1060-05-46   **Lynne L. Doty*** (`lynne.doty@marist.edu`), Mathematics Department, Marist College, 3399 North Rd., Poughkeepsie, NY 12601. *Using cosets to bound neighbor-connectivity of abelian Cayley graphs.*

If a graph is being used to model a communication network, the failure ("subversion", in the terminology originated by Gunther and Hartnell) of a vertex causes the failure (or purposeful shut-down) of all its immediate neighbors as well. Thus whenever a vertex is subverted the entire closed neighborhood of the vertex is deleted from the graph. The minimum number of vertices whose subversion results in an empty, complete, or disconnected subgraph is called the neighbor-connectivity of the graph. Although neighbor-connectivity uses the language of spy networks it can be applied as well to electronic or physical networks in which failure of one node causes neighboring nodes to be shut down. The unambiguous coset structure of quotient groups can be used effectively to analyze neighbor connectivity of abelian Cayley graphs. Specifically coset structure has been used 1) to characterize abelian Cayley graphs with neighbor-connectivity equal to one and 2) to determine upper bounds for neighbor connectivity of abelian Cayley graphs. This talk will outline how the coset structure is used to achieve these results. Other possibly useful avenues of research will be identified. (Received March 08, 2010)