

Hong Yi Huang

☎ +44 (0)7579956791 or +86 13530464479

✉ hy.huang@bristol.ac.uk or hy.huang@st-andrews.ac.uk

🌐 hongyihuang328.github.io

School of Mathematics, University of Bristol, Bristol BS8 1UG, UK

School of Mathematics and Statistics, University of St Andrews, St Andrews KY16 9SS, UK

Research interests

- Group theory (permutation groups, simple groups, algebraic groups)
- Algebraic combinatorics
- Representation theory

Employment

LMS Early Career Research Fellow, University of St Andrews, United Kingdom

from Apr 2025

- Academic host: Professor Colva Roney-Dougal
- Financial support: London Mathematical Society & Heilbronn Institute for Mathematical Research

Education

University of Bristol (UoB), United Kingdom

Jan 2021 – Mar 2025

- PhD in Mathematics
- Supervisor: Professor Tim Burness
- Funding: China Scholarship Council
- Thesis: *Bases for permutation groups and related problems*

Southern University of Science and Technology (SUSTech), China

Sept 2016 – July 2020

- Bachelor of Science
- Major: Mathematics and Applied Mathematics
- Supervisor: Professor Cai Heng Li
- Thesis: *On valency problems of Saxl graphs of almost simple primitive groups with soluble stabiliser*

Distinctions

LMS Early Career Fellowship (6 fellows in 2025)	2025
Oberwolfach Leibniz Graduate Students grant, Mathematical Research Institute Oberwolfach	2025
Alumni Grant: Conference Travel Fund (£300), UoB	2024
China Scholarship Council (full PhD scholarship at UoB)	2021–25
Outstanding undergraduate thesis, SUSTech	2020
First-class scholarship, SUSTech	2017–18
First prize, Chinese Mathematics Competition (Guangdong)	2017

Last updated: 26 June 2025

Journal publications and preprints

- [8] T.C. Burness and H.Y. Huang, *On the intersection of Sylow subgroups in almost simple groups*, submitted (2025), 26 pp. arxiv:2506.19745
- [7] S.D. Freedman, H.Y. Huang, M. Lee and K. Rekvényi, *On the generalised Saxl graphs of permutation groups*, submitted (2024), 35 pp. arxiv:2410.22613
- [6] H.Y. Huang, C.H. Li and Y.L. Xie, *Fixers and derangements of finite permutation groups*, **J. Algebraic Combin.**, to appear. arXiv:2404.18753
- [5] H.Y. Huang, C.H. Li and Y.Z. Zhu, *On finite permutation groups of rank three*, **J. Algebra** 666 (2025), 703–732. doi:10.1016/j.jalgebra.2024.11.028
- [4] H.Y. Huang, *Base sizes of primitive groups of diagonal type*, **Forum Math. Sigma** 12 (2024), Paper No. e2, 43 pp. doi:10.1017/fms.2023.121
- [3] T.C. Burness and H.Y. Huang, *On base sizes for primitive groups of product type*, **J. Pure Appl. Algebra** 227 (2023), Paper No. 107228, 43 pp. doi:10.1016/j.jpaa.2022.107228
- [2] T.C. Burness and H.Y. Huang, *On the Saxl graphs of primitive groups with soluble stabilisers*, **Algebr. Comb.** 5 (2022), 1053–1087. doi:10.5802/alco.238
- [1] J. Chen and H.Y. Huang, *On valency problems of Saxl graphs*, **J. Group Theory** 25 (2022), 543–577. doi:10.1515/jgth-2021-0123

Work in progress

- *On chiral generating pairs of finite simple groups.*
- *Greedy bases for primitive groups with soluble stabilisers*, with C. del Valle.
- *The base sizes of almost simple classical groups on subspaces*, with T. Feng.
- *A Boolean homological structure of symmetries in finite sets*, with Z. Huang and Y.Z. Zhu.
- *Base-related invariants of diagonal type primitive groups*, with C.M. Roney-Dougal.
- *On transitive subgroups of primitive groups*, with L. Wang.
- *Base extensions of permutation groups*, with Y.Z. Zhu.

