1116-15-1062 **Jason J Molitierno*** (molitiernoj@sacredheart.edu), Sacred Heart University, Department of Mathematics, 5151 Park Avenue, Fairfield, CT 06825. *An upper bound on the algebraic connectivity of outerplanar graphs.*

The Laplacian matrix $L = [\ell_{i,j}]$ for a graph on n vertices is the $n \times n$ matrix where $\ell_{i,i}$ is the degree of vertex i, $\ell_{i,j} = -1$ if vertices i and j are adjacent, and $\ell_{i,j} = 0$ if vertices i and j are not adjacent. Since L is positive semidefinite, its eigenvalues can be ordered $0 = \lambda_1 \leq \lambda_2 \leq \ldots \leq \lambda_n$. The eigenvalue λ_2 is known as the algebraic connectivity of a graph because it is a measure of how connected a graph is. Since outerplanar graphs can have a limited number of edges, we expect λ_2 to be small. In this talk, we find upper bounds on λ_2. Focusing on maximal outerplanar graphs, we show that for all maximal outerplanar graphs on $n \geq 12$ vertices, that $\lambda_2 \leq 1$ with the exception of a certain class of maximal outerplanar graphs. In addition, we show that there is a unique maximal outerplanar graph on 12 vertices outside this class where the inequality is sharp and that it is strict for all such graphs on $n \geq 13$ vertices. (Received September 16, 2015)