Young Group theorists workshop: exploring new connections

Report of Contributions

https://indico.global/e/9584

Contribution ID: **1** Type: **not specified**

Hello

Monday 5 September 2022 09:00 (10 minutes)

We welcome you all, give some information for the week and thank our sponsors.

Contribution ID: **2** Type: **not specified**

Cheryl Praeger: Big questions of finite permutation groups –some answered, others open

Monday 5 September 2022 09:15 (1 hour)

Contribution ID: **3** Type: **not specified**

Kamilla Rekvenyi: Orbital Diameter of Primitive Permutation Groups

Monday 5 September 2022 11:00 (15 minutes)

Contribution ID: **4** Type: **not specified**

Getting to know each other

Monday 5 September 2022 11:25 (1 hour)

Contribution ID: **5** Type: **not specified**

Melissa Lee: Primitive permutation groups: more problems and open questions

Monday 5 September 2022 15:00 (1 hour)

Contribution ID: **6** Type: **not specified**

Hongyi Huang: Base-two primitive permutation groups

Monday 5 September 2022 16:00 (15 minutes)

Contribution ID: **7** Type: **not specified**

Emily Hall: Almost elusive groups

Monday 5 September 2022 17:00 (15 minutes)

Contribution ID: **8** Type: **not specified**

Saul Freedman: The intersection graph of a finite simple group

Monday 5 September 2022 17:35 (15 minutes)

Contribution ID: **9** Type: **not specified**

Rebecca Waldecker: Permutation groups acting under constraints

Monday 5 September 2022 18:20 (40 minutes)

Contribution ID: **10** Type: **not specified**

Donna Testerman: Linear groups seen from different angles

Tuesday 6 September 2022 09:00 (50 minutes)

Contribution ID: **11** Type: **not specified**

Aluna Rizzoli

Tuesday 6 September 2022 10:00 (40 minutes)

Contribution ID: **12** Type: **not specified**

Colva Roney-Dougal

Tuesday 6 September 2022 11:15 (50 minutes)

Contribution ID: **13** Type: **not specified**

Eileen Pan: Finite groups of Lie type

Tuesday 6 September 2022 12:15 (15 minutes)

Contribution ID: **14** Type: **not specified**

Veronica Kelsey: A survey of base size and other numerical invariants

Tuesday 6 September 2022 17:30 (40 minutes)

Contribution ID: **15** Type: **not specified**

Luca di Gravina: Möbius function of finite classical groups

Tuesday 6 September 2022 18:20 (15 minutes)

Contribution ID: **16** Type: **not specified**

David Szabo: Finite subgroups of transformation groups

Tuesday 6 September 2022 18:45 (15 minutes)

C. Jordan proved in 1877 that every finite subgroup of $\mathrm{GL}_n(\mathbb{C})$ has a normal abelian subgroup of index bounded by a function of n – in short, these finite subgroups are almost' abelian.
It is natural to investigate whether an analogous statement holds for the finite subgroups of natural transformation groups like
the birational automorphism group of an algebraic variety, or
the diffeomorphism group of a compact manifold.
Recent developments on the topic by A. Guld (2020) and Pyber–Csikós–E. Szabó (2022) gave a positive answer whenabelian' is replaced by nilpotent of class at most 2', and bynilpotent' in the respective cases.
We will briefly discuss why the nilpotency class has to be at least 2 in both cases focusing on the common purely group theoretic ideas.

Contribution ID: **17** Type: **not specified**

Inna Capdeboscq

Wednesday 7 September 2022 09:00 (1 hour)

Contribution ID: **18** Type: **not specified**

Gareth Tracey: The Goldschmidt-Sims conjecture

Wednesday 7 September 2022 10:10 (40 minutes)

The Classification of Finite Simple Groups has led to substantial progress on deriving sharp order bounds in various natural families of finite groups. One of the most well-known instances of this is Sims' conjecture, which states that the order of a point stabiliser in a primitive permutation group has order bounded in terms of its smallest non-trivial orbit length (this was proved by Cameron, Praeger, Saxl and Seitz using the CFSG in 1983). In the meantime, Goldschmidt observed that a generalised version of Sims' conjecture, which we now call the \emph{Goldschmidt–Sims conjecture}, would lead to important applications in graph theory. In this talk, we will describe the conjecture, and discuss some recent progress. Joint work with L. Pyber.

