

# NONLINEAR QUANTUM ALGEBRAIC TOPOLOGICAL MODEL FOR COMPUTING MINIMUM TRANSITION HOMOLOGIES USING JOINT CLUSTER PAINLEVE NETWORK THEORY

## Abstract

Developing immense in network communication, complex topology is one of main structural problem in Transition homologies. Due to this nonlinear structure creates a redundant network life time foe energy loses due to distance theory of connective nodes in network leads data transmission failures. Existing analytics model estimates the linear substance based distance theory to process the Data Transition Homologies (DTH) indeed of nonlinear structure because of dynamic topology in homotphy to improve the network communication. To resolve this problem, we propose a Nonlinear Quantum Algebraic Topological (NQAT) model for computing the minimum Transition homologies using painleve network theory to improve the homological network structure for network life time improvement. This proposed system forming best joint cluster network path  $\lim_{t \rightarrow \infty} 2(x+y) \frac{2(n+1(t))}{\alpha(t)}$  at ' $\alpha$ ' variance at  $x'$  time to create network structure. To create joint cluster by estimating immediate consequence of the orthogonally node condition is the recurrence relation between transient node based on response rate. This chose the best energy level supporting node to construct a topology to improve the network lifetime maximization.

**Keywords:** on linear equation, painleve network theory, topology model, network theory, homotphy equation

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## I. INTRODUCTION

The homotopy transitive solutions for solving the Network Non-Linear Equation (NNLE) using painleve equation-I is hybridized with an active synthesis using that computational intelligence techniques based on Nonlinear Quantum algebraic topological defined by G. D'ambrosi et al [1]. Mathematical models of equations were developed using linear combinations of network computation 'n-theory' that define errors not overseen in the model to reove topological problems.

The  $n+1$  limit is used for solving the Painleve Equation-I is provided using computational intelligence techniques based on distance estimation theory by poison arrival process using homotopy clustering transitive algorithms defining the path alns by E. Hernández et al [3]. Mathematical models of equations have been developed with the help of non-linear combinations of distance theory that define the unsupervised error of the model. This error is minimized if the correct weights for the path network are available to improve the communication in painleves theory.

## II. PAINLEVE SECOND ORDER EQUATION

**Definition 1:** according to Peter et al [2] definitions Painleve is a trance dents solutions which the solves the nonlinear problems in network of communication where the nodes are nontrivial liner structures.

Let us consider the 'n' number of nodes,  $w''(n) = 2w^3 + 2(n+1)zw + \alpha(c)$

Where  $\alpha$  is arbitrary constant, whether the nodes are infinite in nature without at constant 'c' points n number of changes in arbitrary point,

Where N is he number of nodes arrival and node point consider the distance in arbitrary  $\alpha$  at constant in duty cycle 'w' at total on trivial nods in topology and ZW be real node considering  $c \rightarrow \{0,1\}$  be varying the nonlinear structure at similar point defiend by routing concept by Cevher S et al [4]

**Definition 2:** By considering the asymptotic network expansion the nodes are arranged in arbitrary nonlinear model need to facilitate with connection formula to make path, the nonlinear differential be estimated by connection formulae in asymptotic expressions,

$$w'' = 2w^3 + zw$$

From this special case the nonlinear arrangement of nodes be available in dynamic nature  $\alpha = 0$ , the boundary limits of dynamic network be varied,

$$w(z) \rightarrow 0 \text{ at } in \ z \rightarrow \infty$$

From the above anatine state of node represents the dynamic sum of node arrival, pain level be modified as in following equation,

$$w'' = \sum_i^n d \rightarrow 2w^3 + zw$$

Where 'd' represents dynamic topology of node constructing at special case across the variation occurs in nodes.

### III. COMPUTING MINIMUM TRANSITION HOMOLOGIES

**Theorem 1:** Based on the poisson the distribution , the distribution node theory be transition probability 'x' ne carried y regular interval time 't' at number of nodes m/m/G- geometric distribution theory in  $P[x]$  defined by Koekoek et al [6].

From arbitrary point M/ M queuing at x in constant meanwhile  $(t, t+h) \rightarrow$ geometric point

Maximum arrival of node at p more than observe in nonlinear point at 't' point homologies a theta content  $(t, t+h)$ , for  $h \rightarrow 0$ ] f 0 at regular frequency limit  $f_0$

By the probability P maximum at position 'x' at geometric in hotopogy 'h' topology arriving by the n+1 point based on similarity node transmission by U. Al Khawaja et al[7] Let  $p_n(t) = P[x]$  at Regular interval (0,t) atMaximum probability p(x) at regularinterval homologies constructs  $p_n(t+h)$ ,  $h \rightarrow 0$ :

$$p_n(t + h) = p_n(t)[1 - h] + p_{n-1}(t) \rightarrow h$$

let 'n' at the node position be leat time 't' takes more time arrival be transitive out homotphy point n-1 then max closest node n (n+1) be carried out regular interval 't'  $P_0(t+h) = P_0(t)[1-h](n+1)$

$P_0(n)$  be the time of all rival at transition homilies 'h' be maximum n-1 releasing node from transition point begin at node 't' arrival point. Based on the relative theory on nonlinear equation be grouped into cluster approach.

