S,\ 2t-1 < t-1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ is SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperWheel.

(ii), (iii) are obvious by (i).

(iv). By (i), $|V|$ is maximal and it is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's a dual $|V|$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.19. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperCycle/SuperHyperPath. Then the number of*

(i) : *the Failed SuperHyperStable;*

(ii) : *the Failed SuperHyperStable;*

(iii) : *the connected Failed SuperHyperStable;*

(iv) : *the $\mathcal{O}(NSHG)$-Failed SuperHyperStable;*

(v) : *the strong $\mathcal{O}(NSHG)$-Failed SuperHyperStable;*

(vi) : *the connected $\mathcal{O}(NSHG)$-Failed SuperHyperStable.*

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

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph which is a SuperHyperUniform SuperHyperCycle/SuperHyperPath.

(i). Consider one segment is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $2t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperCycle,

$|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 2t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap (V \setminus (V \setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |\{z_1, z_2, \ldots, z_{t-1}\}| < |\{x_1, x_2, \ldots, x_{t-1}\})| \equiv \\
&\exists y \in S,\ t-1 < t-1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ isn't SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperCycle.

Consider one segment, with two segments related to the SuperHyperLeaves as exceptions, is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $2t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperPath, $|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 2t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap (V \setminus (V \setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |N(y_{i_{i=1,2,\ldots,t}}) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}) \cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}} \in V \setminus \{x_i\}_{i=1}^{t},\ |\{z_1, z_2, \ldots, z_{t-1}\}| < \\
&|\{x_1, x_2, \ldots, x_{t-1}\})| \equiv \\
&\exists y \in S,\ t-1 < t-1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ isn't SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperPath.

(ii), (iii) are obvious by (i).

(iv). By (i), $|V|$ is maximal and it's a SuperHyperDefensive Failed SuperHyperStable. Thus it's $|V|$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.20. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel. Then the number of*

(i) : *the dual Failed SuperHyperStable;*

(ii) : *the dual Failed SuperHyperStable;*

(iii) : *the dual connected Failed SuperHyperStable;*

(iv) : *the dual $\mathcal{O}(NSHG)$-Failed SuperHyperStable;*

(v) : *the strong dual $\mathcal{O}(NSHG)$-Failed SuperHyperStable;*

(vi) : *the connected dual $\mathcal{O}(NSHG)$-Failed SuperHyperStable.*

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

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel.

(i). Consider one segment is out of S which is SuperHyperDefensive Failed SuperHyperStable. This segment has $3t$ SuperHyperNeighbors in S, i.e, Suppose $x_{i_{i=1,2,\ldots,t}} \in V \setminus S$ such that $y_{i_{i=1,2,\ldots,t}}, z_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})$. By it's the exterior SuperHyperVertices and the interior SuperHyperVertices coincide and it's SuperHyperUniform SuperHyperWheel, $|N(x_{i_{i=1,2,\ldots,t}})| = |N(y_{i_{i=1,2,\ldots,t}})| = |N(z_{i_{i=1,2,\ldots,t}})| = 3t$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V \setminus \{x_i\}_{i=1}^{t}, \\
&\ |N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})) \cap (V \setminus (V \setminus \{x_{i_{i=1,2,\ldots,t}}\}))| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V \setminus \{x_i\}_{i=1}^{t} \\
&,\ |N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})) \cap S| < \\
&|N(y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}})) \cap \{x_{i_{i=1,2,\ldots,t}}\})| \equiv \\
&\exists y_{i_{i=1,2,\ldots,t}}, s_{i_{i=1,2,\ldots,t}} \in N(x_{i_{i=1,2,\ldots,t}}) \in V \setminus \{x_i\}_{i=1}^{t}, \\
&\ |\{z_1, z_2, \ldots, z_{t-1}, z'_1, z'_2, \ldots, z'_t\}| < |\{x_1, x_2, \ldots, x_{t-1}\})| \equiv \\
&\exists y \in S,\ 2t - 1 < t - 1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x_{i_{i=1,2,\ldots,t}}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperUniform SuperHyperWheel.

$(ii), (iii)$ are obvious by (i).

(iv). By (i), $|V|$ is maximal and it's a dual SuperHyperDefensive Failed SuperHyperStable. Thus it isn't an $|V|$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.21. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices is a*

(i) : *dual SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong dual SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected dual SuperHyperDefensive Failed SuperHyperStable;*

(iv) : $\frac{\mathcal{O}(NSHG)}{2} + 1$-*dual SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong* $\frac{\mathcal{O}(NSHG)}{2} + 1$-*dual SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected* $\frac{\mathcal{O}(NSHG)}{2} + 1$-*dual SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has either $\frac{n}{2}$ or one SuperHyperNeighbors in S. If the SuperHyperVertex is non-SuperHyperCenter, then

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ 1 > 0.
\end{aligned}$$

If the SuperHyperVertex is SuperHyperCenter, then

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has at most $\frac{n}{2}$ SuperHyperNeighbors in S.

$$\forall a \in S,\ \frac{n}{2} > |N(a) \cap S| > \frac{n}{2} - 1 > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperBipartite which isn't a SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable and they're chosen from different SuperHyperParts, equally or almost equally as possible. A SuperHyperVertex has at most $\frac{n}{2}$ SuperHyperNeighbors in S.

$$\forall a \in S,\ \frac{n}{2} > |N(a) \cap S| > \frac{n}{2} - 1 > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperMultipartite which is neither a SuperHyperStar nor SuperHyperComplete SuperHyperBipartite.

(ii), (iii) are obvious by (i).

(iv). By (i), $\{x_i\}_{i=1}^{\frac{\mathcal{O}(NSHG)}{2}+1}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's $\frac{\mathcal{O}(NSHG)}{2} + 1$-dual SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.22. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart is a*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *δ-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong δ-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected δ-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Consider the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has either $n-1, 1$ or zero SuperHyperNeighbors in S. If the SuperHyperVertex is in S, then

$$\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 0 < 1.$$

Thus it's proved. It implies every S is a SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperStar.

Consider the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has no SuperHyperNeighbor in S.

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 0 < \delta.$$

Thus it's proved. It implies every S is a SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperBipartite which isn't a SuperHyperStar.

Consider the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has no SuperHyperNeighbor in S.

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 0 < \delta.$$

Thus it's proved. It implies every S is a SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperMultipartite which is neither a SuperHyperStar nor SuperHyperComplete SuperHyperBipartite.

(ii), (iii) are obvious by (i).

(iv). By (i), S is a SuperHyperDefensive Failed SuperHyperStable. Thus it's an δ-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.23. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then Then the number of*

(i) : *dual SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong dual SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected dual SuperHyperDefensive Failed SuperHyperStable;*

(iv) : $\frac{\mathcal{O}(NSHG)}{2} + 1$*-dual SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong* $\frac{\mathcal{O}(NSHG)}{2} + 1$*-dual SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected* $\frac{\mathcal{O}(NSHG)}{2} + 1$*-dual SuperHyperDefensive Failed SuperHyperStable.*

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.

Proof. (i). Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has either $\frac{n}{2}$ or one SuperHyperNeighbors in S. If the SuperHyperVertex is non-SuperHyperCenter, then

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 1 > 0.$$

If the SuperHyperVertex is SuperHyperCenter, then

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has at most $\frac{n}{2}$ SuperHyperNeighbors in S.

$$\forall a \in S,\ \frac{n}{2} > |N(a) \cap S| > \frac{n}{2} - 1 > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperBipartite which isn't a SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable and they're chosen from different SuperHyperParts, equally or almost equally as possible. A SuperHyperVertex has at most $\frac{n}{2}$ SuperHyperNeighbors in S.

$$\forall a \in S,\ \frac{n}{2} > |N(a) \cap S| > \frac{n}{2} - 1 > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperMultipartite which is neither a SuperHyperStar nor SuperHyperComplete SuperHyperBipartite.

(ii), (iii) are obvious by (i).

(iv). By (i), $\{x_i\}_{i=1}^{\frac{\mathcal{O}(NSHG)}{2}+1}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's $\frac{\mathcal{O}(NSHG)}{2} + 1$-dual SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.24. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph. The number of connected component is $|V - S|$ if there's a SuperHyperSet which is a dual*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *Failed SuperHyperStable;*

(v) : *strong 1-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected 1-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Consider some SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. These SuperHyperVertex-type have some SuperHyperNeighbors in S but no SuperHyperNeighbor out of S. Thus

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 1 > 0.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable and number of connected component is $|V - S|$.

$(ii), (iii)$ are obvious by (i).

