

# EMİNE YILDIRIM

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**EDUCATION**    *Ph.D. in Mathematics,*  
Université du Québec à Montréal, Canada.    August 2015–May 2018  
Advisor : Hugh Thomas

*MSc. in Mathematics,*    February 2010–June 2011  
Abant İzzet Baysal University, Turkey.  
Advisor : Tahire Özen Öztürk

*BSc. in Mathematics,*    September 2006–January 2010  
Abant İzzet Baysal University, Turkey.

**WORK**    *Postdoctoral Researcher*    October 2022–present  
**EXPERIENCE**    University of Leeds, UK

*INI-Simons Postdoctoral Fellow*    October 2021–September 2022  
Isaac Newton Institute; University of Cambridge

*Coleman Postdoctoral Fellow*    July 2018–June 2021  
Queen’s University, Canada

*Teaching Assistant*    January 2014–August 2015  
University of New Brunswick, Canada

*Lecturer*    September 2012–December 2013  
İstanbul Arel University, Turkey

**PAPERS**    E. Kantarcı Oğuz and E. Yıldırım, *Cluster Algebras and Oriented Posets*,  
arXiv:2211.08011.

R. Marczinzik, H. Thomas, and E. Yıldırım, *On the interaction of the Coxeter transformation and the Rowmotion bijection*, arXiv:2201.04446 (submitted).

C. Paquette and E. Yıldırım, *A Completion of Discrete Cluster Categories of type A*, Transactions of the London Mathematical Society (2021), 8(1), 35–64.

V. Bazier-Matte, N. Chapelier-Laget, G. Douville, K. Mousavand, H. Thomas, and E. Yildirim, *ABHY Associahedra and Newton Polytopes of  $F$ -polynomials for finite type cluster algebras*, arXiv:1808.09986v2 (to appear in the Journal of the London Mathematical Society).

V. Bazier-Matte, G. Douville, A. Garver, R. Patrias, H. Thomas, and E. Yildirim, *Leading Terms of  $SL_3$  Web Invariants*, International Mathematics Research Notices, (2020), rnaa110.

T. Brüstle, G. Douville, K. Mousavand, H. Thomas, and E. Yildirim, *On the combinatorics of gentle algebras*, Canadian Journal of Mathematics (2020), 72(6), 1551-1580.

E. Yildirim, *Coxeter transformation on cominuscule posets*. Algebra and Representation Theory (2019), 22(3), 699-722.

T. Ozen and E. Yildirim,  *$\mathcal{X}$ -Injective and  $\mathcal{X}$ -Projective Complexes*. Bulletin of Iranian Mathematical Society (2016), 42(5), 1221-1235.

## AWARDS

- International Congress of Mathematicians 2022 travel grant (award not used since the conference moved to online).
- Invitation/Fund to Hausdorff Junior Trimester Program on "New Trends in Representation Theory" (award declined due to COVID-19/travel restrictions, attended remotely).
- Queen's University Post-Doctoral Travel Award, 2018.
- Institut des Sciences Mathématiques (ISM) Scholarships for Outstanding PhD Candidates, 2018.
- ISM Travel Grant, 2018.
- ISM Graduate Scholarships at UQAM. 2016, 2017, 2018.
- Tuition Exemption Scholarships at UQAM. 2015, 2016, 2017, 2018.
- President's Doctoral Tuition Award at UNB. 2014.
- International Differential Scholarship at UNB. 2014.
- Graduate Scholarship from Prime Ministerial Office in Turkey. 2010-2011.
- Undergraduate Scholarship from Prime Ministerial Office in Turkey. 2006-2010.

## SUPERVISING *Graduate:*

- Julia Hoermayer, PhD supervision at the University of Leeds, ongoing.

## *Undergraduate:*

- İlknur Öztürk, *Root Systems and Reflection Groups*, summer 2023, Directed Reading Program Türkiye.

- Temi Abbass, *Triangulations and Friezes in three dimensions*, summer 2022, In2Research Program at the University of Cambridge.
- Zeliha Sevgi, *Quiver Representations*, summer 2022, Directed Reading Program Türkiye.
- Aysel Şahin, *Conway-Coxeter Friezes and related combinatorics*, summer 2021, Directed Reading Program Türkiye.
- Elifnaz Gülsen, *Quiver representations and their interaction with algebra and combinatorics*, one semester in 2019, Directed Reading Program Queen's University.
- Molly Liu, *Cluster algebras and combinatorics*, one semester in 2019, Directed Reading Program Queen's University.

**ORGANIZING** I am a co-organizer of the following conference and seminars.

- The Advances in Representation Theory of Algebras IX, Queen's University, June 2023.
- Algebra seminars, University of Leeds, since February 2023.
- Cluster algebras and Representation Theory Seminars at Isaac Newton Institute, September-December 2021.
- Virtual Advances in Representation Theory of Algebras 2021 - Online Conference in Honor of Andrzej Skowroński, May 17-May 28 2021.
- Algebra & Geometry Working Seminars, Queen's University at the math department, 2020-2021.
- Geometry and Representation Theory Seminars, Queen's University at the math department, 2019-2020.
- Quantum Groups Learning Seminars, Queen's University at the math department, 2019-2020.

