Dr. Matthew D. Pressland

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CONTACT INFORMATION	School of Mathematics and Statistics, University of Glasgow, Glasgow G12 8QQ, United Kingdom

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PERSONAL INFORMATION

Date of birth: 31.07.1989
Nationality: British citizen

RESEARCH INTERESTS

Representation theory of quivers and algebras, categorical and homological methods.
Connections to cluster theory, algebraic and combinatorial geometry.
Abelian, exact and triangulated categories, (higher) Auslander–Reiten theory.
Non-commutative algebra, connections to geometry, mathematical physics, Lie theory.

FELLOWSHIPS

EPSRC Postdoctoral Fellowship, 30.03.20–29.09.23
Originally at University of Leeds, UK, transferred to University of Glasgow, UK, 05.01.22.
Personal grant, total value £375,748, funding full time postdoctoral research position for myself.

Max Planck Institute Guest Programme, Bonn, Germany, 01.04.16–31.03.17
Postdoctoral research fellowship, total value €25,200 plus travel expenses.

OTHER EMPLOYMENT

Postdoctoral Research Associate, 30.09.23–29.09.24
School of Mathematics & Statistics, University of Glasgow, UK

Temporary Lecturer, 05.01.22–04.04.22
School of Mathematics & Statistics, University of Glasgow, UK

Wissenschaftlicher Mitarbeiter (postdoc), 01.04.17–30.09.21 (on research leave from 30.03.20)
Institut für Algebra und Zahlentheorie, Universität Stuttgart, Germany

EDUCATION

PhD, completed 2015.
University of Bath, United Kingdom
Adviser: Prof. Alastair King.
Thesis title: *Frobenius categorification of cluster algebras.*
Defended 01.09.15, awarded 18.11.15.

MMath, Master of Mathematics, First Class, 2007–2011
University of Warwick, United Kingdom
IBM Student Recognition Award 2010, Warwick 2nd Year Mathematics Prize 2009.

LANGUAGES

English (native speaker), German (B1–2), French (B1–2), various others (A1–2).

FURTHER FUNDING

Hausdorff Junior Trimester Programme: New Trends in Representation Theory, €9,300
Funding to lead a three-person research group during the programme.

Foundation Compositio, €6,000
London Mathematical Society Scheme 1 Grant, £5,000
Heilbronn Small Grants Scheme, £4,000
Funding for the conference 'Quivers, Clusters, Moduli and Stability', Oxford, January 2023.

London Mathematical Society Scheme 3 Grant, £1,200
Funding for the research network CLAN (Clusters and their Applications in the North).

Edinburgh Mathematical Society Student Research Bursary, £900
Funding for a student to carry out a summer research project under my supervision.

Heilbronn Research Grant, £7,500
Funded research in a seven-person group led by principal investigator A. King.

PAPERS

10 peer reviewed publications, 4 preprints and 1 appendix:

1. Perfect matching modules, dimer partition functions and cluster characters
With İ. Çanakçı and A. King. *Adv. Math.*, **443** (2024), Paper no. 109570, 64 pages.
2. A categorification of acyclic principal coefficient cluster algebras
Nagoya Math. J., **252** (2023), 769–809.
3. From frieze patterns to cluster categories
In *Modern Trends in Algebra and Representation Theory*, LMS Lecture Notes, CUP, 2023.
4. Calabi–Yau properties of Postnikov diagrams
Forum Math. Sigma **10** (2022), Paper no. e56, 31 pages.

5. On quiver Grassmannians and orbit closures for gen-finite modules
With J. Sauter. *Algebr. Represent. Theory* **25** (2022), no. 2, 413–445.
6. Special tilting modules for algebras with positive dominant dimension
With J. Sauter. *Glasg. Math. J.* **64** (2022), no. 1, 79–105.
7. Mutation of frozen Jacobian algebras
J. Algebra **546** (2020), 236–273.
8. Graded Frobenius cluster categories
With J.E. Grabowski. *Doc. Math.* **23** (2018), 49–76.
9. Internally Calabi–Yau algebras and cluster-tilting objects
Math. Z. **287** (2017), no. 1–2, 555–585.
10. Labelled seeds and the mutation group
With A. King. *Math. Proc. Cambridge Philos. Soc.* **163** (2017), no. 2, 193–217.

11. Cluster categories for completed infinity-gons I: Categorifying triangulations
With İ. Çanakçı and M. Kalck. Preprint, arXiv:2401.08378, 31 pages.
12. Reduction of Frobenius extriangulated categories
With E. Faber and B.R. Marsh. Preprint, arXiv:2308.16232, 39 pages.
13. Extriangulated ideal quotients, applications to cluster theory and gentle algebras
With X. Fang, M. Gorsky, Y. Palu and P.-G. Plamondon. Preprint, arXiv:2308.05524, 47 pages.
14. Quasi-coincidence of cluster structures on positroid varieties
Preprint, arXiv:2307.13369, 55 pages.

15. Auslander–Reiten translations for Gorenstein algebras
With S. Kvamme. Appendix to *Monomial Gorenstein algebras and the stably Calabi–Yau property*, by A. García Elsener, *Algebr. Represent. Theory* **24** (2021), 1083–1099.

