TS2: Thematic Session: Groups 2

Tuesday 1 July, 14:00–16:00 • Room 103

Kamilla Rekvényi (University of Manchester)

Time: 14:00–14:30

Prime Simplicial Complexes of Finite Groups

In 2024, Peter Cameron proposed generalisations of various graphs defined on groups to simplicial complexes. I will talk about one of these, the prime simplicial complex $\Pi(G)$ of a finite group G, which is composed of all sets of primes S where G has an element of order the product of primes in S, with the subsets partially ordered by inclusion. This is a generalization of the well-studied prime (or Gruenberg-Kegel) graphs. I will present new results about recognizability by prime simplicial complex, and the purity of the prime simplicial complex, a question asked by Peter Cameron. Joint work with Melissa Lee.

Cheng Yeaw Ku (Nanyang Technological University)

Time: 14:30–15:00

Continuos-time Quantum Walk on Cayley graph of the symmetric group.

The main object of study is the average mixing matrix whose columns encode the limiting distribution of the quantum walks from different starting vertices. We are particularly interested in the diagonal entries of this matrix for certain Cayley graph of the symmetric groups. This is joint work with Aw Wee Chong.

David Bradley-Williams (Computer Science Institute of Charles University, Prague.)

Time: 15:00–15:30

Extending partial automorphisms of graphs.

Even though almost all finite graphs are rigid, it is possible to embed every finite graph into a significantly more symmetric graph with a rich automorphism group. Namely E. Hrushovski proved in the early 90's that every finite graph G can be embedded into a finite graph H such that every partial automorphism of G extends to a full automorphism of H. We are interested in how small a graph H can be – and in the best cases, what wonderful properties the group $\mathrm{Aut}(H)$ has. This talk will include results of joint work with S. Brenner, P. J. Cameron, J. Hubička, and M. Konečný.

Scott Harper (University of Birmingham)

Time: 15:30–16:00

Generating infinite simple groups

I will discuss recent work on generating infinite simple groups.
