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New Ideas in Recognition of Cancer and Neutrosophic SuperHyperGraph by Initial Eulerian-Path-Cut as Hyper Initial Eulogy on Super Initial EULA

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Abstract

In this scientific research, some initial results are obtained on SuperHyperGraphs and Neutrosophic SuperHyperGraphs. Some well-known classes are used in this scientific research. A basic familiarity with Neutrosophic SuperHyper Eulerian-Path-Cut theory, SuperHyperGraphs, and Neutrosophic SuperHyperGraphs theory are proposed.

Keywords: *Neutrosophic SuperHyperGraph, SuperHyperEulerian-Path-Cut, Cancer's Neutrosophic Recognition*

1. Neutrosophic Preliminaries of this Scientific Research on the Redeemed Ways

In this section, the basic material in this scientific research, is referred to [Single Valued Neutrosophic Set] ((Henry, 2023), Definition 2.2, p. 2), [Neutrosophic Set] ((Henry, 2023), Definition 2.1, p. 1), [Neutrosophic SuperHyperGraph (NSHG)] ((Henry, 2023), Definition 2.5, p. 2), [Characterization of the Neutrosophic SuperHyperGraph (NSHG)] ((Henry, 2023), Definition 2.7, p. 3), [t-norm] ((Henry, 2023), Definition 2.7, p. 3), and [Characterization of the Neutrosophic SuperHyperGraph (NSHG)] ((Henry, 2023), Definition 2.7, p. 3), [Neutrosophic Strength of the Neutrosophic SuperHyperPaths] ((Henry, 2023), Definition 5.3, p. 7), and [Different Neutrosophic Types of Neutrosophic SuperHyperEdges (NSHE)] ((Henry, 2023), Definition 5.4, p. 7). Also, the new ideas and their clarifications are addressed to Henry (2023).

Definition 1.1.: Different Neutrosophic Types of Neutrosophic SuperHyperEulerian-Path-Cut

Assume a Neutrosophic SuperHyperGraph (NSHG) S is a pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, ..., V_s\}$ and $E' = \{E_1, E_2, ..., E_z\}$. Then either V' or E' is called

(i) Neutrosophic e-SuperHyperEulerian-Path-Cut if the following expression is called Neutrosophic e-SuperHyperEulerian-Path-Cut criteria holds

$\forall E_a \in P : P$ is a SuperHyperPath and it has the all number of SuperHyperEdges;

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(ii) Neutrosophic re-SuperHyperEulerian-Path-Cut if the following expression is called Neutrosophic re-SuperHyperEulerian-Path-Cut criteria holds

$\forall E_a \in P : P$ is a SuperHyperPath and it has the all number of SuperHyperEdges;

and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) Neutrosophic v-SuperHyperEulerian-Path-Cut if the following expression is called Neutrosophic v-SuperHyperEulerian-Path-Cut criteria holds

$\forall V_a \in P : P$ is a SuperHyperPath and it has the all number of SuperHyperEdges;

(iv) Neutrosophic rv-SuperHyperEulerian-Path-Cut if the following expression is called Neutrosophic v-SuperHyperEulerian-Path-Cut criteria holds

$\forall V_a \in P : P$ is a SuperHyperPath and it has the all number of SuperHyperEdges;

and $|V|_{i\text{NEUTROSOPIC CARDINALITY}} = |V|_{j\text{NEUTROSOPIC CARDINALITY}}$;

(v) Neutrosophic SuperHyperEulerian-Path-Cut if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut.

Definition 1.2.: (Neutrosophic) SuperHyperEulerian-Path-Cut

Assume a Neutrosophic SuperHyperGraph (NSHG) S is a pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, ..., V_s\}$. Then E is called

(i) An Extreme SuperHyperEulerian-Path-Cut if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the conseNeighborive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperEulerian-Path-Cut;

(ii) A Neutrosophic SuperHyperEulerian-Path-Cut if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality conseNeighborive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperEulerian-Path-Cut;

(iii) An Extreme SuperHyperEulerian-Path-Cut SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality conseNeighborive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperEulerian-Path-Cut; and the Extreme power is corresponded to its Extreme coefficient;

(iv) A Neutrosophic SuperHyperEulerian-Path-Cut SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality conseNeighborive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperEulerian-Path-Cut; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(v) An Extreme V-SuperHyperEulerian-Path-Cut if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for an Extreme SuperHyperGraph *NSHG* : (*V, E*) is the maximum Extreme cardinality of an Extreme SuperHyperSet *S* of high Extreme cardinality of the Extreme SuperHyperVertices in the conseNeighborive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperEulerian-Path-Cut;

(vi) A Neutrosophic V-SuperHyperEulerian-Path-Cut if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for a Neutrosophic SuperHyperGraph *NSHG* : (*V, E*) is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet *S* of high Neutrosophic cardinality conseNeighborive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperEulerian-Path-Cut;

(vii) An Extreme V-SuperHyperEulerian-Path-Cut SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for an Extreme SuperHyperGraph *NSHG* : (*V, E*) is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet *S* of high Extreme cardinality conseNeighborive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperEulerian-Path-Cut; and the Extreme power is corresponded to its Extreme coefficient;

(viii) A Neutrosophic SuperHyperEulerian-Path-Cut SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperEulerian-Path-Cut, Neutrosophic re-SuperHyperEulerian-Path-Cut, Neutrosophic v-SuperHyperEulerian-Path-Cut, and Neutrosophic rv-SuperHyperEulerian-Path-Cut and (*NSHG*) for a Neutrosophic SuperHyperGraph *NSHG* : (*V, E*) is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet *S* of high Neutrosophic cardinality conseNeighborive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperEulerian-Path-Cut; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

2. Neutrosophic SuperHyperEulerian-Path-Cut but as the Extensions Excerpt from Dense and Super Forms

Proposition 2.1.

Assume a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). The all interior Neutrosophic SuperHyperVertices belong to any Neutrosophic quasi-R-Eulerian-Path-Cut if for any of them, and any of other corresponded Neutrosophic SuperHyperVertex, some interior Neutrosophic SuperHyperVertices are mutually Neutrosophic SuperHyperNeighbors with no Neutrosophic exception at all minus all Neutrosophic SuperHypeNeighbors to any amount of them.

Proposition 2.2.

Assume a connected non-obvious Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). There's only one Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only the maximum possibilities of the distinct interior Neutrosophic SuperHyperVertices inside of any given Neutrosophic quasi-$R\text{-}_{Eulerian\text{-}Path\text{-}Cut}$ minus all Neutrosophic SuperHypeNeighbor to some of them but not all of them. In other words, there's only an unique Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only two distinct Neutrosophic SuperHyperVertices in an Neutrosophic quasi-R-Eulerian-Path-Cut, minus all Neutrosophic SuperHypeNeighbor to some of them but not all of them.

Proposition 2.3.

Assume a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). If a Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has *z* Neutrosophic SuperHyperVertices, then the Neutrosophic cardinality of the Neutrosophic $R\text{-}_{Eulerian\text{-}Path\text{-}Cut}$ is at least

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\})$$

It's straightforward that the Neutrosophic cardinality of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is at least the maximum Neutrosophic number of Neutrosophic SuperHyperVertices of the Neutrosophic SuperHyperEdges with the maximum number of the Neutrosophic SuperHyperEdges. In other words, the maximum number of the Neutrosophic SuperHyperEdges contains the maximum Neutrosophic number of Neutrosophic SuperHyperVertices are renamed to Neutrosophic $_{\text{Eulerian-Path-Cut}}$ in some cases but the maximum number of the Neutrosophic SuperHyperEdge with the maximum Neutrosophic number of Neutrosophic SuperHyperVertices, has the Neutrosophic SuperHyperVertices are contained in a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$.

