

# Anna Macquarie Romanov

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School of Mathematics and Statistics  
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- EMPLOYMENT** Lecturer 2021 – present  
**University of New South Wales**, Sydney, Australia
- Postdoctoral Research Associate 2020 – 2021  
**The University of Sydney**, Sydney, Australia
- National Science Foundation Postdoctoral Research Fellow 2018 – 2020  
**The University of Sydney**, Sydney, Australia
- EDUCATION** **University of Utah**, Salt Lake City, UT 2012 – 2018  
*PhD*, Mathematics  
Advisor: Dragan Miličić
- Colorado State University**, Fort Collins, CO 2007 – 2011  
*Bachelor of Science*, Mathematics  
*Bachelor of Arts*, Languages, Literatures, and Cultures - Spanish  
Summa Cum Laude  
Mathematics Honors Scholar
- PUBLICATIONS AND PREPRINTS** S. Larson, **A. Romanov**, *A categorification of the Lusztig-Vogan module*. arXiv:2203.09007 [math.RT]
- J. Baine, T. Fell, **A. Romanov**, A. Sherman, G. Williamson, *A remarkable functor on  $G$ -modules*. *Journal für die reine und angewandte Mathematik (Crelles Journal)*. <https://doi.org/10.1515/crelle-2026-0037>
- D. Miličić, **A. Romanov**, *On a geometric approach to the discrete series*. *Proceedings of the Harish-Chandra Centenary Celebrations 2023, HRI Prayagraj*. (to appear) arXiv:2511.19767 [math.RT]
- J. Eberhardt, **A. Romanov**, *Two proofs of a Jantzen conjecture for Whittaker modules*. *Selecta Math. (N.S.)* 31(3), 46pp, 2025.
- S. Bohun, **A. Romanov**, *An example of the Jantzen filtration of a  $\mathcal{D}$ -module*. *Journal of the Australian Mathematical Society*. 118(3), 265-296, 2025.
- A. Brown, **A. Romanov**, *Contravariant pairings between standard Whittaker modules and Verma modules*. *Journal of Algebra*, 609, 145-179, 2022
- A. Romanov**, *Four examples of Beilinson–Bernstein localization*. *Lie Groups, Number Theory, and Vertex Algebras, Contemporary Mathematics*, vol. 768, Amer. Math. Soc., Providence, RI, 65-85, 2021.
- A. Romanov**, *A Kazhdan–Lusztig algorithm for Whittaker modules*. *Algebras and Representation Theory*, 24(1), 81-133, 2021.

F. Pearson, **A. Romanov**, D. Soller, *Finite Gelfand pairs and cracking points of the symmetric groups*. Rocky Mountain Journal of Mathematics, 50(5), 1807-1812, 2020.

A. Brown, **A. Romanov**, *Contravariant forms on Whittaker modules*. Proceedings of the American Mathematical Society, 149(1), 37-52, 2020.

H. Friedlander, W. Grodzicki, W. Johnson, G. Ratcliff, **A. Romanov**, B. Strasser, B. Wessel, *An orbit model for the spectra of nilpotent Gelfand pairs*. Transformation Groups, 25(3), 859-886, 2019.

**NOTES AND  
BOOK  
CHAPTERS**

**A. Romanov**, G. Williamson, *Langlands correspondence and Bezrukavnikov's equivalence*. arXiv:2103.02329 [math.RT], 2021.

**A. Romanov**, S. Taylor, *A lightning introduction to category  $\mathcal{O}$* . Book chapter, *Introduction to Soergel bimodules*. RSME Springer Series, vol. 5, 2020.

