

NICHOLAS WILLIAMS

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EDUCATION

Doctorate in Mathematics

University of Cologne

University of Leicester

Supervisor: Sibylle Schroll

Summa cum laude

April 2021 – June 2022

September 2018 – September 2021

Graduate Diploma in Quantitative Economics

Birkbeck, University of London

Distinction

October 2017 – June 2018

MMathPhil in Mathematics & Philosophy

Worcester College, Oxford

Double First Class Honours

October 2012 – June 2016

EMPLOYMENT

University of Tokyo

JSPS London Short Term Predoctoral Research Fellow

Host: Osamu Iyama

One year

Currently unable to take up due to COVID-19 travel restrictions

King's College London

Graduate Teaching Assistant

September 2021 – December 2021

London School of Economics

Guest Teacher

September 2021 – December 2021

University of Leicester

Feedback session leader

January 2019 – December 2020

PUBLICATIONS

The combinatorics of tensor products of higher Auslander algebras of type A

(With Jordan McMahon.)

Glasgow Mathematical Journal, 63(3), pp. 526–546.

2021

CONFERENCE PROCEEDINGS

The higher Stasheff–Tamari orders in representation theory

Proceedings of the 2020 International Conference on Representations of Algebras

To appear

The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders

Proceedings of the 33rd International Conference on Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire 85B, Art. 6, 12.

2021

PREPRINTS

- Quiver combinatorics for higher-dimensional triangulations
arXiv:2112.09189 *December 2021*
- The two higher Stasheff–Tamari orders are equal
arXiv:2106.01050 *June 2021*
- The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders
arXiv:2012.10371 *December 2020*
- New interpretations of the higher Stasheff–Tamari orders
arXiv:2007.12664 *July 2020*

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

- 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

- The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders** *January 2022*
Formal Power Series and Algebraic Combinatorics
Bar-Ilan University
Via Zoom
- The higher Stasheff–Tamari orders on triangulations of cyclic polytopes** *June 2021*
London Mathematical Society Graduate Student Meeting
Via Zoom
- Vertex figures of cubillages of cyclic zonotopes** *November 2020*
London Mathematical Society Graduate Student Meeting
Via Zoom
- 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
New Connections and Directions in Representation Theory
University of Leeds

April 2019

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

April 2019

SEMINAR TALKS

Equivalence of maximal green sequences
Paris algebra seminar
Institut de Mathématiques de Jussieu-Paris Rive Gauche
In person

February 2022

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

January 2022

Cyclic polytopes and higher Auslander–Reiten theory
Tokyo–Nagoya algebra seminar
University of Tokyo and Nagoya University
Via Zoom

December 2021

The two higher Stasheff–Tamari orders are equal
Working seminar in algebra and geometry
University of Cologne
Via Zoom

May 2021

The higher Stasheff–Tamari orders in representation theory
Paris algebra seminar
Institut de Mathématiques de Jussieu-Paris Rive Gauche
Via Zoom

April 2021

New interpretations of the higher Stasheff–Tamari orders
Diskrete Mathematik / Geometrie Forschungsseminar
TU Berlin
Via Zoom

March 2021

The Tamari lattice in representation theory
Junior Algebra Colloquium
University of Bristol
Via Zoom

March 2021

KP solitons
PhD seminar
University of Leicester
Via Microsoft Teams

October 2020

KP solitons and the higher Stasheff–Tamari orders II
Working seminar in algebra and geometry
University of Leicester
Via Zoom

October 2020

KP solitons and the higher Stasheff–Tamari orders I
Working seminar in algebra and geometry
University of Leicester
Via Zoom

September 2020

Triangulations of odd-dimensional cyclic polytopes PhD seminar University of Leicester Via Blackboard Collaborate	<i>June 2020</i>
Fukaya categories and higher Auslander algebras of type A Working seminar in algebra and geometry University of Leicester Via Zoom	<i>April 2020</i>
Cluster categories and crossing conditions Working seminar in algebra and geometry University of Leicester	<i>February 2020</i>
An algebraic interpretation of the higher Stasheff–Tamari orders Pure mathematics seminar University of East Anglia	<i>November 2019</i>
An algebraic interpretation of the higher Stasheff–Tamari orders Working seminar in algebra and geometry University of Leicester	<i>November 2019</i>
Nice triangulations of cyclic polytopes PhD seminar University of Leicester	<i>October 2019</i>
Higher analogues of Grassmannian clusters Algebra and number theory seminar University of Graz	<i>April 2019</i>
Alternating strand diagrams, plabic graphs, and Grassmannians PhD seminar University of Leicester	<i>January 2019</i>
Grassmannians Working seminar in algebra and geometry University of Leicester	<i>October 2018</i>

POSTERS

An algebraic interpretation of the higher Stasheff–Tamari orders <i>Young Researchers in Mathematics</i> Online Winner of 1 st prize in poster competition	<i>June 2021</i>
An algebraic interpretation of the higher Stasheff–Tamari orders <i>Advances in Representation Theory of Algebras</i> Online	<i>May 2021</i>
New interpretations of the higher Stasheff–Tamari orders <i>Combinatorial algebra meets algebraic combinatorics</i> Université du Québec à Montréal Online	<i>January 2021</i>
An algebraic interpretation of the higher Stasheff–Tamari orders <i>International Conference on Representations of Algebras</i> “Research snapshot” Online	<i>November 2020</i>

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

September 2020

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

March 2019

GRANTS

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

April 2020

ORGANISATION

Köln Algebra and Representation Theory seminar
Co-organiser
Online

April 2021 – present

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

September 2020

Mathematics PhD seminar
University of Leicester

September 2019 – August 2020

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

May 2019

RESEARCH STAYS

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

December 2021

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

April 2019

REVIEWING

zbMATH
2 reviews written

September 2020 – present

REFEREEING

Journal of Algebraic Combinatorics

TEACHING

Real analysis

Class teacher (online)
King's College London

September 2021 – December 2021

MA107: Quantitative methods

Class teacher
London School of Economics

September 2021 – December 2021

Calculus & analysis

Class teacher (online)
University of Leicester

October 2020 – December 2020

Second-year algebra

Class teacher
University of Leicester

January 2020 – April 2020

Calculus & analysis

Class teacher
University of Leicester

October 2019 – April 2020

Elements of number theory

Class teacher
University of Leicester

October 2019 – December 2019

Calculus & analysis

Class teacher
University of Leicester

January 2019 – March 2019

COMMITTEE ROLES

Mathematics & Philosophy Representative
Joint Consultative Committee with Undergraduates
University of Oxford

2015 – 2016

Undergraduate Representative
Joint Committee for Mathematics and Philosophy
University of Oxford

2015 – 2016

Undergraduate Representative
Mathematics Department Art Committee
University of Oxford

2015 – 2016

OUTREACH

University of Leicester Representative
Research in the UK afternoon
University of Cambridge

November 2018, 2019, 2020

Student Helper
Oxford and Cambridge Student Conferences

March 2013, 2014, 2015

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	A1
Spanish	A1

OTHER EMPLOYMENT

Enders Analysis

November 2016 – August 2018

Research analyst, Telecoms