

# Kaveh Mousavand

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## Employment

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- **Okinawa Institute of Science and Technology (OIST)** **Japan**  
*Postdoctoral Researcher in Representation Theory & Algebraic Combinatorics* (July 2023-Now)
- **Queen's University** **Canada**  
*Coleman Postdoctoral Fellow in Department of Mathematics & Statistics* (July 2020- June 2023)

## Research Interests

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- Representation Theory of Algebras
- Moduli space of representations
- Cluster Algebras
- Algebraic Combinatorics

## PhD studies

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- **Université du Québec à Montréal** **Canada**  
*Ph.D. Candidate, Supervisor: Prof. Hugh Thomas* 2020  
I started my graduate studies at University of New Brunswick and then moved to UQAM, after my advisor accepted a new position in Montreal.

## Publications

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Published/Accepted.....

- “*ABHY associahedra and Newton polytopes of  $F$ -pynomials for cluster algebras of simply laced finite type*” accepted in *Journal of the London Mathematical Society* (2023), with V. Bazier-Matte, N. Chapelier-Laget, G. Douville, H. Thomas, E. Yıldırım.
- “ *$\tau$ -tilting finiteness of non-distributive algebras and their module varieties*”, *Journal of Algebra* (2022).
- “ *$\tau$ -tilting finiteness of biserial algebras*”, *Journal of Algebras and Representation Theory* (2022).
- “*Minimal  $\tau$ -tilting infinite algebras*”, *Nagoya Mathematical Journal* (2022), with C. Paquette.
- “*On combinatorics of gentle algebras*”, *Canadian Journal of Mathematics* (2020), with T. Brüstle, G. Douville, H. Thomas, E. Yıldırım.
- “*A categorification of biclosed sets of strings*”, *Journal of Algebra* (2020), with A. Garver, T. McConville.
- “*On some properties of Toeplitz matrices*”, *Cogent Mathematics* (2016), with D. Kucerovsky and A. Sarraf.

## Submitted.....

- "*Biserial algebras and generic bricks*" (arXiv:2209.05696), with Charles Paquette.
- "*A continuous associahedron of type A*" (arXiv:2108.12927), with M. Kulkarni, J. Matherne, D. Rock.

## Preprints.....

- "*Strict Dihedral algebras are  $\tau$ -tilting finite*" (<http://kavehmousavand.wixsite.com/math>).
- "*Distribution of bricks and an open algebro-geometric conjecture*" (<http://kavehmousavand.wixsite.com/math>).

## Awards

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- Queen's University Professional Development Award (2022).
- Mitacs Globalink Research Award (2019).
- Parya Foundation Scholarship (2019).
- Scholarship for outstanding PhD candidates, Institute des Science du Mathématiques (2018).
- Bourse de stage international du FRQNT (2017).
- Bourse d'excellence, Institute des Science du Mathématiques (2016, 17).
- ISM Travel Grant, Institute des Science du Mathématiques (2016, 17, 18).
- Bourse d'excellence de la Faculté des Sciences UQAM (2015).

## Research Visits

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### Long-term.....

- Bielefeld Representation Theory Group, Bielefeld, Germany (1.5 months: Sept-Oct of 2023).
- Institut Henri Poincaré (IHP), Paris, France (3 months: Jan-March of 2020).
- University of Paris-Sud, France (3 months: Sept-Nov of 2019).
- Massachusetts Institute of Technology (MIT), MA, US (4 months: Feb-May of 2017).
- Fields Institute, Toronto, ON, Canada (1 month: December of 2016).
- Banach Center, Warsaw (IMPAN), Poland (3 months: Sept-Nov of 2016).

### Short-term (less than 2 weeks).....

- Bielefeld Representation Theory Group, Bielefeld University, Germany (September 2021).
- Dr. Amihay Hanany, Imperial College London, England, UK (April 2019).
- Dr. Agustin M. Canadas, National University, Bogota, Colombia (July 2018).
- Dr. Julia Heller, Karlsruhe Institute of Technology, Germany (March 2018).
- Dr. Petra Schwer, Karlsruhe Institute of Technology, Germany (December 2017).
- Dr. Sibylle Schroll, University of Leicester, England, UK (December 2017).
- Dr. Ilke Canakci, University of Newcastle, England, UK (November 2017).
- Dr. Anna Felikson, Durham University, England, UK (November 2017).