**GRANTS**

UNSW Faculty of Science Research Grant (AU\$6,500) 2025

UNSW Faculty of Science Research Grant (AU\$7,500) 2024

Sydney Mathematical Research Institute International Visitor (AU\$19,000) 2023  
*To support a five month visit by Prof. Dragan Milicic, University of Utah*

UNSW Start-up Grant (AU\$20,000) 2021

Australian Mathematical Sciences Institute conference grant (AU\$8,000) 2020

Australian Mathematical Society conference grant (AU\$3500) 2020

Sydney School of Mathematics and Statistics workshop funding (AU\$7,000) 2020

NSF Mathematical Sciences Postdoctoral Research Fellowship (US\$150,000) 2018

**AWARDS**

UNSW Momentum Award (AU\$5,000) 2024, 2026

UNSW Career Advancement Award (AU\$10,000) 2024, 2026

Most Outstanding Research Poster, Association for Women in Mathematics research symposium 2018

University of Utah Teaching Fellowship (US\$17,000) 2017-2018

Mathematics Summer Research Fellowship (US\$4,500) 2017

Mathematics Nominee, Thomas G. Stockham Medal for Conspicuously Effective Teaching 2017

2016 Outstanding Professor Award, Sigma Chi Fraternity 2016

NSF Research Training Grant Fellowship (US\$10,200) 2015

Outstanding Graduate Student Award (US\$500) 2014-2015

<b>STUDENT SUPERVISION</b>	Pengyu Jia, Honours University of New South Wales	Feb 2026 - Dec 2026
	Jacques du Plooy, MSc (Joint supervisor) University of New South Wales	Feb 2026 - Feb 2028
	Daniel Dunmore, PhD (Joint supervisor) University of New South Wales	June 2024 - Dec 2027
	Thomas Dunmore, PhD (Joint supervisor) University of New South Wales	June 2024 - Dec 2027
	Victor Zhang, PhD (Primary supervisor) University of New South Wales	Feb 2024 - June 2027
	Tasman Fell, MSc (Primary supervisor) University of New South Wales	Feb 2023 - Feb 2025
	Zach Leong, Honours University of New South Wales	Feb 2024 - Dec 2024
	Victor Zhang, Honours University of New South Wales	June 2022 - May 2023
	Simon Bohun, Honours University of New South Wales	June 2022 - May 2023
	Amy Bradford, Undergraduate Research University of Utah/University of Texas at Austin	Aug 2020 - July 2021
	Faith Pearson, Undergraduate Research University of Utah	May 2018 - March 2020
	Dylan Soller, Undergraduate Research University of Utah	May 2018 - March 2020
<b>TEACHING</b>	<i>University Lecturer</i>	2022-present
	Coordinated, designed, and lectured undergraduate and honours courses at UNSW Sydney. Courses taught:	
	<ul style="list-style-type: none"> <li>• T1 2026: Modules and Representation Theory, Math 5735</li> <li>• T1 2024: Modules and Representation Theory, Math 5735</li> <li>• T2 2022: Mathematics 1B (linear algebra + probability), Math 1231</li> <li>• T1 2022: Modules and Representation Theory, Math 5735</li> </ul>	
	<i>Course Designer and Instructor</i>	2017-2018
Received fellowship to design and implement a new interdisciplinary undergraduate course at the University of Utah in Spring 2018. Course title: <i>Representation Theory Techniques in Quantum Physics</i>		
<i>Co-Principal Investigator, Research Project on Calculus Persistence</i>	2016-2018	
Education research project investigating effects of varied assessment techniques on stu-		

dent persistence in a calculus sequence. (*Joint with Heather Zinn Brooks.*)

*Instructor of Record* 2012-2017

Taught undergraduate courses at the University of Utah with full responsibility for lectures, assessment, and grades. Courses taught:

- Spring 2017: Linear Algebra, Math 2270
- Summer 2016: Discrete Mathematics, Math 2200
- Spring 2016: Linear Algebra, Math 2270
- Fall 2014: Precalculus, Math 1080
- Summer 2014: College Algebra, Math 1050
- Spring 2014: Precalculus, Math 1080
- Fall 2013: Engineering Calculus I, Math 1310 (TA)
- Spring 2013: Intermediate Algebra, Math 1010
- Fall 2012: Intermediate Algebra, Math 1010

*Teacher Training Workshop Facilitator* 2015, 2016

Facilitated and organized annual workshop for new teaching assistants in the University of Utah mathematics department.