## SELECTED PRESENTATIONS

- *Growth of frieze patterns*, Cluster Structures in the North 2023, University of Central Lancashire, Preston, June 2023.
- *Cluster Expansions via matrices*, Combinatorial aspects of Representation Theory, Norwegian Academy of Sciences and Letters in Oslo, March 2023.
- *Cluster-tilting subcategories*, Bridges between representation theory and algebraic geometry: Singularities, friezes and cluster categories, University of Leeds, May 2022.
- What is a connection between cluster algebras and friezes?; with Emily Gunawan, The Banff International Research Station, April 2022.
- *Periodic actions on distributive lattices and counterparts in algebra*, FD Seminar, November 2021 (online).
- *Cluster structures*, New developments in Representation Theory arising from Cluster Algebras, Isaac Newton Institute, September 2021 (online).

- *Discrete cluster categories of type A and beyond*, Flash Talks in Representation Theory, NTNU, January 2021 (online).
- *The orbits of the Coxeter Transformation and Rowmotion for cominuscule posets*, Dynamical Algebraic Combinatorics, Banff International Research Station, October 2020 (online).
- *A completion of discrete cluster categories of type A*, Seventh Conference on Geometric Methods in Representation Theory, University of Missouri, Columbia, November 2019.
- *The bounded derived category for cominuscule posets*, Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, MA, April 2019.
- *The Web Basis and Preprojective Algebras*, American Mathematical Society Sectional Meeting, Hartford, CT, April 2019.
- *Associahedra and Newton Polytopes of F-Polynomials*, Cluster structures in geometry, physics, combinatorics and representation theory, Jerusalem, December 2018.
- *Auslander-Reiten translation on cominuscule posets*, Advances in Representation Theory of Algebras VI: Geometry and Homology (ARTA), Luminy, September 2017.
- *Periodic behavior of Auslander-Reiten translation*, The Mathematical Congress of the Americas (MCA), Montreal, QC, July 2017.
- *On the combinatorics of gentle algebras*, XXVIIIth Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2016.
- *Coxeter transformation of the poset of order ideals in a grid*, International Conference on Representations of Algebras, Syracuse, NY August 2016.

## RECENT CONFERENCES

- Combinatorial Representation Theory in Leeds, University of Leeds, July 2023.
- Functor Categories, Model Theory, and Constructive Category Theory, University of Málaga, July 2023.
- Cluster Structures in the North 2023, University of Central Lancashire, Preston, June 2023.
- Advances in Representation Theory of Algebras IX, Queen's University, Kingston, June 2023.
- Combinatorial aspects of Representation Theory, Norwegian Academy of Sciences and Letters in Oslo, March 2023.
- Geometric and combinatorial methods in homological algebra, Aarhus University, July 2022.
- Bridges between representation theory and algebraic geometry: Singularities, friezes and cluster categories, University of Leeds, May 2022.

## RECENT WORKSHOPS

- Counting conjectures and beyond, The Isaac Newton Institute, Cambridge, May 2022.
- Mutations in Representation Theory of Algebras, University of Isfahan, May 2023 (online).
- Masterclass: Cluster Algebras and Representation Theory, University of Copenhagen, November 2022.
- Women in Noncommutative Algebra and Representation Theory 3, The Banff International Research Station, April 2022 (online).
- Cluster Algebras and Representation Theory, Semester-Program at the Isaac Newton Institute, Sept-Dec 2021, Cambridge, UK.

## TEACHING

### University of Leeds, United Kingdom:

- **Projects in Mathematics.** This is a year long course for students to carry out independent research. I co-supervised 5 students for different projects in the research field of “*Friezes*.”

### Queen’s University, Kingston, Canada:

1. **Vector Calculus** in the Fall semesters of 2018; 2019; 2020.
  - The class size was about 150 students in 2018 and 2019 and the online course in 2020 had about 275 students. I was the only instructor, thus the coordinator, of this course each semester and I was responsible for every aspect of the teaching including preparing and giving lectures, assigning homeworks, preparing exams and coordinating with teaching assistants for grading of the exams.
2. **Rings and Fields** in the Winter semester 2019.
  - This was a coordinated course and I was responsible from preparing and giving lectures for my section which had about 55 students. I was also responsible for preparing weekly quizzes for my section and organizing weekly tutorial sessions with the teaching assistant.
3. **Linear Algebra** for the Winter semester 2020; 2021.
  - This was a coordinated course and I had about 120 students in 2020 and 135 students in the online course in 2021. I was the coordinator of the online course in 2021 and was responsible for every aspect of the teaching.

### University of New Brunswick, Fredericton, Canada:

- From January 2014 to August 2015, I worked as a teaching assistant for introductory calculus classes. I was responsible for preparing exercises and grading. I conducted problem solving sessions for two hours every week.

- In addition, I worked as a tutor at the Math Help Center helping students with their homeworks and questions related to math courses.

**Arel University, Istanbul, Turkey:**

- From September 2012 to December 2013, I was a full time lecturer. I taught introductory calculus classes in English to first and second year engineering students. I had around six sections each semester and each section included around 25 students. I was responsible from every aspect of teaching; preparing and giving lectures, assigning and grading homeworks, preparing and grading exams.

**SKILLS**

*Languages:* Turkish (native), English (fluent), French (intermediate).

*Software:* SAGE, GAP, PYTHON, R, JUPYTER.

*Art:* Painting, Photography.