

Haocong (David) Guo

ADDRESS: School of Mathematics, Fry Building, Woodland Road, Bristol, BS8 1UG
EMAIL: h.guo@bristol.ac.uk
WEBSITE: <https://dguo97.github.io/>

RESEARCH INTERESTS

The interaction between algebraic, combinatorial and geometric aspects of group theory.

EDUCATION

- | | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2021 - 2025 | PhD in MATHEMATICS, University of Bristol
Supervisor: Matthew Tointon
Thesis title: Some topics related to growth in soluble groups |
| 2016 - 2020 | Master's in MATHEMATICS, University of Warwick
Thesis supervisor: Derek Holt
Thesis title: The complexity of the compressed word problem for finitely generated free groups |

PREPRINTS

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| Oct 2024 | Residually Finite Groups with Uniformly Almost Flat Quotients , David Guo and Matthew Tointon, arXiv: 2410.23035 |
| Oct 2024 | The Conjugacy Ratio of Abelian-by-Cyclic Groups , David Guo, arXiv: 2410.23034 |

WORK IN PROGRESS

1. Random Walks on Vertex-Transitive Graph with Moderate Growth

TALKS

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| Oct 2024 | Bristol Combinatorics Seminars, University of Bristol
Residually finite groups with uniformly almost flat quotients |
| Feb 2024 | Bristol Junior Algebra and Combinatorics Seminar, University of Bristol
Uniformly almost flat coset space in polycyclic groups |
| July 2023 | Postgraduate Group Theory Conference 2023, Heriot-Watt University
Uniformly almost flat coset space in polycyclic groups |
| May 2023 | Bristol Junior Geometry Seminar, University of Bristol
Uniformly almost flat coset space in polycyclic groups |
| Dec 2022 | Seminars on Groups and Graphs (online), SUSTech
Random Walks on Vertex-Transitive Graphs with Moderate Growth |
| Oct 2022 | Random walks and related random topics, University of Göttingen |

| Random Walks on Vertex-Transitive Graph with Moderate Growth

Upcoming talks:

Jan 2025 | Algebra Seminar, **Heriot-Watt University**
The Conjugacy Ratio of abelian-by-cyclic groups

Feb 2025 | Algebra Seminar, **University of Warwick**
Residually finite groups with uniformly almost flat quotients

OTHER CONFERENCES

July 2024 | Summer School on Symmetry and Randomness, **University of Bristol**

Apr 2024 | Young geometric group theory XII, **University of Bristol**

June 2023 | Probabilistic Group Theory, **University of Bristol**

Jan 2023 | LMS Regional Meeting, Geometric Group Theory, **University of Southampton**

Sept 2022 | Young Group Theorists Workshop, **SwissMAP Research Station**

July 2022 | Graduate Student Concentration Week on Metric Geometry, **Texas A & M University**

July 2022 | Postgraduate Group Theory Conference, **King's College London**

TEACHING EXPERIENCE

University of Bristol (2021-present):

2024 - 2025 MATH10011 Analysis, Support Class Teacher

2024 - 2025 MATH33300 Group theory, Support Class Teacher

2023 - 2024 MATH10010 Proofs and Group Theory, Support Class Teacher

2022 - 2023 MATH10010 Linear algebra, Support Class Teacher

2022 - 2023 MATH33300 Group theory, Support Class Teacher

Before 2021:

2021 - 2022 Learning support tutor, Havering College, London

2017 - 2017 MA131 Analysis, Peer Tutor, University of Warwick

VOLUNTEERING AND OUTREACH

July 2019 | Team Guide for IMO, **University of Bath**

Aug 2019 | Volunteer teacher and trainer, **Haryana, India**

SERVICES

2024 - 2025 | Postgraduate Group Theory Conference 2025, **University of Bristol**, Co-organiser

2024 - 2025 | Bristol Junior Algebra and Combinatorics Seminar, **University of Bristol**,
Co-organiser

OTHER

Languages | English, Chinese.

Programming | Python, Java, MATLAB, Visual Basic, Julia.