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Vertex distinction and interlacing with subgraph centrality

Centrality measures are often used to determine the most important vertices of a graph. We focus on subgraph centrality, which is based on the matrix exponential of βA , where β is a parameter and A is the adjacency matrix of the graph.

Our objective is to study when two different vertices have the same subgraph centrality, and their interlacing values, i.e. how many times their relative ranking reverses as β varies from 0 to ∞ . We show a recent proof of Estrada's conjecture, which is related to cospectral vertices and walk-regular graphs; we also show some bounds on the number of interlacing values for two vertices.

This is a joint work with Michele Benzi (Scuola Normale Superiore).