VISITING POSITIONS	**Invited participant**, Cluster Algebras and Representation Theory, 06.09.21–17.12.21 **Isaac Newton Institute for Mathematical Sciences**, Cambridge, UK **Group leader**, New Trends in Representation Theory, 01.09.20–29.11.20 **Hausdorff Institute for Mathematics**, Bonn, Germany.
ESTEEM	**Awards** Jon Nimmo Teaching Prize for early career staff, Glasgow, 2022 **Invitations** Three invited lecture series and many invited conference talks (further details below). Invitations to exclusive conferences at Oberwolfach (×2) and Casa Matemática Oaxaca (×3). **Main organiser** Clusters and their Applications in the North, Glasgow, 14.02.24 Quivers, Clusters, Moduli and Stability, Oxford, 09–13.01.23 Bridges Between Representation Theory and Algebraic Geometry, Leeds, 24–27.05.22 Representation Theory Working Group, Stuttgart, 2017–18 and 2019–20 Bath Postgraduate Geometry & Algebra Seminar, 2012–15 Bath Postgraduate Seminar Series, 2012–13 **Local organiser** Research network CLAN (Clusters and their Applications in the North), Glasgow organiser Two Weeks of Silting, Stuttgart, 30.07.19–09.08.19 Calf regional algebraic geometry seminar, Bath, 31.05.12 **Refereeing experience** Adv. Math. (×3), Proc. Lond. Math. Soc., Algebra Number Theory, Int. Math. Res. Not. IMRN, J. Combin. Theory Ser. A, Math. Z., Bull. Lond. Math. Soc., Math. Proc. Cambridge Philos. Soc., J. Algebraic Combin., Algebr. Represent. Theory (×3), SIGMA Symmetry Integrability Geom. Methods Appl., Monatsh. Math., Glasg. Math. J., Quart. J. Math. Oxford, Appl. Categ. Structures., FPSAC. **External examiner** Eight Bachelors' theses in algebra (three in Norwegian), NTNU Trondheim, 2019 **Administrator** FDLIST, mailing list and webpage for representation theory of algebras, with over 400 registered users worldwide, since 2020 **Reviewer** MathSciNet, zbMath

Outreach and administration
Invited contributor to 'Snapshots of modern mathematics from Oberwolfach', 2023
Royal Institution Masterclass for secondary school students, Glasgow, 26.11.22
Early Career Researcher roundtable with science minister, on UK R&D Roadmap, 24.09.20
Staff–Student Liaison Committee postgraduate representative, Bath, 2013–14
Teaching Assistant for STEP Outreach Programme for sixth-form students, Bath, 2013

COURSES
LECTURED
Metric Spaces and Basic Topology, University of Glasgow, 2024
Metric Spaces and Basic Topology, University of Glasgow, 2022 (online)
Höhere Mathematik II, Universität Stuttgart, 2017 (additional lectures, in German)

SUPERVISION
MSc Project, D. Qin, The McKay Correspondence, Glasgow, 07–09.2023
Summer Project, G.C.-D. Fernández, Frieze Patterns, Glasgow, 06–07.2022

TEACHING
EXPERIENCE
School of Mathematics and Statistics, **University of Glasgow**, UK
Lecturer

○ Course head, with full responsibility for delivering lectures, setting problem sheets, setting and grading the exam and other assessments (including online quiz), maintaining the course webpage and lecture notes (with accessibility considerations), organising tutors and tutorials.
○ Three lectures (50 mins) plus one or two tutorials (50 mins) per week.
○ Recognised with the Jon Nimmo Teaching Prize for early career staff in 2022.

Institut für Algebra und Zahlentheorie, **Universität Stuttgart**, Germany
Lehrassistent   **April 2017 to March 2020**

○ Teaching for Höhere Mathematik (Higher Mathematics) I and II (2017–2020, for BSc physics and engineering students) and Advanced Higher Mathematics for INFOTECH (2017–2019, for MSc information technology students).
○ Delivered Vortragsübungen ('lectured exercises') to approximately 200 students in one 90 minute lecture per week (in German).
○ Produced weekly exercise sheets and final exams, and provided office hours.
○ Exam invigilation, grading and checking of exam scripts, exam feedback for students.
○ Second examiner for oral exams and an undergraduate thesis on representation theory.

Department of Mathematical Sciences, University of Bath, UK
Teaching Assistant   **October 2011 to April 2015**

○ Tutorials for first and second year courses (Algebra 1A, 1B, 2A, 2B, Analysis 1A), plus grading and feedback.
○ Assisted with workshops to prepare college students for the STEP examination.
○ Three-day training course on teaching in mathematics before beginning the role, in addition to a further one-day teaching workshop in December 2011.

Mathematics Institute, University of Warwick, United Kingdom
Supervisor   **October 2010 to June 2011**

○ Taught five first year students algebra, analysis and calculus, plus grading and feedback.
○ Gave more general advice on university life and good working practices.

Analysis I Peer Tutor   **October 2008 to December 2008**

○ Assisted a postgraduate TA in tutorials for first year analysis.

