

Strongly Regular Multigraphs

Leah Meissner, John T. Saccoman*, Seton Hall University

Strongly regular graphs have a direct connection to structures in algebraic combinatorics. They are defined by 4 parameters, n , k , a , and c where n is the number of nodes, k is the degree of each node, a is the number of common neighbors for every adjacent pair of nodes, and c is the number of common neighbors for every nonadjacent pair of nodes. A multigraph is a graph that has no self-loops, but may have multiple edges and is formally defined by specifying a graph G and assigning a multiplicity to each edge of G . We examine underlying strongly regular multigraphs in order to further clarify their properties, specifically with regard to combinatorial configurations.

Keywords: strongly regular graphs, multigraphs, algebraic combinatorics