Proposition 2.4.

Assume a simple Neutrosophic SuperHyperGraph $ESHG:(V,E)$. Then the Neutrosophic number of type-result-R-$_{\textit{Eulerian-Path-Cut}}$ has, the least Neutrosophic cardinality, the lower sharp Neutrosophic bound for Neutrosophic cardinality, is the Neutrosophic cardinality of

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

If there's a Neutrosophic type-result-R-$_{\textit{Eulerian-Path-Cut}}$ with the least Neutrosophic cardinality, the lower sharp Neutrosophic bound for cardinality.

Proposition 2.5.

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

$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial} = z^4.$$
$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathrm{C}(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = z^5.$$

Is a Neutrosophic type-result-Eulerian-Path-Cut. In other words, the least cardinality, the lower sharp bound for the cardinality, of a Neutrosophic type-result-Eulerian-Path-Cut is the cardinality of

$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut} = \{V_1, E_1, V_2, E_2, V_3, E_3, V_4, E_4, V_1\}.$$
$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial} = z^4.$$
$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut} = \{V_1, V_2, V_3, V_4, V_1\}.$$
$$\mathrm{C}(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = z^5.$$

Proof: Assume a connected loopless Neutrosophic SuperHyperGraph $ESHG:(V,E)$. The SuperHyperSet of the SuperHyperVertices $V \setminus V \setminus \{z\}$ isn't a quasi-R-$_{\text{Eulerian-Path-Cut}}$ since neither amount of Neutrosophic SuperHyperEdges nor amount of SuperHyperVertices where amount refers to the Neutrosophic number of SuperHyperVertices(-/ SuperHyperEdges) more than one to form any kind of SuperHyperEdges or any number of SuperHyperEdges. Let us consider the Neutrosophic SuperHyperSet

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

This Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices has the eligibilities to propose property such that there's no Neutrosophic SuperHyperVertex of a Neutrosophic SuperHyperEdge is common and there's an Neutrosophic SuperHyperEdge for all Neutrosophic SuperHyperVertices but the maximum Neutrosophic cardinality indicates that these Neutrosophic type-SuperHyperSets couldn't give us the Neutrosophic lower bound in the term of Neutrosophic sharpness. In other words, the Neutrosophic SuperHyperSet

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

of the Neutrosophic SuperHyperVertices implies at least on-quasi-triangle style is up but sometimes the Neutrosophic SuperHyperSet

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

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

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

Is a quasi-R-$_{\text{Eulerian-Path-Cut}}$. In other words, the least cardinality, the lower sharp bound for the cardinality, of a quasi-R-$_{\text{Eulerian-Path-Cut}}$ is the cardinality of

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

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

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

Let $V \setminus V \setminus \{z\}$ in mind. There's no necessity on the SuperHyperEdge since we need at least two SuperHyperVertices to form a SuperHyperEdge. It doesn't withdraw the principles of the main definition since there's no condition to be satisfied but the condition is on the existence of the SuperHyperEdge instead of acting on the SuperHyperVertices. In other words, if there's a SuperHyperEdge, then the Neutrosophic SuperHyperSet has the necessary condition for the intended definition to be applied. Thus the $V \setminus V \setminus \{z\}$ is withdrawn not by the conditions of the main definition but by the necessity of the pre-condition on the usage of the main definition.

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

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

Comes up. This Neutrosophic case implies having the Neutrosophic style of on-quasi-triangle Neutrosophic style on the every Neutrosophic elements of this Neutrosophic SuperHyperSet. Precisely, the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is the

Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices such that some Neutrosophic amount of the Neutrosophic SuperHyperVertices are on-quasi-triangle Neutrosophic style. The Neutrosophic cardinality of the v SuperHypeSet

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

Is the maximum in comparison to the Neutrosophic SuperHyperSet

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

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

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

Has the maximum Neutrosophic cardinality such that

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

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

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

It means that the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices

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

Is a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ for the Neutrosophic SuperHyperGraph as used Neutrosophic background in the Neutrosophic terms of worst Neutrosophic case and the common theme of the lower Neutrosophic bound occurred in the specific Neutrosophic SuperHyperClasses of the Neutrosophic SuperHyperGraphs which are Neutrosophic free-quasi-triangle.

Assume a Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z Neutrosophic number of the Neutrosophic SuperHyperVertices. Then every Neutrosophic SuperHyperVertex has at least no Neutrosophic SuperHyperEdge with others in common. Thus those Neutrosophic SuperHyperVertices have the eligibles to be contained in a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Those Neutrosophic SuperHyperVertices are potentially included in a Neutrosophic style-R-$_{\text{Eulerian-Path-Cut}}$. Formally, consider

$$V \setminus (V \setminus \{a_E, b_E, c_E, \ldots, z_E\}).$$

Are the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperEdge

$E \in E_{ESHG:(V,E)}$. Thus

$$Z_i \sim Z_j, \; i, j \qquad i, j = 1, 2, \ldots, z.$$

where the ~ isn't an equivalence relation but only the symmetric relation on the Neutrosophic SuperHyperVertices of the Neutrosophic SuperHyperGraph. The formal definition is as follows.

$$Z_i \sim Z_j, \; i, j \qquad i, j = 1, 2, \ldots, z$$

if and only if Z_i and Z_j are the Neutrosophic SuperHyperVertices and there's only and only one Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ between the Neutrosophic SuperHyperVertices Z_i and Z_j. The other definition for the Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ in the terms of Neutrosophic R-Eulerian-Path-Cut is

$\{a_E, b_E, c_E, ..., z_E\}$.

This definition coincides with the definition of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ but with slightly differences in the maximum Neutrosophic cardinality amid those Neutrosophic type-SuperHyperSets of the Neutrosophic SuperHyperVertices. Thus the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices,

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

and

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

is formalized with mathematical literatures on the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Let $Z_i \underset{\sim}{E} Z_j$, be defined as Z_i and Z_j are the Neutrosophic SuperHyperVertices belong to the Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$. Thus,

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

Or

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

But with the slightly differences,

Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ =

$$\left\{Z_1, Z_2, ..., Z_z \mid \forall ij, i, j = 1, 2, ..., z, \exists E_x Z_i \underset{\sim}{E_x} Z_j\right\}.$$

Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ =

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

Thus $E \in E_{ESHG:(V,E)}$ is a Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ where $E \in E_{ESHG:(V,E)}$ is fixed that means $E_x = E \in E_{ESHG:(V,E)}$. for all Neutrosophic intended SuperHyperVertices but in a Neutrosophic $_{\text{Eulerian-Path-Cut}}$, $E_x = E \in E_{ESHG:(V,E)}$ could be different and it's not unique. To sum them up, in a connected Neutrosophic SuperHyperGraph *ESHG* : (*V*, *E*). If a Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has z Neutrosophic SuperHyperVertices, then the Neutrosophic cardinality of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is at least

$V \setminus (V \setminus \{a_E, b_E, c_E, ..., z_E\})$.

It's straightforward that the Neutrosophic cardinality of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is at least the maximum Neutrosophic number of Neutrosophic SuperHyperVertices of the Neutrosophic SuperHyperEdges with the maximum number of the Neutrosophic SuperHyperEdges. In other words, the maximum number of the Neutrosophic SuperHyperEdges contains the maximum Neutrosophic number of Neutrosophic SuperHyperVertices are renamed to Neutrosophic $_{\text{Eulerian-Path-Cut}}$ in some cases but the maximum number of the Neutrosophic SuperHyperEdge with the maximum Neutrosophic number of Neutrosophic SuperHyperVertices, has the Neutrosophic SuperHyperVertices are contained in a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$.

