1077-05-967 **Margaret Meyerhofer*** (mmeyerho@andrew.cmu.edu). *Parallel Double Rule Application in Signed Graphs.*

In this paper we study the parallel complexity of signed graphs. We provide an algebraic characterization for when n double rules apply in parallel. We demonstrate a transformation from a family of signed graphs into directed graphs. For these transformed graphs we give a necessary and sufficient condition for determining if n double rules apply in parallel. We also describe a polynomial time algorithm for checking this condition. Finally we discuss transforming signed graphs into labeled graphs to expand our algorithm to additional cases. (Received September 15, 2011)