Jon Wilson

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http://jon-m-wilson.github.io/
Replace [surname] with my surname.

Research interests: Cluster algebras and their generalisations, orientable and non-orientable surfaces, representation theory of quivers, categorification of cluster algebras, combinatorial theory of polytopes.

Employment

Jeremiah Horrocks Institute, University of Lancashire, UK

Lecturer in Mathematics, January 2021 – present

Instituto de Matemáticas, Universidad Nacional Autónoma de México (UNAM), Mexico

Postdoctoral Researcher, October 2018–March 2020

Eberhard-Karls-Universität Tübingen, Germany

Postdoctoral Researcher, October 2017– September 2018

Education

Durham University, UK

Ph.D., Pure Mathematics, October 2013–May 2017 (Viva date: 8 May 2017)

University of Cambridge, UK

MASt in Mathematics, Part III, October 2012–2013

Swansea University, UK

BSc. in Mathematics, Mathematics, October 2009–2012

Publications and Preprints

[1] *Shellability and sphericity of finite quasi-arc complexes.* 10.1007/s00454-017-9929-0, **Discrete and Computational Geometry**, Volume 59, Issue 3, April 2018, pp 680–706.

[2] *Laurent phenomenon algebras arising from surfaces.* 10.1093/imrn/rnw341, **International Mathematics Research Notices**, Volume 2018, Issue 12, 13 June 2018, Pages 3800–3833.

[3] *Laurent phenomenon algebras arising from surfaces II – laminated surfaces.* 10.1007/s00029-020-00591-5, **Selecta Mathematica**, Volume 26, Issue 5, 14 October 2020, Pages 1–53.

[4] *Positivity for quasi-cluster algebras*, preprint: arXiv:1912.12789, 2019.

[5] *Surface cluster algebra expansion formulae via loop graphs*, preprint: arXiv:2006.13218, 2020.

[6] *Bangle functions are the generic basis for cluster algebras from punctured surfaces with boundary (jt. with Christof Geiß and Daniel Labardini-Fragoso)*, preprint: arXiv:2310.03306, 2024

[7] *Laminations of punctured surfaces as τ-reduced irreducible components (jt. with Christof Geiß and Daniel Labardini-Fragoso)*, 2025, preprint: arXiv:2308.00792.

Current Teaching

University of Lancashire, UK

Lecturer: 3rd year undergraduate course on *Coding Theory*, 24 lectures. **Sept 2025 - present**

Lecturer: 3rd year undergraduate course on *Complex Analysis*, 24 lectures. **Jan 2021 - present**

Lecturer: 2nd year undergraduate course on *Cryptology*, 24 lectures. **Sept 2023 - present**

Lecturer: 2nd year undergraduate course on *Further Real Analysis*, 24 lectures. **Oct 2021 - present**

Lecturer: 1st year undergraduate *Study Skills* sessions, 6 lectures **Oct 2021 - present**

Past Teaching

University of Lancashire, UK

Lecturer: Foundation year course on *Pure Mathematics and Statistics*, 18 lectures. **Sept 2024 - Jan 2025**

Lecturer: 1st year undergraduate course on *Abstract Algebra*, 12 lectures **Jan 2021 - Sept 2023**

Tutor: 1st year undergraduate course on *Linear Algebra and Abstract Algebra*, 24 tutorials. **Jan 2021 - Sept 2024**

Instituto de Matemáticas, Universidad Nacional Autónoma de México (UNAM), Mexico

Lecturer: Course on Cluster Algebras for graduate students, 26 lectures. **Feb 2019 - Jun 2019.**

Eberhard-Karls-Universität Tübingen, Germany

Lecturer: Course on Cluster Algebras, 28 lectures. **Oct 2017 - July 2018.**

Durham University, UK

Tutor: 2nd year undergraduate course on *Groups*, *Rings* and *Fields* (3 groups of approx. 15 students.) **Oct 2014 - May 2017**

Lecture Series

- Expansion formulas and good bases for surface cluster algebras (3 talks). In: *International Centre for Theoretical Sciences (ICTS), Bangalore, India: School on Cluster Algebras*, December 8–23, 2018.

