

Adam (Adi) Onus

PHD STUDENT · MATHEMATICS · PRONOUNS: THEY/SHE

School of Mathematical Sciences, Queen Mary University of London

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Qualifications

POSITIONS

University of Oxford

POSTDOCTORAL RESEARCHER

Sep 2025 - present

- Advisor: Professor Helen Byrne
- Joint appointment between the Centre for Human Genetics and the Mathematical Institute

The Francis Crick Institute

VISITING RESEARCHER

Sep 2025 - present

- Affiliated with the Sahai Lab

EDUCATION

Queen Mary University of London (QMUL)

PHD MATHEMATICS

Sep 2021 - Aug 2025

- Advisor: Professor Primož Škraba

Australian National University (ANU)

BACHELOR OF PHILOSOPHY (HONOURS) – SCIENCE

Feb 2017 - Nov 2020

- Honours thesis advisors: Dr Vanessa Robins and Dr Martin Helmer

TEACHING

Advance HE (HEA)

ASSOCIATE FELLOWSHIP

May 2023 - present

- Higher education teaching qualification awarded for evidenced effective and inclusive teaching practices.

Publications

PUBLISHED

Onus, A., Krumholz, MR., Federrath, C. 2018. Numerical calibration of the HCN–star formation correlation. *Monthly Notices of the Royal Astronomical Society*, Volume 479, Issue 2, September 2018, Pages 1702–1710.
<https://doi.org/10.1093/mnras/sty1662>

PREPRINTS

Onus, A., Škraba, P. 2025. Persistent local systems of periodic spaces. arXiv preprint arXiv:2505.13051.
<https://doi.org/10.48550/arXiv.2505.13051>

Onus, A., Otter, N., Turkeš, R. 2024. Shoving tubes through shapes gives a sufficient and efficient shape statistic. arXiv preprint arXiv:2412.18452.
<https://doi.org/10.48550/arXiv.2412.18452>

Onus, A., Škraba, P. 2023. Computing 1-Periodic Persistent Homology with Finite Windows. arXiv preprint arXiv:2312.00709.
<https://doi.org/10.48550/arXiv.2312.00709> (Under review with the *Journal of Applied and Computational Topology*)

Onus, A., Robins, V. 2022. Quantifying the homology of periodic cell complexes. arXiv preprint arXiv:2208.09223.
<https://doi.org/10.48550/arXiv.2208.09223> (Under review with the *SIAM Journal on Applied Algebra and Geometry*)

OUTREACH REPORTS

Marajh, J., **Onus, A.**, Pintado, M.F., 2025. A Mathematician Like Me, London Mathematical Society Newsletter, Issue 515, May 2025, Pages 29-32. https://www.lms.ac.uk/sites/default/files/inline-files/NLMS_515.v6.nocrop_0.pdf

Historical contributions of different cultures to Mathematics (2024)

PDF available at <https://www.sereseach.qmul.ac.uk/pce/ediresources/>

Diversifying the Maths Curriculum: booklet of biographies (2022)

PDF available at <https://www.sereseach.qmul.ac.uk/pce/ediresources/>

Presentations

INVITED TALKS

Mar 2025	<i>Distance-from-flat persistent homology transforms</i> , Durham/Swansea TDA Reading Group.
Feb 2025	<i>Distance-from-flat persistent homology transforms</i> . Statistics and Data Science Seminar, Queen Mary University of London.
Oct 2024	<i>Local systems for periodic data</i> . Combinatorics, Geometry and Topology Seminar, Institute of Science and Technology Austria.
Oct 2024	<i>Local systems for periodic data</i> . DataShape Seminar, Laboratoire de Mathématiques d'Orsay.
May 2024	<i>Local systems for periodic data</i> . Oxford Applied Topology Seminar, Oxford University.
May 2024	<i>Local systems for periodic data</i> . QMUL Postgraduate Research Day, Queen Mary University of London.
May 2023	<i>Sheafy approaches to periodic cell complexes</i> . London TDA Seminar, Queen Mary University of London.
Dec 2022	<i>Quantifying the homology of periodic cell complexes</i> . EPFL Applied Topology Seminar, École Polytechnique Fédérale de Lausanne.
Aug 2022	<i>Quantifying the homology of periodic cell complexes</i> . London TDA Seminar, Queen Mary University of London.

