1118-05-191 **Michael R Yatauro*** (mry3@psu.edu), Media, PA 19063, and **Monika Heinig**. *Uniform optimality results for trees in the Neighbor Component Order Edge Connectivity Network Model.*

Let G be a finite simple graph. Consider a model in which edges of G fail independently, and when an edge fails we remove it from G along with the incident vertices. We say that a set of edges F is a *failure set* of G if after all edges of F fail, the components of the induced subgraph all contain at most $k-1$ vertices, for some prescribed $k \geq 1$. If an edge fails with probability ρ, then the *unreliability* of G, denoted $\mathcal{U}_k(G, \rho)$, is the probability that a randomly selected set of edges is a failure set. Given a class of graphs $\mathcal{G}$, we say $H \in \mathcal{G}$ is *uniformly most reliable* (resp. *uniformly least reliable*) in $\mathcal{G}$ if $\mathcal{U}_k(H, \rho) \leq \mathcal{U}_k(G, \rho)$ (resp. $\mathcal{U}_k(H, \rho) \geq \mathcal{U}_k(G, \rho)$) for all $G \in \mathcal{G}$ and every value of ρ, with $0 < \rho < 1$. In this talk, we prove the existence of unique uniformly most reliable and uniformly least reliable graphs in the class of trees when $k = 1$. (Received January 31, 2016)