

1024-05-191

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Martin. *Counting weighted simplicial spanning trees of shifted complexes.* Preliminary report.

Building upon the work of Kalai and Adin, we extend the concept of a spanning tree from graphs to simplicial complexes. For all complexes Δ satisfying a mild technical condition, we show that the simplicial spanning trees of Δ can be enumerated using its Laplacian matrices, generalizing the matrix-tree theorem. As in the graphic case, replacing the Laplacian with a weighted analogue yields homological information about the simplicial spanning trees being counted. We find a nice expression for the resulting weighted tree enumerator of shifted complexes, by generalizing a formula for the Laplacian eigenvalues of a shifted complex to the weighted case. (Received January 08, 2007)