

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.

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 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. Yıldırım, *ABHY Associahedra and Newton Polytopes of F -polynomials for finite type cluster algebras*, arXiv:1808.09986v2 (submitted).

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 (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.
- Institute des Science du 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 Undergraduate:

- Temi Abbass, *Triangulations and Friezes in three dimensions*, 2022. (In2Research Program)
- Zeliha Sevgi, *Quiver Representations*, 2022. (DRP Turkey)
- Aysel Şahin, *Conway-Coxeter Friezes and related combinatorics*, 2021. (DRP Turkey)
- Elifnaz Gülsen, *Quiver representations and their interaction with algebra and combinatorics*, 2019. (DRP Queen's)
- Molly Liu, *Cluster algebras and combinatorics*, 2019. (DRP Queen's)

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.
- 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.

PRESENTATIONS

- *Poset Quivers*, Geometric and combinatorial methods in homological algebra, Aarhus University, July 2022.
- *Cluster-tilting subcategories*, Bridges between representation theory and algebraic geometry: Singularities, friezes and cluster categories, University of Leeds, May 2022.
- Cluster categories: classical, discrete and beyond, Algebra seminar, University of Bath, May 2022.
- *Periodic actions*, Bilkent Algebra Seminar, February 2022 (online).
- *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).
- *The manifestations of Rowmotion in Representation Theory of Algebras*, Summer School of Algebraic Combinatorics, June 2021 (online).
- *Composition of the rowmotion and the Coxeter transformation*, Virtual Advances in Representation Theory of Algebras, May 2021 (online).
- *Webs and Modules*, TRAC Online Seminars, University of Sherbrooke, April 2021 (online).
- *Generalized Associahedra*, Algebra Seminar, University of Leeds, March 2021 (online).
- *Tilting theory and Quiver mutation*, LPA Seminars, Turkey, February 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 cominus-cule posets*, Dynamical Algebraic Combinatorics, Banff International Research Station, October 2020 (online).

- *Graphs and Combinatorics in Representation Theory of Algebras.*, Queen's University Colloquium, October 2020 (online).
- *Associahedra and Quiver Representations*, Gebze Technical University, October 2020 (online).
- *The Coxeter Transformation and Rowmotion for cominuscule posets*, Kentucky Discrete Math Seminar, September 2020 (online).
- *Cluster categories*, Uluslararası Cebirsel Geometri Neşesi, 2020 (online).
- *Cluster categories capturing combinatorics of infinite cluster variables*, Algebra Seminar, University of Sherbrooke, Quebec, February 2020.
- *The Coxeter Transformation and Promotion*, Algebra Seminar, University of Toronto, Toronto, January 2020.
- *A completion of discrete cluster categories of type A*, Seventh Conference on Geometric Methods in Representation Theory, University of Missouri, Columbia, November 2019.
- *Rowmotion and Coxeter transformation*, Applied Algebra Seminar, York University, Toronto, September 2019.
- *A slight extension of discrete cluster categories*, Cluster Algebras and Quiver Representations, Centre de Recherches Mathématiques (CRM), August 2019.
- *Cluster categories for an infinite rank cluster algebra*, Summer Day of Representation Theory of Algebras, Université de Sherbrooke-Bishop's University, QC, July 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.
- *The bounded derived category for cominuscule posets*, Algebra seminar, Queen's University, Kingston, ON, September 2018.
- *Generalized Associahedra and Newton polytopes of F-polynomials*, Algebra seminar, Carleton University, Ottawa, ON, September 2018.
- *Associahedra via quiver representations*, Canadian Mathematical Society Summer Meeting, Fredericton, NB, June 2018.
- *The periodicity of the Coxeter transformation*, The XXI^e Colloque panquébécois des étudiants de l'Institut des Sciences mathématiques (ISM), Université de Sherbrooke, QC, May 2018.
- *The Coxeter transformation on cominuscule posets*, Séminaire de combinatoire, Université du Québec à Montréal, LaCIM, QC, February 2018.

- *The Coxeter transformation on cominuscule posets*, Department seminar, Mimar Sinan University, Istanbul, December 2017.
- *The Coxeter transformation on grid posets*, Department seminar, Istanbul Technical University, Istanbul, December 2017.
- *Cluster Monomials in Web Basis*, Algebra seminar, University of Sherbrooke, QC, November 2017.
- *Cluster Monomials in Web Basis*, Cluster algebras seminar, University of Connecticut, CT, November 2017.
- *Coxeter transformation on cominuscule posets*, Cluster algebras seminar, University of Connecticut, CT, October 2017.
- *Coxeter transformation on cominuscule posets*, Combinatoric seminar, University of Minnesota, MN, September 2017.
- *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.
- *Cluster Algebras*, graduate seminar, University of New Brunswick, NB, April 2015.
- *Two dimensional Yetter-Drinfeld modules over $U_q(sl_2)$ are trivial*, Hopf Algebras in (Co)Action workshop, NB, June 2014.
- *Monomial ideals of path algebras*, research seminar, University of New Brunswick, NB, March 2014.

