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On the Connectivity of Graphs Associated with Sets of Generating Tuples of a Finite Group

Abstract for the Combinatorics Seminar 2014 December 2

This talk will be on group [sic] theory.

Given a finite group G , I examine various interesting graphs with vertex set $S_n(G)$ of generating n -tuples of G , most importantly the (extended) Product Replacement Graphs and the Andrew-Curtis Graphs. The Product Replacement Graphs are of great interest as suitable random walks on these graphs produce excellent ways of generating random elements of the group G . These graphs admit interesting actions of both $\text{Aut}(F_n)$ (F_n is the free group) and $\text{Aut}(G)$ motivated by combinatorial and computational group theory. In particular I will discuss connectivity issues related to these graphs in some generality before focusing on what is already known for solvable groups and certain families of simple groups.

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