The Sufficiency of Edge-Monic Contributors for the Hypergraph Laplacian and Contributor Duality

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Based on joint work with Blake Dvarishkis and Lucas Rusnak (Texas State University)

Sachs showed that coefficient of the characteristic polynomial of the adjacency matrix of a graph are calculated using cycle covers. We use contributors, the extended notion of weak cycle covers via closed walk embeddings into the underlying incidence structure, to show that the total minor polynomial depends solely on the edge-monic contributors. We then examine the dual of a contributor and show that only the class of edge-monic, circle-closed contributors admit a contributor-dual. Furthermore, non-zero isospectrality of the Laplacian and its dual is reclaimed as an immediate consequence.