

1083-05-227

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*Laplacian ideals, arrangements, and resolutions.* Preliminary report.

The lattice ideal of the Laplacian matrix of a graph  $G$  provides an algebraic perspective on the combinatorial dynamics of the Abelian Sandpile Model and the more general Riemann-Roch theory of  $G$ . The generators of this ideal form a Gröbner bases with respect to a certain term order, and the associated initial ideals have well-known connections to  $G$ -parking functions. We study resolutions of these initial ideals and show that, at least under certain conditions on  $G$ , a minimal free resolution is supported on the bounded subcomplex of a hyperplane section of the graphical arrangement of  $G$ . It is conjectured that these complexes also support resolutions for the Laplacian lattice ideal itself. This generalizes constructions from Postnikov and Shaprio (for the case of the complete graph) and connects to work of Manjunath and Sturmfels, and Perkinson on the commutative algebra of Sandpiles. Time permitting we will discuss some connections to the topology of generalized partition posets. This is joint work with Raman Sanyal. (Received August 28, 2012)