

# 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 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*

- 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 in 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 (up to 8 fellows per year)	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: 19 April 2025

## Journal publications and preprints

---

- [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.
- *Tetravalent graphical regular representations of finite simple groups*, with B. Xia and J. Zhang.
- *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  
*Simple groups, Representations and Applications*, Isaac Newton Institute, University of Cambridge July  
*Groups and Graphs*, Jiangxi University of Science and Technology (online) July  
*23rd Postgraduate Group Theory Conference*, London July

## 2021

- 43rd Australasian Combinatorics Conference*, The University of Melbourne (online) Dec

<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
- Reviewer for AMS Mathematical Reviews *since 2023*
- Associate member of the London Mathematical Society *since 2024*
- Member of the Combinatorial Mathematics Society of Australasia 2022