The obvious SuperHyperGraph has no Neutrosophic SuperHyperEdges. But the non-obvious Neutrosophic SuperHyperModel is up. The quasi-SuperHyperModel addresses some issues about the Neutrosophic optimal SuperHyperObject. It specially delivers some remarks on the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices such that there's distinct amount of Neutrosophic SuperHyperEdges for distinct amount of Neutrosophic SuperHyperVertices up to all taken from that Neutrosophic SuperHyperSet of the Neutrosophic

SuperHyperVertices but this Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices is either has the maximum Neutrosophic SuperHyperCardinality or it doesn't have maximum Neutrosophic SuperHyperCardinality. In a non-obvious SuperHyperModel, there's at least one Neutrosophic SuperHyperEdge containing at least all Neutrosophic SuperHyperVertices. Thus it forms a Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ where the Neutrosophic completion of the Neutrosophic incidence is up in that. Thus it's, literarily, a Neutrosophic embedded R-$_{\text{Eulerian-Path-Cut}}$. The SuperHyperNotions of embedded SuperHyperSet and quasi-SuperHyperSet coincide. In the original setting, these types of SuperHyperSets only don't satisfy on the maximum SuperHyperCardinality. Thus the embedded setting is elected such that those SuperHyperSets have the maximum Neutrosophic SuperHyperCardinality and they're Neutrosophic SuperHyperOptimal. The less than two distinct types of Neutrosophic SuperHyperVertices are included in the minimum Neutrosophic style of the embedded Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. The interior types of the Neutrosophic SuperHyperVertices are deciders. Since the Neutrosophic number of SuperHyperNeighbors are only affected by the interior Neutrosophic SuperHyperVertices. The common connections, more precise and more formal, the perfect unique connections inside the Neutrosophic SuperHyperSet for any distinct types of Neutrosophic SuperHyperVertices pose the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Thus Neutrosophic exterior SuperHyperVertices could be used only in 214 one Neutrosophic SuperHyperEdge and in Neutrosophic SuperHyperRelation with the interior Neutrosophic SuperHyperVertices in that Neutrosophic SuperHyperEdge. In the embedded Neutrosophic Eulerian-Path-Cut, there's the usage of exterior Neutrosophic SuperHyperVertices since they've more connections inside more than outside. Thus the title "exterior" is more relevant than the title "interior". One Neutrosophic SuperHyperVertex has no connection, inside. Thus, the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices with one SuperHyperElement has been ignored in the exploring to lead on the optimal case implying the Neutrosophic R-Eulerian-Path-Cut. The Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ with the exclusion of the exclusion of all Neutrosophic SuperHyperVertices in one Neutrosophic SuperHyperEdge and with other terms, the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ with the inclusion of all Neutrosophic SuperHyperVertices in one Neutrosophic SuperHyperEdge, is a Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$. To sum them up, in a connected non-obvious Neutrosophic SuperHyperGraph $ESHG:(V,E)$. There's only one Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only the maximum possibilities of the distinct interior Neutrosophic SuperHyperVertices inside of any given Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ minus all Neutrosophic SuperHypeNeighbor to some of them but not all of them. In other words, there's only an unique Neutrosophic SuperHyperEdge $E \in E_{ESHG:(V,E)}$ has only two distinct Neutrosophic SuperHyperVertices in an Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$, minus all Neutrosophic SuperHypeNeighbor to some of them but not all of them.

The main definition of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ has two titles. a Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ and its corresponded quasi-maximum Neutrosophic R-SuperHyperCardinality are two titles in the terms of quasi-R-styles. For any Neutrosophic number, there's a Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ with that quasi-maximum Neutrosophic SuperHyperCardinality in the terms of the embedded Neutrosophic SuperHyperGraph. If there's an embedded Neutrosophic SuperHyperGraph, then the Neutrosophic quasi-SuperHyperNotions lead us to take the collection of all the Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cuts}}$ for all Neutrosophic numbers less than its Neutrosophic corresponded maximum number. The essence of the Neutrosophic Eulerian-Path-Cut ends up but this essence starts up in the terms of the Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$, again and more in the operations of collecting all the Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cuts}}$ acted on the all possible used formations of the Neutrosophic SuperHyperGraph to achieve one Neutrosophic number. This Neutrosophic number is considered as the equivalence class for all corresponded quasi-R-$_{\text{Eulerian-Path-Cuts}}$. Let $z_{\text{Neutrosophic Number}}$, $S_{\text{Neutrosophic SuperHyperSet}}$ and $G_{\text{Neutrosophic Eulerian-Path-Cut}}$ be a Neutrosophic number, a Neutrosophic SuperHyperSet and a Neutrosophic $_{\text{Eulerian-Path-Cut}}$.

Then

$$[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} = \{S_{\text{Neutrosophic SuperHyperSet}} \mid$$
$$S_{\text{Neutrosophic SuperHyperSet}} = G_{\text{Neutrosophic Eulerian-Path-Cut}},$$
$$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$$
$$= z_{\text{Neutrosophic Number}}\}.$$

As its consequences, the formal definition of the Neutrosophic Eulerian-Path-Cut is re-formalized and redefined as follows.

$$G_{\text{Neutrosophic Eulerian-Path-Cut}} \in \cup_{z_{\text{Neutrosophic Number}}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}$$

$= \cup_{z\text{Neutrosophic Number}} \{S_{\text{Neutrosophic SuperHyperSet}} |$

$S_{\text{Neutrosophic SuperHyperSet}} = G_{\text{Neutrosophic Eulerian-Path-Cut}},$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= z_{\text{Neutrosophic Number}}\}.$

To get more precise perceptions, the follow-up expressions propose another formal technical definition for the Neutrosophic$_{\text{Eulerian-Path-Cut}}$.

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{S_{\text{Neutrosophic SuperHyperSet}} |$

$S_{\text{Neutrosophic SuperHyperSet}} = G_{\text{Neutrosophic Eulerian-Path-Cut}},$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= z_{\text{Neutrosophic Number}} |$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}} \Bigg\}.$$

In more concise and more convenient ways, the modified definition for the Neutrosophic$_{\text{Eulerian-Path-Cut}}$ poses the upcoming expressions.

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup z_{\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} |$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}} \Bigg\}.$$

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

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup z_{\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} |$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}} \Bigg\}$$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

And then,

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup z_{\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} |$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

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

$G_{\text{Neutrosophic Eulerian-Path-Cut}} \in \cup z_{\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{S_{\text{Neutrosophic SuperHyperSet}}|$

$S_{\text{Neutrosophic SuperHyperSet}} = G_{\text{Neutrosophic Eulerian-Path-Cut}},$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{S_{\text{Neutrosophic SuperHyperSet}}|$

$S_{\text{Neutrosophic SuperHyperSet}} = G_{\text{Neutrosophic Eulerian-Path-Cut}},$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= z_{\text{Neutrosophic Number}}|$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}\}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{S \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|S_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

Now, the extension of these types of approaches is up. Since the new term, "Neutrosophic SuperHyperNeighborhood", could be redefined as the collection of the Neutrosophic SuperHyperVertices such that any amount of its Neutrosophic SuperHyperVertices are incident to a Neutrosophic SuperHyperEdge. It's, literarily, another name for "Neutrosophic Quasi-$_{\text{Eulerian-Path-Cut}}$" but, precisely, it's the generalization of "Neutrosophic Quasi-$_{\text{Eulerian-Path-Cut}}$" since "Neutrosophic Quasi-$_{\text{Eulerian-Path-Cut}}$" happens "Neutrosophic Eulerian-Path-Cut" in a Neutrosophic SuperHyperGraph as initial framework and background but "Neutrosophic SuperHyperNeighborhood" may not happens "Neutrosophic $_{\text{Eulerian-Path-Cut}}$" in a Neutrosophic SuperHyperGraph as initial framework and preliminarily background since there are some ambiguities about the Neutrosophic SuperHyperCardinality arise from it. To get orderly keywords, the terms, "Neutrosophic SuperHyperNeighborhood", "Neutrosophic Quasi-$_{\text{Eulerian-Path-Cut}}$", and "Neutrosophic $_{\text{Eulerian-Path-Cut}}$" are up.