Conference & seminar organisation

26th Postgraduate Group Theory Conference (PGTC), UoB

July 2025

- With Marina Anagnostopoulou-Merkouri, Pénélope Azuelos, David Guo, Merlin Haith Rowlatt and Sarah Martin
- Funded by the London Mathematical Society, the Heilbronn Institute for Mathematical Research, Jane Street Capital, and the School of Mathematics of UoB
- Website: <https://sites.google.com/view/pgtc2025>

Bristol Junior Algebra and Combinatorics Seminar (BJACS), UoB

Feb–May 2024

- Founding co-organiser
- With Marina Anagnostopoulou-Merkouri and Merlin Haith Rowlatt
- Website: <https://sites.google.com/view/bjacs>

4th International Conference on Groups, Graphs and Combinatorics, SUSTech

Nov 2023

- With a group of people led by Cai Heng Li

Seminars on Groups and Graphs, SUSTech (online)

2021–24

- Founding co-organiser
- With Zhaochen Ding (2021–24), Yilin Xie (2021–23), Junyan Chen (2024) and Fu-Gang Yin (2024)
- Website: <https://www.gtseminar.xyz/>

Conference invitations

Finite Groups, Fusion Systems and Applications, Mathematical Research Institute Oberwolfach

Mar 2025

Young Group Theorists Workshop, SwissMAP, Les Diablerets, Switzerland

Sept 2022

Invited talks & seminars

2025

Permutation groups, transitive subgroups and bases, Pure Maths Colloquium, University of St Andrews

17 Apr

Permutation groups, symmetry breaking and probability, Great Bay University

26 Feb

Permutation groups, symmetry breaking and probability, Guangxi University

25 Feb

2024

Permutation groups, symmetry breaking and probability, Zhejiang University

24 Dec

Bases and Saxl graphs in the past four years, Discrete Mathematics Seminar, SUSTech

12 Dec

Bases and Saxl graphs for permutation groups, BJACS, UoB

18 Sept

Bases for permutation groups, University of Milano-Bicocca, Italy

6 Sept

Permutations, bases and low rank groups, Joint Algebra Seminar, RWTH Aachen

13 June

Permutations, bases and low rank groups, Advanced Seminar on Group Theory, HHU Düsseldorf

11 June

Permutations, bases and low rank groups, Seminar Groups and Representations, Kaiserslautern-Landau

6 June

Permutations, bases and low rank groups, Algebra Seminar, UoB

19 Mar

Bases for permutation groups, Algebra Seminar, University of Warwick

29 Jan

2023

Bases for permutation groups, Algebra Seminar, University of Birmingham

30 Nov

Symmetry breaking on graphs and groups, Seminars on Discrete Mathematics, Xiamen University

26 Sept

Permutation groups: bases and Saxl graphs, Capital Normal University

16 Sept

Bases for permutation groups, SUSTech

7 Sept

Bases for permutation groups, Junior London Algebra Colloquium, Imperial College London

23 Mar

2022

Bases, distinguishing partitions and probabilistic methods, The University of Melbourne (online)

18 Aug

2021

Groups, graphs and transitivity, Junior Algebra Colloquium, UoB (online)

21 May

The probabilistic method in group theory, Discrete Mathematics Seminar, SUSTech

22 Apr

2020

On valency problems of Saxl graphs, Discrete Mathematics Seminar, SUSTech

26 Nov

Other talks

2025

- Transitive subgroups of primitive groups*, Mathematical Research Institute Oberwolfach, Germany 20 Mar
Regular subgroups of primitive groups, Groups, Graphs and Combinatorics, Kunming 12 Jan

2024

- The generalised Saxl graphs of finite permutation groups*, Topics in Group Theory, Padova, Italy 11 Sept
Permutation groups of rank three, Group Theory in Florence IV, Florence, Italy 2 July

2023

- Bases for permutation groups*, 16th National Conference on Algebra, Quanzhou 18 Nov
Bases for permutation groups, 4th International Conference on Groups, Graphs and Combinatorics 11 Nov
Symmetry breaking on primitive groups, Seminars on Groups and Graphs, SUSTech 4 Mar

2022

- Base-two primitive permutation groups*, Young Group Theorists Workshop, SwissMAP, Les Diablerets 5 Sept
Base-two primitive permutation groups, Groups St Andrews, Newcastle, UK 4 Aug
Base-two primitive permutation groups and their Saxl graphs, Groups and Graphs 24 July
Base-two primitive permutation groups, 23rd Postgraduate Group Theory Conference 8 July
Bases for primitive permutation groups, Group Theory Seminar, SUSTech 24 May
Regular orbits of primitive groups on power sets, Group Theory Seminar, SUSTech 19 Feb