*Undergraduate Summer School Teaching Assistant* 2015

Engaged undergraduates at the Park City Mathematics Institute with problems focusing on moduli spaces and geometric representation theory.

**CONFERENCE** *OTI Representation Theory Workshop* 2023, 2024, 2026

**ORGANIZATION** One Tree Island Research Station, Queensland

*Diagrammatic Categorification* Oct 2025

Institute for Computational and Experimental Research in Mathematics (ICERM)  
Rhode Island, USA

*Computational Algebra and Magma* Dec 2023

University of Sydney

*Special Session in Representation Theory* Dec 2022, Dec 2023

AustMS Annual Meeting, UNSW Sydney

*New Connections in Representation Theory* Feb 2020

Mooloolaba, Queensland, Australia

**SEMINAR** *Pure Mathematics Seminar* 2022-2024

**ORGANIZATION** University of New South Wales

*Tensor Categories and their Modules* Feb-June 2024

University of New South Wales/University of Sydney

*Mahler Lecture* Nov 2022

University of New South Wales

*Informal Friday Seminar* 2018-2021

University of Sydney

*Representation Theory Student Seminar* 2014-2018

University of Utah

**OUTREACH  
AND  
PROFESSIONAL  
SERVICE**

- Do the Maths: Women, Empowerment, Opportunity* 2024  
Organised a carnival booth on four dimensional polytopes for UNSW's flagship mathematics outreach event, aimed at young women in their final years of high school.
- Frontiers of Science Forum, public lecture* 2023  
Presented a public lecture for this annual event run by the Australian Institute of Physics, the Teachers Guild of NSW, the Royal Australian Chemical Society, and the Royal Society of NSW.
- Referee work* 2019-2023
- Girls do the Maths organizing committee* 2022  
Helped with organisation of annual workshop for female students in their final years of high school studies. The aim of the workshop series is to encourage female students to consider mathematics as a career.
- Live from the Lab, interdisciplinary collaboration* 2021  
"A celebration of science, music, arts, and culture." Worked with R&B soul artist Mi-Kaisha to create an original piece of music inspired by my mathematics research.
- IAS Women and Mathematics program organizing committee* 2021  
Evaluated applications and selected participants for the annual Women and Mathematics program at the Institute for Advanced Study, Princeton, USA.
- Infinite Pathways Speaker, outreach lecture* 2021  
Presented on careers in mathematics in a University of Sydney outreach event aimed at year 9 and 10 students.
- Raising the Bar speaker, public lecture* 2019  
Presented a sold-out public lecture (and podcast) as part of a yearly event aimed at bringing science into the broader Sydney community.
- Public radio appearance, ABC Radio Evenings with Chris Bath* 2019  
Appeared as a special guest on a public radio show about women in mathematics.
- Bernhard Neumann Prize selection committee* 2018, 2019  
Evaluated student talks at the Australian Mathematical Society annual meetings and helped to select the 2018 BH Neumann Prize recipients.
- "Meet and Greet a Scientist" high school outreach event* 2019  
Presented to high school students at the University of Sydney's 2019 International Science School event about research and academic life.
- President, Association for Women in Mathematics Utah Student Chapter* 2017-2018  
Chapter activities included: AWM speaker series, negotiation skills workshop, monthly lunch discussions on gender issues in academia, professor panel, and establishment of a mentorship network.
- Vice President, Association for Women in Mathematics Student Chapter* 2016-2017  
Chapter activities included: initiation and funding of new speaker series, monthly lunch discussions on gender issues in academia, outreach event at a local science museum, workshops on scientific communication, implicit bias, and gendered language.
- Mathematics Category Judge, Sterling Scholar Award* 2017

Evaluated and interviewed Utah high school students who were nominated by school administrators for this state scholarship.

