1038-13-279 **Uwe Nagel** and **Sonja Petrović*** (petrovic@ms.uky.edu), Department of Mathematics, 719 Patterson Office Tower, University of Kentucky, Lexington, KY 40508. *Properties of cut ideals of certain graphs.* Preliminary report.

Given a graph G, any partition of its vertex set induces a coloring on its edges by recording whether the ends of an edge have been separated by the partition. The set of edges whose ends have been separated in this way is called a cut of the graph. These edge colorings induced by vertex set partitions parametrize a toric variety. Its defining ideal, the cut ideal of G, records algebraic relations among the cuts.

These toric ideals have been introduced by Sturmfels and Sullivant who also posed the problem of relating their properties to the combinatorial structure of the graph. We will describe a certain class of graphs whose cut ideals admit squarefree lexicographic Groebner bases. Thus the associated semigroup algebras are Cohen-Macaulay, but not Gorenstein in general. In addition, the cut ideals of an important subclass of these graphs have a quadratic Groebner basis. (Received February 11, 2008)