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Selvi Kara | CV

Employment

August 2022 - present	**Bryn Mawr College**	**Department of Mathematics** **Assistant Professor**
August 2022 - August 2023	**University of Utah**	**Science Research Initiative** **Postdoctoral Fellow**
July 2021 - July 2022	**University of Utah**	**Department of Mathematics** **Research Associate**
August 2017 - May 2021	**University of South Alabama**	**Department of Math and Stats** **(TT) Assistant Professor**
Summer 2017	**Girls Who Code at Packer Collegiate**	**Instructor**

Research Interests

Commutative algebra, algebraic and geometric combinatorics, computational algebra

Fellowships

2021 - 2022	**Mathematical Association of America**	**Gold '21 Project NExT Fellow**

Education

May 2017   **Tulane University - Ph.D. in Mathematics**

❱ **Thesis:** *Castelnuovo-Mumford Regularity of Powers of Edge Ideals*
❱ **Advisor:** Tai Huy Ha, Ph.D

January 2012   **Istanbul Technical University - M.Sc. in Mathematics Engineering**

❱ **Thesis:** *Hilbert Functions, Free Resolutions and Betti Numbers*
❱ **Advisors:** Vahap Erdogdu, Ph.D, and Sefa Feza Arslan, Ph.D.

June 2008   **Istanbul University - B.Sc. in Mathematics**

Teaching Experience

2021 - 2022   **University of Utah**

❱ **Spring 2022** Calculus III, History of Mathematics
❱ **Spring 2022** Supervised Reading on Algebraic Combinatorics
❱ **Fall 2021** College Algebra, Calculus III

2017 - 2021   **University of South Alabama**

❯ Calculus I, II & III
❯ Linear Algebra
❯ Abstract Algebra
❯ Graduate Linear Algebra I & II

Publications

❯ **Multi-Rees algebras of strongly stable ideals**, with Kuei-Nuan Lin and Gabriel Sosa. (2022) *Collectanea Mathematica* journal version arXiv version

❯ **Toric ideals of weighted oriented graphs**, with Jennifer Biermann, Kuei-Nuan Lin, and Augustine O'Keefe. (2022) *International Journal of Algebra and Computation* journal version arXiv version

❯ **Rigid Gorenstein toric Fano varieties arising from directed graphs**, with Irem Portakal and Akiyoshi Tsuchiya. (2022) *Collectanea Mathematica* journal version arXiv version

❯ **Betti numbers of weighted oriented graphs**, with Beata Casiday. *The Electronic Journal of Combinatorics* 28(2) (2021), #P2.33. journal version arXiv version

❯ **Algebraic properties of weighted oriented graphs**, with Jennifer Biermann, Kuei-Nuan Lin, and Augustine O'Keefe. (2021) *Journal of Algebraic Combinatorics* journal version arXiv version

❯ **Regularity of powers of edge ideals: from local properties to global bounds**, with Arindam Banerjee and Huy Tài Hà. *Algebraic Combinatorics*, Volume 3 (2020) no. 4, pp. 839-854. journal version, arXiv version

❯ **Algebraic properties of toric rings of graphs**, with Huy Tài Hà and Augustine O'Keefe. *Communications in Algebra*, 47:1, 1-16, (2019). journal version, arXiv version

❯ **Regularity of powers of unicyclic graphs**, with Ali Alilooee and Selvaraja S. *Rocky Mountain J. Math.*, Volume 49, Number 3, 699-728, (2019). journal version, arXiv version

❯ **Regularity of edge ideals and their powers**, with Arindam Banerjee and Huy Tài Hà. *Advances in Algebra*. SRAC 2017. Springer Proceedings in Mathematics & Statistics, vol 277. Springer, Cham, (2018). journal version, arXiv version

❯ **Regularity of powers of forests and cycles**, with Huy Tài Hà, and Trân Nam Trung. *Journal of Algebraic Combinatorics*, 42: 1077, (2015). journal version, arXiv version

Submitted Papers

❯ **Macaulay2 package: Morse resolutions**, with Trung Chau and Augustine O'Keefe (2023) arXiv version

