1023-05-85 **Ian A. Rogers*** (`rogersia@rose-hulman.edu`), 502 W White St., Freeburg, IL 62243. *On the Minimum Vector Rank of a Multigraph.* Preliminary report.

Given a multigraph G on the vertices $\{v_1, \ldots, v_n\}$, in which all edges are multiedges, we associate a set of nonzero vectors $\vec{V} = \{\vec{v_1}, \ldots, \vec{v_n}\}$ in $\mathbb{C}^n$ to the vertices of G in the following manner: If vertices v_i and v_j are not joined then the corresponding vectors $\vec{v_i}$ and $\vec{v_j}$ are orthogonal. The rank of a vector representation $\vec{V}$ is the maximum number of linearly independent vectors in $\vec{V}$. The *minimum vector rank* of G, $mvr(G)$, is the minimum rank among all vector representations of G.

We present methods for determining $mvr(G)$ if G is among certain classes of graphs, including perfect graphs and cycles. Further, we present upper and lower bounds on $mvr(G)$ for all multigraphs that contain only multiedges, and provide a conjecture on the exact value of $mvr(G)$ for such multigraphs. (Received July 28, 2006)