Contribution ID: **19** Type: **not specified**

Mandi Schaeffer-Fry: Conjecture-Cracking with the Classification: Some Applications, New and Old, of the CFSG

Wednesday 7 September 2022 11:20 (1 hour)

Contribution ID: **20** Type: **not specified**

Noelia Rizo

Wednesday 7 September 2022 15:00 (40 minutes)

Contribution ID: **21** Type: **not specified**

Virgilius-Aurelian Minuță: Group graded algebras over G-graded G-algebras

Wednesday 7 September 2022 15:50 (15 minutes)

Contribution ID: **22** Type: **not specified**

Margherita Piccolo: Representation growth of semisimple profinite groups

Wednesday 7 September 2022 16:45 (15 minutes)

Contribution ID: **23** Type: **not specified**

Sesuai ”Yash” Madanha: Average number of zeros of characters of finite groups

Wednesday 7 September 2022 17:10 (15 minutes)

Contribution ID: **24** Type: **not specified**

SP Madireddi: The Foulkes module

Wednesday 7 September 2022 20:00 (15 minutes)

Contribution ID: **25** Type: **not specified**

Teaser and poster, open end!

Wednesday 7 September 2022 20:25 (30 minutes)

2 minutes teaser for a poster.

Koushik Paul: Construction of Specht modules

Contribution ID: **26** Type: **not specified**

Alice Niemeyer

Thursday 8 September 2022 09:00 (1 hour)

Contribution ID: **27** Type: **not specified**

Daniel Rademacher: Constructive recognition of classical groups

Thursday 8 September 2022 10:10 (15 minutes)

Contribution ID: **28** Type: **not specified**

Rebecca Waldecker: Backtrack methods and canonical images

Thursday 8 September 2022 11:00 (40 minutes)

Contribution ID: **29** Type: **not specified**

Farzaneh Gholaminezhad: The G-graph of the Gyrogroups

Thursday 8 September 2022 11:50 (15 minutes)

Contribution ID: **30** Type: **not specified**

Friedrich Rober: Wreath Product Decompositions

Thursday 8 September 2022 15:00 (15 minutes)

Contribution ID: **31** Type: **not specified**

Mun See Chang: Overview

Thursday 8 September 2022 15:25 (1 hour)

Contribution ID: **32** Type: **not specified**

Anna Sucker + Lucas Wollenhaupt: Computing the alternating and symmetric square representations of classical groups

Thursday 8 September 2022 17:00 (20 minutes)

Contribution ID: **33** Type: **not specified**

Laura Voggesberger: On algebraic groups, their Lie algebras, and nilpotent pieces

Thursday 8 September 2022 17:30 (15 minutes)

Contribution ID: **34** Type: **not specified**

John McHugh: On the image of the trivial source ring in the ring of virtual characters of a finite group

Thursday 8 September 2022 18:00 (15 minutes)

Contribution ID: **35** Type: **not specified**

Open problems session

2x2 minutes teaser for open problems, discussion

Contribution ID: **36** Type: **not specified**

Eilidh McKemmie

Friday 9 September 2022 09:00 (45 minutes)

Contribution ID: **37** Type: **not specified**

Scott Harper. The generating graph: spread and domination

Friday 9 September 2022 09:55 (45 minutes)

The generating graph of a group has as vertices the nontrivial elements of the group and two vertices are adjacent if the elements generate the group. I will discuss the recent classification of the finite groups whose generating graph is connected (joint with Burness and Guralnick) and related work on surprisingly small total dominating sets for generating graphs of simple groups (joint with Burness). Time permitting, I will discuss related ideas for infinite simple groups.

Contribution ID: **38** Type: **not specified**

Colva Roney-Dougal

Friday 9 September 2022 11:10 (50 minutes)

Contribution ID: **39** Type: **not specified**

Short feedback round

Friday 9 September 2022 12:15 (15 minutes)

How was the workshop for you?
What did you enjoy, what would you like more of in future workshops?
What did you not like so much?