

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 I. Le and E. Yıldırım, *Cluster Categorification of Rank 2 Webs*, arXiv:2402.14501.

A. Felikson, P. Tumarkin and E. Yıldırım, *Polytopal realizations of non-crystallographic associahedra*, arXiv:2401.08285

E. Kantarcı Oğuz and E. Yıldırım, *Cluster Expansions: T-walks, Labeled Posets and Matrix Calculations*, arXiv:2211.08011.

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

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.

IN PREPARATION

K. Baur, L. Bittmann, E. Gunawan, and G. Todorov, *Infinite friezes of affine type D* .

C. Paquette, J. D. Rock, and E. Yildirim, *Representations of thread quivers*.

AWARDS

- London Mathematical Society Scheme 5 ‘Collaborations with Developing Countries’ grant.
- 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

- 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.

- Algebra seminars, University of Leeds, since February 2023.
- CLAN (Clusters and their Applications in the North), since January 2024.
- The Advances in Representation Theory of Algebras IX, Queen's University, June 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

- *Cluster Expansion via matrices*, Cluster Algebra and Its Application, Oberwolfach, January 2024.
- *Webs and $Gr(3, n)$* , Arbeitsgemeinschaft: Cluster Algebras, Oberwolfach, October 2023.
- *Friz Desenlerinin Cebirsel Yorumu*, 35. National Mathematics Symposium, Trakya University, Turkey, September 2023.
- *Friezes*, Combinatorial Representation Theory in Leeds, University of Leeds, July 2023.

- *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

- CLAN (Clusters and their Applications in the North), University of Glasgow, February 2024.
- Cluster Algebra and Its Application, Oberwolfach, January 2024.
- Current Trends in Representation Theory, Cluster Algebras and Geometry, Centre International de Rencontres Mathématiques (CIRM), Luminy, November 2023.
- 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.
- Counting conjectures and beyond, The Isaac Newton Institute, Cambridge, May 2022.

RECENT WORKSHOPS

- Arbeitsgemeinschaft: Cluster Algebras, Oberwolfach, October 2023.
- 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:

- **(Advanced) Commutative Rings and Algebraic Geometry**, currently teaching in 2024.
- **Projects in Mathematics in 2022-2023.** 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.