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Module Bases for Integer Splines

Abstract for the Combinatorics Seminar 2019 March 5

Let G be a graph with n vertices and positive integer edge weights A. A vertex labeling $(g_1,...,g_n)$ is an *integer spline* if for every pair of adjacent vertices $\{i,j\}$ with edge weight a, $g_i = g_j \mod a$. The set of splines on a given weighted graph (G,A) forms a free module of rank n over the integers. We provide an explicit construction for a particularly nice basis for this module, generalizing work done by undergraduates at Smith College and Bard College.

This is joint work with Jeff Suzuki and Jessica Liu.

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