Thus, let $z_{\text{Neutrosophic Number}}$, $N_{\text{Neutrosophic SuperHyperNeighborhood}}$ and $G_{\text{Neutrosophic Eulerian-Path-Cut}}$ be a Neutrosophic number, a Neutrosophic SuperHyperNeighborhood and a Neutrosophic $_{\text{Eulerian-Path-Cut}}$ and the new terms are up.

$G_{\text{Neutrosophic Eulerian-Path-Cut}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{N_{\text{Neutrosophic SuperHyperNeighborhood}}|$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{N_{\text{Neutrosophic SuperHyperNeighborhood}}|$

$|N_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= z_{\text{Neutrosophic Number}}|$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}}$

$\in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|N_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}.$

And with go back to initial structure,

$G_{\text{Neutrosophic Eulerian-Path-Cut}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{N_{\text{Neutrosophic SuperHyperNeighborhood}}|$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}} =$

$\cup_{z\text{Neutrosophic Number}} \{N_{\text{Neutrosophic SuperHyperNeighborhood}}|$

$|N_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= z_{\text{Neutrosophic Number}}|$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}} \in \cup z_{\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|N_{\text{Neutrosophic SuperHyperNeighborhood}}|_{\text{Neutrosophic Cardinality}}$

$= \max_{[z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}} z_{\text{Neutrosophic Number}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}\}.$

$G_{\text{Neutrosophic Eulerian-Path-Cut}} =$

$\{N_{\text{Neutrosophic SuperHyperNeighborhood}} \in \cup_{z\text{Neutrosophic Number}} [z_{\text{Neutrosophic Number}}]_{\text{Neutrosophic Class}}|$

$|N_{\text{Neutrosophic SuperHyperSet}}|_{\text{Neutrosophic Cardinality}}$

$= \max |E| \mid E \in E_{ESHG:(V,E)}\}.$

Thus, in a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). The all interior Neutrosophic SuperHyperVertices belong to any Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ if for any of them, and any of other corresponded Neutrosophic SuperHyperVertex, some interior Neutrosophic SuperHyperVertices are mutually Neutrosophic

SuperHyperNeighbors with no Neutrosophic exception at all minus all Neutrosophic SuperHypeNeighbors to any amount of them.

To make sense with the precise words in the terms of "R-', the follow-up illustrations are coming up.

The following Neutrosophic SuperHyperSet of Neutrosophic SuperHyperVertices is the simple Neutrosophic type-SuperHyperSet of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$.

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

The Neutrosophic SuperHyperSet of Neutrosophic SuperHyperVertices,

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

Is the simple Neutrosophic type-SuperHyperSet of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. The Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices,

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

Is an Neutrosophic $_{\text{R-Eulerian-Path-Cut}}$ (*ESHG*) for an Neutrosophic SuperHyperGraph *ESHG* : (*V, E*) is a Neutrosophic type-SuperHyperSet with the maximum Neutrosophic cardinality of a Neutrosophic SuperHyperSet *S* of Neutrosophic SuperHyperVertices such that there's no a Neutrosophic SuperHyperEdge amid some Neutrosophic SuperHyperVertices instead of all given by Neutrosophic $_{\text{Eulerian-Path-Cut}}$ is related to the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices,

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

There's not only one Neutrosophic SuperHyperVertex inside the intended Neutrosophic SuperHyperSet. Thus the non-obvious Neutrosophic $_{\text{Eulerian-Path-Cut}}$ is up. The obvious simple Neutrosophic type-SuperHyperSet called the Neutrosophic Eulerian-Path-Cut is a Neutrosophic SuperHyperSet includes only one Neutrosophic SuperHyperVertex. But the Neutrosophic SuperHyperSet of Neutrosophic SuperHyperVertices,

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

doesn't have less than two SuperHyperVertices inside the intended Neutrosophic SuperHyperSet since they have come from at least so far an SuperHyperEdge. Thus the non-obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is up. To sum them up, the Neutrosophic SuperHyperSet of Neutrosophic SuperHyperVertices,

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

Is the non-obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Since the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices,

$$(V \setminus V \setminus \{x, z\}) \cup \{xy\}$$

or

$$(V \setminus V \setminus \{x, z\}) \cup \{zy\}$$

is an Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ C(*ESHG*) for an Neutrosophic SuperHyperGraph *ESHG* : (*V, E*) is the Neutrosophic SuperHyperSet *S* of Neutrosophic SuperHyperVertices such that there's no a Neutrosophic SuperHyperEdge for some Neutrosophic SuperHyperVertices instead of all given by that Neutrosophic type-SuperHyperSet called the Neutrosophic $_{\text{Eulerian-Path-Cut}}$ and it's an Neutrosophic $_{\text{Eulerian-Path-Cut}}$. Since it's the maximum Neutrosophic cardinality of a Neutrosophic

SuperHyperSet S of Neutrosophic SuperHyperVertices such that there's no a Neutrosophic SuperHyperEdge for some amount Neutrosophic SuperHyperVertices instead of all given by that Neutrosophic type-SuperHyperSet called the Neutrosophic $_{\text{Eulerian-Path-Cut}}$. There isn't only less than two Neutrosophic SuperHyperVertices inside the intended Neutrosophic SuperHyperSet,

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

Thus the non-obvious Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$,

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

is up. The non-obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$, not:

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

Is the Neutrosophic SuperHyperSet, not:

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

does includes only less than two SuperHyperVertices in a connected Neutrosophic SuperHyperGraph $ESHG:(V,E)$ but it's impossible in the case, they've corresponded to an SuperHyperEdge. It's interesting to mention that the only non-obvious simple Neutrosophic type-SuperHyperSet called the "Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$" amid those obvious[non-obvious] simple Neutrosophic type-SuperHyperSets called the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$, is only and only

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

In a connected Neutrosophic SuperHyperGraph $ESHG:(V,E)$ with a illustrated SuperHyperModeling. It's also, not only a Neutrosophic free-triangle embedded SuperHyperModel and a Neutrosophic on-triangle embedded SuperHyperModel but also it's a Neutrosophic stable embedded SuperHyperModel. But all only non-obvious simple Neutrosophic type-SuperHyperSets of the Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ amid those obvious simple Neutrosophic type-SuperHyperSets of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$, are

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

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

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

is a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. In other words, the least cardinality, the lower sharp bound for the cardinality, of a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ is the cardinality of

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

To sum them up, in a connected Neutrosophic SuperHyperGraph $ESHG:(V,E)$. The all interior Neutrosophic SuperHyperVertices belong to any Neutrosophic quasi-R-$_{\text{Eulerian-Path-Cut}}$ if for any of them, and any of other corresponded Neutrosophic SuperHyperVertex, some interior Neutrosophic SuperHyperVertices are mutually Neutrosophic SuperHyperNeighbors with no Neutrosophic exception at all minus all Neutrosophic SuperHypeNeighbors to any amount of them.