❯ **Barile-Macchia resolutions**, with Trung Chau (2022) arXiv version

❯ **A three regime theorem for flow-firing**, with Sarah Brauner, Galen Dorpalen-Barry, Caroline Klivans, and Lisa Schneider (2022) arXiv version

❯ **On algebraic and combinatorial properties of weighted simplicial complexes** (2020) arXiv version

Papers in Progress

❯ **Barile-Macchia resolutions of path ideals of paths**, with Trung Chau and Kyle Wang

❯ **Barile-Macchia resolutions of monomial ideals with at most 5 generators are minimal**, with Trung Chau and Lia Smith

❯ **Normal polytopes arising from weighted oriented graphs**, with Jennifer Biermann, Kuei-Nuan Lin, and Augustine O'Keefe

❯ **Regularity and degree of connected graphs**, with Jennifer Biermann, Augustine O'Keefe, Joseph Skelton, and Gabriel Sosa

❯ **Stirling permutations and the lucky statistic**, with Aleyah Dawkins, Jennifer Elder, Pamela E. Harris, Kimberly Harry, Dorian Smith, and Bridget Eileen Tenner

Other Publications

❯ **A Conversation on Meet a Mathematician and Math For All,** with Padi Fuster (2021) in Practices and Policies: Advocating For Students of Color in Mathematics, Pamela E. Harris and Aris Winger. CreateSpace 2021.

Sponsored Research

June 2022	Collaborate @ICERM	Visiting Researcher
Aug 2021, Feb 2022	ICERM Research Community in Algebraic Combinatorics (RCAC)	Fellow
July 2019	Mathematical Sciences and Research Institute	Visiting Researcher
June 2016	Vietnam Institute of Advanced Study in Mathematics	Visiting Researcher

Grants

2022 - 2023	NSF, Fields Institute, and AARMS, Conference Grants for CAAC 2023
2021 - 2023	AMS-Simons Travel Grant
2021 - 2022	ICERM, Fellowships for RCAC
2021 - 2022	COMMIT Four Corners, Conference Grant for WITP
2019 - 2022	MAA Tensor Grant for Girls in Math Program
May 2021	TPSE Math Funding for Meet a Mathematician
2019 - 2020	MSRI, Summer Research in Mathematics Collaboration Grant
Nov 2019	University of South Alabama, Faculty Development and Support Award

Student Research

❯ Trung Chau (Graduate student, University of Utah)   Fall 2021– present

❯ Lia Smith (Undergraduate student, University of Utah)   Fall 2022– Spring 2023

❯ Aidan Bucko, Nick Van Fleet, Josie Marshall, Kayden Perez, Kiyanna Porter, Amelia Walden, and Deborah Wooton (Science Research Initiative Students, University of Utah)   Fall 2021– present

❯ Rachel Hilarides (Undergraduate student, University of South Alabama)   Spring 2021 – Spring 2022

❯ Beata Casiday (Undergraduate student, Yale University)   Fall 2019 - Fall 2020, Summer 2023 – present

❯ Kayla Johnson (Masters student, University of South Alabama)   Spring 2019 - Spring 2020

Recent Talks

❯ Algebra Seminar, West Virginia University	April 2023
❯ Discrete Math Seminar, Texas State University	April 2023
❯ Recent Developments in Comm.Algebra Session, AMS Sectional at Georgia Tech	March 18-19, 2023
❯ Mathematics Colloquium, Hunter College	February 2023
❯ Topological and Combinatorial Methods in Comm. Algebra Session, JMM 2023	January 4-5, 2023
❯ Algebraic, Geometric, and Topological Combinatorics Session, AMS Sectional at UTEP	September 2022
❯ Macaulay 2 Workshop, Cleveland State University	May 2022
❯ Undergraduate Seminar for Science and Math Students, Westminster College	April 2022
❯ Virtual AMS Spring Eastern Sectional Meeting Virtual, Tufts University	March 2022
❯ MAA Intermountain Section Speaker, Virtual	March 2022
❯ Algebra and Combinatorics Seminar, Tulane University	March 2022
❯ Virtual Combinatorial Algebra meets Algebraic Combinatorics, Fields Institute	January 2022
❯ Undergraduate Math Colloquium, University of Utah	January 2022
❯ Undergraduate Math Seminar, Colgate University	December 2021
❯ Algebra Seminar, University of Utah	November 2021
❯ Algebra Seminar, Bilkent University, Turkey	October 2021
❯ Algebra and Discrete Math Seminar, Clemson University	September 2021
❯ NTAG Seminar, Simon Fraser University, Canada	June 2021
❯ Departmental Colloquium, Gebze Technical University, Turkey	May 2021
❯ Commutative Algebra Seminar, Jagiellonian University, Poland	April 2021
❯ Algebra Seminar, University of Connecticut	April 2021

