John T. Saccoman* (john.saccoman2@shu.edu), Seton Hall University, Dept. of Mathematics and Computer Science, South Orange, NJ 07079. A Spanning Tree-Reducing Surgery and Partial Factor Majorization.

A graph $G$ is a threshold graph if, for all pairs of nodes $u$ and $v$ in $G$, the neighborhood of $u$ excluding $v$ is completely contained in the neighborhood of $v$ excluding $u$ whenever $\deg(u) \leq \deg(v)$. It is known that threshold graphs provide the best lower bound on the number of spanning trees and all-terminal reliability for graphs in a particular class. There exist surgeries that lower these invariants for certain threshold graphs, but they do not work in all cases. We present a new surgery that will transform a threshold graph with minimum degree of 2 or greater, meeting other conditions, to a threshold graph with a lower number of spanning trees. In doing so we apply a majorization technique to the graphs' respective Temperley's B-matrix eigenvalues.

Keywords: spanning trees, eigenvalues, majorization, threshold graphs, spectral graph theory (Received October 24, 2017)