CONTRIBUTED TALKS

Jul 2025	<i>Distance-from-flat persistent homology transforms</i> , ATMCS11, Montana State University.
Dec 2024	<i>Local systems for periodic data</i> . Joint meeting of the NZMS, AustMS and AMS, University of Auckland.
Sep 2024	<i>Local systems for periodic data</i> . The 4th Workshop on Computational Persistence, Graz University of Technology, Austria.
Apr 2024	<i>Local systems for periodic data</i> . British Applied Mathematics Colloquium, University of Newcastle.
Apr 2024	<i>Diversifying the maths curriculum at Queen Mary University of London</i> . British Applied Mathematics Colloquium, University of Newcastle.
Jun 2022	<i>Quantifying the homology of periodic cell complexes</i> . ATMCS10, Oxford University.
Jan 2022	<i>The Wonderful and Diverse World of Applied Topology</i> . Queen Mary Internal Postgraduate Seminar (QuIPS).

POSTERS

Jun 2025	<i>Distance-from-flats persistent homology transform</i> . Joint British Mathematical Colloquium & British Applied Mathematical Colloquium, University of Exeter.
Aug 2024	<i>Local systems for periodic data</i> . Spires 2024, Centre for Topological Data Analysis, Oxford University.
May 2023	<i>The homology of periodic spaces</i> . QMUL Postgraduate Research Day, Queen Mary University of London.

Awards & Grants

AWARDS

2025	Early Career Researcher Award, <i>Award from QMUL School of Mathematical Sciences</i>	QMUL
2025	BMC/BAMC Poster Prize, <i>"Distance-from-flats persistent homology transform"</i>	
2024	QMUL Postgraduate Research Day: Prize for 2nd Best Talk, <i>"Local systems for periodic data"</i>	QMUL
2023	Science and Engineering Faculty Award for Equality, Diversity and Inclusion, <i>"Diversifying the mathematics curriculum"</i>	QMUL
2023	QMUL Postgraduate Research Day: Prize for Best Poster, <i>"The homology of periodic spaces"</i>	QMUL

GRANTS

July 2025	AMSI-AustMS Scientific Workshop Funding, <i>\$7500AUD to support Queer and Trans Mathematicians in Combinatorics conference</i>	
May 2025	Glasgow Mathematical Journal Trust Learning & Research Support Fund, <i>£2000 to support PiFORUM25 conference</i>	
May 2025	Heilbronn Institute Small Grants Call, <i>£1800 to support PiFORUM25 conference</i>	
May 2025	London Mathematical Society Inclusion and Diversity Fund, <i>£1000 to support PiFORUM25 conference</i>	
May 2025	London Mathematical Society Inclusion and Diversity Fund, <i>£1000 to run workshop for LGBTQ+ school students</i>	
Nov 2024	Queen Mary Postgraduate Research Fund, <i>£1500 travel grant</i>	QMUL

Teaching

POSITIONS

2022-2025	Teaching Assistant , Queen Mary University of London, School of Mathematical Sciences
2020-2021	Teaching Assistant , Australian National University, Mathematical Sciences Institute

SUBJECTS

2025	MTH4104 – Introduction to Algebra, <i>Teaching Assistant</i>	QMUL
2024-2025	MTH4500 – Probability and Statistics, <i>IT Lab Demonstrator</i>	
2023-2024	MTH5001 - Introduction to Computer Programming, <i>IT Lab Demonstrator</i>	
2022, 2024	MTH4115 – Vectors and Matrices, <i>Teaching Assistant</i>	
2023	MTH4600 – Applied Probability and Statistics, <i>Teaching Assistant</i>	
2023	MTH5103 - Complex Variables, <i>Coursework Marker</i>	
2022-2023	MTH4116 – Probability and Statistics I, <i>IT Lab Demonstrator</i>	
2022	MTH4107 – Introduction to Probability, <i>Teaching Assistant and Coursework Marker</i>	
2022	MTH4114 – Computing and Data Analysis with Excel, <i>IT Lab Demonstrator</i>	
2021	Math2320 – Advanced Analysis 1: Metric Spaces and Applications, <i>Teaching Assistant and Coursework Marker</i>	ANU
2020	Math1014 – Mathematics and Applications 2, <i>Teaching Assistant and Coursework Marker</i>	
2020	Math1013 – Mathematics and Applications 1, <i>Teaching Assistant and Coursework Marker</i>	

