1077-15-950 **Shaun M Fallat*** (sfallat@math.uregina.ca), Department of Mathematics and Statistics, University of Regina, Regina, Sask. s4s0a2, Canada. *Bipartiteness and the Signless Laplacian Matrix of a Graph.*

For the Laplacian matrix, L, of a graph G, Fiedler observed long ago that the smallest positive eigenvalue of L, $\alpha(G)$, is zero if and only if G is disconnected and that $\alpha(G) \leq \nu(G) \leq \epsilon(G)$ where $\nu(G), \epsilon(G)$ are, respectively, the vertex connectivity, and the edge connectivity of the graph G.

For the signless Laplacian matrix, Q, it is known that the smallest eigenvalue, $\lambda_b(G)$, is zero if and only if G is bipartite.

We establish the inequalities, $\lambda_b(G) \leq \nu_b(G) \leq \epsilon_b(G)$, where $\nu_b(G)$ and $\epsilon_b(G)$ denote the fewest number of vertices (resp. edges) whose deletion yields a bipartite graph. We also derive a number of useful relationships between the eigenvalues of Q and other parameters associated with G. (Received September 14, 2011)