### IV. CLUSTER DISTANCE THEORY $\lim_{t \rightarrow \infty} 2(x + y)$ NODES

**Definition 3:** Painleves distance estimation are carried from minimum transition topology in nonlinear derivative principles at 'i' number of duty cycle defined by [5]. The 't' be equivalentconstant be taken uniformly grouping least distance a and b in communal link ,  $iu_t = u_{xx} + iaau * u_x + ibu^2 u_x + cu^3 u^{*2}$  also the conjugate represent of a, b, c are real constant values irregular point painleve first order equivalence theory to calculate the distance of nodes defined by D. R. Licata [8].

Based on the relative response, the Queue represents the similarity of the nodes. Based on the achieving similarity them group's equivalent nodes at regular interval of time between the nodes at average communication points in nonlinearpoint  $\lim_{t \rightarrow \infty} 2(x + y)$ , where x and y be the onde plotting positon.

**Theorem 2:** Let us average mean time of node dependencies at regular interval 10 min and the response time 20 min. Also the delay tolerance be carried out in waiting time queue be uniform distribution M-queue at sequence point of node. By the point latency point be varied out approximation to tolerate the error be estimated by.

$$\lambda = \frac{1}{10}$$

$C_s^2 = 1$  as defined as value the delay to learn expect the mean time of node arrival  $(10+20)/2=15$ , remain be distributed at  $\mu = \frac{1}{15}$ , time dependencies carried at the node,  $\sigma_a^2$  will dependant  $(20 - 10)2/12=8.33$ , weather  $\rho = \frac{15}{2*10} = 0.75$ , where  $C_s^2 = \frac{\sigma_s^2}{(\frac{1}{\mu})^2} = \frac{8.33}{(15)^2} = 0.03$ , node arrival rate on queuing be regularized,  $\rho_0 = 0.1453$ , then

By the latent queuing the cluster be formed by the relative estimation  $Lq = Lq = \frac{\rho^2(1+C_s^2)(C_a^2+\rho^2C_s^2)}{2*(1-\rho)^2} = \frac{0.1453(\frac{1}{15})^2*0.75}{2*(1-0.75)^2} = Wq = \frac{Lq}{\lambda} = 1.929 * 10 = 19.29$ .

**Definition 4: Equivalent Distance Theory:**  $Wq$  equivalent  $\frac{(C_a^2+C_s^2)}{2}(19.29)*(1 + 0.03)/2 = 9.93$ , the number of target nodes specified each variation of cluster nodes  $Lq=Wq * \lambda = 9.93*1/10 = 0.993$

Mean depth point of node points on extended state is  $\frac{|9.9376 - 9.5693|}{9.9376} * 100 = 3.07\%$

The mean estimation delay time is  $W=Wq+\frac{1}{\mu} = 8.12 + 14 = 24.93min$

The maximum node similar zed grouped into specific point be extended the joining point in active homologies  $q \rightarrow n$  at 't' time nodes accessibility

$L = \lambda w = q$  at  $0 < n < 2(n+1)$  in equivalent arrival of nodes at least mean square values point the distance theory of nodes in communication point.

The arrival execution of nodes depending on the Priority, the waiting time be nonlinear point depended at remain while the node (n at arrival distance homologies) rather than  $2(n)$  remains  $0 < n < (n+1)$ . Priority Rules determine who should provide the following, other than that the priority rules are those that come first 'n' and  $2(n+1)$  foremost. The number of nodes 'n' at each duty cycle 'd(n+1)' be considered as maximum allocation pointed to select the maximum structure of homologies with least group selected from the cluster head based on the priority.

## V. NONLINEAR QUANTUM ALGEBRAIC TOPOLOGICAL (NQAT) MODEL

**Definition 5:** Let us consider a random discrete network defined from Vivo et al (7), we compose a mathematical painleve second order for network path construction in  $(n+1)$  and  $(n-1)$  where, n is the node variation point whether node n is assigned at arbitrary point or leave at  $K \rightarrow Kn$  arbitrary point.

