LORD KAVI, Concordia University of Edmonton

Towards Haemers Laplacian Toughness Conjecture

This talk focuses on graph connectivity and toughness, highlighting an improved bound on vertex connectivity as initially proposed by Krivelevich and Sudakov. Toughness, introduced by Chvátal in 1973, is a key measure of how well different parts of a graph are connected, with implications for Hamiltonicity, spanning trees, connectivity, and more. We derive new bounds on graph toughness and confirm specific cases of a Laplacian-based toughness conjecture by Haemers. Our results include confirmations for regular bipartite graphs, trees, graphs with at least one leaf, graphs with up to 8 vertices, and some specially constructed examples.