Assume a connected Neutrosophic SuperHyperGraph $ESHG:(V,E)$. Let a Neutrosophic SuperHyperEdge $ESHE: E\in E_{ESHG:(V,E)}$ has some Neutrosophic SuperHyperVertices r. Consider all Neutrosophic numbers of those Neutrosophic SuperHyperVertices from that Neutrosophic SuperHyperEdge excluding excluding more than r distinct Neutrosophic SuperHyperVertices, exclude to any given Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices. Consider there's a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ with the least cardinality, the lower sharp Neutrosophic bound for

Neutrosophic cardinality. Assume a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). The Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices $V_{ESHE} \cup \{z\}$ is a Neutrosophic SuperHyperSet *S* of the Neutrosophic SuperHyperVertices such that there's a Neutrosophic SuperHyperEdge to have some Neutrosophic SuperHyperVertices uniquely but it isn't a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Since it doesn't have the maximum Neutrosophic cardinality of a Neutrosophic SuperHyperSet S of Neutrosophic SuperHyperVertices such that there's a Neutrosophic SuperHyperEdge to have some SuperHyperVertices uniquely. The Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices $V_{ESHE} \cup \{z\}$ is the maximum Neutrosophic cardinality of a Neutrosophic SuperHyperSet S of Neutrosophic SuperHyperVertices but it isn't a Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$. Since it doesn't do the Neutrosophic procedure such that such that there's a Neutrosophic SuperHyperEdge to have some Neutrosophic SuperHyperVertices uniquely [there are at least one Neutrosophic SuperHyperVertex outside implying there's, sometimes in the connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*), a Neutrosophic SuperHyperVertex, titled its Neutrosophic SuperHyperNeighbor, to that Neutrosophic SuperHyperVertex in the Neutrosophic SuperHyperSet *S* so as *S* doesn't do "the Neutrosophic procedure".]. There's only one Neutrosophic SuperHyperVertex outside the intended Neutrosophic SuperHyperSet, $V_{ESHE} \cup \{z\}$, in the terms of Neutrosophic SuperHyperNeighborhood. Thus the obvious Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$, V_{ESHE} is up. The obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic R-Eulerian-Path-Cut, V_{ESHE}, is a Neutrosophic SuperHyperSet, V_{ESHE}, includes only all Neutrosophic SuperHyperVertices does forms any kind of Neutrosophic pairs are titled Neutrosophic SuperHyperNeighbors in a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). Since the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperVertices V_{ESHE}, is the maximum Neutrosophic SuperHyperCardinality of a Neutrosophic SuperHyperSet *S* of Neutrosophic SuperHyperVertices such that there's a Neutrosophic SuperHyperEdge to have some Neutrosophic SuperHyperVertices uniquely. Thus, in a connected Neutrosophic SuperHyperGraph *ESHG* : (*V, E*). Any Neutrosophic R-$_{\text{Eulerian-Path-Cut}}$ only contains all interior Neutrosophic SuperHyperVertices and all exterior Neutrosophic SuperHyperVertices from the unique Neutrosophic SuperHyperEdge where there's any of them has all possible Neutrosophic SuperHyperNeighbors in and there's all Neutrosophic SuperHyperNeighborhoods in with no exception minus all Neutrosophic SuperHypeNeighbors to some of them not all of them but everything is possible about Neutrosophic SuperHyperNeighborhoods and Neutrosophic SuperHyperNeighbors out.

The SuperHyperNotion, namely, $_{\text{Eulerian-Path-Cut}}$, is up. There's neither empty SuperHyperEdge nor loop SuperHyperEdge. The following Neutrosophic SuperHyperSet of Neutrosophic SuperHyperEdges[SuperHyperVertices] is the simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$. The Neutrosophic SuperHyperSet of Neutrosophic SuperHyperEdges[SuperHyperVertices],

$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$

$$\left[\frac{\left|E_{ESHG:(V,E)}\right|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$=\{E_{2i-1}\}_{i=1}.$$

$$\mathrm{C}(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$

$$\left[\frac{\left|E_{ESHG:(V,E)}\right|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$=2z.$$

$$\mathrm{C}(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$\mathrm{C}(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

is the simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$. The Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperEdges[SuperHyperVertices],

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$
$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$
$$= \{E_{2i-1}\}_{i=1}.$$
$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$
$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$
$$= 2z.$$
$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$
$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Is an Neutrosophic $_{\text{Eulerian-Path-Cut}}$ ($ESHG$) for an Neutrosophic SuperHyperGraph $ESHG : (V, E)$ is a Neutrosophic type-SuperHyperSet with the maximum Neutrosophic cardinality of a Neutrosophic SuperHyperSet S of Neutrosophic SuperHyperEdges[SuperHyperVertices] such that there's no Neutrosophic SuperHyperVertex of a Neutrosophic SuperHyperEdge is common and there's an Neutrosophic SuperHyperEdge for all Neutrosophic SuperHyperVertices. There are not only two Neutrosophic SuperHyperVertices inside the intended Neutrosophic SuperHyperSet. Thus the non-obvious Neutrosophic $_{\text{Eulerian-Path-Cut}}$ is up. The obvious simple Neutrosophic type-SuperHyperSet called the Neutrosophic $_{\text{Eulerian-Path-Cut}}$ is a Neutrosophic SuperHyperSet includes only two Neutrosophic SuperHyperVertices. But the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperEdges[SuperHyperVertices],

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$
$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$
$$= \{E_{2i-1}\}_{i=1}.$$
$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$
$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$
$$= 2z.$$
$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$
$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Doesn't have less than three SuperHyperVertices inside the intended Neutrosophic SuperHyperSet. Thus the non-obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$ is up. To sum them up, the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperEdges[SuperHyperVertices],

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$
$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$
$$= \{E_{2i-1}\}_{i=1}.$$

$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$=2z.$

$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$

$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$

Is the non-obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$. Since the Neutrosophic SuperHyperSet of the Neutrosophic SuperHyperEdges[SuperHyperVertices],

$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$= \{E_{2i-1}\}_{i=1}.$

$C(NSHG)$*NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial*

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$=2z.$

$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$

$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$

Is an Neutrosophic $_{\text{Eulerian-Path-Cut}}$ (*ESHG*) for an Neutrosophic SuperHyperGraph *ESHG* : (*V, E*) is the Neutrosophic SuperHyperSet *S* of Neutrosophic SuperHyperVertices such that there's no a Neutrosophic SuperHyperEdge for some Neutrosophic SuperHyperVertices given by that Neutrosophic type-SuperHyperSet called the Neutrosophic $_{\text{Eulerian-Path-Cut}}$ and it's an Neutrosophic $_{\text{Eulerian-Path-Cut}}$. Since it's the maximum Neutrosophic cardinality of a Neutrosophic SuperHyperSet *S* of Neutrosophic SuperHyperEdges[SuperHyperVertices] such that there's no Neutrosophic SuperHyperVertex of a Neutrosophic SuperHyperEdge is common and there's an Neutrosophic SuperHyperEdge for all Neutrosophic SuperHyperVertices. There aren't only less than three Neutrosophic SuperHyperVertices inside the intended Neutrosophic SuperHyperSet,

