

NICHOLAS WILLIAMS

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EDUCATION

PhD in Mathematics

University of Leicester

University of Cologne

Supervisor: Sibylle Schroll

September 2018 – September 2021

April 2021 – June 2022 (expected)

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

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 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

(Extended abstract)

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

2021

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

(With Jordan McMahon.)

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

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 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 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 TALKS

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

Cyclic polytopes and higher Auslander–Reiten theory Tokyo–Nagoya algebra seminar University of Tokyo and Nagoya University Via Zoom	<i>December 2021</i>
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The two higher Stasheff–Tamari orders are equal Working seminar in algebra and geometry University of Cologne Via Zoom	<i>May 2021</i>
The higher Stasheff–Tamari orders in representation theory Paris algebra seminar Institut de Mathématiques de Jussieu-Paris Rive Gauche Via Zoom	<i>April 2021</i>
New interpretations of the higher Stasheff–Tamari orders Diskrete Mathematik / Geometrie Forschungsseminar TU Berlin Via Zoom	<i>March 2021</i>
The Tamari lattice in representation theory Junior Algebra Colloquium University of Bristol Via Zoom	<i>March 2021</i>
KP solitons PhD seminar University of Leicester Via Microsoft Teams	<i>October 2020</i>
KP solitons and the higher Stasheff–Tamari orders II Working seminar in algebra and geometry University of Leicester Via Zoom	<i>October 2020</i>
KP solitons and the higher Stasheff–Tamari orders I Working seminar in algebra and geometry University of Leicester Via Zoom	<i>September 2020</i>
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*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

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

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 Graz

April 2019

Visiting: Jordan McMahon

Host: Karin Baur

1 week

University of Cambridge

December 2021

Isaac Newton Institute for Mathematical Sciences

Cluster algebras and representation theory programme

Invited participant

1 week

REVIEWING

zbMATH

September 2020 – present

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

Programming Python, Sage, Maple, node.js, Haskell
Git**Languages**

(CEFR levels)

English Native

German B1

French B1

Spanish A1

Japanese A1

OTHER EMPLOYMENT

Enders Analysis*November 2016 – August 2018*

Research analyst, Telecoms