❯❯❯ Recent Conferences and Workshops Attended

❯ Interactions Between Top. Combinatorics and Comb. Comm. Algebra Workshop at BIRS	April 2023
❯ GEMS of Combinatorics Workshop at AIM	March 2023
❯ MathFest	August 2021 and Augusts 2022
❯ MSRI Workshop on Math and Racial Justice	June 2021
❯ NAM Faculty Conference on Research and Teaching Excellence	May 2021
❯ paraDIGMS Fall & Spring Conference	Nov 2020 & April 2021
❯ Workshop in Combinatorial Algebraic Geometry at ICERM	February 2021

❱ Advocating for Students of Color, AMS Webinar   Fall 2020

❱ AWM Working Towards Change Workshop, JMM 2020   January 2020

❱❱❱ Recent Conferences and Workshops Organized

❱ Math for All, Salt Lake City Satellite   February 2023

❱ 2023 Combinatorial Algebra Meets Algebraic Combinatorics   January 2023

❱ AWM Research Symposium, Special Session on Combinatorial and Homological Methods in Commutative Algebra, University of Minnesota   June 2022

❱ Virtual AMS Spring Western Sectional, Special Session Commutative Algebra   May 2022

❱ Workshop for Inclusive Teaching Practices in SLC   April 2022

❱ Virtual Math for All, Salt Lake City Satellite   February 2022

❱ Virtual AMS Fall Southeastern Sectional Meeting   November 2021

❱❱❱ Community Projects and Events

❱ **Meet a Mathematician!**, Co-Founder   March 2020 - present

❱ **Math For All SLC Satellite**, Co-Organizer   2022-2023

❱ **MEET and SHARE: A Mathematicians' Storytelling Event at JMM 2023,**, Co-Organizer   January 5, 2023

❱ **GSAC EDI Book Club**, Co-Organizer   Summer 2022

❱ **Summer Research in Mathematics Program in Turkey**, Co-Organizer   Summer 2021

❱ **Girls in Math Day Program @ South 2018 & 2019**, Co-Founder and Co-Director   2018 - 2021

❱ **Panel discussion "What comes after #MeToo?"** Organizer and Moderator   April 2018

❱ **#MeToo Panel Discussion, Democracy Day**, Organizer and Moderator   March 2018

❱ **Girls Exploring Math and Science**, Keynote Speaker and Workshop Leader   November 2017

❱ **Girls Who Code Club at South**, Founder and Facilitator   2017 - 2021

❱ **AWM Student Chapter @ South**, Faculty Advisor   Fall 2017 - Spring 2021

❱❱❱ Professional Service

2021 - 2023   **University of Utah**

       Departmental Committees

          ❱ EDI Committee
          ❱ EDI Survey Subcommittee, Chair

2017 - 2021   **University of South Alabama**

College Committees

❱ Summer Professional Development Awards Committee
❱ Diversity Committee

Departmental Committees

❱ Outreach Committee
❱ Curriculum Committee
❱ Library Committee

Scholarly Review

❱ Journal of Combinatorial Theory Series A
❱ Journal of Algebraic Combinatorics
❱ Journal of Algebra
❱ Electronic Journal of Combinatorics
❱ Proceedings of the AMS