$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$= \{E_{2i-1}\}_{i=1}.$

$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$=2z.$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Thus the non-obvious Neutrosophic $_{\text{Eulerian-Path-Cut}}$,

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$= \{E_{2i-1}\}_{i=1}.$$

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$= 2z.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Is up. The obvious simple Neutrosophic type-SuperHyperSet of the Neutrosophic $_{\text{Eulerian-Path-Cut}}$, not:

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$= \{E_{2i-1}\}_{i=1}.$$

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$= 2z.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Is the Neutrosophic SuperHyperSet, not:

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$

$$\left[\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$= \{E_{2i-1}\}_{i=1}.$$

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$

$$\left[\frac{\left|E_{ESHG:(V,E)}\right|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$=2z.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

Does includes only less than three SuperHyperVertices in a connected Neutrosophic SuperHyperGraph $ESHG:(V,E)$. It's interesting to mention that the only non-obvious simple Neutrosophic type-SuperHyperSet called the "Neutrosophic $_{\text{Eulerian-Path-Cut}}$" amid those obvious[non-obvious] simple Neutrosophic type-SuperHyperSets called the Neutrosophic $_{\text{Eulerian-Path-Cut}}$, is only and only

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-Cut}$$

$$\left[\frac{\left|E_{ESHG:(V,E)}\right|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$=\{E_{2i-1}\}_{i=1}.$$

$$C(NSHG)_{NeutrosophicQuasi-Eulerian-Path-CutSuperHyperPolynomial}$$

$$\left[\frac{\left|E_{ESHG:(V,E)}\right|_{Neutrosophic\ Cardinality}}{2}\right]$$

$$=2z.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-Cut} = \{V_i\}_{i=1}^{s}, \{V_j\}_{j=1}^{t}.$$

$$C(NSHG)_{NeutrosophicR-Quasi-Eulerian-Path-CutSuperHyperPolynomial} = az^s + bz^t.$$

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

3. The Neutrosophic Departures on the Theoretical Results Toward Theoretical Motivations

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 3.1.

Assume a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. Then

$$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$$

$$=\{E_i \in E_{NSHG}\}.$$

$$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$

$$=\sum z^{|E_i \in E_{NSHG}|}.$$

$$C(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$$

$$=\{V_i \in V_{NSHG}\}.$$

$$(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$

$$=\sum z^{|V_i \in V_{NSHG}|}.$$

Proof: Let

$P:$

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

...

$V_{\frac{|E_{NSHG}|}{3}}^{EXTERNAL}, E_{\frac{NSHG}{3}}$

$P:$

$E_1, V_1^{EXTERNAL}$

$E_2, V_2^{EXTERNAL}$

...

$E_{\frac{NSHG}{3}}, V_{\frac{|E_{NSHG}|}{3}}^{EXTERNAL}$

be a longest path taken from a connected Neutrosophic SuperHyperPath *ESHP* : (*V, E*). There's a new way to redefine as

$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$

$\exists! E_z \in E_{ESHG(V,\,E)}, V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$

$\exists! E_z \in E_{ESHG(V,\,E)}, \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward.

Example 3.2.

In the Figure (1), the connected Neutrosophic SuperHyperPath *ESHP* : (*V, E*), is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (1), is the SuperHyperEulerian-Path-Cut.

Proposition 3.3.

Assume a connected Neutrosophic SuperHyperCycle *ESHC* : (*V, E*). Then

$\mathcal{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$

$= \{\}.$

$\mathcal{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0.$

$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$

$= \{\}.$

$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0.$

Proof: Let

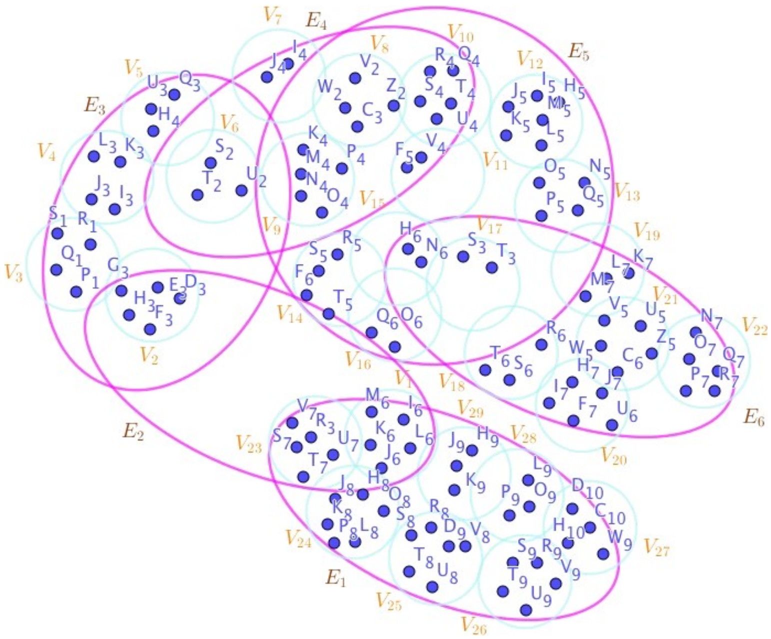

Figure 1: A Neutrosophic SuperHyperPath Associated to the Notions of Neutrosophic SuperHyperEulerian-Path-Cut in the Example (4.2)

$P:$

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

...

$V_{\frac{|E_{NSHG}|}{3}}^{EXTERNAL}, E_{\frac{NSHG}{3}}$

$P:$

$E_1, V_1^{EXTERNAL}$

$E_2, V_2^{EXTERNAL}$

...

$E_{\frac{NSHG}{3}}, V_{\frac{|E_{NSHG}|}{3}}^{EXTERNAL}$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC:(V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$$

$$\exists! E_z \in E_{ESHG(V,E)}, V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$

$$\exists! E_z \in E_{ESHG(V,E)}, \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $\left|N\left(V_i^{EXTERNAL}\right)\right| \geq \left|N\left(V_j\right)\right|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward.

Example 3.4.

In the Figure 2, the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (2), is the Neutrosophic SuperHyperEulerian-Path-Cut.

Proposition 3.5.

□

Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then

$$\mathcal{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$$
$$= \{\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$
$$= 0z^0.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$$
$$= \{\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$
$$= 0z^0.$$

Proof: Let

$$P :$$
$$V_1^{EXTERNAL}, E_1$$
$$CENTER, E_2$$
$$P :$$
$$E_1, V_1^{EXTERNAL}$$
$$E_2, CENTER$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

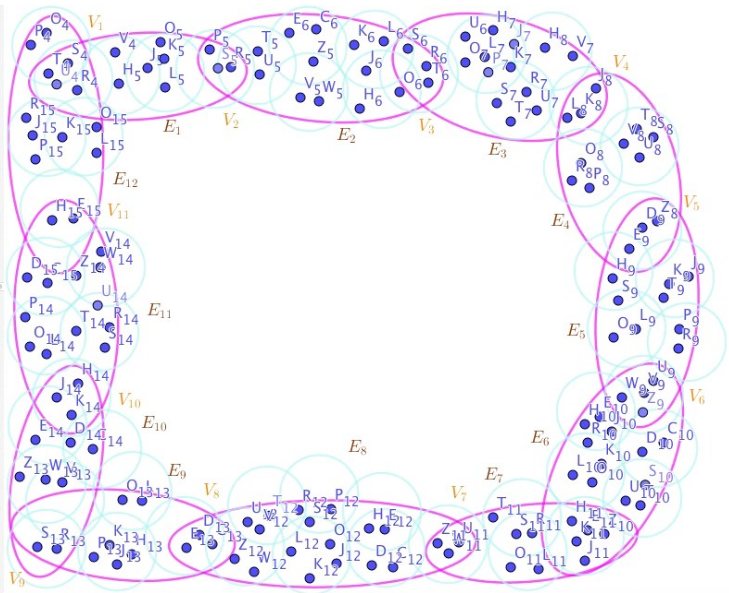

Figure 2: A Neutrosophic SuperHyperCycle Associated to the Neutrosophic Notions of Neutrosophic SuperHyperEulerian-Path-Cut in the Neutrosophic Example (4.4)

$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$

$\exists! E_z \in E_{ESHG(V,\,E)},\, V_i^{EXTERNAL},\, V_j^{EXTERNAL} \in E_z \equiv$

$\exists! E_z \in E_{ESHG(V,\,E)},\, \{V_i^{EXTERNAL},\, V_j^{EXTERNAL}\} \subseteq E_z.$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward.