Outreach

Diversifying the Mathematics Curriculum

SERIES OF EDI PROJECTS AT QMUL

June 2022 - Aug 2025

- Ongoing series of cocreation projects writing biographies, conducting interviews and writing about history of mathematicians from underrepresented groups
- Outreach programs presenting this work to local schools and creating activities for visiting groups for university taster days
- Resources have been shared widely across the UK

Curriculum Ambassador for Mathematics

QMUL STUDENT RECRUITMENT AND WIDENING PARTICIPATION TEAM

Oct 2022 - Aug 2025

- I organise and run interactive hour-long workshops for secondary school groups of 20-60 students
- My topics include packing problems, dynamical systems, graph theory, and straight edge and compass constructions

PhD Your Way

PANELIST AND CO-ORGANISER

Nov 2022 - Nov 2024

- Annual online event for undergraduate and masters students to explain the PhD application process
- Q&A panelist and volunteer in 2022 and 2023
- Member of the organising group in 2024

Festival of Communities

MATHEMATICS STAND FOR PUBLIC ENGAGEMENT

2023-2024

- Co-organising a stall representing QMUL School of Mathematical Sciences for members of the local community
- Running activities related to aperiodic tilings for children

AATRN Tutorial-a-thon

VIDEO CONTENT CREATION

2021

- Two videos as part of a series of short, accessible videos to spread awareness of the field of topological data analysis
 - Why Does Persistent Homology Work in Applications? (Nov 2021)
 - A very brief crash course on cellular sheaves (Feb 2025)

Robogals Canberra

LEAD VOLUNTEER

2018 - 2020

- Student run organisation inspiring girls and young women to pursue STEM careers
- Run coding workshops at local primary schools

Service

REFeree

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|------|--|
| 2025 | Algebraic Topology: Methods, Computation, & Science (ATMCS11), <i>Conference</i> |
| 2023 | Conference on Discrete Geometry and Mathematical Morphology, <i>Conference</i> |

CONFERENCE AND SEMINAR ORGANIZATION

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|-------------|--|------|
| Nov 2025 | Queer and Trans Mathematicians in Combinatorics (QTMC), <i>Conference organizing committee member</i> | |
| Oct 2025 | Topological methods for time-varying data: theory and applications (Top Time), <i>Conference organizing committee member</i> | |
| Sep 2025 | Piscopia PiFORUM25, <i>Conference organizing committee member</i> | |
| June 2024 | Celebrating EDI in Science and Engineering, <i>Co-organiser of one day interdepartmental EDI event</i> | QMUL |
| 2023 - 2025 | Undergraduate Research Seminar in Mathematics, <i>Co-organiser of weekly seminars for undergraduate students</i> | QMUL |
| July 2023 | Non-binary mathematics seminar, <i>Organiser of one day event to celebrate non-binary mathematicians</i> | QMUL |
| 2022 - 2023 | Queen Mary Internal Postgraduate Seminar (QuIPS), <i>Co-organiser of weekly seminars for PhD students</i> | QMUL |

NETWORKS AND COMMITTEES

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|----------------|---|------|
| 2024 - present | Queer, Equality and Diversity Network (QED), <i>Co-founder of research network aimed at increasing awareness of inclusive practices in academia</i> | |
| 2024 - 2025 | QMUL Piscopia Committee, <i>Co-founder of the QMUL branch of Piscopia</i> | |
| 2023 - 2025 | QMUL School of Mathematical Sciences EDI Committee Member, <i>Co-lead of LGBTQ+ subgroup and Postgraduate representative</i> | QMUL |

MEMBERSHIPS

2023 - present London Mathematical Society
2023 - present European Women in Mathematics

TECHNICAL SKILLS

Languages: English (native), German (B2)

Programming: Python, Sage, Julia, R, Mathematica, Macaulay2

References

Prof Primož Skraba

Queen Mary University of London
p.skraba@qmul.ac.uk

Dr Vanessa Robins

Australian National University
vanessa.robins@anu.edu.au

Dr Nina Otter

INRIA Saclay & Université Paris-Saclay
nina-lisann.otter@inria.fr

Prof Claudia Garetto

Queen Mary University of London
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