

1145-VP-1396 **Gregory J Clark*** (gjclark@email.sc.edu) and **Joshua Cooper**. *A Generalization of the Harary-Sachs Theorem for Hypergraphs.*

The Harary-Sachs theorem equates the coefficients of the characteristic polynomial of a graph to a weighted sum of a specific set of graphs called elementary graphs. We extend this theorem by equating the coefficients of the characteristic polynomial of a hypergraph to a weighted sum of a specific set of hypergraphs called Veblen graphs. We provide a characterization of Veblen graphs and present a combinatorial formula for their associated coefficient. Using our theorem, we provide a numerically stable algorithm for computing the characteristic polynomial of a hypergraph. We conclude by demonstrating this algorithm by presenting the characteristic polynomial of various hypergraphs which are not computable using conventional methods. This is joint work with Joshua Cooper. (Received September 21, 2018)