CONFERENCES ATTENDED

- 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.
- ARTIN meeting, the University of Manchester, March 2022.
- Representation Theory and Geometry, Queen's University - RMC, February 2022 (online).
- Combinatorial Algebra meets Algebraic Combinatorics, 19th Annual Meeting, The Fields Institute, January 2022 (online).
- Dynamical Algebraic Combinatorics, Banff International Research Station (BIRS), November 2021 (online).

- New developments in representation theory arising from cluster algebras, Isaac Newton Institute, September 2021 (online).
- Summer School of Algebraic Combinatorics, June 2021 (online).
- Virtual ARTA 2021 - Online Conference in Honor of Andrzej Skowroński, May 2021 (online).
- Additive categories between algebra and functional analysis, March 2021 (online).
- Flash Talks in Representation Theory, NTNU, January 2021 (online).
- Dynamical Algebraic Combinatorics, BIRS, October 2020 (online).
- Winter School "Connections between representation theory and geometry", Hausdorff Research Institute for Mathematics, October 2020 (online).
- Meeting on Representation Theory of Algebras – Corona Edition, Sherbrooke, QC, September 2020 (online).
- Categorifications in Representation Theory, September 2020 (online).
- Cluster Algebras 2020 (online).
- McKay correspondence, mutation and related topics, Kavli IPMU, August 2020 (online).
- Dimers in Combinatorics and Cluster Algebras, University of Michigan, August, 2020 (online).
- Seventh Conference on Geometric Methods in Representation Theory, University of Missouri, Columbia, November 2019.
- The 29th Annual Route 81 Conference on Commutative Algebra and Algebraic Geometry, Kingston, ON, October 2019.
- The XXXIst Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2019.
- Quiver Varieties and Representation Theory, Centre de Recherches Mathématiques (CRM), Montreal, QC, August 2019.
- Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, Massachusetts, MA, April 2019.
- American Mathematical Society Sectional Meeting, Hartford, CT, April 2019.
- Cluster structures in geometry, physics, combinatorics and representation theory, Jerusalem, December 2018.
- The 28th Annual Route 81 Conference on Commutative Algebra and Algebraic Geometry, Syracuse, September 2018.
- The XXXth Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2018.
- Canadian Mathematical Society Summer Meeting, Fredericton, NB, June 2018.

- The *XIX^e* Colloque panquébécois des étudiants de l'ISM, Université de Sherbrooke, QC, May 2018.
- Cluster Algebras: Twenty Years On, Centre International de Rencontres Mathématiques (CIRM), Luminy, 2018.
- Combinatorial Algebra meets Algebraic Combinatorics, 15th Annual Meeting, Hamilton, ON, January 2018.
- The XXIXth Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2017.
- Advances in Representation Theory of Algebras VI: Geometry and Homology (ARTA), CIRM, Luminy, 2017.
- The Mathematical Congress of the Americas (MCA), Montreal, QC, July 2017.
- Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, MA, April 2017.
- Combinatorial Algebra meets Algebraic Combinatorics, Fourteenth Annual Meeting, Montreal, QC, January 2017.
- The XXVIIIth Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2016.
- International Conference on Representations of Algebras, Syracuse, NY, August 2016.
- The *XIX^e* Colloque panquébécois des étudiants de l'ISM, QC, May 2016.
- Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, MA, April 2016.
- Canadian Mathematical Society Winter Meeting, Montreal, QC, December 2015.
- The XXVIIth Meeting on Representation Theory of Algebras, Sherbrooke, QC, September 2015.
- Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, MA, April 2015.
- Fall Eastern Sectional Meeting Dalhousie University, Halifax, NS, October 2014.

WORKSHOPS ATTENDED

- Cluster Algebras and Representation Theory, Semester-Program at the Isaac Newton Institute, Sept-Dec 2021, Cambridge, UK.
- Introductory Workshop: Group Representation Theory and Applications, Mathematical Sciences Research Institute, Berkeley, February 2018.
- Connections for Women: Group Representation Theory and Applications, Mathematical Sciences Research Institute, Berkeley, CA February 2018.

- School and Workshop: Algebraic and Geometric Combinatorics of Reflection Groups, Montreal, QC, June 2017.
- Sage Days 86, UQAM, Montreal, QC, April 2017.
- Workshop on Representations of Algebras, Syracuse, NY, August, 2016.
- Positive Grassmannians, CRM, Montreal, QC, July 2015.
- Cluster algebras, Poisson Structure, Networks and Integrable Systems, CRM, Montreal, QC, July 2015.
- Hopf Algebras in (Co)Action, Fredericton, NB, June 2014.
- Noncommutative Geometry and Quantum Groups, Bahçeşehir University, Istanbul, September 2014.
- Path Algebras and Homology, Bahçeşehir University, Istanbul, January 2013.

TEACHING

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 in 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.