(iv). By (i), S is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's a dual 1-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv). □

Proposition 6.25. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph. Then the number is at most $\mathcal{O}(NSHG)$ and the neutrosophic number is at most $\mathcal{O}_n(NSHG)$.*

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph. Consider V. All SuperHyperMembers of V have at least one SuperHyperNeighbor inside the SuperHyperSet more than SuperHyperNeighbor out of SuperHyperSet. Thus,

V is a dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in V,\ |N(a) \cap V| > |N(a) \cap (V \setminus V)| \equiv$$
$$\forall a \in V,\ |N(a) \cap V| > |N(a) \cap \emptyset| \equiv$$
$$\forall a \in V,\ |N(a) \cap V| > |\emptyset| \equiv$$
$$\forall a \in V,\ |N(a) \cap V| > 0 \equiv$$
$$\forall a \in V,\ \delta > 0.$$

V is a dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\forall a \in S,\ |N_s(a) \cap S| > |N_s(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in V,\ |N_s(a) \cap V| > |N_s(a) \cap (V \setminus V)| \equiv$$
$$\forall a \in V,\ |N_s(a) \cap V| > |N_s(a) \cap \emptyset| \equiv$$
$$\forall a \in V,\ |N_s(a) \cap V| > |\emptyset| \equiv$$
$$\forall a \in V,\ |N_s(a) \cap V| > 0 \equiv$$
$$\forall a \in V,\ \delta > 0.$$

V is connected a dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\forall a \in S,\ |N_c(a) \cap S| > |N_c(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in V,\ |N_c(a) \cap V| > |N_c(a) \cap (V \setminus V)| \equiv$$
$$\forall a \in V,\ |N_c(a) \cap V| > |N_c(a) \cap \emptyset| \equiv$$
$$\forall a \in V,\ |N_c(a) \cap V| > |\emptyset| \equiv$$
$$\forall a \in V,\ |N_c(a) \cap V| > 0 \equiv$$
$$\forall a \in V,\ \delta > 0.$$

V is a dual δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (N(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (N(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N(a) \cap V)| > \delta.
\end{aligned}$$

V is a dual strong δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (N_s(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (N_s(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N_s(a) \cap V)| > \delta.
\end{aligned}$$

V is a dual connected δ-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (N_c(a) \cap (V \setminus V))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (N_c(a) \cap (\emptyset))| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V) - (\emptyset)| > \delta \equiv \\
&\forall a \in V,\ |(N_c(a) \cap V)| > \delta.
\end{aligned}$$

Thus V is a dual SuperHyperDefensive Failed SuperHyperStable and V is the biggest SuperHyperSet in $NSHG : (V, E)$. Then the number is at most $\mathcal{O}(NSHG : (V, E))$ and the neutrosophic number is at most $\mathcal{O}_n(NSHG : (V, E))$. □

Proposition 6.26. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperComplete. The number is $\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1$ and the neutrosophic number is* $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(NSHG:(V,E))}{2}} \subseteq V} \sigma(v)$, *in the setting of dual*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : $(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$*-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong* $(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$*-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected* $(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$*-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.
\end{aligned}$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual SuperHyperDefensive Failed SuperHyperStable.

(ii). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\forall a\in S,\ |N(a)\cap S|>|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in S,\ \frac{n}{2}>\frac{n}{2}-1.$$

Thus it's proved. It implies every S is a dual strong SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual strong SuperHyperDefensive Failed SuperHyperStable.

(iii). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\forall a\in S,\ |N(a)\cap S|>|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in S,\ \frac{n}{2}>\frac{n}{2}-1.$$

Thus it's proved. It implies every S is a dual connected SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual connected SuperHyperDefensive Failed SuperHyperStable.

(iv). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\forall a\in S,\ |N(a)\cap S|>|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in S,\ \frac{n}{2}>\frac{n}{2}-1.$$

Thus it's proved. It implies every S is a dual $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable.

(v). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\forall a\in S,\ |N(a)\cap S|>|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in S,\ \frac{n}{2}>\frac{n}{2}-1.$$

Thus it's proved. It implies every S is a dual strong $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable in a given

SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual strong $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable.

(vi). Consider n half -1 SuperHyperVertices are out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has n half SuperHyperNeighbors in S.

$$\forall a\in S,\ |N(a)\cap S|>|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in S,\ \frac{n}{2}>\frac{n}{2}-1.$$

Thus it's proved. It implies every S is a dual connected $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperComplete SuperHyperGraph. Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2}+1$ and the neutrosophic number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(NSHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of a dual connected $(\frac{\mathcal{O}(NSHG:(V,E))}{2}+1)$-SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.27. *Let $NSHG:(V,E)$ be a neutrosophic SuperHyperGraph which is $\emptyset$. The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of dual*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : 0-*SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong* 0-*SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected* 0-*SuperHyperDefensive Failed SuperHyperStable.*

Proof. Suppose $NSHG:(V,E)$ is a neutrosophic SuperHyperGraph. Consider $\emptyset$. All SuperHyperMembers of $\emptyset$ have no SuperHyperNeighbor inside the SuperHyperSet less than SuperHyperNeighbor out of SuperHyperSet. Thus,

(i). $\emptyset$ is a dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\forall a\in S,\ |N(a)\cap S|<|N(a)\cap(V\setminus S)|\equiv$$
$$\forall a\in\emptyset,\ |N(a)\cap\emptyset|<|N(a)\cap(V\setminus\emptyset)|\equiv$$
$$\forall a\in\emptyset,\ |\emptyset|<|N(a)\cap(V\setminus\emptyset)|\equiv$$
$$\forall a\in\emptyset,\ 0<|N(a)\cap V|\equiv$$
$$\forall a\in\emptyset,\ 0<|N(a)\cap V|\equiv$$
$$\forall a\in V,\ \delta>0.$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual SuperHyperDefensive Failed SuperHyperStable.

(ii). $\emptyset$ is a dual strong SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_s(a) \cap S| < |N_s(a) \cap (V \setminus S)| \equiv \\
&\forall a \in \emptyset,\ |N_s(a) \cap \emptyset| < |N_s(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < |N_s(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_s(a) \cap V| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_s(a) \cap V| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual strong SuperHyperDefensive Failed SuperHyperStable.

(iii). $\emptyset$ is a dual connected SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |N_c(a) \cap S| < |N_c(a) \cap (V \setminus S)| \equiv \\
&\forall a \in \emptyset,\ |N_c(a) \cap \emptyset| < |N_c(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < |N_c(a) \cap (V \setminus \emptyset)| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_c(a) \cap V| \equiv \\
&\forall a \in \emptyset,\ 0 < |N_c(a) \cap V| \equiv \\
&\forall a \in V,\ \delta > 0.
\end{aligned}$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual connected SuperHyperDefensive Failed SuperHyperStable.

(iv). $\emptyset$ is a dual SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N(a) \cap S) - (N(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N(a) \cap \emptyset) - (N(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N(a) \cap \emptyset) - (N(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual 0-SuperHyperDefensive Failed SuperHyperStable.

(v). $\emptyset$ is a dual strong 0-SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_s(a) \cap S) - (N_s(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_s(a) \cap \emptyset) - (N_s(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_s(a) \cap \emptyset) - (N_s(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual strong 0-SuperHyperDefensive Failed SuperHyperStable.

(vi). $\emptyset$ is a dual connected SuperHyperDefensive Failed SuperHyperStable since the following statements are equivalent.

$$\begin{aligned}
&\forall a \in S,\ |(N_c(a) \cap S) - (N_c(a) \cap (V \setminus S))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_c(a) \cap \emptyset) - (N_c(a) \cap (V \setminus \emptyset))| < \delta \equiv \\
&\forall a \in \emptyset,\ |(N_c(a) \cap \emptyset) - (N_c(a) \cap (V))| < \delta \equiv \\
&\forall a \in \emptyset,\ |\emptyset| < \delta \equiv \\
&\forall a \in V,\ 0 < \delta.
\end{aligned}$$

The number is 0 and the neutrosophic number is 0, for an independent SuperHyperSet in the setting of a dual connected 0-offensive SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.28. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperComplete. Then there's no independent SuperHyperSet.*

Proposition 6.29. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperCycle/SuperHyperPath/SuperHyperWheel. The number is $\mathcal{O}(NSHG : (V, E))$ and the neutrosophic number is $\mathcal{O}_n(NSHG : (V, E))$, in the setting of a dual*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *$\mathcal{O}(NSHG : (V, E))$-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong $\mathcal{O}(NSHG : (V, E))$-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected $\mathcal{O}(NSHG : (V, E))$-SuperHyperDefensive Failed SuperHyperStable.*

Proof. Suppose $NSHG : (V, E)$ is a neutrosophic SuperHyperGraph which is SuperHyperCycle/SuperHyperPath/SuperHyperWheel.