$$X_{n+1} + X_{n-1} = \frac{(an + b)xn + c}{1 - X_n^2}$$

Where  $X_n$  is the dependent variable in the search, n is the dependent variable, and the elements a, b, c  $\in c$  are as follows. It is noteworthy that we did not find it to be an equation

that follows a rectangular stratosphere that completes a unit circle. By using the general prison criteria (1.1) to generalize,

$$X_{n+1} + X_{n-1} = \frac{(an + b)xn + c + (-1)^n d}{1 - X_n^2}$$

Based on the dependent variables  $X_n$  and  $Y_{n-1}$  the nodes are rearranged with distance parameter with integral preserved by real value

$$X_n = X_{2n}, Y_n = X_{2n-1}$$

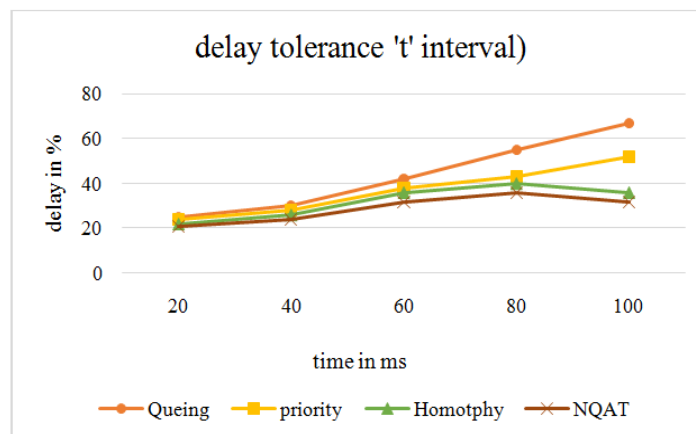
From the above two equation we combine,

$$Y_{n+1} + Y_n = \frac{(2an + b)Xn + c + d}{1 - X_n^2}, X_{n+1} + X_n = \frac{(a(2n + 1) + b)Yn + 1 + c - d}{1 - X_n^2}$$

This derive the projective variation of network node construction equalize the Panileve and standalone Painleve equations characterize the basic space under initial conditions from network theory. It initially corresponds to the translation of the network direction among the group node related to space.

## VI. SUBSTITUTION OF SIMULATED NETWORK PROOFS

The resultant of proposed equation theory be test simulated on network simulator 2 and the parameters of packets be transferred to test the evaluationin the proposed process to create a simulated system by solving nonlinear predictive math dissolution. The proposed network approach behavior is integrated and considers various simulated parameters. Delayed transmission response refers to the n-1 strategy, but over time, the network moves away from one drive and leaves another coverage area. Delayed data will arrive from the target source to the end point from the average estimated order and arrive from the coverage area at the required time.



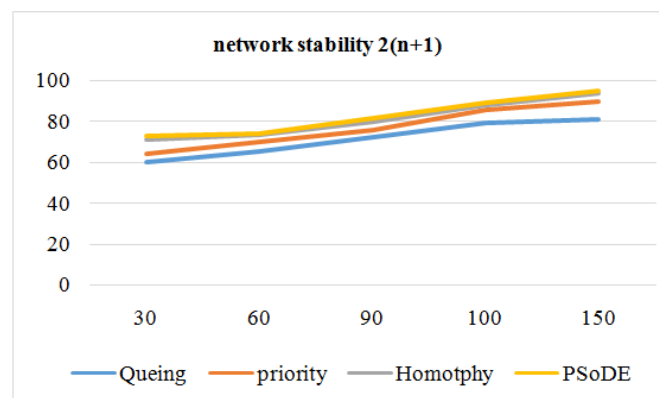
**Figure 1:** Delay tolerance on 't'

Indicates a delay in the terminal response on the network starch (n-1). This increases data transition mediumto select the best homologies construction. The dynamic position maintained based on delay tolerance at regular interval based on non-linear type equations defined by U. Al Khawaja et al [9]. Therefore, energy consumption can be increased by

reducing the network latency by using the component  $(n-1)$  that manages the maintenance of the communication system on energy.

## VII. NETWORK STABILITY OF ACCESING CONNECTION MEDIUM $2(N+1)$

In order to maintain connection stability and improve the system, the sensor node is expected to respond to the maximum rated time and cause dynamic network delays. Communication extends the exchange by verifying the maximum response node and the maximum dynamic range. Network based solutions are based on the results of these system parameters in the most optimal latency mode of the packet sharing protocol.



**Figure 2:** Network stability  $2(n+1)$

The network stability is shown in figure 2, where  $n \rightarrow 2(n + 1)$  has maximum connection stability in the adjacent coverage area. The proposed solution demonstrates the effectiveness of a node stability connection that extends the life of the sensor network in a non-linear communication network. In the event of variance residues  $(n-1)$  being ignored by adding a sleeping terminal, stability be varied at achieved point of  $n$  number of nodes arrived shortly

## VIII. CONCLUSION

The Painleve property should be used as a nonlinear topological construction to produce best performance for solving nonlinear network computing theory. This improves the communication analytical process based on the  $n+1$  distance theory by painleves equation. The nonlinear distance theory formulated under the poison process of queuing distribution theory by among the shortest analytical process to resolve the problems on transition homotphy representation. As well this proposed resultant proves the definitions based on to improve the network of communication achieve high performance than other solutions.

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