NICHOLAS WILLIAMS

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EDUCATION

Doctorate in Mathematics *September 2018 – May 2022*
University of Cologne *April 2021 – May 2022*
Started at University of Leicester *September 2018 – April 2021*
Supervisor: Sibylle Schroll
Thesis title: *Higher-dimensional combinatorics in representation theory*
Summa cum laude

Graduate Diploma in Quantitative Economics *October 2017 – June 2018*
Birkbeck, University of London
Distinction

MMathPhil in Mathematics & Philosophy *October 2012 – June 2016*
Worcester College, Oxford
Double First Class Honours

EMPLOYMENT

Postdoctoral Research Associate *September 2022 – March 2025*
Lancaster University
With David Pauksztello

JSPS Short Term Postdoctoral Research Fellow *May 2022 – August 2022*
University of Tokyo
With Osamu Iyama

Graduate Teaching Assistant *September 2021 – December 2021*
King's College London

Guest Teacher *September 2021 – December 2021*
London School of Economics

Feedback session leader *January 2019 – December 2020*
University of Leicester

PUBLICATIONS

2. New interpretations of the higher Stasheff–Tamari orders *2022*
   Advances in Mathematics, Volume 407, 108552

1. The combinatorics of tensor products of higher Auslander algebras of type A *2021*
   (With Jordan McMahon)
   Glasgow Mathematical Journal, 63(3), pp. 526–546.

CONFERENCE PROCEEDINGS

2. The higher Stasheff–Tamari orders in representation theory *To appear*
   Proceedings of the 2020 International Conference on Representations of Algebras

1. The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders *2021*
   Proceedings of the 33rd International Conference on Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire 85B, Art. 6, 12.

PREPRINTS

5. Stability spaces of string and band modules   *2022*
   (With Sibylle Schroll, Aran Tattar, Hipolito Treffinger, and Yadira Valdivieso)
   `arXiv:2208.15000`

4. Triangulations of prisms and preprojective algebras of type A *2022*
   (With Osamu Iyama)
   `arXiv:2208.12957`

3. Quiver combinatorics for higher-dimensional triangulations   *2021*
   `arXiv:2112.09189`

2. The two higher Stasheff–Tamari orders are equal   *2021*
   `arXiv:2106.01050`

1. The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders   *2020*
   `arXiv:2012.10371`

PRIZES AND SCHOLARSHIPS

Gibbs prize for Mathematics & Philosophy   *2016*
University of Oxford
For top performance in Mathematics papers

Gibbs prize for Mathematics & Philosophy   *2015*
University of Oxford
For top performance in Mathematics papers

Academic scholarship   *2013*
Worcester College, Oxford

Honorary scholarship   *2007*
Westminster School

INVITED CONFERENCE TALKS (VIRTUAL)

An algebraic interpretation of the higher Stasheff–Tamari orders   *November 2020*
International Conference on Representations of Algebras
Selected to give talk by scientific committee based on research snapshot
Via BigBlueButton

CONTRIBUTED CONFERENCE TALKS (IN PERSON)

Algebraic interpretation of the higher Stasheff–Tamari orders   *July 2022*
Representation theory and various issues on related topics
Research Institute for Mathematical Sciences, Kyoto University

Nice triangulations of cyclic polytopes   *June 2019*
London Mathematical Society Graduate Student Meeting

Higher analogues of Grassmannian clusters   *April 2019*
Maurice Auslander Distinguished Lectures and International Conference

Higher analogues of Grassmannian clusters   *April 2019*
New Connections and Directions in Representation Theory
University of Leeds

Higher analogues of Grassmannian clusters   *April 2019*
Tropical Geometry meets Representation Theory
University of Leicester

CONTRIBUTED CONFERENCE TALKS (VIRTUAL)

The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders   *January 2022*
Formal Power Series and Algebraic Combinatorics
Bar-Ilan University

The higher Stasheff–Tamari orders on triangulations of cyclic polytopes   *June 2021*
London Mathematical Society Graduate Student Meeting

Vertex figures of cubillages of cyclic zonotopes   *November 2020*
London Mathematical Society Graduate Student Meeting

SEMINAR TALKS (IN PERSON)

Equivalence of maximal green sequences   *April 2022*
Working seminar in algebra and geometry
University of Cologne

Equivalence of maximal green sequences   *February 2022*
Paris algebra seminar
Institut de Mathématiques de Jussieu-Paris Rive Gauche

Cluster categories and crossing conditions   *February 2020*
Working seminar in algebra and geometry
University of Leicester

An algebraic interpretation of the higher Stasheff–Tamari orders   *November 2019*
Pure mathematics seminar
University of East Anglia

An algebraic interpretation of the higher Stasheff–Tamari orders   *November 2019*
Working seminar in algebra and geometry
University of Leicester

Nice triangulations of cyclic polytopes   *October 2019*
PhD seminar
University of Leicester

Higher analogues of Grassmannian clusters   *April 2019*
Algebra and number theory seminar
University of Graz

Alternating strand diagrams, plabic graphs, and Grassmannians   *January 2019*
PhD seminar
University of Leicester

Grassmannians   *October 2018*
Working seminar in algebra and geometry
University of Leicester

SEMINAR TALKS (VIRTUAL)

Cyclic polytopes and higher Auslander–Reiten theory III   *July 2022*
Tokyo–Nagoya algebra seminar
University of Tokyo and Nagoya University