(i). Consider one SuperHyperVertex is out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. This SuperHyperVertex has one SuperHyperNeighbor in S, i.e, suppose $x \in V \setminus S$ such that $y, z \in N(x)$. By it's SuperHyperCycle, $|N(x)| = |N(y)| = |N(z)| = 2$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap (V \setminus (V \setminus \{x\}))| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap \{x\})| \equiv \\
&\exists y \in V \setminus \{x\},\ |\{z\}| < |\{x\})| \equiv \\
&\exists y \in S,\ 1 < 1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperCycle.

Consider one SuperHyperVertex is out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. This SuperHyperVertex has one SuperHyperNeighbor in S, i.e, Suppose $x \in V \setminus S$ such that $y, z \in N(x)$. By it's SuperHyperPath,

$|N(x)| = |N(y)| = |N(z)| = 2$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap (V \setminus (V \setminus \{x\}))| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap \{x\})| \equiv \\
&\exists y \in V \setminus \{x\},\ |\{z\}| < |\{x\})| \equiv \\
&\exists y \in S,\ 1 < 1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperPath.

Consider one SuperHyperVertex is out of S which is a dual SuperHyperDefensive Failed SuperHyperStable. This SuperHyperVertex has one SuperHyperNeighbor in S, i.e, Suppose $x \in V \setminus S$ such that $y, z \in N(x)$. By it's SuperHyperWheel, $|N(x)| = |N(y)| = |N(z)| = 2$. Thus

$$\begin{aligned}
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\forall a \in S,\ |N(a) \cap S| < |N(a) \cap (V \setminus S)| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap (V \setminus (V \setminus \{x\}))| \equiv \\
&\exists y \in V \setminus \{x\},\ |N(y) \cap S| < |N(y) \cap \{x\})| \equiv \\
&\exists y \in V \setminus \{x\},\ |\{z\}| < |\{x\})| \equiv \\
&\exists y \in S,\ 1 < 1.
\end{aligned}$$

Thus it's contradiction. It implies every $V \setminus \{x\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperWheel.

(ii), (iii) are obvious by (i).

(iv). By (i), V is maximal and it's a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's a dual $\mathcal{O}(NSHG : (V, E))$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv).

Thus the number is $\mathcal{O}(NSHG : (V, E))$ and the neutrosophic number is $\mathcal{O}_n(NSHG : (V, E))$, in the setting of all types of a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.30. *Let $NSHG : (V, E)$ be a neutrosophic SuperHyperGraph which is SuperHyperStar/complete SuperHyperBipartite/complete SuperHyperMultiPartite. The number is $\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1$ and the neutrosophic number is $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(NSHG:(V,E))}{2}} \subseteq V} \sigma(v)$, in the setting of a dual*

(i) : *SuperHyperDefensive Failed SuperHyperStable;*

(ii) : *strong SuperHyperDefensive Failed SuperHyperStable;*

(iii) : *connected SuperHyperDefensive Failed SuperHyperStable;*

(iv) : *$(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$-SuperHyperDefensive Failed SuperHyperStable;*

(v) : *strong $(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$-SuperHyperDefensive Failed SuperHyperStable;*

(vi) : *connected $(\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1)$-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Consider n half $+1$ SuperHyperVertices are in S which is SuperHyperDefensive Failed SuperHyperStable. A SuperHyperVertex has at most n half SuperHyperNeighbors in S. If the SuperHyperVertex is the non-SuperHyperCenter, then

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ 1 > 0.$$

If the SuperHyperVertex is the SuperHyperCenter, then

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{n}{2} > \frac{n}{2} - 1.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is a dual SuperHyperDefensive Failed SuperHyperStable.

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{\delta}{2} > n - \frac{\delta}{2}.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given complete SuperHyperBipartite which isn't a SuperHyperStar.

Consider n half $+1$ SuperHyperVertices are in S which is a dual SuperHyperDefensive Failed SuperHyperStable and they are chosen from different SuperHyperParts, equally or almost equally as possible. A SuperHyperVertex in S has δ half SuperHyperNeighbors in S.

$$\forall a \in S,\ |N(a) \cap S| > |N(a) \cap (V \setminus S)| \equiv$$
$$\forall a \in S,\ \frac{\delta}{2} > n - \frac{\delta}{2}.$$

Thus it's proved. It implies every S is a dual SuperHyperDefensive Failed SuperHyperStable in a given complete SuperHyperMultipartite which is neither a SuperHyperStar nor complete SuperHyperBipartite.

$(ii), (iii)$ are obvious by (i).

(iv). By (i), $\{x_i\}_{i=1}^{\frac{\mathcal{O}(NSHG:(V,E))}{2}+1}$ is maximal and it's a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's a dual $\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1$-SuperHyperDefensive Failed SuperHyperStable.

$(v), (vi)$ are obvious by (iv).

Thus the number is $\frac{\mathcal{O}(NSHG:(V,E))}{2} + 1$ and the neutrosophic number is $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(NSHG:(V,E))}{2}} \subseteq V} \sigma(v)$, in the setting of all dual Failed SuperHyperStable. □

Proposition 6.31. *Let $\mathcal{NSHF} : (V, E)$ be a SuperHyperFamily of the $NSHGs : (V, E)$ neutrosophic SuperHyperGraphs which are from one-type SuperHyperClass which the result is obtained for the individuals. Then the results also hold for the SuperHyperFamily $\mathcal{NSHF} : (V, E)$ of these specific SuperHyperClasses of the neutrosophic SuperHyperGraphs.*

Proof. There are neither SuperHyperConditions nor SuperHyperRestrictions on the SuperHyperVertices. Thus the SuperHyperResults on individuals, $NSHGs : (V, E)$, are extended to the SuperHyperResults on SuperHyperFamily, $\mathcal{NSHF} : (V, E)$. □

Proposition 6.32. *Let $NSHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. If S is a dual SuperHyperDefensive Failed SuperHyperStable, then $\forall v \in V \setminus S,\ \exists x \in S$ such that*

(i) $v \in N_s(x)$;

(ii) $vx \in E$.

Proof. (i). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider $v \in V \setminus S$. Since S is a dual SuperHyperDefensive Failed SuperHyperStable,

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)| \\
&v \in V \setminus S, \exists x \in S,\ v \in N_s(x).
\end{aligned}$$

(ii). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider $v \in V \setminus S$. Since S is a dual SuperHyperDefensive Failed SuperHyperStable,

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)| \\
&v \in V \setminus S, \exists x \in S :\ v \in N_s(x) \\
&v \in V \setminus S, \exists x \in S : vx \in E,\ \mu(vx) = \sigma(v) \wedge \sigma(x). \\
&v \in V \setminus S, \exists x \in S : vx \in E.
\end{aligned}$$

□

Proposition 6.33. *Let $NSHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. If S is a dual SuperHyperDefensive Failed SuperHyperStable, then*

(i) S is SuperHyperDominating set;

(ii) there's $S \subseteq S'$ such that $|S'|$ is SuperHyperChromatic number.

Proof. (i). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider $v \in V \setminus S$. Since S is a dual SuperHyperDefensive Failed SuperHyperStable, either

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)| \\
&v \in V \setminus S, \exists x \in S,\ v \in N_s(x)
\end{aligned}$$

or

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)| \\
&v \in V \setminus S, \exists x \in S :\ v \in N_s(x) \\
&v \in V \setminus S, \exists x \in S : vx \in E,\ \mu(vx) = \sigma(v) \wedge \sigma(x) \\
&v \in V \setminus S, \exists x \in S : vx \in E.
\end{aligned}$$

It implies S is SuperHyperDominating SuperHyperSet.

(ii). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider $v \in V \setminus S$. Since S is a dual SuperHyperDefensive Failed SuperHyperStable, either

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)| \\
&v \in V \setminus S, \exists x \in S,\ v \in N_s(x)
\end{aligned}$$

or

$$\begin{aligned}&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|\\&v \in V \setminus S,\ |N_s(v) \cap S| > |N_s(v) \cap (V \setminus S)|\\&v \in V \setminus S, \exists x \in S:\ v \in N_s(x)\\&v \in V \setminus S, \exists x \in S: vx \in E,\ \mu(vx) = \sigma(v) \wedge \sigma(x)\\&v \in V \setminus S, \exists x \in S: vx \in E.\end{aligned}$$

Thus every SuperHyperVertex $v \in V \setminus S$, has at least one SuperHyperNeighbor in S. The only case is about the relation amid SuperHyperVertices in S in the terms of SuperHyperNeighbors. It implies there's $S \subseteq S'$ such that $|S'|$ is SuperHyperChromatic number. □

Proposition 6.34. *Let $NSHG : (V, E)$ be a strong neutrosophic SuperHyperGraph. Then*

(i) $\Gamma \leq \mathcal{O}$;

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

Proof. (i). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Let $S = V$.

$$\begin{aligned}&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|\\&v \in V \setminus V,\ |N_s(v) \cap V| > |N_s(v) \cap (V \setminus V)|\\&v \in \emptyset,\ |N_s(v) \cap V| > |N_s(v) \cap \emptyset|\\&v \in \emptyset,\ |N_s(v) \cap V| > |\emptyset|\\&v \in \emptyset,\ |N_s(v) \cap V| > 0\end{aligned}$$

It implies V is a dual SuperHyperDefensive Failed SuperHyperStable. For all SuperHyperSets of SuperHyperVertices $S,\ S \subseteq V$. Thus for all SuperHyperSets of SuperHyperVertices $S,\ |S| \leq |V|$. It implies for all SuperHyperSets of SuperHyperVertices $S,\ |S| \leq \mathcal{O}$. So for all SuperHyperSets of SuperHyperVertices $S,\ \Gamma \leq \mathcal{O}$.

