

Characterization and Enumeration of 3-Regular Permutation Graphs

Aysel Erey, Gebze Technical University

Zachary Gershkoff*, Louisiana State University

Amanda Lohss, Messiah College

Ranjan Rohatji, Saint Mary's College

A permutation graph is a graph that can be derived from a permutation, where the vertices correspond to letters of the permutation, and the edges represent inversions. We provide a construction to show that there are infinitely many connected r -regular permutation graphs for $r \geq 3$. We prove that all 3-regular permutation graphs arise from a similar construction. Finally, we enumerate all 3-regular permutation graphs on n vertices.

Keywords: permutation graph, graph regularity