Decomposing Set Intersection Graphs into Triples

Braxton Carrigan*, Aaron Clark, Southern Connecticut State University
James Hammer, Cedar Crest College

Johnson and Kneser graphs are both defined on the set of vertices that are the k element subsets of a set of size n and the edges are defined by the size of the intersection of the vertices; for Johnson graphs an edge is between vertices which intersect in exactly $k-1$ elemens and in the Kneser graphs an edge is between vertices who's intersection is empty. We raise the idea of set intersection graphs defined on the same set of vertices, where the edges are defined by the size of the intersection of the vertices. We will present preliminary results on deciding if these highly symmetric graphs can be decomposed into triples.

Keywords: Graph Decompositions, Johnson Graphs, Kneser Graphs