Example 3.6.

In the Figure 3, the connected Neutrosophic SuperHyperStar *ESHS* : (*V, E*), is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar *ESHS* : (*V, E*), in the Neutrosophic SuperHyperModel (3), is the Neutrosophic SuperHyperEulerian-Path-Cut.

Proposition 3.7.

Assume a connected Neutrosophic SuperHyperBipartite *ESHB* : (*V, E*). Then □

$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$

$= \{\}.$

$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0.$

$C(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$

$= \{\}.$

$C(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0.$

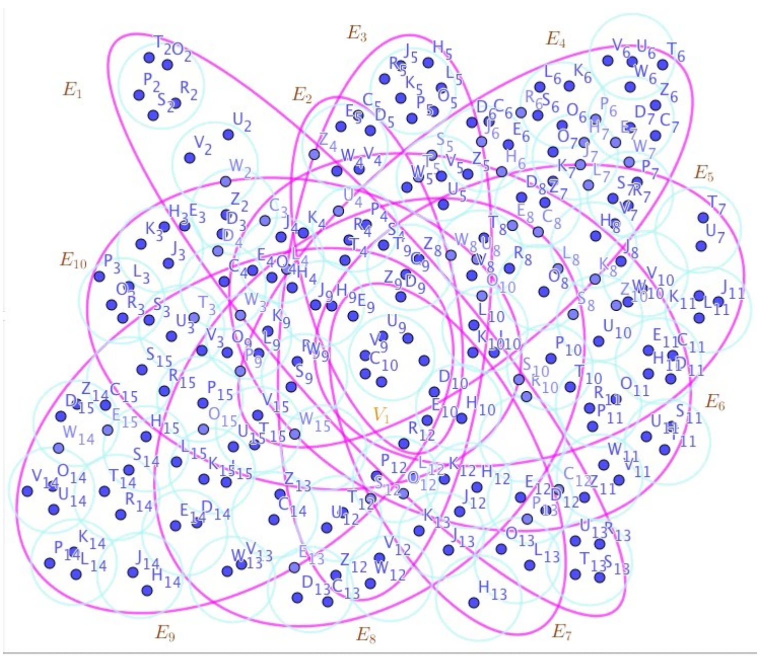

Figure 3: A Neutrosophic SuperHyperStar Associated to the Neutrosophic Notions of Neutrosophic SuperHyperEulerian-Path-Cut in the Neutrosophic Example (4.6)

Proof: Let

$P:$

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

...

$V_{|P_i|=\min_{P_j \in E_{NSHG}}}^{EXTERNAL} |P_j|, E_{|P_i|=\min_{P_j \in E_{NSHG}}} |P_j|$

$P:$

$E_1, V_1^{EXTERNAL}$

$E_2, V_2^{EXTERNAL}$

...

$E_{|P_i|=\min_{P_j \in E_{NSHG}}} |P_j|, V_{|P_i|=\min_{P_j \in E_{NSHG}}}^{EXTERNAL} |P_j|$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite *ESHB* : (*V, E*). There's a new way to redefine as

$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$

$\exists! E_z \in E_{ESHG(V,\,E)}, V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$

$\exists! E_z \in E_{ESHG(V,\,E)}, \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$

The term "EXTERNAL" implies $\left|N\left(V_i^{EXTERNAL}\right)\right| \geq \left|N\left(V_j\right)\right|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward. Then there's no at least one SuperHyperEulerian-Path-Cut. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperEulerian-Path-Cut could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$P:$

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

is a longest SuperHyperEulerian-Path-Cut taken from a connected Neutrosophic SuperHyperBipartite *ESHB* : (*V, E*). Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$P:$

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

The latter is straightforward.

Example 3.8.

In the Neutrosophic Figure 4, the connected Neutrosophic SuperHyperBipartite *ESHB* : (*V, E*), is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous

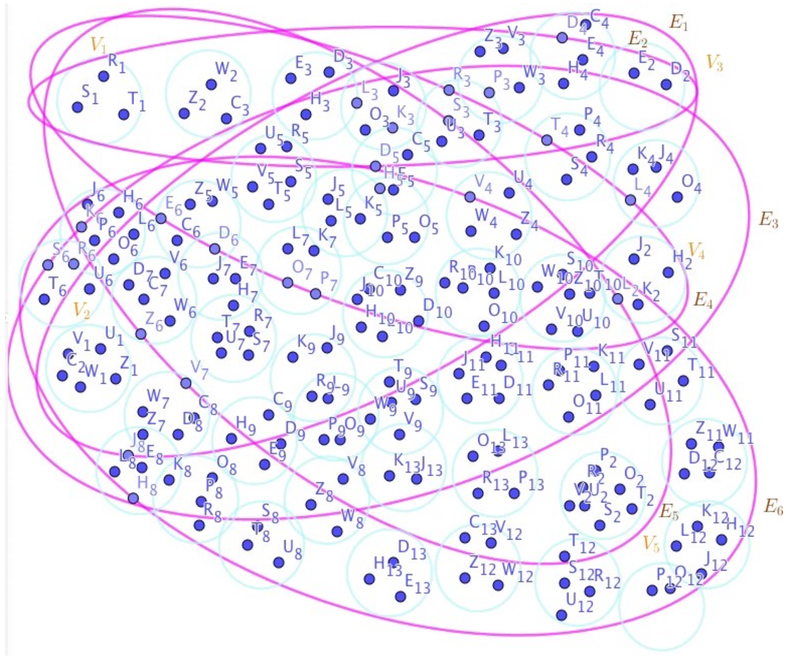

Figure 4: Neutrosophic SuperHyperBipartite Neutrosophic Associated to the Neutro-Sophic Notions of Neutrosophic SuperHyperEulerian-Path-Cut in the Example (4.8)

Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite *ESHB* : (*V, E*), in the Neutrosophic SuperHyperModel (4), is the Neutrosophic SuperHyperEulerian-Path-Cut.

Proposition 3.9.

Assume a connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*). Then □

$$\mathrm{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$$
$$= \{\}.$$
$$\mathrm{C}(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$
$$= 0z^0.$$
$$\mathrm{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$$
$$= \{\}.$$
$$\mathrm{C}(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$$
$$= 0z^0.$$

Proof: Let

$$P:$$
$$V_1^{EXTERNAL}, E_1$$
$$V_2^{EXTERNAL}, E_2$$
$$\ldots$$
$$V_{|P_i|=\min_{P_j \in E_{NSHG}}}^{EXTERNAL} |P_j|, E_{|P_i|=\min_{P_j \in E_{NSHG}}} |P_j|$$
$$P:$$
$$E_1, V_1^{EXTERNAL}$$

$E_2, V_2^{EXTERNAL}$

...

