1145-VP-132 **Joshua J Steier*** (`joshua.steier@student.shu.edu`), **Kristi Luttrell** and **John T Saccoman**. *Limit Characterizations of Graphs: An Extension to Multigraphs.*

Limit characterizations through spanning trees in multigraphs: an exploration By Joshua Steier Advisors: Dr. Kristi Luttrell and Dr. John T. Saccoman

Nikolopolous et. al., using Cayley's Theorem and Kirchhoff's Matrix Theorem, established limiting results for the number of spanning trees of certain families of graphs. Focusing as they did on edge deletions, we applied similar techniques to similar families of multigraphs. We examined existing results involving threshold graphs and split graphs. Utilizing various matrix properties and a general formula for the number of spanning trees on complete multigraphs, we conjecture limit characterization for underlying complete multigraphs with fixed multiplicity. Keywords: multigraphs, split graphs, spanning trees, Laplacian Matrix, Kirchhoff's Theorem (Received August 07, 2018)

1