*Chair, Graduate Student Colloquium* 2015-2016  
Organized, advertised, and found speakers for weekly graduate student colloquium.

*Chair, Graduate Student Advisory Committee* 2014-2015  
Represented graduate students on university committees and served as a liaison between graduate students and department administration.

*Chair, Graduate Student Recruitment Committee* 2014-2015  
Coordinated prospective graduate student visiting weekend by scheduling transportation, faculty talks, student interviews, and social activities.

**INVITED  
RESEARCH  
TALKS**

KIAS Geometry, Algebra and Physics Seminar (Korea)	June 2026
University of Sydney Algebra Seminar (Australia)	May 2026
UNSW Algebra Seminar (Australia)	Feb 2026
Inst. for Computational and Experimental Research in Mathematics (USA)	Oct 2025
Kioloa Conference on Representation Theory (Australia)	Dec 2025
One Tree Island Representation Theory Workshop (Australia)	July 2023
Categorification in Representation Theory, USyd (Australia)	Feb 2023
University of Sydney Algebra Seminar (Australia)	Oct 2022
National University of Singapore (Singapore)	Oct 2022
Representation Theory XVII (Croatia)	Oct 2022
Peking Online International Number Theory (POINT) Seminar (online)	May 2022
The Hendoff, Conference in honour of Anthony Henderson (Australia)	April 2022
Beijing Institute of Technology (online)	April 2022
Chinese University of Hong Kong RANT seminar (online)	Nov 2021
University of Utah Representation Theory Seminar (online)	Oct 2021
UNSW Canberra Number Theory Seminar (Australia)	Aug 2022
University of Adelaide Colloquium (Australia)	May 2022
University of New South Wales Pure Math Seminar (online)	April 2021
University of North Carolina Chapel Hill AWM Lecture Series (online)	Nov 2020
Categorification Seminar (online)	Sept 2020
Macquarie University Department Colloquium (online)	April 2020
University of Adelaide Differential Geometry Seminar (Australia)	May 2022
The Mathematics of Conformal Field Theory, ANU (online)	July 2021
American Mathematical Society Spring Western Sectional Meeting (online)	May 2021
University of Oregon Algebra Seminar (online)	Feb 2022
University of Utah Representation Theory Seminar (USA)	Jan 2022
Mathematical Congress of the Americas (online)	July 2021
University of Bonn Oberseminar (online)	June 2021
University of Queensland Pure Math Seminar (Australia)	June 2021
American Mathematical Society Spring Western Sectional Meeting (online)	May 2021
Melbourne Representation Theory Seminar (3 lecture series)	April-May 2021
University of Georgia Algebra Seminar (online)	April 2021
Categorification Seminar (online)	Oct 2020
Max Planck/Perimeter Geometric Representation Theory conference (online)	June 2020
What is ...? Seminar, University of Queensland (online)	April 2021
Melbourne Representation Theory Seminar (online)	Dec 2020
What is ...? Seminar, University of Queensland (online)	Aug 2020
Australian Categories Seminar, Macquarie University (online)	May 2020
Australian Mathematical Society Annual Meeting; Melbourne (Australia)	Dec 2019
Sydney Flags, Galleries and Reflection Groups conference (Australia)	Aug 2019

