Analysis Seminar

An extension of the concept of cospectral vertices and its application to lumpability of graphs

By

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Abstract: We investigate the relationship between cospectral vertices and lumpability of graphs. We find that lumpability arises in a nontrivial way for graphs containing cospectral vertex pairs and is reflected in the Perron-Frobenius eigenvector of the adjacency matrix.

We then extend the definition of cospectral vertices without losing the lumpability property. We find that this extended definition of vertex pairs is observed more frequently in random graphs than cospectral vertices. Furthermore, we present a graph-theoretical construction method to obtain such vertices. We conclude with some remarks on certain other settings where such vertices can arise.

Date: Thursday, January 9, 2025
Time: 10:00-11:00
Place: SA141 - Mathematics Seminar Room