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**Art Duval\*** ([artduval@math.utep.edu](mailto:artduval@math.utep.edu)), University of Texas at El Paso, Department of Mathematical Sciences, El Paso, TX 79968-0514. *Matroid Steiner complexes are Laplacian integral*. Preliminary report.

The collection of simplicial complexes whose combinatorial Laplacian  $(\partial\partial^* + \partial^*\partial)$  eigenvalues are integers includes matroid complexes and is also closed under canonical Alexander duality. Matroid complexes are not closed under Alexander duality, but matroid Steiner complexes, which generalize both matroid complexes and their Alexander duals, are.

After a brief review of this motivation, we will define matroid Steiner complexes, and carefully describe some of their properties. We will then show that their Laplacian eigenvalues are integers. We also offer several conjectures further describing the behavior of the Laplacian eigenvalues of these complexes. (Received August 16, 2005)