$E_{|P_i|=\min_{P_j \in E_{NSHG}} |P_j|}, V^{EXTERNAL}_{|P_i|=\min_{P_j \in E_{NSHG}} |P_j|}$

is a longest SuperHyperEulerian-Path-Cut taken from a connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*). There's a new way to redefine as:

$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$

$\exists! E_z \in E_{ESHG(V,\, E)}, V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$

$\exists! E_z \in E_{ESHG(V,\, E)}, \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z$.

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward. Then there's no at least one SuperHyperEulerian-Path-Cut. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperEulerian-Path-Cut could be applied. There are only z^2 SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

P:

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*). Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

P:

$V_1^{EXTERNAL}, E_1$

$V_2^{EXTERNAL}, E_2$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*). The latter is straightforward.

Example 3.10.

In the Figure 5, the connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*)*,* is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite *ESHM* : (*V, E*)*,* in the Neutrosophic SuperHyperModel (5), is the Neutrosophic SuperHyperEulerian-Path-Cut.

Proposition 3.11.

Assume a connected Neutrosophic SuperHyperWheel *ESHW* : (*V, E*). Then*,*

$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut}$

$= \{\}$.

$C(NSHG)_{Neutrosophic\ Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0$.

$C(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut}$

$= \{\}$.

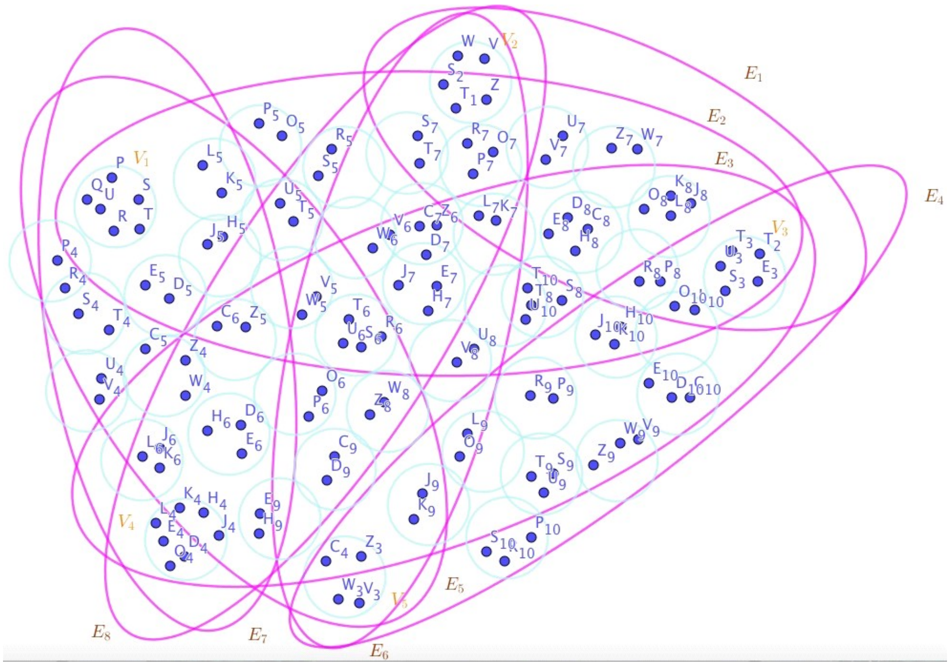

Figure 5: A Neutrosophic SuperHyperMultipartite Associated to the Notions of Neu- trosophic SuperHyperEulerian-Path-Cut in the Example (4.10)

$C(NSHG)_{Neutrosophic\ V\text{-}Eulerian\text{-}Path\text{-}Cut\ SuperHyperPolynomial}$

$= 0z^0.$

Proof: Let

$P:$

$V_1^{EXTERNAL}, E_1^*$

$CENTER, E_2^*$

$P:$

$E_1^*, V_1^{EXTERNAL}$

$E_2^*, CENTER$

is a longest SuperHyperEulerian-Path-Cut taken from a connected Neutrosophic SuperHyperWheel *ESHW* : (*V*, *E*). There's a new way to redefine as:

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} =$$

$$\exists! E_z \in E_{ESHG(V,E)}, V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$

$$\exists! E_z \in E_{ESHG(V,E)}, \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperEulerian-Path-Cut. The latter is straightforward. Then there's at least one SuperHyperEulerian-Path-Cut. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperEulerian-Path-Cut could be applied. The unique embedded SuperHyperEulerian-Path-Cut proposes some longest SuperHyperEulerian-Path-Cut excerpt from some representatives. The latter is straightforward.

Example 3.12.

In the Neutrosophic Figure 6, the connected Neutrosophic SuperHyperWheel *NSHW* : (*V, E*), is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel *ESHW* : (*V, E*), in the Neutrosophic SuperHyperModel (6), is the Neutrosophic SuperHyperEulerian-Path-Cut.

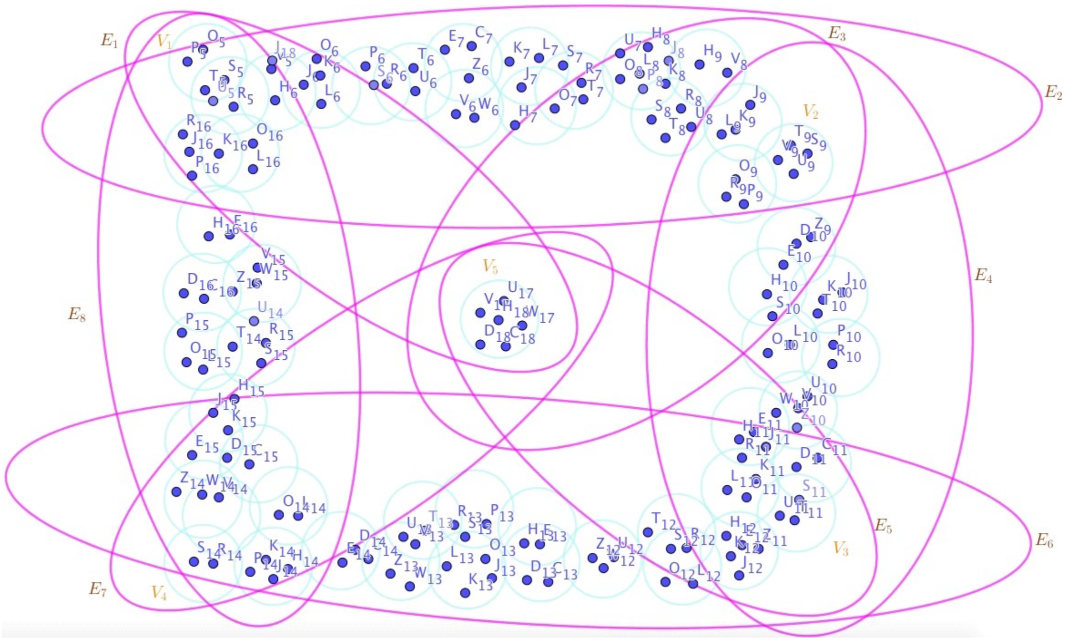

Figure 6: A Neutrosophic SuperHyperWheel Neutrosophic Associated to the Neu-Trosophic Notions of Neutrosophic SuperHyperEulerian-Path-Cut in the Neutrosophic Example (4.12)

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