2021

- Base-two primitive permutation groups and their Saxl graphs*, 43rd Australasian Combinatorics Conference 13 Dec
Regular suborbits of finite primitive groups, Groups, Graphs and Combinatorics 14 Nov
Base-two primitive permutation groups and their Saxl graphs, LMS Graduate Student Meeting 8 Nov
The distinguishing number of permutation groups, Group Theory Seminar, SUSTech 9 Oct
On valency problems of Saxl graphs, Workshop on Group Actions and Transitive Graphs 2 Jan

2020

- On valency problems of Saxl graphs*, SUSTech 17 Nov

Other conferences

2025

- Groups, Graphs and Combinatorics*, Yunnan University, Kunming, China Jan

2024

- Topics in Group Theory*, University of Padova Sept
Group Theory in Florence IV, University of Florence July
New perspectives in Computational Group Theory, University of Warwick June

2023

- 16th National Conference on Algebra*, Quanzhou, China Nov
International Conference on Combinatorics and Finite Geometry, SUSTech Sept
CMI-HIMR Summer School: Probabilistic Group Theory, UoB June
Fry Conference Series: New Perspectives in Pure Mathematics, UoB Mar

2022

- Groups St Andrews*, Newcastle University Aug

<i>Simple groups, Representations and Applications</i> , Isaac Newton Institute, University of Cambridge	<i>July</i>
<i>Groups and Graphs</i> , Jiangxi University of Science and Technology (online)	<i>July</i>
<i>23rd Postgraduate Group Theory Conference</i> , London	<i>July</i>

2021

<i>43rd Australasian Combinatorics Conference</i> , The University of Melbourne (online)	<i>Dec</i>
<i>Groups, Graphs and Combinatorics</i> , SUSTech (online)	<i>Nov</i>
<i>LMS Graduate Student Meeting</i> , London Mathematical Society (online)	<i>Nov</i>
<i>Workshop on Group Actions and Transitive Graphs</i> , Kunming, China	<i>Jan</i>

Before 2020

<i>Workshop on Combinatorics and Graph Theory</i> , SUSTech	<i>Oct 2020</i>
<i>International Conference on Algebraic Combinatorics</i> , Jiaozuo, China	<i>Sept 2019</i>
<i>The Third International Conference on Group Actions and Transitive Graphs</i> , SUSTech	<i>Oct 2018</i>

Teaching

Tutorial leader, School of Mathematics, UoB

- 2023–2024 Teaching Block 2: MATH10010 Introduction to Group Theory (3 tutorial groups)
- 2021–2022 Teaching Block 1: MATH10010 Introduction to Proofs (3 tutorial groups)

Teaching assistant, Department of Mathematics, SUSTech

- 2019–2020 Spring: MA109 Advanced Linear Algebra (1 out of 3 tutorial groups)
- 2019–2020 Fall: MA107 Advanced Linear Algebra I (2 out of 2 tutorial groups)
- 2018–2019 Spring: MA104b Linear Algebra II (1 out of 4 tutorial groups)

Homework marker, Department of Mathematics, SUSTech

- 2020–2021 Spring: MA321 Group Representation Theory, and MA219-16 Elementary Number Theory
- 2019–2020 Fall: MA321 Group Representation Theory, and MA219 Abstract Algebra (H)
- 2018–2019 Spring: MAT8010 Combinatorics (PG)
- 2017–2018 Fall: MA219-16 Elementary Number Theory, and MA213-16 Mathematical Analysis

Research visits

2025: Great Bay University (1 day, hosted by Weicong Li); Guangxi University (1 day, Huye Chen); Yunnan University (1 week, hosted by Lei Wang)

2024: Zhejiang University (1 week, Tao Feng); SUSTech (1 week, Cai Heng Li); Milano-Bicocca (3 days, Pablo Spiga); Warwick (1 day, Gareth Tracey); RWTH Aachen (3 days, Alice Niemeyer); HHU Düsseldorf (2 days, Benjamin Klopsch); Kaiserslautern-Landau (1 week, Gunter Malle); Imperial College London (3 days, Kamilla Rekvényi)

2023: Xiamen University (1 week, Jiyong Chen); Capital Normal University (1 week, Shaofei Du); SUSTech (1 month, Cai Heng Li)

2021: SUSTech (2 months, Qing Xiang)

2020: SUSTech (6 months, Cai Heng Li)

Professional activities

- Refereeing assignments: Journal of Algebra, European Journal of Combinatorics *since 2023*
- Reviewer for AMS Mathematical Reviews *since 2024*
- Associate member of the London Mathematical Society *2022*
- Member of the Combinatorial Mathematics Society of Australasia