(ii). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Let $S = V$.

$$\begin{aligned}&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|\\&v \in V \setminus V,\ |N_s(v) \cap V| > |N_s(v) \cap (V \setminus V)|\\&v \in \emptyset,\ |N_s(v) \cap V| > |N_s(v) \cap \emptyset|\\&v \in \emptyset,\ |N_s(v) \cap V| > |\emptyset|\\&v \in \emptyset,\ |N_s(v) \cap V| > 0\end{aligned}$$

It implies V is a dual SuperHyperDefensive Failed SuperHyperStable. For all SuperHyperSets of neutrosophic SuperHyperVertices $S,\ S \subseteq V$. Thus for all SuperHyperSets of neutrosophic SuperHyperVertices $S,\ \Sigma_{s \in S}\Sigma_{i=1}^{3}\sigma_i(s) \leq \Sigma_{v \in V}\Sigma_{i=1}^{3}\sigma_i(v)$. It implies for all SuperHyperSets of neutrosophic SuperHyperVertices $S,\ \Sigma_{s \in S}\Sigma_{i=1}^{3}\sigma_i(s) \leq \mathcal{O}_n$. So for all SuperHyperSets of neutrosophic SuperHyperVertices $S,\ \Gamma_s \leq \mathcal{O}_n$. □

Proposition 6.35. *Let $NSHG : (V, E)$ be a strong neutrosophic SuperHyperGraph which is connected. Then*

(i) $\Gamma \leq \mathcal{O} - 1$;

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

Proof. (i). Suppose $NSHG:(V,E)$ is a strong neutrosophic SuperHyperGraph. Let $S = V - \{x\}$ where x is arbitrary and $x \in V$.

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus V - \{x\},\ |N_s(v) \cap (V - \{x\})| > |N_s(v) \cap (V \setminus (V - \{x\}))| \\
&|N_s(x) \cap (V - \{x\})| > |N_s(x) \cap \{x\}| \\
&|N_s(x) \cap (V - \{x\})| > |\emptyset| \\
&|N_s(x) \cap (V - \{x\})| > 0
\end{aligned}$$

It implies $V - \{x\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. For all SuperHyperSets of SuperHyperVertices $S \neq V,\ S \subseteq V - \{x\}$. Thus for all SuperHyperSets of SuperHyperVertices $S \neq V,\ |S| \leq |V - \{x\}|$. It implies for all SuperHyperSets of SuperHyperVertices $S \neq V,\ |S| \leq \mathcal{O} - 1$. So for all SuperHyperSets of SuperHyperVertices $S,\ \Gamma \leq \mathcal{O} - 1$.

(ii). Suppose $NSHG:(V,E)$ is a strong neutrosophic SuperHyperGraph. Let $S = V - \{x\}$ where x is arbitrary and $x \in V$.

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus V - \{x\},\ |N_s(v) \cap (V - \{x\})| > |N_s(v) \cap (V \setminus (V - \{x\}))| \\
&|N_s(x) \cap (V - \{x\})| > |N_s(x) \cap \{x\}| \\
&|N_s(x) \cap (V - \{x\})| > |\emptyset| \\
&|N_s(x) \cap (V - \{x\})| > 0
\end{aligned}$$

It implies $V - \{x\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. For all SuperHyperSets of neutrosophic SuperHyperVertices $S \neq V,\ S \subseteq V - \{x\}$. Thus for all SuperHyperSets of neutrosophic SuperHyperVertices $S \neq V,\ \Sigma_{s\in S}\Sigma_{i=1}^{3}\sigma_i(s) \leq \Sigma_{v\in V-\{x\}}\Sigma_{i=1}^{3}\sigma_i(v)$. It implies for all SuperHyperSets of neutrosophic SuperHyperVertices $S \neq V,\ \Sigma_{s\in S}\Sigma_{i=1}^{3}\sigma_i(s) \leq \mathcal{O}_n - \Sigma_{i=1}^{3}\sigma_i(x)$. So for all SuperHyperSets of neutrosophic SuperHyperVertices $S,\ \Gamma_s \leq \mathcal{O}_n - \Sigma_{i=1}^{3}\sigma_i(x)$. □

Proposition 6.36. *Let $NSHG:(V,E)$ be an odd SuperHyperPath. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG:(V,E)$ is an odd SuperHyperPath. Let $S = \{v_2, v_4, \cdots, v_{n-1}\}$ where for all $v_i, v_j \in \{v_2, v_4, \cdots, v_{n-1}\},\ v_iv_j \notin E$ and $v_i, v_j \in V$.

$$\begin{aligned}
&v \in \{v_1, v_3, \cdots, v_n\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_{n-1}\}| = 2 > \\
&0 = |N_s(v) \cap \{v_1, v_3, \cdots, v_n\}| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 > \\
&0 = |N_s(z) \cap (V \setminus S)| \\
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)| \\
&v \in V \setminus \{v_2, v_4, \cdots, v_{n-1}\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_{n-1}\}| > \\
&|N_s(v) \cap (V \setminus \{v_2, v_4, \cdots .v_{n-1}\})|
\end{aligned}$$

It implies $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S = \{v_2, v_4, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_2, v_4, \cdots, v_{n-1}\}$, then

$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 = 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 \not> 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $\{v_2, v_4, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_2, v_4, \cdots, v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii) and (iii) are trivial.

(iv). By (i), $S_1 = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's enough to show that $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Suppose $NSHG : (V, E)$ is an odd SuperHyperPath. Let $S = \{v_1, v_3, \cdots, v_{n-1}\}$ where for all $v_i, v_j \in \{v_1, v_3, \cdots, v_{n-1}\},\ v_i v_j \not\in E$ and $v_i, v_j \in V$.

$$v \in \{v_2, v_4, \cdots, v_n\},\ |N_s(v) \cap \{v_1, v_3, \cdots .v_{n-1}\}| = 2 >$$
$$0 = |N_s(v) \cap \{v_2, v_4, \cdots, v_n\}| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 > 0 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$
$$v \in V \setminus \{v_1, v_3, \cdots, v_{n-1}\},\ |N_s(v) \cap \{v_1, v_3, \cdots .v_{n-1}\}| >$$
$$|N_s(v) \cap (V \setminus \{v_1, v_3, \cdots .v_{n-1}\})|$$

It implies $S = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S = \{v_1, v_3, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_1, v_3, \cdots, v_{n-1}\}$, then

$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 = 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 \not> 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $\{v_1, v_3, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_1, v_3, \cdots, v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.37. *Let $NSHG : (V, E)$ be an even SuperHyperPath. Then*

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

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is an even SuperHyperPath. Let $S = \{v_2, v_4, \cdots, v_n\}$ where for all $v_i, v_j \in \{v_2, v_4, \cdots, v_n\},\ v_i v_j \not\in E$ and $v_i, v_j \in V$.

$$v \in \{v_1, v_3, \cdots, v_{n-1}\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_n\}| = 2 >$$
$$0 = |N_s(v) \cap \{v_1, v_3, \cdots, v_{n-1}\}| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 >$$
$$0 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$
$$v \in V \setminus \{v_2, v_4, \cdots, v_n\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_n\}| > |N_s(v) \cap (V \setminus \{v_2, v_4, \cdots .v_n\})|$$

It implies $S=\{v_2,v_4,\cdots,v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S=\{v_2,v_4,\cdots,v_n\}-\{v_i\}$ where $v_i\in\{v_2,v_4,\cdots,v_n\}$, then

$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1=1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1\not>1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|\not>|N_s(z)\cap(V\setminus S)|.$$

So $\{v_2,v_4,\cdots,v_n\}-\{v_i\}$ where $v_i\in\{v_2,v_4,\cdots,v_n\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S=\{v_2,v_4,\cdots,v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii) and (iii) are trivial.

