## Dr. Matthew D. Pressland

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Information Université de Caen-Normandie,

RESEARCH

14032 Caen Cedex 5, ORCID: 0000-0002-9631-3583

France ResearcherID: O-3994-2016

Representation theory of quivers and algebras, categorical and homological methods. Interests 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.

Fellowship, 30.03.20–29.09.23

Originally at University of Leeds, UK, transferred to University of Glasgow, UK, 05.01.22. Personal grant, 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 Maître de conférences ( $\approx$  lecturer), from 01.12.24 EMPLOYMENT LMNO, Université de Caen-Normandie, France

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), 01.04.17–30.03.20

Institut für Algebra und Zahlentheorie, Universität Stuttgart, Germany

EDUCATION PhD in Mathematics, completed 2015

> University of Bath, UK Adviser: Prof. Alastair King

Thesis title: Frobenius categorification of cluster algebras

Hausdorff Junior Trimester Programme: New Trends in Representation Theory, €9,300 Funding

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

FURTHER

11 peer-reviewed publications, 3 preprints and 1 appendix:

1. Extriangulated ideal quotients, with applications to cluster theory and gentle algebras

With X. Fang, M. Gorsky, Y. Palu, P.-G. Plamondon. J. Pure Appl. Algebra (to appear).

- 2. Cluster categories for completed infinity-gons I: Categorifying triangulations With İ. Canakçı, M. Kalck. J. Lond. Math. Soc. 111 (2025), No. e70092.
- 3. Perfect matching modules, dimer partition functions and cluster characters With İ. Canakçı, A. King. Adv. Math 443 (2024), No. 109570.
- 4. From frieze patterns to cluster categories

Modern Trends in Algebra and Representation Theory, London Math. Soc. Lecture Note Ser. Vol. 486, CUP (2023), 109-145.

5. A categorification of acyclic principal coefficient cluster algebras Nagoya Math. J. 252 (2023), 769–809.

6. Calabi-Yau properties of Postnikov diagrams

Forum Math. Sigma 10 (2022), Paper no. e56.

## 7. On quiver Grassmannians and orbit closures for gen-finite modules

With J. Sauter. Algebr. Represent. Theory 25 (2022), no. 2, 413–445.

## 8. Special tilting modules for algebras with positive dominant dimension

With J. Sauter. Glasg. Math. J. 64 (2022), no. 1, 79–105.

#### Mutation of frozen Jacobian algebras

J. Algebra **546** (2020), 236–273.

#### 9. Graded Frobenius cluster categories

With J.E. Grabowski. Doc. Math. 23 (2018), 49-76.

## 10. Internally Calabi-Yau algebras and cluster-tilting objects

Math. Z. 287 (2017), no. 1–2, 555–585.

## 11. Labelled seeds and the mutation group

With A. King. Math. Proc. Cambridge Philos. Soc. 163 (2017), no. 2, 193–217.

# 12. Cluster structures via representation theory: cluster ensembles, tropical duality, cluster characters and quantisation

With J.E. Grabowski. Preprint, arXiv:2411.11633.

#### 13. Reduction of Frobenius extriangulated categories

With E. Faber, B. Marsh. Preprint, arXiv:2308.16232.

## 14. Quasi-coincidence of cluster structures on positroid varieties

Preprint, arXiv:2307.13369.

## 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

Six invited lecture series and many invited conference talks.

Invitations to exclusive conferences at Oberwolfach ( $\times 2$ ), the Banff International Research Station, Casa Matemática Oaxaca ( $\times 3$ ) and the Chennai Mathematical Institute.

## Main organiser

ICRA (International Conference on Representations of Algebras), Grenoble, 22.06.26–03.07.26 Journées d'algèbre, Caen, 18.03.25–19.03.25

Clusters and their Applications in the North, 1st Meeting, 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

#### Supporting organiser

Algebraic geometry days, Glasgow, 08.05.24–09.05.24

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

J. Eur. Math. Soc., Adv. Math. (×3), Proc. Lond. Math. Soc., Algebra Number Theory, J. Combin. Theory Ser. A, Int. Math. Res. Not. IMRN, Math. Z., Bull. Lond. Math. Soc., J. Algebraic Combin., Algebr. Represent. Theory (×3), Quart. J. Math. Oxford, Math. Proc. Cambridge Philos. Soc., Appl. Categ. Structures, Monatsh. Math., Glasg. Math. J., SIGMA Symmetry Integrability Geom. Methods Appl., 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

Logique et Raisonnement, Université de Caen-Normandie, 2026 (combined lecture/tutorial)

LECTURED Algèbre 1, Université de Caen-Normandie, 2025 (combined lecture/tutorial)

Logique et Raisonnement, Université de Caen-Normandie, 2025 (combined lecture/tutorial)

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)

SUPERVISION

MSc Project, D. Qin, The McKay correspondence, Glasgow, 07–09.2023

Stage L3, K. Marandeau, Cohen-Macaulay representations, Caen, 05–07.2025 Summer Project, G.C.-D. Fernández, Frieze patterns, Glasgow, 06–07.2022

Talks

Lecture Series

Markov Numbers and the Combinatorics of Cluster Algebras, İstanbul, Turkey, 25–28.08.25

Cluster Algebras and Symplectic Geometry, Banff, Canada, 30.03–04.04.25

Cluster Algebra, Representation Theory and Algebraic Geometry, Hong Kong, 08–12.11.25

Mutations in Representation Theory of Algebras, Online / Isfahan, Iran, 10–12.05.23

Preprojective Algebras and Calabi-Yau Algebras, Online / Osaka, Japan, 02-04.03.22

London Mathematical Society Autumn Algebra School, Online, 06–09.10.20

## Invited Talks (since 2021)

The RepNet Launch Party, York, UK, 30.07.25

Derived Representation Theory and Triangulated Categories, Thessaloníki, Greece, 27.06.25 Séminaire AG, Versailles, France, 17.06.25

AIMS Conference on Dynamical Systems and Differential Equations, Abu Dhabi, UAE, 18.12.24 Homological Algebra Seminar, Aarhus, Denmark, 23.10.24

Algebra Seminar, Aberdeen, UK, 09.10.24

Séminaire d'Algèbre d'IMJ-PRG, Paris, France, 17.06.24

Séminaire d'Algèbre et de Géométrie, Caen, France, 02.04.24

Séminaire AG, Online / Versailles, France, 19.03.24

London Mathematical Society Northern Regional Meeting, Durham, UK, 25.03.24

Algebraic Topology Seminar, Warwick, UK, 13.03.24

Cluster Algebras and Their 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

 ${\it Geometric and Combinatorial Methods in Homological Algebra, Aarhus, Denmark, 21.07.22}$ 

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