1096-05-1840 **Bryan Tyler Ek*** (bte1759@rit.edu), 3608 29th Street, Chesapeake Beach, MD 20732.

Betweenness Centrality of Cycle Power Graphs.

Betweenness centrality is a measure of the importance of a vertex to the optimal paths in a graph. Betweenness centrality of a vertex is defined as $bc(v) = \sum_{x,y} \frac{\sigma_{xy}(v)}{\sigma_{xy}}$ where σ_{xy} is the number of unique paths of shortest length between vertices x and y. $\sigma_{xy}(v)$ is the number of optimal paths that include the vertex v. In this paper, we examined betweenness centrality for vertices in C_n^m: a cycle power graph with vertices $v_1, \ldots, v_n$. v_i is connected to v_j if and only if $(i-j) \equiv \pm e \ mod \ n$ with $1 \leq e \leq m$. By the symmetry of C_n^m, every vertex will have the same betweenness centrality. Let $d = \left\lceil \frac{n-1}{2m} \right\rceil - 1$ and pick $r \equiv (1-n) \mod 2m$ such that $2m > r \geq 0$. Then $\forall v \in C_n^m$, $bc(v) = md(d+1) - rd$. (Received September 16, 2013)