TALKS
Lecture Series
Mutations in Representation Theory of Algebras, Online / Isfahan, Iran, 10–12.05.23
Preprojective Algebras and Calabi–Yau Algebras, Online / Ōsaka, Japan, 02–04.03.22
London Mathematical Society Autumn Algebra School, Online, 06–09.10.20

Invited Talks
Séminaire d'Algèbre et de Géométrie, Caen, France, 02.04.24
London Mathematical Society Northern Regional Meeting, Durham, UK, 25.03.24
Algebraic Topology Seminar, Warwick, UK, 12.03.24
Cluster Algebras and Its Applications, Oberwolfach, Germany, 16.01.24
FD Seminar, Online, 28.09.23
Homological Algebra and Representation Theory, Karlóvasi, Greece, 13.07.23
Nordic Congress of Mathematicians, Aalborg, Denmark, 04.07.23
Combinatorial Aspects of Representation Theory, Oslo, Norway, 28.03.23
Séminaire AG, Versailles, France, 14.03.23

GLEN Algebraic Geometry Seminar, Edinburgh, UK, 09.12.22
Pure Mathematics Seminar, Lancaster, UK, 12.10.22
Geometric and Combinatorial Methods in Homological Algebra, Aarhus, Denmark, 21.07.22
Clusters and Braids Seminar, Online, 06.06.22
Øyvind 60, Trondheim, Norway, 04.06.22
58th ARTIN Meeting, Manchester, UK, 17.03.22
International Workshop on Geometry and Math. Physics, Online / Ulsan, South Korea, 15.02.22
LAGOON Seminar, Online, 10.02.22
Hodge Seminar, Edinburgh, UK, 08.12.21
Séminaire d'Algèbre d'IMJ-PRG, Online / Paris, France, 18.10.21
New Developments in Rep. Theory Arising from Cluster Algebras, Cambridge, UK, 23.09.21
Cluster Algebras and Related Topics, Online / Běijīng, China, 06.06.21
Plymouth Pure Mathematics Seminar, Online / Plymouth, UK, 25.02.21
TRAC Seminar, Online / Sherbrooke, Canada, 17.02.21
Categorifications in Representation Theory, Online / Leicester, UK, 16.09.20
Dimers in Combinatorics and Cluster Algebras, Online / Ann Arbor, USA, 13.08.20
FD Seminar, Online, 21.05.20
Séminaire d'Algèbre d'IMJ-PRG, Paris, France, 17.02.20
Darstellungstheorie Oberseminar, Bonn, Germany, 06.12.19
Séminaire Quantique, Strasbourg, France, 20.11.19
Algebraic Representation Theory and Related Topics, Sānyà, China, 11.10.19
SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland, 09.07.19
Cluster Algebras and Representation Theory, Kyōto, Japan, 11.06.19
Interactions betw. Comm. Algebra, Rep. Theory & Alg. Geometry, Münster, Germany, 23.03.19
LaCIM Seminar, UQAM, Montréal, Canada, 02.05.18
Maurice Auslander International Conference, Woods Hole, USA, 25.04.18
Cluster Algebras in Mathematical Physics, Mainz, Germany, 28.03.17
Algebra and Number Theory Seminar, Graz, Austria, 09.03.17
Seminar am Institut für Algebra und Zahlentheorie, Stuttgart, Germany, 05.08.16
Darstellungstheorie Oberseminar, Bonn, Germany, 15.07.16
Cluster Algebras and Finite Dimensional Algebras, Leicester, UK, 05.06.15
44th ARTIN Meeting, Manchester, UK, 08.05.15
Algebra Seminar, Leeds, UK, 10.03.15
Calf Seminar, Imperial College London, UK, 28.01.15
Junior Geometry Seminar, Imperial College London, UK, 29.01.14
Calf Seminar, Oxford, UK, 26.04.13

Selected Other Talks
Arbeitsgemeinschaft: Cluster Algebras, Oberwolfach, Germany, 12.10.23
Silting in Rep. Theory, Singularities, and Noncommutative Geometry, Oaxaca, Mexico, 14.09.23
Advances in Representations of Algebras IX, Kingston, Canada, 13.06.23
International Conference on Representations of Algebras, Buenos Aires, Argentina, 09.08.22
Tilting, Singularity Categories & Non-Commutative Resolutions, Oaxaca, Mexico, 02.09.19
Workshop on Stability Conditions, Oaxaca, Mexico, 02.11.18
First SWAN Workshop, Stuttgart, Germany, 17.09.18
International Conference on Representations of Algebras, Prague, Czechia, 16.08.18
Tropical Geometry Meets Representation Theory, Cologne, Germany, 15.03.18
Darstellungstheorietage 2017, Eichstätt, Germany, 10.11.17
Lie Theory and Cluster Algebras, Rome, Italy, 20.10.16
International Conference on Representations of Algebras, Syracuse, USA, 15.08.16
Quivers and Bipartite Graphs, London, USA, 03.05.16
Cluster Algebras and Geometry, Münster, Germany, 11.03.16
International Conference on Representations of Algebras, Sānyà, China, 25.08.14