## Selected presentations (since 2018)

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- "*Algebraic and combinatorial treatments of  $g$ -vector fans*", Combinatorial Algebra meets Algebraic Combinatorics, Waterloo, Canada, January 2023.
- "*Biserial algebras and generic bricks*", Advances in Representation Theory of Algebras (ATRA VIII), Toruń, Poland, September 2022.
- "*Distribution of Schur representations of finite dimensional algebras*", Non-commutative algebras,

- representation theory and special functions, Special program at CRM, Montreal, May 2022.
- "*Distribution of bricks over tame algebras (Brick discrete vs. Brick continuous)*", Representations of Algebras and Related Combinatorics, Special Session of AMS meeting, March 2022 [Via Zoom].
  - "*Classification of minimal  $\tau$ -tilting infinite biserial algebras*", Homological Methods in Representation Theory (A conference in honour of Lidia Angeleri Hügel), Germany, October 2021.
  - "*A Modern Analogue of the 2nd Brauer-Thrall Conjecture*", Combinatorics and Representation Theory in Lausanne, Switzerland, September 2021.
  - "*Moduli spaces of quiver representations and an open conjecture*", Mathematical Congress of Americas (Special session on Moduli Spaces in Algebraic Geometry and Applications), July 2021 [Via Zoom].
  - "*Distribution of bricks over minimal representation infinite algebras*", Advances in Representation Theory of Algebras (ATRA VII), May 2021 [Via Zoom].
  - "*Minimal  $\tau$ -tilting infinite algebras and new conjectures*", 4th International Colloquium on representation of algebras and its applications, Bogota, Colombia, November 2020 [Via Zoom].
  - "*A Categorification of biclosed sets of strings*", Categorifications in Representation Theory, Leicester, England, September 2020 [Via Zoom].
  - " *$\tau$ -Tilting finiteness of non-distributive algebras*", XXXIst Meeting of Representation Theory of Algebras, Sherbrooke, Canada, September 2019
  - "*An application of tropical geometry in cluster algebras*", Non-Archimedean and Tropical Geometry Conference, Regensburg, Germany, July 2019.
  - "*Minimal  $\tau$ -tilting infinite algebras*", Tropical Geometry meets Representation Theory II, Leicester, England, April 2019.
  - "*Combinatorial aspects of  $\tau$ -tilting theory*", Combinatorial Algebra meets Algebraic Combinatorics, Ottawa, Canada, January 2019.
  - "*Representation finiteness via  $\tau$ -tilting theory*", XXXth Meeting of Representation Theory of Algebras, Sherbrooke, Canada, September 2018.
  - "*Lattice theory of biclosed sets via torsion and wide shadows*", International Conference on Representations of Algebras, Prague, Czech Republic, August 2018.
  - "*Generalized associahedron via representation theory*", Algebraic Methods in Mathematical Physics, Centre de Recherches Mathématiques (CRM), Montreal, Canada, July 2018.
  - "*Torsion and wide shadows and biclosed sets*", 3rd International Colloquium of Representation Theory of Associative Algebras, Medellín, Colombia, June 2018.
  - "*From noncrossing partitions to exceptional sequences*", XXI Colloque de l'ISM, Sherbrooke, Canada, May 2018.

## Organizing Duties:

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### Conferences & Schools:

- Co-organizer of "Advances in Representation Theory of Algebras IX", Kingston, Canada, June 2023.
- Co-organizer of a scientific session on "Representation theory of algebras" at Canadian Mathematical Society, Toronto, Canada, December 2022.
- Co-organizer of the research school "ISM Discovery School on Mutations: from cluster algebras to representation theory", Montréal, Canada, July 2022.
- Co-organizer of the conference "Representation Theory and Geometry", February 2022 [Online].
- Co-organizer of the mini-courses for junior mathematicians in "Canadian Mathematical Society

Winter Meeting”, Ottawa, Canada, 2020.

- Co-organizer of the “Poster Session” in Canadian Mathematical Society Winter Meeting, Toronto, Canada, 2019.

### **Working Groups & Seminars:**

- Founder and organizer of “Machine Learning Working Group”, Queen’s University, 2022-now.
- Organizer of the Algebra and Geometry Seminar at Queen’s University, Canada, 2021-Now.
- Co-founder and co-organizer of “LaCIM Representation Theory Working Group”, Université du Québec à Montréal, 2015-19.
- Co-founder and co-organizer of “Algebra Reading Group”, University of New Brunswick, 2014-15.

## **Services**

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- Vice-President of Postdoctoral Scholars (Unit 2 of PSAC) at Queen’s University, Kingston, ON, Canada, August 2022- March 2023.
- Reader in the Major Admission Awards Committee at Queen’s University, Kingston, ON, Canada, 2022 and 2023.
- Representative of Postdoctoral Scholars in the Postdoctoral Advisory Committee, Queen’s University, Kingston, ON, Canada, 2022-now.
- General Member of Studc (Canadian Mathematical Society Student Committee), 2017-20.
- Representative of Graduate Students in Teaching Excellence and Policy Committee, University of New Brunswick, Fredericton, NB, Canada, 2014-15.

## **References**

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- Prof. Hugh Thomas (Université du Québec à Montréal, Canada) [My Ph.D. Supervisor]  
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- Prof. Osamu Iyama (University of Tokyo, Japan) [Member of My Ph.D. Defence Committee]  
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- Prof. Charles Paquette (Royal Military College, Canada) [My Postdoctoral Mentor & Collaborator]  
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- Prof. Thomas Brüstle (Université de Sherbrooke, Canada) [My Collaborator]  
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- Prof. Pierre-Guy Plamondon, (Université de Versailles Saint-Quentin, France)  
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