

NICHOLAS WILLIAMS

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EDUCATION

PhD in Mathematics

University of Cologne

University of Leicester

Supervisor: Sibylle Schroll

April 2021 – June 2022 (expected)

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 *December 2020*
arXiv:2012.10371

New interpretations of the higher Stasheff–Tamari orders *July 2020*
arXiv:2007.12664

PRIZES AND SCHOLARSHIPS

Gibbs prize for Mathematics & Philosophy University of Oxford For top performance in Mathematics papers	<i>2016</i>
Gibbs prize for Mathematics & Philosophy University of Oxford For top performance in Mathematics papers	<i>2015</i>
Academic scholarship Worcester College, Oxford	<i>2013</i>
Honorary scholarship Westminster School	<i>2007</i>

INVITED CONFERENCE TALKS

An algebraic interpretation of the higher Stasheff–Tamari orders <i>International Conference on Representations of Algebras</i> Selected to give talk by scientific committee based on research snapshot Via BigBlueButton	<i>November 2020</i>
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CONTRIBUTED CONFERENCE TALKS

The first higher Stasheff–Tamari orders are quotients of the higher Bruhat orders <i>Formal Power Series and Algebraic Combinatorics</i> Bar-Ilan University Via Zoom	<i>January 2022</i>
The higher Stasheff–Tamari orders on triangulations of cyclic polytopes <i>London Mathematical Society Graduate Student Meeting</i> Via Zoom	<i>June 2021</i>
Vertex figures of cubillages of cyclic zonotopes <i>London Mathematical Society Graduate Student Meeting</i> Via Zoom	<i>November 2020</i>
Nice triangulations of cyclic polytopes <i>London Mathematical Society Graduate Student Meeting</i>	<i>June 2019</i>
Higher analogues of Grassmannian clusters <i>Maurice Auslander Distinguished Lectures and International Conference</i>	<i>April 2019</i>
Higher analogues of Grassmannian clusters <i>New Connections and Directions in Representation Theory</i> University of Leeds	<i>April 2019</i>
Higher analogues of Grassmannian clusters <i>Tropical Geometry meets Representation Theory</i> University of Leicester	<i>April 2019</i>

SEMINAR TALKS

Equivalence of maximal green sequences

February 2022

Paris algebra seminar

Institut de Mathématiques de Jussieu-Paris Rive Gauche

In person

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

Via Zoom

Cyclic polytopes and higher Auslander–Reiten theory

December 2021

Tokyo–Nagoya algebra seminar

University of Tokyo and Nagoya University

Via Zoom

The two higher Stasheff–Tamari orders are equal

May 2021

Working seminar in algebra and geometry

University of Cologne

Via Zoom

The higher Stasheff–Tamari orders in representation theory

April 2021

Paris algebra seminar

Institut de Mathématiques de Jussieu-Paris Rive Gauche

Via Zoom

New interpretations of the higher Stasheff–Tamari orders

March 2021

Diskrete Mathematik / Geometrie Forschungsseminar

TU Berlin

Via Zoom

The Tamari lattice in representation theory

March 2021

Junior Algebra Colloquium

University of Bristol

Via Zoom

KP solitons

October 2020

PhD seminar

University of Leicester

Via Microsoft Teams

KP solitons and the higher Stasheff–Tamari orders II

October 2020

Working seminar in algebra and geometry

University of Leicester

Via Zoom

KP solitons and the higher Stasheff–Tamari orders I

September 2020

Working seminar in algebra and geometry

University of Leicester

Via Zoom

Triangulations of odd-dimensional cyclic polytopes

June 2020

PhD seminar

University of Leicester

Via Blackboard Collaborate

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 <i>Virtual Heidelberg Laureate Forum</i> Online	<i>September 2020</i>

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

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 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

2 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

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

Associate member

3 reports on conferences written for the LMS newsletter

*June 2019 – present***Programming**

Python, Sage, Maple, node.js, Haskell

Git

L^AT_EX**Languages**

(CEFR levels)

English Native

German B1

French B1

Japanese A1

Spanish A1