1031-13-58 **Uwe Nagel** and **Sonja Petrovic*** (petrovic@ms.uky.edu), 719 Patterson Office Tower, University of Kentucky, Lexington, KY 40506. *Algebraic properties of cut ideals.* Preliminary report.

A cut ideal of a graph records the relations among the cuts of the graph. 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 study a nice collection of graphs that can be obtained from trees and cycles: the outerplanar graphs. A correspondance between cut ideals of cycles and a recently studied class of phylogenetic ideals reveals a quadratic Groebner basis. In addition, the associated semigroup algebras are Cohen-Macaulay. Using Sturmfels and Sullivant's clique-sum construction, we show that the cut ideals of all outerplanar graphs have a squarefree quadratic Groebner basis. Thus the coordinate rings are Cohen-Macaulay, but not Gorenstein in general. (Received August 01, 2007)