Cyclic polytopes and higher Auslander–Reiten theory II   *June 2022*
Tokyo–Nagoya algebra seminar
University of Tokyo and Nagoya University

Mutating cluster-tilting objects in $(d+2)$-angulated cluster categories *June 2022*
FD seminar

Cyclic polytopes and higher Auslander–Reiten theory I *June 2022*
Tokyo–Nagoya algebra seminar
University of Tokyo and Nagoya University

An algebraic interpretation of the higher Stasheff–Tamari orders *January 2022*
Aachen–Bochum–Cologne Darstellungstheorie Seminar
RWTH Aachen University, Ruhr-University Bochum, and University of Cologne

Cyclic polytopes and higher Auslander–Reiten theory *December 2021*
Tokyo–Nagoya algebra seminar
University of Tokyo and Nagoya University

The two higher Stasheff–Tamari orders are equal *May 2021*
Working seminar in algebra and geometry
University of Cologne

The higher Stasheff–Tamari orders in representation theory *April 2021*
Paris algebra seminar
Institut de Mathématiques de Jussieu-Paris Rive Gauche

New interpretations of the higher Stasheff–Tamari orders *March 2021*
Diskrete Mathematik / Geometrie Forschungsseminar
TU Berlin

The Tamari lattice in representation theory *March 2021*
Junior Algebra Colloquium
University of Bristol

KP solitons *October 2020*
PhD seminar
University of Leicester

KP solitons and the higher Stasheff–Tamari orders II *October 2020*
Working seminar in algebra and geometry
University of Leicester

KP solitons and the higher Stasheff–Tamari orders I *September 2020*
Working seminar in algebra and geometry
University of Leicester

Triangulations of odd-dimensional cyclic polytopes *June 2020*
PhD seminar
University of Leicester

Fukaya categories and higher Auslander algebras of type A *April 2020*
Working seminar in algebra and geometry
University of Leicester

POSTERS

An algebraic interpretation of the higher Stasheff–Tamari orders *June 2021*
Young Researchers in Mathematics
Online
Winner of 1ˢᵗ prize in poster competition

An algebraic interpretation of the higher Stasheff–Tamari orders   *May 2021*
Advances in Representation Theory of Algebras
Online

New interpretations of the higher Stasheff–Tamari orders   *January 2021*
Combinatorial algebra meets algebraic combinatorics
Université du Québec à Montréal
Online

An algebraic interpretation of the higher Stasheff–Tamari orders   *November 2020*
International Conference on Representations of Algebras
"Research snapshot"
Online

New interpretations of the higher Stasheff–Tamari orders   *September 2020*
Virtual Heidelberg Laureate Forum
Online

Representation theory and Grassmannians   *March 2019*
STEM for Britain
Poster competition at UK Parliament

GRANTS

London Mathematical Society Scheme 8   *April 2020*
Postgraduate research conference grants
Categorifications in Representation Theory conference organised with Aran Tattar
GBP 2,500

ORGANISATION

Köln Algebra and Representation Theory seminar   *April 2021 – present*
Co-organiser
University of Cologne
Online

Categorifications in Representation Theory conference   *September 2020*
Co-organised with Aran Tattar
Online

Mathematics PhD seminar   *September 2019 – August 2020*
University of Leicester

Representation theory and mirror symmetry conference   *May 2019*
Local organising committee
University of Leicester

RESEARCH STAYS

University of Cologne   *April 2021*
Visiting: Sibylle Schroll and Aran Tattar
1 week

University of Cambridge   *December 2021*
Isaac Newton Institute for Mathematical Sciences
Cluster algebras and representation theory programme
Invited participant
1 week

University of Graz April 2019
Visiting: Jordan McMahon
Host: Karin Baur
1 week

REVIEWING

zbMATH *September 2020 – present*
5 reviews written

REFEREEING

Journal of Algebraic Combinatorics

TEACHING

Real analysis *September 2021 – December 2021*
Class teacher (online)
King's College London

MA107: Quantitative methods *September 2021 – December 2021*
Class teacher
London School of Economics

Calculus & analysis *October 2020 – December 2020*
Class teacher (online)
University of Leicester

Second-year algebra *January 2020 – April 2020*
Class teacher
University of Leicester

Calculus & analysis *October 2019 – April 2020*
Class teacher
University of Leicester

Elements of number theory *October 2019 – December 2019*
Class teacher
University of Leicester

Calculus & analysis *January 2019 – March 2019*
Class teacher
University of Leicester

COMMITTEE ROLES

Mathematics & Philosophy Representative *2015 – 2016*
Joint Consultative Committee with Undergraduates
University of Oxford

Undergraduate Representative *2015 – 2016*
Joint Committee for Mathematics and Philosophy
University of Oxford

Undergraduate Representative *2015 – 2016*
Mathematics Department Art Committee
University of Oxford

OUTREACH

University of Leicester Representative   *November 2018, 2019, 2020*
Research in the UK afternoon
University of Cambridge

Student Helper   *March 2013, 2014, 2015*
Oxford and Cambridge Student Conferences

OTHER

London Mathematical Society   *June 2019 – present*
Associate member
3 reports on conferences written for the LMS newsletter

Programming   Python, Sage, Maple, node.js, Haskell
                     Git
                     LaTeX

Languages

	(CEFR levels)
English	Native
German	B1
French	B1
Japanese	A2
Spanish	A1