

Some graph labellings, complexities and connections to groups.

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Abstract

For a graph G , a *graph labelling* is an assignment of natural numbers to the vertices $V(G)$ (or edges $E(G)$, or both) such that certain conditions hold. This is a classic and well studied problem in graph theory and computer science. In this talk we discuss some specific graph labellings and investigate the complexities of transforming one labeling into another subject to certain conditions. Considering some special types of graphs, like the path, star and grids, one quickly sees how the symmetric group, its subgroups and Cayley graphs plays an important role.

Keywords: graph labeling, complexity, symmetric group, Cayley graph