Plenary talk, Representation Theory XVI conference (Croatia)	June 2019
University of Melbourne Pure Math Seminar (Australia)	May 2019
University of New South Wales Pure Math Seminar (Australia)	April 2019
The Perimeter Institute for Theoretical Physics (Canada)	April 2018
University of Toronto Geometric Representation Theory Seminar (Canada)	Mar 2018
University of Wisconsin-Madison Algebraic Combinatorics Seminar (USA)	Jan 2018
University of California Los Angeles Algebra Seminar (USA)	Jan 2018
University of Southern California Algebra Seminar (USA)	Jan 2018
University of Sydney Algebra Seminar (Australia)	Dec 2017
University of Georgia Algebra Seminar (USA)	Nov 2017
Louisiana State University Algebra and Number Theory Seminar (USA)	Nov 2017
University of Utah Representation Theory Seminar (USA)	Sept 2017
AMS Sectional Meeting; University of Hawaii at Manoa (USA)	Mar 2019
Workshop on Quantum Symmetries, ANU (Australia)	Feb 2019
Geometric Representation Theory conference, MATRIX Institute (Australia)	Dec 2018
Australian Mathematical Society Annual Meeting; Adelaide (Australia)	Dec 2018
University of Sydney Algebra Seminar (Australia)	Nov 2018
Joint Mathematics Meetings; San Diego, CA (USA)	Jan 2018

**INVITED  
OUTREACH  
TALKS**

Frontiers of Science public lecture	March 2023
Girls Do The Maths, UNSW Outreach event	June 2022, June 2023
Infinite Pathways, Program for year 9 students	March 2021
Sydney University Mathematics Society	Aug 2019, Oct 2020
ACCESS Program for Undergraduate Women in Science	June 2018
Utah Summer Mathematics Program for High School Students	July 2014, June 2018
University of Utah Undergraduate Colloquium	Nov 2014, Oct 2015, Nov 2017
University of Utah Graduate Colloquium	2014, 2015, 2015, 2016, 2017
Utah Teachers' Math Circle	Feb 2016
Science Day at the University of Utah	Oct 2015
What is Math? Day	Mar 2015
Association for Women in Mathematics Workshop	Feb 2015

**INTERNAL  
TALKS**

Tensor Categories and their modules (UNSW Sydney)	
<i>Basics of monoidal categories</i>	Feb 2024
<i>Basics of tensor categories</i>	Feb 2024
Informal Friday Seminar (University of Sydney)	
<i>Affine Whittaker modules</i>	March 2021
<i>Vogan duality (two-week mini-series)</i>	July/August 2020
<i>The Lusztig–Vogan module of the Hecke algebra (two week mini-series)</i>	Nov 2019
<i>The Kazhdan–Lusztig conjectures: history, statement, “proof”</i>	Aug 2019
<i>Introduction to equivariant cohomology (two week mini-series)</i>	June 2019
<i>Representation theory of <math>SL(2, \mathbb{R})</math> (two week mini-series)</i>	Mar 2019
<i>The Hitchin fibration and the Springer resolution</i>	Dec 2018
<i>Unitary representations of real reductive groups (two week mini-series)</i>	Nov 2018
Student Algebra Seminar (University of Sydney)	
<i>The antispherical module of the Hecke algebra and Whittaker modules</i>	April 2020
Representation Theory Student Seminar (University of Utah)	
<i>A Kazhdan–Lusztig algorithm for Whittaker modules</i>	March 2017
<i>Twisted sheaves on flag varieties - <math>\mathfrak{sl}(2, \mathbb{C})</math> calculations</i>	Nov 2016

<i>Character theory of Whittaker modules</i>	April 2016
<i>Cosets in the Weyl group</i>	Feb 2016
<i>Deriving the Weyl character formula from a basis of Verma modules</i>	Dec 2015
<i>Composition factors, multiplicity and Grothendieck groups</i>	Sept 2015
<i>Deriving the Weyl character formula from Kostant's theorem</i>	March 2015
<i>A proof of the Borel–Weil theorem</i>	Nov 2014
Algebraic Geometry Student Seminar (University of Utah)	
<i>Algebraic D-modules: A first example</i>	Dec 2016
<i>Introduction to D-modules</i>	Nov 2015
Hodge Theory and D-Modules Seminar (University of Utah)	
<i>Holonomic D-Modules: A first detailed example</i>	Oct 2015