

# NICHOLAS WILLIAMS

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## EDUCATION

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### PhD in Mathematics

University of Leicester

University of Cologne

Supervisor: Sibylle Schroll

*September 2018 – present*

*April 2021 – present*

### 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*

## PUBLICATIONS

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

(With Jordan McMahon.)

*Glasgow Mathematical Journal*. To appear.

*July 2020*

## PREPRINTS

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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

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### Gibbs prize for Mathematics & Philosophy

University of Oxford

For top performance in Mathematics papers

*2016*

### Gibbs prize for Mathematics & Philosophy

University of Oxford

For top performance in Mathematics papers

*2015*

### Academic scholarship

Worcester College, Oxford

*2013*

### Honorary scholarship

Westminster School

*2007*

## INVITED TALKS

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**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 TALKS

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**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** *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

## SEMINAR TALKS

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**The two higher Stasheff–Tamari 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

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

## POSTERS

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- An algebraic interpretation of the higher Stasheff–Tamari orders** *June 2021*  
*Young Researchers in Mathematics*  
Online  
Winner of 1<sup>st</sup> 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

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

## ORGANISATION

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- Köln Algebra and Representation Theory seminar** *April 2020 – 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

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

*April 2019*

## REVIEWING

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zbMATH

*September 2020 – present*

## REFEREEING

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Journal of Algebraic Combinatorics

## TEACHING

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### **Calculus & Analysis**

Class teacher  
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

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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

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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

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London Mathematical Society  
Associate member

*June 2019 – present*

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

### Languages

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

## OTHER EMPLOYMENT

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**Enders Analysis**  
Research analyst, Telecoms

*November 2016 – August 2018*