SEMINARIO DE ANÁLISIS Y APLICACIONES

Viernes, 22 de octubre de 2021

11:30 h., Aula Naranja, ICMAT,

y además ONLINE - URL: https://us06web.zoom.us/j/5446648029

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Isospectral graphs for the discrete magnetic Laplacian

Resumen:
Analysis on graphs studies the connections between geometrical or combinatorial properties of graphs and natural operators defined on them. In this talk, I will 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 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:

(1) J.S. Fabila-Carrasco, F. Lledó and O. Post, A geometric construction of isospectral magnetic graphs, 2021 (in preparation).

(2) J.S. Fabila-Carrasco, F. Lledó and O. Post, Spectral preorder and perturbations of discrete weighted graphs, Math. Ann. 2020,
DOI: https://doi.org/10.1007/s00208-020-02091-5

(3) J.S. Fabila-Carrasco, F. Lledó and O. Post, Spectral gaps and discrete magnetic Laplacians, Lin. Alg. Appl. 547 (2018) 183-216

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