(iv). By (i), $S_1=\{v_2,v_4,\cdots,v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's enough to show that $S_2=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Suppose $NSHG:(V,E)$ is an even SuperHyperPath. Let $S=\{v_1,v_3,\cdots,v_{n-1}\}$ where for all $v_i,v_j\in\{v_1,v_3,\cdots,v_{n-1}\},\ v_iv_j\not\in E$ and $v_i,v_j\in V$.

$$v\in\{v_2,v_4,\cdots,v_n\},\ |N_s(v)\cap\{v_1,v_3,\cdots.v_{n-1}\}|=2>$$
$$0=|N_s(v)\cap\{v_2,v_4,\cdots,v_n\}|\forall z\in V\setminus S,\ |N_s(z)\cap S|=2>0=|N_s(z)\cap(V\setminus S)|$$
$$\forall z\in V\setminus S,\ |N_s(z)\cap S|>|N_s(z)\cap(V\setminus S)|$$
$$v\in V\setminus\{v_1,v_3,\cdots,v_{n-1}\},\ |N_s(v)\cap\{v_1,v_3,\cdots.v_{n-1}\}|>$$
$$|N_s(v)\cap(V\setminus\{v_1,v_3,\cdots.v_{n-1}\})|$$

It implies $S=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S=\{v_1,v_3,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_1,v_3,\cdots,v_{n-1}\}$, then

$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1=1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1\not>1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|\not>|N_s(z)\cap(V\setminus S)|.$$

So $\{v_1,v_3,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_1,v_3,\cdots,v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.38. *Let $NSHG:(V,E)$ be an even SuperHyperCycle. Then*

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

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG:(V,E)$ is an even SuperHyperCycle. Let $S=\{v_2,v_4,\cdots,v_n\}$ where for all $v_i,v_j\in\{v_2,v_4,\cdots,v_n\},\ v_iv_j\not\in E$ and $v_i,v_j\in V$.

$$v\in\{v_1,v_3,\cdots,v_{n-1}\},\ |N_s(v)\cap\{v_2,v_4,\cdots.v_n\}|=2>$$
$$0=|N_s(v)\cap\{v_1,v_3,\cdots,v_{n-1}\}|\forall z\in V\setminus S,\ |N_s(z)\cap S|=2>$$
$$0=|N_s(z)\cap(V\setminus S)|$$
$$\forall z\in V\setminus S,\ |N_s(z)\cap S|>|N_s(z)\cap(V\setminus S)|$$
$$v\in V\setminus\{v_2,v_4,\cdots,v_n\},\ |N_s(v)\cap\{v_2,v_4,\cdots.v_n\}|>$$
$$|N_s(v)\cap(V\setminus\{v_2,v_4,\cdots.v_n\})|$$

It implies $S = \{v_2, v_4, \cdots, v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S = \{v_2, v_4, \cdots, v_n\} - \{v_i\}$ where $v_i \in \{v_2, v_4, \cdots, v_n\}$, then

$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 = 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 \not> 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $\{v_2, v_4, \cdots, v_n\} - \{v_i\}$ where $v_i \in \{v_2, v_4, \cdots, v_n\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_2, v_4, \cdots, v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii) and (iii) are trivial.

(iv). By (i), $S_1 = \{v_2, v_4, \cdots, v_n\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's enough to show that $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Suppose $NSHG : (V, E)$ is an even SuperHyperCycle. Let $S = \{v_1, v_3, \cdots, v_{n-1}\}$ where for all $v_i, v_j \in \{v_1, v_3, \cdots, v_{n-1}\},\ v_iv_j \notin E$ and $v_i, v_j \in V$.

$$v \in \{v_2, v_4, \cdots, v_n\},\ |N_s(v) \cap \{v_1, v_3, \cdots .v_{n-1}\}| = 2 >$$
$$0 = |N_s(v) \cap \{v_2, v_4, \cdots, v_n\}| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 > 0 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$
$$v \in V \setminus \{v_1, v_3, \cdots, v_{n-1}\},\ |N_s(v) \cap \{v_1, v_3, \cdots .v_{n-1}\}| >$$
$$|N_s(v) \cap (V \setminus \{v_1, v_3, \cdots .v_{n-1}\})|$$

It implies $S = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S = \{v_1, v_3, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_1, v_3, \cdots, v_{n-1}\}$, then

$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 = 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| = 1 \not> 1 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v_{i+1} \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $\{v_1, v_3, \cdots, v_{n-1}\} - \{v_i\}$ where $v_i \in \{v_1, v_3, \cdots, v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_1, v_3, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.39. *Let $NSHG : (V, E)$ be an odd SuperHyperCycle. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is an odd SuperHyperCycle. Let $S = \{v_2, v_4, \cdots, v_{n-1}\}$ where for all $v_i, v_j \in \{v_2, v_4, \cdots, v_{n-1}\},\ v_iv_j \notin E$ and $v_i, v_j \in V$.

$$v \in \{v_1, v_3, \cdots, v_n\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_{n-1}\}| = 2 >$$
$$0 = |N_s(v) \cap \{v_1, v_3, \cdots, v_n\}| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 > 0 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$
$$v \in V \setminus \{v_2, v_4, \cdots, v_{n-1}\},\ |N_s(v) \cap \{v_2, v_4, \cdots .v_{n-1}\}| >$$
$$|N_s(v) \cap (V \setminus \{v_2, v_4, \cdots .v_{n-1}\})|$$

It implies $S=\{v_2,v_4,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S=\{v_2,v_4,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_2,v_4,\cdots,v_{n-1}\}$, then

$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1=1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1\not>1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|\not>|N_s(z)\cap(V\setminus S)|.$$

So $\{v_2,v_4,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_2,v_4,\cdots,v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S=\{v_2,v_4,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii) and (iii) are trivial.

(iv). By (i), $S_1=\{v_2,v_4,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's enough to show that $S_2=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Suppose $NSHG:(V,E)$ is an odd SuperHyperCycle. Let $S=\{v_1,v_3,\cdots,v_{n-1}\}$ where for all $v_i,v_j\in\{v_1,v_3,\cdots,v_{n-1}\},\ v_iv_j\not\in E$ and $v_i,v_j\in V$.

$$v\in\{v_2,v_4,\cdots,v_n\},\ |N_s(v)\cap\{v_1,v_3,\cdots.v_{n-1}\}|=2>$$
$$0=|N_s(v)\cap\{v_2,v_4,\cdots,v_n\}|\forall z\in V\setminus S,\ |N_s(z)\cap S|=2>0=|N_s(z)\cap(V\setminus S)|$$
$$\forall z\in V\setminus S,\ |N_s(z)\cap S|>|N_s(z)\cap(V\setminus S)|$$
$$v\in V\setminus\{v_1,v_3,\cdots,v_{n-1}\},\ |N_s(v)\cap\{v_1,v_3,\cdots.v_{n-1}\}|>$$
$$|N_s(v)\cap(V\setminus\{v_1,v_3,\cdots.v_{n-1}\})|$$

It implies $S=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S=\{v_1,v_3,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_1,v_3,\cdots,v_{n-1}\}$, then

$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1=1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|=1\not>1=|N_s(z)\cap(V\setminus S)|$$
$$\exists v_{i+1}\in V\setminus S,\ |N_s(z)\cap S|\not>|N_s(z)\cap(V\setminus S)|.$$

So $\{v_1,v_3,\cdots,v_{n-1}\}-\{v_i\}$ where $v_i\in\{v_1,v_3,\cdots,v_{n-1}\}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S=\{v_1,v_3,\cdots,v_{n-1}\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.40. *Let $NSHG:(V,E)$ be SuperHyperStar. Then*

(i) *the SuperHyperSet $S=\{c\}$ is a dual maximal Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG:(V,E)$ is a SuperHyperStar.

$$\forall v\in V\setminus\{c\},\ |N_s(v)\cap\{c\}|=1>$$
$$0=|N_s(v)\cap(V\setminus\{c\})|\forall z\in V\setminus S,\ |N_s(z)\cap S|=1>$$
$$0=|N_s(z)\cap(V\setminus S)|$$
$$\forall z\in V\setminus S,\ |N_s(z)\cap S|>|N_s(z)\cap(V\setminus S)|$$
$$v\in V\setminus\{c\},\ |N_s(v)\cap\{c\}|>|N_s(v)\cap(V\setminus\{c\})|$$

It implies $S = \{c\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S = \{c\} - \{c\} = \emptyset$, then

$$\begin{aligned}
&\exists v \in V \setminus S,\ |N_s(z) \cap S| = 0 = 0 = |N_s(z) \cap (V \setminus S)| \\
&\exists v \in V \setminus S,\ |N_s(z) \cap S| = 0 \not> 0 = |N_s(z) \cap (V \setminus S)| \\
&\exists v \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.
\end{aligned}$$

So $S = \{c\} - \{c\} = \emptyset$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{c\}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii) and (iii) are trivial.