Talks at International Conferences

- Expansion formulae for punctured surfaces. *University of Lancashire: Cluster Structures in the North*, June, 2023.
- Expansion formulae for quasi-cluster algebras. *Oaxaca, BIRS-CMO*, Dec 8–9, 2019.
- Expansion formulae for quasi-cluster algebras. *University of Leeds: New Connections and Directions in Representation Theory and Related Topics*, April 15–17, 2019.
- Expansion formulae for quasi-cluster algebras. *University of Leicester: Tropical Geometry meets Representation Theory II*, April 8–12, 2019.
- Expansion formulae for quasi-cluster algebras. *UNAM, Mexico: Mini Workshop on Cluster Theory*, March 21–22, 2019.
- Cluster structures from laminated surfaces. *CIRM, Luminy, France: Representations in Lie Theory and Interactions*, November 5–9, 2018.
- Cluster structures from laminated surfaces. *Michigan State University: Cluster Algebras and Mathematical Physics*, May 7–12, 2018.
- Nonorientable Surfaces and their cluster structure. *University Notre Dame: Quivers and Bipartite Graphs: Physics and Mathematics*, May 2–6, 2016.
- The cluster structure of non-orientable surfaces. *Münster: Cluster Algebras and Geometry*, March 10–12, 2016.
- Wilson, J. Quasi-cluster algebras and the structure of the finite type exchange graphs. *KIAS; Korea: Young Mathematicians Workshop on Cluster Algebras*, December 12, 2014.
- Wilson, J. Quasi-cluster algebras from non-orientable surfaces. *Cardiff University: LMS Workshop on Cluster Algebras and Preprojective Algebras*, October 17–18, 2014.

Seminar Talks

- Conway-Coxeter Frieze patterns. *University of Lancashire: Mathematics Seminar*, January, 2023.
- An introduction to Game Theory. *University of Lancashire: JHI Postgraduate Lectures*, December, 2022.
- Cluster structures from surfaces and the magic of perfect matchings. *UNAM: Instituto de Matemáticas Colloquium*, November 17, 2019.
- Expansion formulae for quasi-cluster algebras. *CIMAT: Commutative Algebra and Algebraic Geometry Seminar*, Guanajuato, Mexico, October 7, 2019.
- An introduction to Hall Algebras. *UNAM: Representation theory seminar*, Mexico City, Mexico, September 30, 2019.
- Cluster structures from laminated surfaces. *Durham University Cluster Algebra Seminar*, Durham, UK May 4, 2017.
- A short course (6 talks) on Laurent Phenomenon algebras and their connection to surfaces. *Durham University Cluster Algebra Seminar*, Durham, UK, January - March 2017.
- Triangulated non-orientable surfaces and their flip structure. *University of Manchester Geometry Seminar*, Manchester, UK, March 3, 2016.
- The structure of arc complexes. *Durham University Gandalf Seminar*, October 13, 2015.

Fellowships, Grants, and Scholarships

- QR (quality related) research funding from UKRI, Research England – studentship to support the project 'Interdisciplinary aspects of cluster algebras and related structures'.
  Grant ref. KIR002. October 2023 - March 2027. Value: £81,977
- Principal grant holder for the CLAN research network (supported via LMS Scheme 3).
  Grant ref. 32433. October 2023 - present. Value: £2,700.
- London Mathematical Society Conference Grant – Scheme 9 – Celebrating New Appointments.
  Grant ref. 42218. July 2023. Value: £709 (inc. £210 contributed by the Jeremiah Horrocks Institute).
- EPSRC Doctoral Scholarship, 2013–2017, Durham University. Value: £66,941

Esteem

- Nominated for Lecturer of the Year (2025) at University of Lancashire.
- Associate Fellow of the Higher Education Academy (AFHEA) – awarded 20/09/2022.
- Referee for Boletín de la Sociedad Matemática Mexicana and MathSciNet.
- Teach@Tübingen Award, 2017–2018, Eberhard-Karls-Universität Tübingen.
- Institute of Mathematics Prize, 2011–2012, Institute of Mathematics and its Applications.
- Senior Foulkes Prize in Mathematics, 2011–2012, Swansea University.
- Lynne Charles Prize in Mathematics, 2010–2011, Swansea University.
- Junior Foulkes Prize in Mathematics, 2009–2010, Swansea University.

Programming experience

- LaTeX.
- Python.
- Mathematica.
- IPE.