1035-15-610 **Jason J Molitierno*** (molitiernoj@sacredheart.edu), Sacred Heart University, Department of Mathematics, 5151 Park Avenue, Fairfield, CT 06825-1000. *Submatrices of Laplacian Matrices for Graphs with Cut Vertices.*

In graph theory, a graph $\mathcal{G}$ on n vertices labeled $1, \ldots, n$ can be represented by an $n \times n$ Laplacian matrix L where the diagonal entries $\ell_{i,i}$ are each the degree of vertex i, and the off-diagonal entries $\ell_{i,j}$ are -1 if vertices i and j are adjacent and 0 otherwise. The submatirx L_i of L is obtained by deleting the row and column of L corresponding to vertex i of $\mathcal{G}$. If λ_n and λ_{n-1} are the largest eigenvalues of L, and $\rho(L_i)$ is the largest eigenvalue of L_i, it follows from the interlacing theorem of eigenvalues that $\lambda_{n-1} \leq \rho(L_i) \leq \lambda_n$. In this talk, we will investigate the Laplacian matrices for graphs that contain cut vertices. By observing the values of $\rho(L_i)$ when i represents a cut vertex, we will be able to classify such graphs $\mathcal{G}$ into two categories based on whether $\mathcal{G}$ contains a cut vertex i such that $\rho(L_i) = \lambda_{n-1}$. We will also investigate the values of $\rho(L_i)$ for non-cut vertices and obtain some surprising results, especially when there exists a vertex such that $\rho(L_i) = \lambda_n$. (Received September 12, 2007)