(iv). By (i), $S = \{c\}$ is a dual SuperHyperDefensive Failed SuperHyperStable. Thus it's enough to show that $S \subseteq S'$ is a dual SuperHyperDefensive Failed SuperHyperStable. Suppose $NSHG : (V, E)$ is a SuperHyperStar. Let $S \subseteq S'$.

$$\begin{aligned}
&\forall v \in V \setminus \{c\},\ |N_s(v) \cap \{c\}| = 1 > \\
&0 = |N_s(v) \cap (V \setminus \{c\})| \forall z \in V \setminus S',\ |N_s(z) \cap S'| = 1 > \\
&0 = |N_s(z) \cap (V \setminus S')| \\
&\forall z \in V \setminus S',\ |N_s(z) \cap S'| > |N_s(z) \cap (V \setminus S')|
\end{aligned}$$

It implies $S' \subseteq S$ is a dual SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.41. *Let $NSHG : (V, E)$ 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 Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is a SuperHyperWheel. Let $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$. There are either

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| = 2 > 1 = |N_s(z) \cap (V \setminus S)| \\
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|
\end{aligned}$$

or

$$\begin{aligned}
&\forall z \in V \setminus S,\ |N_s(z) \cap S| = 3 > 0 = |N_s(z) \cap (V \setminus S)| \\
&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|
\end{aligned}$$

It implies $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S' = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n} - \{z\}$ where $z \in S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$, then There are either

$$\begin{aligned}
&\forall z \in V \setminus S',\ |N_s(z) \cap S'| = 1 < 2 = |N_s(z) \cap (V \setminus S')| \\
&\forall z \in V \setminus S',\ |N_s(z) \cap S'| < |N_s(z) \cap (V \setminus S')| \\
&\forall z \in V \setminus S',\ |N_s(z) \cap S'| \not> |N_s(z) \cap (V \setminus S')|
\end{aligned}$$

or

$$\forall z \in V \setminus S',\ |N_s(z) \cap S'| = 1 = 1 = |N_s(z) \cap (V \setminus S')|$$
$$\forall z \in V \setminus S',\ |N_s(z) \cap S'| = |N_s(z) \cap (V \setminus S')|$$
$$\forall z \in V \setminus S',\ |N_s(z) \cap S'| \not> |N_s(z) \cap (V \setminus S')|$$

So $S' = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n} - \{z\}$ where $z \in S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ is a dual maximal SuperHyperDefensive Failed SuperHyperStable.

(ii), (iii) and (iv) are obvious. □

Proposition 6.42. *Let $NSHG : (V, E)$ be an odd SuperHyperComplete. Then*

(i) *the SuperHyperSet $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ is a dual SuperHyperDefensive Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is an odd SuperHyperComplete. Let $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$. Thus

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor + 1 > \lfloor \frac{n}{2} \rfloor - 1 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$

It implies $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$, then

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor = \lfloor \frac{n}{2} \rfloor = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|$$

So $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ is a dual SuperHyperDefensive Failed SuperHyperStable.

(ii), (iii) and (iv) are obvious. □

Proposition 6.43. *Let $NSHG : (V, E)$ be an even SuperHyperComplete. Then*

(i) *the SuperHyperSet $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual SuperHyperDefensive Failed SuperHyperStable;*

(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 Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is an even SuperHyperComplete. Let $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$. Thus

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor > \lfloor \frac{n}{2} \rfloor - 1 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|.$$

It implies $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual SuperHyperDefensive Failed SuperHyperStable. If $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$, then

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor - 1 < \lfloor \frac{n}{2} \rfloor + 1 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable. It induces $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual maximal SuperHyperDefensive Failed SuperHyperStable.

(ii), (iii) and (iv) are obvious. □

Proposition 6.44. *Let $\mathcal{NSHF} : (V, E)$ be a m-SuperHyperFamily of neutrosophic SuperHyperStars with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

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

Proof. (i). Suppose $NSHG : (V, E)$ is a SuperHyperStar.

$$\forall v \in V \setminus \{c\},\ |N_s(v) \cap \{c\}| = 1 >$$
$$0 = |N_s(v) \cap (V \setminus \{c\})| \forall z \in V \setminus S,\ |N_s(z) \cap S| = 1 >$$
$$0 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|$$
$$v \in V \setminus \{c\},\ |N_s(v) \cap \{c\}| > |N_s(v) \cap (V \setminus \{c\})|$$

It implies $S = \{c_1, c_2, \cdots, c_m\}$ is a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$. If $S = \{c\} - \{c\} = \emptyset$, then

$$\exists v \in V \setminus S,\ |N_s(z) \cap S| = 0 = 0 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v \in V \setminus S,\ |N_s(z) \cap S| = 0 \not> 0 = |N_s(z) \cap (V \setminus S)|$$
$$\exists v \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $S = \{c\} - \{c\} = \emptyset$ isn't a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$. It induces $S = \{c_1, c_2, \cdots, c_m\}$ is a dual maximal SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$.

(ii) and (iii) are trivial.

(iv). By (i), $S = \{c_1, c_2, \cdots, c_m\}$ is a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$. Thus it's enough to show that $S \subseteq S'$ is a dual

SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF}:(V,E)$. Suppose $NSHG:(V,E)$ is a SuperHyperStar. Let $S \subseteq S'$.

$$\begin{aligned}&\forall v \in V \setminus \{c\},\ |N_s(v) \cap \{c\}| = 1 >\\&0 = |N_s(v) \cap (V \setminus \{c\})| \forall z \in V \setminus S',\ |N_s(z) \cap S'| = 1 >\\&0 = |N_s(z) \cap (V \setminus S')|\\&\forall z \in V \setminus S',\ |N_s(z) \cap S'| > |N_s(z) \cap (V \setminus S')|\end{aligned}$$

It implies $S' \subseteq S$ is a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF}:(V,E)$. □

Proposition 6.45. *Let $\mathcal{NSHF}:(V,E)$ be an m-SuperHyperFamily of odd SuperHyperComplete SuperHyperGraphs with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

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

Proof. (i). Suppose $NSHG:(V,E)$ is odd SuperHyperComplete. Let $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$. Thus

$$\begin{aligned}&\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor + 1 > \lfloor \frac{n}{2} \rfloor - 1 = |N_s(z) \cap (V \setminus S)|\\&\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|\end{aligned}$$

It implies $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ is a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF}:(V,E)$. If $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$, then

$$\begin{aligned}&\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor = \lfloor \frac{n}{2} \rfloor = |N_s(z) \cap (V \setminus S)|\\&\forall z \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|\end{aligned}$$

So $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF}:(V,E)$. It induces $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ is a dual maximal SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF}:(V,E)$.

(ii), (iii) and (iv) are obvious. □

Proposition 6.46. *Let $\mathcal{NSHF}:(V,E)$ be a m-SuperHyperFamily of even SuperHyperComplete SuperHyperGraphs with common neutrosophic SuperHyperVertex SuperHyperSet. Then*

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

Proof. (i). Suppose $NSHG : (V, E)$ is even SuperHyperComplete. Let $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$. Thus

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor > \lfloor \frac{n}{2} \rfloor - 1 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| > |N_s(z) \cap (V \setminus S)|.$$

It implies $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$. If $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$, then

$$\forall z \in V \setminus S,\ |N_s(z) \cap S| = \lfloor \frac{n}{2} \rfloor - 1 < \lfloor \frac{n}{2} \rfloor + 1 = |N_s(z) \cap (V \setminus S)|$$
$$\forall z \in V \setminus S,\ |N_s(z) \cap S| \not> |N_s(z) \cap (V \setminus S)|.$$

So $S' = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor} - \{z\}$ where $z \in S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ isn't a dual SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$. It induces $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual maximal SuperHyperDefensive Failed SuperHyperStable for $\mathcal{NSHF} : (V, E)$.

(ii), (iii) and (iv) are obvious. □

Proposition 6.47. *Let* $NSHG : (V, E)$ *be a strong neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if* $s \geq t$ *and a SuperHyperSet* S *of SuperHyperVertices is an t-SuperHyperDefensive Failed SuperHyperStable, then* S *is an s-SuperHyperDefensive Failed SuperHyperStable;*

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

Proof. (i). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < t;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < t \leq s;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < s.$$

Thus S is an s-SuperHyperDefensive Failed SuperHyperStable.

