1014-05-1465 **Brian Beavers*** (beavers@math.lsu.edu), Louisiana State University, Department of Mathematics, Baton Rouge, LA 70803. *A matroid-based decomposition of* 3*-connected graphs.* Preliminary report.

Cunningham and Edmonds proved that all of the 2-separations of a 2-connected graph can be displayed in a tree and that tree can be used to decompose the graph uniquely into 3-connected pieces, cycles, and bonds. Moreover, the original graph can be recovered from the pieces and the tree by the 2-sum operation. Obtaining a corresponding result for 3-connected graphs has proved difficult because of the complicated interactions of crossing 3-separations. Oxley, Semple, and Whittle were able to describe the structure of the 3-separations of a 3-connected matroid M by producing a labeled tree that displays all non-trivial 3-separations up to a natural equivalence. In general, this tree does not yield a decomposition of the matroid M into pieces from which M can be recovered. But, when M is graphic, we can obtain such a decomposition result, thereby extending the results of Coullard, Gardner, and Wagner. This talk describes the details of this decomposition and what can be said about its uniqueness. (Received September 28, 2005)