1011-15-133 **Sivaram K. Narayan*** (sivaram.narayan@cmich.edu), Department of Mathematics, Pearce Hall 111, Central Michigan University, Mount Pleasant, MI 48859. *The Minimum Positive Semi-definite Rank of a Graph.*

A matrix $A \in M_n(\mathbb{C})$ is called *Hermitian* if $A = A^*$. A Hermitian matrix with nonnegative eigenvalues is called a *positive semi-definite (PSD)* matrix. Given a Hermitian matrix A we associate a simple, undirected graph G with $V(G) = \{1, \cdots, n\}$ and edges $E(G) = \{(i, j) \mid a_{ij} \neq 0, i \neq j\}$. The graph is independent of the diagonal entries of A. The *minimum positive semi-definite (PSD) rank* of G, denoted $msr(G)$, is the minimum rank of A where A varies over all PSD matrices with graph G.

In this talk we present results on the upper and lower bounds for the minimum PSD rank, and the effect of topological changes such as vertex or edge modifications on $msr(G)$. In addition, we will discuss the $msr(G)$ for some classes of graphs, including bipartite graphs and chordal graphs.

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