

Unit Name

Representation Theory and Algebraic Combinatorics Unit

Research Personnel

Louise Sutton, Staff Scientist

Duc Khanh Nguyen, Postdoctoral Scholar

Kaveh Mousavand, Postdoctoral Scholar

Eoghan McDowell, Postdoctoral Scholar

Pablo Sanchez Ocal, Postdoctoral Scholar

Berta Hudak, PhD student

Kyle Stanley Grant, PhD Student

Martin Forsberg, PhD Student

Scholarly Contributions and Creative Productions (by Faculty)

Presentation at Conference

1. Speyer, L.
A New Construction of Simple Modules for Type A KLR Algebras. Hecke algebra day 2025.
2. Speyer, L.
A New Construction of Simple Modules for Type A KLR Algebras. Mathematical Society of Japan Autumn Meeting 2024 2024.
3. Speyer, L.
Strictly Wild Blocks of Type A Hecke Algebras. Diagrammatic Intuition and Deep Learning in Mathematics 2024.
4. Speyer, L.
Graded Decomposition Matrices for Type C KLR Algebras. Mathematical Society of Japan Spring Meeting 2024 2024.

Seminars

1. Speyer, L.
Schurian-Infinite Blocks of Type A Hecke Algebras. 2024.
2. Speyer, L.
Schurian-Infinite Blocks of Type Hecke Algebras. 2024.

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet
Kaveh Mousavand	Journal Article	Biserial algebras and generic bricks	Mathematische Zeitschrift
Eoghan McDowell	Journal Article	Characters and spin characters of alternating and symmetric	Arkiv för Matematik

Name of Unit Member	Type	Title	Outlet
		groups determined by values on l' -classes	
Konrad Aguilar, Angelynn Álvarez, René Ardila, Pablo S. Ocal (OIST), Cristian Rodríguez Avila, Anthony Várilly-Alvarado	Journal Article	Locally recoverable algebro-geometric codes with multiple recovery sets from projective bundles	arXiv
Kaveh Mousavand (OIST) & Charles Paquette	Journal Article	Hom-orthogonal modules and brick-Brauer–Thrall conjectures	arXiv
Berta Hudak	Journal Article	Homomorphisms into Specht modules labelled by hooks in quantum characteristic two	arXiv
Susumu Ariki, Berta Hudak (OIST), Linliang Song, Qi Wang	Journal Article	Representation type of higher level cyclotomic quiver Hecke algebras in affine type C	arXiv
Kaveh Mousavand (OIST), Charles Paquette	Journal Article	Geometric interactions between bricks and τ -rigidity	arXiv
Christopher Chung (OIST) & Berta Hudak (OIST)	Journal Article	Representation type of level 1 KLR algebras $\mathcal{R}^{\Lambda_k}(-\beta)$ in type C	Osaka Journal of Mathematics
Matthew Fayers & Eoghan McDowell (OIST)	Journal Article	Spin characters of the symmetric group which are proportional to linear characters in characteristic 2	Annals of Representation Theory
Duc-Khanh Nguyen	Other Scholarly Work	Taught mini-course: Schubert Calculus on Grassmannians	OIST PhD course
Kaveh Mousavand	Other Scholarly Work	Taught mini-course: On second brick-Brauer–Thrall conjecture and related problems [Three 1-hour lectures via Zoom]	Remotely hosted by IPM - Institute for Research in Fundamental Sciences, Isfahan, Iran
Louise Sutton	Presentation at Conference	Irreducible Specht modules for cyclotomic KLR algebras	AMS Spring Western Sectional Meeting: Special Session on Diagrammatic algebras in representation theory and beyond,
Kaveh Mousavand	Presentation at Conference	Hom-orthogonal modules and bricks	Mathematical Society of Japan Autumn Meeting, Osaka University
Pablo Ocal	Presentation at Conference	The Ziegler spectrum of a discrete valuation ring	Large modules and endofiniteness Winter School, University of Stuttgart
Kaveh Mousavand	Presentation at Conference	Hom-orthogonal modules and brick-Brauer–Thrall conjectures	Perspectives in Tilting Theory and Related Topics, RIMS, Kyoto
Kaveh Mousavand	Presentation at Conference	Hom-orthogonal modules, bricks and representation varieties	Topological Data Analysis and Representation Theory, Kobe
Kaveh Mousavand	Presentation at Conference	brick-Brauer–Thrall Conjectures and some applications	International Conference on Representations of Algebras (ICRA 21), Shanghai
Louise Sutton	Presentation at Conference	Cyclotomic KLR algebras in types A_∞ and C_∞	AMS Spring Eastern Sectional Meeting: Special Session on Advances in Representation Theory,

