1035-05-1983 **Jeffrey Stuart*** (jeffrey.stuart@plu.edu), Mathematics Department, Pacific Lutheran University, Tacoma, WA 98447. *Eavesdropping on Graphs.*

Let G be a finite, connected, undirected graph without loops and without multiple edges. For a pair of distinct vertices u and v, a set S of edges from G is a $\{u, v\}$-separating set if the removal of all edges in S disconnects u and v. The $\{u, v\}$-separating set S is a minimum $\{u, v\}$-separating set if no proper subset of S is itself a $\{u, v\}$-separating set. The edge connectivity of G, denoted $\lambda(G)$, is defined to be the minimum cardinality of a minimum $\{u, v\}$-separating set as u and v range over all pairs of distinct vertices in G. We introduce and investigate the eavesdropping number, denoted $\varepsilon(G)$, which is defined to be the maximum cardinality of a minimum $\{u, v\}$-separating set as u and v range over all pairs of distinct vertices in G. Results are presented for regular graphs and maximally locally connected graphs, for subgraphs obtained through vertex or edge deletion or through edge contraction, and for a number of common families of graphs. (Received September 21, 2007)