(ii). Suppose $NSHG : (V, E)$ is a strong neutrosophic SuperHyperGraph. Consider a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > t;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > t \geq s;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > s.$$

Thus S is a dual s-SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.48. *Let* $NSHG : (V, E)$ *be a strong neutrosophic SuperHyperGraph. Then following statements hold;*

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

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

Proof. (*i*). Suppose $NSHG:(V,E)$ is a strong neutrosophic SuperHyperGraph. Consider a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < t;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < t \leq t+2 \leq s;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < s.$$

Thus S is an $(t+2)-$SuperHyperDefensive Failed SuperHyperStable. By S is an $s-$SuperHyperDefensive Failed SuperHyperStable and S is a dual $(s+2)-$SuperHyperDefensive Failed SuperHyperStable, S is an s-SuperHyperPowerful Failed SuperHyperStable.

(*ii*). Suppose $NSHG:(V,E)$ is a strong neutrosophic SuperHyperGraph. Consider a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V\setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > t;$$
$$\forall t \in V\setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > t \geq s > s-2;$$
$$\forall t \in V\setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > s-2.$$

Thus S is an $(s-2)-$SuperHyperDefensive Failed SuperHyperStable. By S is an $(s-2)-$SuperHyperDefensive Failed SuperHyperStable and S is a dual $s-$SuperHyperDefensive Failed SuperHyperStable, S is an $s-$SuperHyperPowerful Failed SuperHyperStable. □

Proposition 6.49. *Let* $NSHG:(V,E)$ *be a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then following statements hold;*

(*i*) *if* $\forall a \in S,\ |N_s(a)\cap S| < \lfloor \frac{r}{2} \rfloor + 1$, *then* $NSHG:(V,E)$ *is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(*ii*) *if* $\forall a \in V\setminus S,\ |N_s(a)\cap S| > \lfloor \frac{r}{2} \rfloor + 1$, *then* $NSHG:(V,E)$ *is a dual 2-SuperHyperDefensive Failed SuperHyperStable;*

(*iii*) *if* $\forall a \in S,\ |N_s(a)\cap V\setminus S| = 0$, *then* $NSHG:(V,E)$ *is an r-SuperHyperDefensive Failed SuperHyperStable;*

(*iv*) *if* $\forall a \in V\setminus S,\ |N_s(a)\cap V\setminus S| = 0$, *then* $NSHG:(V,E)$ *is a dual r-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (*i*). Suppose $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then

$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1) < 2;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < 2.$$

Thus S is an 2-SuperHyperDefensive Failed SuperHyperStable.

(ii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1) > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2.$$

Thus S is a dual 2-SuperHyperDefensive Failed SuperHyperStable.

(iii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < r - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < r - 0 = r;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < r.$$

Thus S is an r-SuperHyperDefensive Failed SuperHyperStable.

(iv). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > r - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > r - 0 = r;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > r.$$

Thus S is a dual r-SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.50. *Let $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$ *if $NSHG : (V, E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$ *if $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if $NSHG : (V, E)$ is an r-SuperHyperDefensive Failed SuperHyperStable;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if $NSHG : (V, E)$ is a dual r-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 = \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t) \cap S| = \lfloor \frac{r}{2} \rfloor + 1,\ |N_s(t) \cap (V \setminus S)| = \lfloor \frac{r}{2} \rfloor - 1.$$

(ii). Suppose $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and a dual 2-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > 2 = \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > \lfloor \frac{r}{2} \rfloor + 1 - (\lfloor \frac{r}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| = \lfloor \frac{r}{2} \rfloor + 1,\ |N_s(t)\cap (V\setminus S) = \lfloor \frac{r}{2} \rfloor - 1.$$

(iii). Suppose $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and an r-SuperHyperDefensive Failed SuperHyperStable.

$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < r;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < r = r - 0;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < r - 0;$$
$$\forall t \in S,\ |N_s(t)\cap S| = r,\ |N_s(t)\cap (V\setminus S)| = 0.$$

(iv). Suppose $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and a dual r-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > r;$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > r = r - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| > r - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t)\cap S| = r,\ |N_s(t)\cap (V\setminus S)| = 0.$$

□

Proposition 6.51. *Let $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a)\cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if $NSHG:(V,E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(ii) $\forall a \in V\setminus S,\ |N_s(a)\cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if $NSHG:(V,E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable;*

(iii) $\forall a \in S,\ |N_s(a)\cap V\setminus S| = 0$ *if $NSHG:(V,E)$ is an $(\mathcal{O}-1)$-SuperHyperDefensive Failed SuperHyperStable;*

(iv) $\forall a \in V\setminus S,\ |N_s(a)\cap V\setminus S| = 0$ *if $NSHG:(V,E)$ is a dual $(\mathcal{O}-1)$-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG:(V,E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and an 2- SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < 2;$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < 2 = \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t)\cap S| - |N_s(t)\cap (V\setminus S)| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t)\cap S| = \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1,\ |N_s(t)\cap (V\setminus S)| = \lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1.$$

(ii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and a dual 2-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 = \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| = \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1,\ |N_s(t) \cap (V \setminus S) = \lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1.$$

(iii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and an $(\mathcal{O}-1)$-SuperHyperDefensive Failed SuperHyperStable.

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1 = \mathcal{O} - 1 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| = \mathcal{O} - 1,\ |N_s(t) \cap (V \setminus S)| = 0.$$

(iv). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and a dual r-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1 = \mathcal{O} - 1 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| = \mathcal{O} - 1,\ |N_s(t) \cap (V \setminus S)| = 0.$$

□

Proposition 6.52. *Let $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) if $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$, then $NSHG : (V, E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;

(ii) if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$, then $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable;

(iii) if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, then $NSHG : (V, E)$ is $(\mathcal{O}-1)$-SuperHyperDefensive Failed SuperHyperStable;

(iv) if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, then $NSHG : (V, E)$ is a dual $(\mathcal{O}-1)$-SuperHyperDefensive Failed SuperHyperStable.

Proof. (i). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1) < 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2.$$

Thus S is an 2-SuperHyperDefensive Failed SuperHyperStable.

(*ii*). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1);$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1 - (\lfloor \frac{\mathcal{O}-1}{2} \rfloor - 1) > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2.$$

Thus S is a dual 2-SuperHyperDefensive Failed SuperHyperStable.

(*iii*). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1 - 0 = \mathcal{O} - 1;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < \mathcal{O} - 1.$$

Thus S is an $(\mathcal{O} - 1)$-SuperHyperDefensive Failed SuperHyperStable.

(*iv*). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1 - 0 = \mathcal{O} - 1;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > \mathcal{O} - 1.$$

Thus S is a dual $(\mathcal{O} - 1)$-SuperHyperDefensive Failed SuperHyperStable. □

Proposition 6.53. *Let $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then following statements hold;*

(*i*) *$\forall a \in S,\ |N_s(a) \cap S| < 2$ if $NSHG : (V, E))$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(*ii*) *$\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$ if $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable;*

(*iii*) *$\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ if $NSHG : (V, E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(*iv*) *$\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ if $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (*i*). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and S is an 2-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 = 2 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| < 2,\ |N_s(t) \cap (V \setminus S)| = 0.$$

(*ii*). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and S is a dual 2-SuperHyperDefensive Failed SuperHyperStable.

Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 = 2 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| > 2,\ |N_s(t) \cap (V \setminus S) = 0.$$

(iii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and S is an 2-SuperHyperDefensive Failed SuperHyperStable.

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 = 2 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| < 2,\ |N_s(t) \cap (V \setminus S)| = 0.$$

(iv). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph and S is a dual r-SuperHyperDefensive Failed SuperHyperStable. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 = 2 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| > 2,\ |N_s(t) \cap (V \setminus S)| = 0.$$

□

Proposition 6.54. *Let $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then following statements hold;*

(i) *if $\forall a \in S,\ |N_s(a) \cap S| < 2$, then $NSHG : (V, E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(ii) *if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$, then $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable;*

(iii) *if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, then $NSHG : (V, E)$ is an 2-SuperHyperDefensive Failed SuperHyperStable;*

(iv) *if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, then $NSHG : (V, E)$ is a dual 2-SuperHyperDefensive Failed SuperHyperStable.*

Proof. (i). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then

$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 - 0;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 - 0 = 2;$$
$$\forall t \in S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2.$$

Thus S is an 2-SuperHyperDefensive Failed SuperHyperStable.

(ii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then

$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 - 0;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 - 0 = 2;$$
$$\forall t \in V \setminus S,\ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2.$$

Thus S is a dual 2-SuperHyperDefensive Failed SuperHyperStable.

(iii). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then

$$\forall t \in S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 - 0;$$
$$\forall t \in S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2 - 0 = 2;$$
$$\forall t \in S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| < 2.$$

Thus S is an 2-SuperHyperDefensive Failed SuperHyperStable.

