1145-VP-233 **Monsikarn Jansrang*** (`jansr1m@cmich.edu`). *Graph Complement Conjecture for the Minimum Semidefinite Rank.* Preliminary report.

Given an $n \times n$ Hermitian matrix $A = [a_{ij}]$ we associate a graph $G(A)$ to the matrix A such that the set of vertices is $\{v_1, \ldots, v_n\}$ and the set of edges is $E = \{\{v_i, v_j\} : a_{ij} \neq 0, i \neq j\}$. The diagonal entries of A do not have an effect on $G(A)$. Let $P(G) = \{A \in M_n(\mathbb{C}) : A^* = A,\ A \text{ is positive semidefinite}, \ G(A) = G\}$. The *minimum semidefinite rank* of G is defined to be $mr_+^{\mathbb{C}}(G) = \min\{rank(A) :\ A \in P(G)\}$. If we restrict to real symmetric positive semidefinite matrices, the real minimum semidefinite rank is denoted by $mr_+^{\mathbb{R}}(G)$.

It has been conjectured that $mr_+^{\mathbb{R}}(G) + mr_+^{\mathbb{R}}(\overline{G}) \leq |G| + 2$ where $\overline{G}$ is the complement of the graph G and $|G|$ is the number of vertices in G. This conjecture is called "Graph Complement Conjecture" and is denoted GCC_+. Given a graph G, the *shadow graph* $S(G)$ is obtained from G by adding for each vertex u of G, a new vertex v called the shadow vertex of u, and joining v to the neighbors of u in G. In this talk we will present some new results about classes of shadow graphs that satisfy GCC_+. (Received August 23, 2018)