1077-05-1429 **Adam H. Berliner*** (berliner@stolaf.edu), MSCS Dept., 1520 St. Olaf Ave., Northfield, MN 55057, and **Richard A. Brualdi**. 2-*Matching covered loopy graphs.* Preliminary report.

A $\{1,2\}$-matching M of a graph G is a collection of edges such that each vertex of G meets at most two edges of M. A perfect 2-matching of G is a $\{1,2\}$-matching that is a spanning set consisting of pairwise vertex disjoint edges and odd cycles. For a subset of vertices X, $N(X)$ is the set of vertices of G adjacent to at least one vertex in X. A theorem of Tutte asserts that a graph G has a perfect 2-matching if and only if $|N(X)| \geq |X|$ for all independent sets of vertices X. We investigate minimal 2-matching covered graphs, i.e. graphs in which every edge is in some perfect 2-matching and the removal of any edge results in a graph without this property. In particular, we will discuss some classes of minimally 2-matching covered loopy graphs (graphs in which each vertex may contain a loop), where a loop is regarded as a cycle of length one. (Received September 19, 2011)