Isospectral magnetic graphs

Fernando Lledó

*University Carlos III, Madrid and Institute for Mathematical Sciences (ICMAT), Madrid*

flledo@math.uc3m.es

We present a new geometrical construction leading to an infinite collection of families of graphs, where all the elements in each family are (finite) isospectral non-isomorphic graphs for the discrete magnetic Laplacian with normalised weights (in particular for standard weights). The construction is based on the notion of isospectral frames which, together with the $s$-partition of a natural number $r$, define the isospectral families of graphs by contraction of distinguished vertices. The isospectral frames have high symmetry and we use a spectral preorder of graphs studied in [2,3] to control the spectral spreading of the eigenvalues under elementary perturbations of the graph like vertex contraction and vertex virtualisation.

References:

