

Distance spectra

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The distance matrix of a graph of order n is a symmetric $n \times n$ integer matrix whose ij -entry is the distance between vertices v_i and v_j . Distance matrices were introduced by Graham and Pollak in the study of loop switching in circuits. The distance eigenvalues of G are the eigenvalues of its distance matrix, which form the distance spectrum of G . The original problem and various recent results will be described, including a proof of a 1978 conjecture of Graham and Lovász that the coefficients of the distance characteristic polynomial are unimodal (and log-concave), the determination of distance spectra for distance regular graphs that have one positive distance eigenvalue, and a characterization of strongly regular graphs having more positive than negative distance eigenvalues.

This talk is based on joint work with G. Aalipour, A. Abiad, Z. Berikkyzy, J. Cummings, J. De Silva, W. Gao, K. Heysse, F.H.J. Kenter, J.C.-H. Lin, and M. Tait.