Name of Unit Member	Type	Title	Outlet
			Combinatorics, and Interactions with Machine Learning
Kaveh Mousavand	Presentation at Conference	New realizations & generalizations of locally representation-directed algebras	International Workshop on Homological Approximation Theory and Applications, Hangzhou
Kaveh Mousavand	Presentation at Conference	A τ -tilting counterpart of cluster algebras of minimal infinite type	Advances in Cluster Algebras 2024, Nagoya
Martín Forsberg Conde	Presentation at Conference	New homomorphisms between Specht modules of the symmetric group	Mathematical Society of Japan Spring Meeting 2024, Osaka Metropolitan University
Duc-Khanh Nguyen	Presentation at Conference	On the shifted Littlewood–Richardson coefficients and Littlewood–Richardson coefficients	Algebraic Lie Theory and Representation Theory (ALTReT) 2024, Kumamoto University
Kaveh Mousavand	Seminars	Hom-orthogonal modules and geometry of representation varieties	Joint UOttawa-Carleton Algebra Seminar
Eoghan McDowell	Seminars	Eoghan McDowell Swapping runners to find spin representations which reduce modulo 2 to Specht modules	University of Birmingham Algebra Seminar
Kaveh Mousavand	Seminars	A combinatorial proof of the (strong) semibrick conjecture for biserial algebras	Laboratoire d’Algèbre, de Combinatoire et d’Informatique Mathématique (LACMI), Montréal
Duc-Khanh Nguyen	Seminars	Application of (K-theoretic) Peterson isomorphism	OIST Representation Theory Seminar
Pablo Ocal	Seminars	Deformations of Frobenius algebras and noncommutative 2d topological quantum field theories	OIST Representation Theory Seminar
Duc-Khanh Nguyen	Seminars	Application of (K-theoretic) Peterson isomorphism	Algebra Seminar, Vietnam Institute for Advanced Study in Mathematics, Vietnam
Duc-Khanh Nguyen	Seminars	On the shifted Littlewood–Richardson coefficients and Littlewood–Richardson coefficients	Tsukuba University Algebra seminar
Eoghan McDowell	Seminars	Spin characters of the symmetric group which reduce modulo 2 to Specht modules	OIST Representation Theory Seminar
Kaveh Mousavand	Seminars	Algebraic and geometric distribution of bricks	Algebraic and Geometric Seminar (SAG) at Sherbrooke University, Sherbrooke
Pablo Ocal	Seminars	Warped tensor products and noncommutative 2d topological quantum field theories	UC Berkeley Representation theory and tensor categories seminar

Name of Unit Member	Type	Title	Outlet
Kaveh Mousavand	Seminars	Geometric interactions between bricks and other families of indecomposable modules	Representation Theory Seminar, Nantong University, Nantong

Honors, Awards & Fellowships (only by unit members)

2024-06-01 Eoghan McDowell, Editor's Choice Article 2024, N/A, 2025, Arkiv för Matematik, N/A

External Service

2024-11-18 Organised international school & conference, 'Autumn School & Conference. New developments in representation theory of algebras: Algebraic, combinatorial and geometric aspects', co-organised with our postdoc, Kaveh Mousavand

2024-04-22 Organised international workshop, 'Spring Workshop on the Representation Theory of Algebras and related areas', co-organised with our postdoc, Kaveh Mousavand

2020-02-01 - Ongoing Refereeing for journals, I am regularly asked to referee papers for mathematics journals. I have refereed approx. 20 papers for journals including top-tier general audience journals (incl. International Mathematics Research Notices, Mathematische Zeitschrift, Journal of the London Mathematical Society) and top-tier algebra journals (incl. Representation Theory, Journal of Algebra).

Workshops and Seminars (Organized and Hosted by Faculty/Units)

Speaker Name(s)	Title	Location	Date
Emerson Escolar	Representation Theory and (Barcoding) Invariants for Persistence	L4F01, OIST and online	2025-04-22
Vyacheslav Futorny	Smooth representations of Affine Lie algebras	L4F01, OIST and online	2025-04-03
Iryna Kashuba	Southern University of Science and Technology	L4F01, OIST and online	2025-04-03
Jonathan Brundan	Quasi-split 2-iquantum groups	L4F01, OIST and online	2025-03-11
Andrea Solotar	On the tau-tilting Hochschild (co)homology of an algebra	L4F01, OIST and online	2025-02-18
Pablo Ocal	Deformations of Frobenius algebras and noncommutative 2d topological quantum field theories	L4F01, OIST and online	2024-12-03
Daisuke Sagaki	Toward a Pieri rule for double quantum Grothendieck polynomials	L4F01, OIST and online	2024-11-12
Rongwel Yang	Linear algebra in several variables	Online	2024-10-29
Kai Meng Tan	Cores and core blocks of Ariki-Koike algebras	L4F01, OIST and online	2024-10-15
Kay Jin Lim	Integral Basic Algebras	L4F01, OIST and online	2024-10-01
Duc-Khanh Nguyen	Application of (K-theoretic) Peterson isomorphism	L4F01, OIST and online	2024-09-17

Speaker Name(s)	Title	Location	Date
Eoghan McDowell	Spin representations of the symmetric group which reduce modulo 2 to Specht modules	L4E48, OIST and online	2024-04-16