National Institute of Technology Rourkela

Registration Seminar

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| Seminar Title | : Laplacian State Transfer on Graphs |
| Speaker | : Swornalata Ojha ( Rollno : 523ma1002) |
| Supervisor | : Hiranmoy Pal |
| Venue | : Seminar Room, Department of Mathematics |
| Date and Time | : 01 Apr 2025 (5:15 PM) |
| Abstract | : Let G be a finite, simple and undirected graph with adjacency matrix L. The continuous time quantum walk relative to L is governed by the transition matrix U_L(t) = e^{itL}, where t &isin R and i = &radic&minus1. The graph G is said to exhibit Laplacian perfect state transfer(LPST) between a pair of distinct vertices a and b if there exists &tau &isin R and a unimodular complex number &gamma such that e^T_b U_L(&tau)e_a = &gamma. The graph G is said to have Laplacian pretty good state transfer (LPGST) between a pair of distinct vertices a and b if there exists a sequence &tau_k &isin R and a unimodular complex number &gamma such that lim_{k&rarr&infin} e^T_v U_L(&tau_k)e_u = &gamma. A pair state associated with a pair of vertices a and b of G is given by e_a &minus e_b. One may consider Laplacian perfect pair state transfer (pair-LPST) and Laplacian pretty good pair state transfer (pair-LPGST) instead of LPST and LPGST, wherein the vertex states are replaced by linearly independent pair states. We investigate the existence of Laplacian state transfer on a double subdivided star T_{m,m} which is obtained by joining the coalescence vertices of two copies of a subdivided star SK_{1,m}. Then, an edge perturbation in T_{m,m} yields infinitely many bicyclic graphs exhibiting Pair-LPST. A graph with an involution exhibits pair-LPST, which depends on the vertex state transfer of the half graph induced by the involution. From this, we obtain an infinite family of trees with potential and unicyclic graphs exhibitting pair-LPST. |