

# Hong Yi Huang

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## Research interests

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

## Education

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### School of Mathematics, University of Bristol (UoB)

United Kingdom

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

Jan 2021 –

### Department of Mathematics, Southern University of Science and Technology (SUSTech)

China

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

Sept 2016 – July 2020

## Distinctions

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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

## Journal publications and preprints

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- [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*, submitted (2024), 33 pp. arXiv: 2404.18753
- [5] H.Y. Huang, C.H. Li and Y.Z. Zhu, *On finite permutation groups of rank three*, submitted (2023), 22 pp. arXiv: 2311.04057

- [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

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- *The regular subgroups of primitive groups of diagonal type and the skew braces of simple type.*
- *On chiral generating pairs of finite simple groups.*

## Conference & seminar organisation

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**26th Postgraduate Group Theory Conference (PGTC), UoB** *July 2025*  
 • With Marina Anagnostopoulou-Merkouri, Penelope Azuelos, David Guo, Merlin Haith Rowlett and Sarah Martin

**Bristol Junior Algebra and Combinatorics Seminar (BJACS), UoB** *Feb–May 2024*  
 • Founding co-organiser  
 • With Marina Anagnostopoulou-Merkouri and Merlin Haith Rowlett  
 • Website: <https://sites.google.com/view/bjacs/home>

**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

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*Finite Groups, Fusion Systems and Applications*, Mathematical Research Institute Oberwolfach *Mar 2025*

## Invited talks & seminars

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**2024**

<i>Bases and Saxl graphs for permutation groups</i> , Zhejiang University, China	<i>Dec</i>
<i>Bases and Saxl graphs in the past four years</i> , Discrete Mathematics Seminar, SUSTech	<i>12 Dec</i>
<i>Bases and Saxl graphs for permutation groups</i> , BJACS, UoB	<i>18 Sept</i>
<i>Bases for permutation groups</i> , University of Milano-Bicocca, Italy	<i>6 Sept</i>
<i>Permutations, bases and low rank groups</i> , Joint Algebra Seminar, RWTH Aachen	<i>13 June</i>
<i>Permutations, bases and low rank groups</i> , Advanced Seminar on Group Theory, HHU Düsseldorf	<i>11 June</i>

<i>Permutations, bases and low rank groups</i> , Seminar Groups and Representations, Kaiserslautern-Landau	6 June
<i>Permutations, bases and low rank groups</i> , Algebra Seminar, UoB	19 Mar
<i>Bases for permutation groups</i> , Algebra Seminar, University of Warwick	29 Jan
<b>2023</b>	
<i>Bases for permutation groups</i> , Algebra Seminar, University of Birmingham	30 Nov
<i>Symmetry breaking on graphs and groups</i> , Seminars on Discrete Mathematics, Xiamen University	26 Sept
<i>Permutation groups: bases and Saxl graphs</i> , Capital Normal University	16 Sept
<i>Bases for permutation groups</i> , SUSTech	7 Sept
<i>Bases for permutation groups</i> , Junior London Algebra Colloquium, Imperial College London	23 Mar
<b>2022</b>	
<i>Bases, distinguishing partitions and probabilistic methods</i> , The University of Melbourne	18 Aug
<b>2021</b>	
<i>Groups, graphs and transitivity</i> , Junior Algebra Colloquium, UoB	21 May
<i>The probabilistic method in group theory</i> , Discrete Mathematics Seminar, SUSTech	22 Apr
<b>2020</b>	
<i>On valency problems of Saxl graphs</i> , Discrete Mathematics Seminar, SUSTech	26 Nov

## Other talks

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<b>2025</b>	
<i>Regular subgroups of primitive groups of diagonal type</i> , Groups, Graphs and Combinatorics, Kunming	Jan
<b>2024</b>	
<i>The generalised Saxl graphs of finite permutation groups</i> , Topics in Group Theory, Padova, Italy	11 Sept
<i>Permutation groups of rank three</i> , Group Theory in Florence IV, Florence, Italy	2 July
<b>2023</b>	
<i>Bases for permutation groups</i> , 16th National Conference on Algebra, Quanzhou	18 Nov
<i>Bases for permutation groups</i> , 4th International Conference on Groups, Graphs and Combinatorics	11 Nov
<i>Symmetry breaking on primitive groups</i> , Seminars on Groups and Graphs, SUSTech	4 Mar
<b>2022</b>	
<i>Base-two primitive permutation groups</i> , Young Group Theorists Workshop, SwissMAP, Les Diablerets	5 Sept
<i>Base-two primitive permutation groups</i> , Groups St Andrews, Newcastle, UK	4 Aug
<i>Base-two primitive permutation groups and their Saxl graphs</i> , Groups and Graphs	24 July
<i>Base-two primitive permutation groups</i> , 23rd Postgraduate Group Theory Conference	8 July
<i>Bases for primitive permutation groups</i> , Group Theory Seminar, SUSTech	24 May
<i>Regular orbits of primitive groups on power sets</i> , Group Theory Seminar, SUSTech	19 Feb
<b>2021</b>	
<i>Base-two primitive permutation groups and their Saxl graphs</i> , 43rd Australasian Combinatorics Conference	13 Dec
<i>Regular suborbits of finite primitive groups</i> , Groups, Graphs and Combinatorics	14 Nov
<i>Base-two primitive permutation groups and their Saxl graphs</i> , LMS Graduate Student Meeting	8 Nov
<i>The distinguishing number of permutation groups</i> , Group Theory Seminar, SUSTech	9 Oct
<i>On valency problems of Saxl graphs</i> , Workshop on Group Actions and Transitive Graphs	2 Jan
<b>2020</b>	

## Other conferences

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### 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

*Young Group Theorists Workshop*, SwissMAP, Les Diablerets, Switzerland Sept

*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

*Groups, Graphs and Combinatorics*, SUSTech (online) Nov

*LMS Graduate Student Meeting*, London Mathematical Society (online) Nov

*Workshop on Group Actions and Transitive Graphs*, Kunming, China Jan

### Before 2020

*Workshop on Combinatorics and Graph Theory*, SUSTech Oct 2020

*International Conference on Algebraic Combinatorics*, Jiaozuo, China Sept 2019

*The Third International Conference on Group Actions and Transitive Graphs*, SUSTech Oct 2018

## Teaching

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### 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

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2025: Yunnan University (1 week, hosted by Lei Wang)

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

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

2021: SUSTech (2 months, Qing Xiang)

2020: SUSTech (6 months, Cai Heng Li)

## Professional activities

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- 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*