(iv). Suppose $NSHG : (V, E)$ is a[an] [r-]SuperHyperUniform-strong-neutrosophic SuperHyperGraph which is SuperHyperCycle. Then

$$\forall t \in V \setminus S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 - 0;$$
$$\forall t \in V \setminus S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2 - 0 = 2;$$
$$\forall t \in V \setminus S, \ |N_s(t) \cap S| - |N_s(t) \cap (V \setminus S)| > 2.$$

Thus S is a dual 2-SuperHyperDefensive Failed SuperHyperStable. □

7 Applications in Cancer's Extreme Recognition

The cancer is the disease but the model is going to figure out what's going on this phenomenon. The special case of this disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The recognition of the cancer could help to find some treatments for this disease.

In the following, some steps are devised on this disease.

Step 1. (Definition) The recognition of the cancer in the long-term function.

Step 2. (Issue) The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done.

Step 3. (Model) There are some specific models, which are well-known and they've got the names, and some general models. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a neutrosophic SuperHyperPath(-/SuperHyperCycle, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the Failed SuperHyperStable or the neutrosophic Failed SuperHyperStable in those neutrosophic SuperHyperModels.

8 Case 1: The Initial Steps Toward SuperHyperBipartite as SuperHyperModel

Step 4. (Solution) In the Figure (27), the SuperHyperBipartite is highlighted and featured.

By using the Figure (27) and the Table (4), the neutrosophic SuperHyperBipartite is obtained.

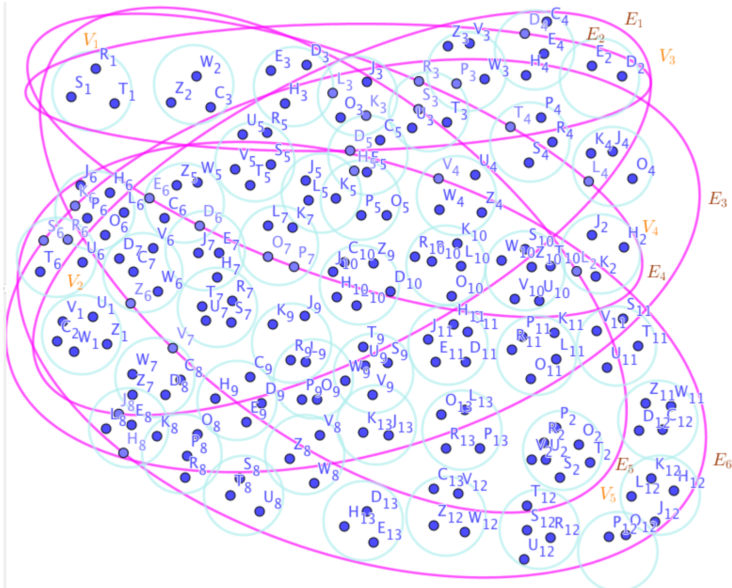

Figure 27. A SuperHyperBipartite Associated to the Notions of Failed SuperHyper-Stable

Table 4. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyper-Edges Belong to The Neutrosophic SuperHyperBipartite

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

The obtained SuperHyperSet, by the Algorithm in previous result, of the SuperHyperVertices of the connected SuperHyperBipartite $NSHB : (V, E)$, in the SuperHyperModel (27),

$$\{V_1, \{C_4, D_4, E_4, H_4\},$$
$$\{K_4, J_4, L_4, O_4\}, \{W_2, Z_2, C_3\}, \{C_{13}, Z_{12}, V_{12}, W_{12}\},$$

is the Failed SuperHyperStable.

9 Case 2: The Increasing Steps Toward SuperHyperMultipartite as SuperHyperModel

Step 4. (Solution) In the Figure (28), the SuperHyperMultipartite is highlighted and featured.
By using the Figure (28) and the Table (5), the neutrosophic SuperHyperMultipartite is obtained.
The obtained SuperHyperSet, by the Algorithm in previous result, of the

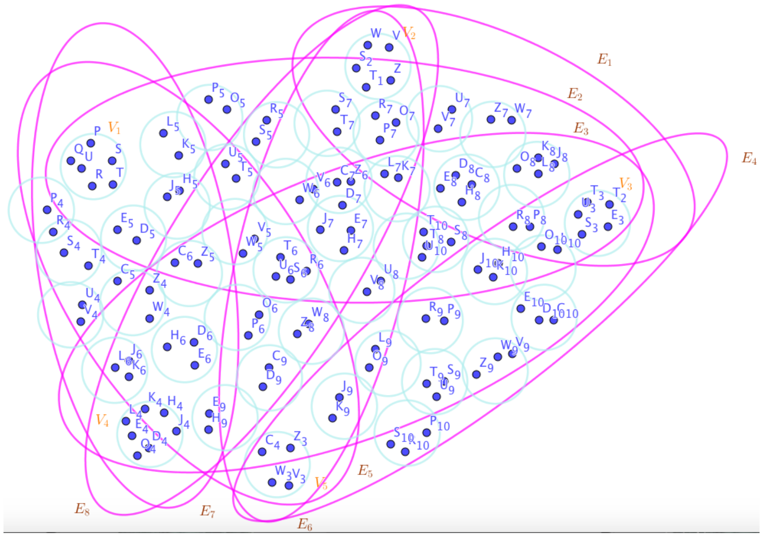

Figure 28. A SuperHyperMultipartite Associated to the Notions of Failed SuperHyperStable

Table 5. The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperMultipartite

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

SuperHyperVertices of the connected SuperHyperMultipartite $NSHM : (V, E)$,

$$\{\{\{L_4, E_4, O_4, D_4, J_4, K_4, H_4\},$$
$$\{S_{10}, R_{10}, P_{10}\},$$
$$\{Z_7, W_7\}, \{U_7, V_7\}\},$$

in the SuperHyperModel (28), is the Failed SuperHyperStable.

10 Open Problems

In what follows, some “problems” and some “questions” are proposed.

The Failed SuperHyperStable and the neutrosophic Failed SuperHyperStable are defined on a real-world application, titled “Cancer’s Recognitions”.

Question 10.1. *Which the else SuperHyperModels could be defined based on Cancer’s recognitions?*

Question 10.2. *Are there some SuperHyperNotions related to Failed SuperHyperStable and the neutrosophic Failed SuperHyperStable?*

Question 10.3. *Are there some Algorithms to be defined on the SuperHyperModels to compute them?*

Question 10.4. *Which the SuperHyperNotions are related to beyond the Failed SuperHyperStable and the neutrosophic Failed SuperHyperStable?*

Problem 10.5. *The Failed SuperHyperStable and the neutrosophic Failed SuperHyperStable do a SuperHyperModel for the Cancer's recognitions and they're based on Failed SuperHyperStable, are there else?*

Problem 10.6. *Which the fundamental SuperHyperNumbers are related to these SuperHyperNumbers types-results?*

Problem 10.7. *What's the independent research based on Cancer's recognitions concerning the multiple types of SuperHyperNotions?*

11 Conclusion and Closing Remarks

In this section, concluding remarks and closing remarks are represented. The drawbacks of this research are illustrated. Some benefits and some advantages of this research are highlighted.

This research uses some approaches to make neutrosophic SuperHyperGraphs more understandable. In this endeavor, two SuperHyperNotions are defined on the Failed SuperHyperStable. For that sake in the second definition, the main definition of the neutrosophic SuperHyperGraph is redefined on the position of the alphabets. Based on the new definition for the neutrosophic SuperHyperGraph, the new SuperHyperNotion, neutrosophic Failed SuperHyperStable, finds the convenient background to implement some results based on that. Some SuperHyperClasses and some neutrosophic SuperHyperClasses are the cases of this research on the modeling of the regions where are under the attacks of the cancer to recognize this disease as it's mentioned on the title "Cancer's Recognitions". To formalize the instances on the SuperHyperNotion, Failed SuperHyperStable, the new SuperHyperClasses and SuperHyperClasses, are introduced. Some general results are gathered in the section on the Failed SuperHyperStable and the neutrosophic Failed SuperHyperStable. The clarifications, instances and literature reviews have taken the whole way through. In this research, the literature reviews have fulfilled the lines containing the notions and the results. The SuperHyperGraph and neutrosophic SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognitions" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the longest and strongest styles with the formation of the design and the architecture are formally called " Failed SuperHyperStable" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. In the Table (6), some limitations and advantages of this

Table 6. A Brief Overview about Advantages and Limitations of this Research

Advantages	Limitations
1. Redefining Neutrosophic SuperHyperGraph	1. General Results
2. Failed SuperHyperStable	
3. Neutrosophic Failed SuperHyperStable	2. Other SuperHyperNumbers
4. Modeling of Cancer's Recognitions	
5. SuperHyperClasses	3. SuperHyperFamilies

research are pointed out.

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