

CURRICULUM VITAE
Zachary Mesyan

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Education

Ph. D. in Mathematics, University of California, Berkeley 05/2006
Advisor: George Bergman
Sc. B. in Mathematics and Philosophy, Brown University 05/2001
With Honors in Mathematics, Magna Cum Laude, Phi Beta Kappa, Sigma Xi

Employment

Professor, University of Colorado, Colorado Springs 08/2019–present
Associate Professor, University of Colorado, Colorado Springs 08/2015–07/2019
Assistant Professor, University of Colorado, Colorado Springs 08/2010–07/2015
Postdoctoral Fellow, Ben Gurion University of the Negev (Israel) 09/2008–07/2010
Lecturer, University of Southern California 08/2006–05/2008

Grants and Awards

National Science Foundation Conference Grant 1602010 2016
Israeli Council for Higher Education Vatat Fellowship 2008–2010
Mathematics Department Fellowship, UC Berkeley Spring 2005
Mangasar M. Mangasarian Scholarship, UC Berkeley Spring 2003 & 2004

Publications

28. *Unifying Some Classical Results on Artinian Rings and Modules* (with D. Leyba and G. Oman), *Communications in Algebra*, in press
27. *Properties of Congruence Lattices of Graph Inverse Semigroups* (with M. Anagnostopoulou-Merkouri and J. D. Mitchell), *International Journal of Algebra and Computation* **34** (2024) 371–396
26. *Automatic Continuity, Unique Polish Topologies, and Zariski Topologies on Monoids and Clones* (with L. Elliott, J. Jonušas, J. D. Mitchell, M. Morayne, and Y. Péresse), *Transactions of the American Mathematical Society* **376** (2023) 8023–8093
25. *Graded Semigroups* (with R. Hazrat), *Israel Journal of Mathematics* **253** (2023) 249–319

24. *Products and Intersections of Prime-Power Ideals in Leavitt Path Algebras* (with K. M. Rangaswamy), *Journal of Algebra and its Applications* **21** (2022) 2250104 (26 pages)
23. *Products of Ideals in Leavitt Path Algebras* (with G. Abrams and K. M. Rangaswamy), *Communications in Algebra* **48** (2020) 1853–1871
22. *Infinite-Dimensional Triangularizable Algebras*, *Forum Mathematicum* **31** (2019) 19–33
21. *An Infinite Cardinal-Valued Krull Dimension for Rings* (with K. A. Loper and G. Oman), *Journal of Algebra* **517** (2019) 223–248
20. *Chains of Semiprime and Prime Ideals in Leavitt Path Algebras* (with G. Abrams, B. Greenfeld, and K. M. Rangaswamy), 1–16, *Contemporary Mathematics* **715**, American Mathematical Society, Providence, RI, 2018
19. *Infinite-Dimensional Triangularization*, *Journal of Pure and Applied Algebra* **222** (2018) 1529–1547
18. *Realizing Posets as Prime Spectra of Leavitt Path Algebras* (with G. Abrams, G. Aranda Pino, and C. Smith), *Journal of Algebra* **476** (2017) 267–296
17. *Infinite-Dimensional Diagonalization and Semisimplicity* (with M. C. Iovanov and M. L. Reyes), *Israel Journal of Mathematics* **215** (2016) 801–855
16. *The Structure of a Graph Inverse Semigroup* (with J. D. Mitchell), *Semigroup Forum* **93** (2016) 111–130
15. *Topological Graph Inverse Semigroups* (with J. D. Mitchell, M. Morayne, and Y. Péresse), *Topology and its Applications* **208** (2016) 106–126
14. *Traces on Semigroup Rings and Leavitt Path Algebras* (with L. Vaš), *Glasgow Mathematical Journal* **58** (2016) 97–118
13. *Polynomials of Small Degree Evaluated on Matrices*, *Linear and Multilinear Algebra* **61** (2013) 1487–1495
12. *Commutator Leavitt Path Algebras*, *Algebras and Representation Theory* **16** (2013) 1207–1232
11. *The Bergman-Shelah Preorder on Transformation Semigroups* (with J. D. Mitchell, M. Morayne, and Y. Péresse), *Mathematical Logic Quarterly* **58** (2012) 424–433
10. *Monoids of Injective Maps Closed Under Conjugation by Permutations*, *Israel Journal of Mathematics* **189** (2012) 287–305
9. *Simple Lie Algebras Arising from Leavitt Path Algebras* (with G. Abrams), *Journal of Pure and Applied Algebra* **216** (2012) 2302–2313
8. *Groups Where Free Subgroups are Abundant*, *Journal of Algebra* **344** (2011) 161–171
7. *Conjugation of Injections by Permutations*, *Semigroup Forum* **81** (2010) 297–324
6. *The Ideals of an Ideal Extension*, *Journal of Algebra and Its Applications* **9** (2010) 407–431

5. *On Minimal Extensions of Rings* (with T. J. Dorsey), *Communications in Algebra* **37** (2009) 3463–3486
4. *Generating Self-map Monoids of Infinite Sets*, *Semigroup Forum* **75** (2007) 648–675
3. *Endomorphism Rings Generated Using Small Numbers of Elements*, *Bulletin of the London Mathematical Society* **39** (2007) 290–300
2. *Commutator Rings*, *Bulletin of the Australian Mathematical Society* **74** (2006) 279–288
1. *Generating Endomorphism Rings of Infinite Direct Sums and Products of Modules*, *Journal of Algebra* **283** (2005) 364–366

Software

Contribution to the *Semigroups* Package for the Computer Algebra System *GAP* (2016)

Invited Talks

<i>Graded Semigroups</i> AMS Fall Central Sectional Meeting, San Antonio, TX	September 14, 2024
<i>Conjugacy and Least Commutative Congruences in Semigroups</i> Joint Mathematical Meetings, San Francisco, CA	January 4, 2024
<i>Topological Transformation Monoids</i> Joint Mathematical Meetings, Denver, CO	January 17, 2020
<i>Leavitt Path Algebras and the Kaplansky Property for Prime Spectra</i> AMS Spring Western Sectional Meeting, Portland, OR	April 14, 2018
<i>Infinite-Dimensional Diagonalization</i> Graduate Algebra Seminar, University of Colorado, Boulder, CO	November 15, 2016
<i>Topological Graph Inverse Semigroups</i> AMS Fall Western Sectional Meeting, Denver, CO	October 9, 2016
<i>Leavitt Path Algebras and Possible Prime Spectra of Rings</i> AMS Fall Eastern Sectional Meeting, Brunswick, ME	September 24, 2016
<i>Infinite-Dimensional Diagonalization</i> University of Málaga, Málaga, Spain	June 4, 2015
<i>Infinite-Dimensional Diagonalization</i> Mathematics Colloquium, University of Dayton, Dayton, OH	March 26, 2015
<i>Generalizations of Shoda's Theorem</i> AMS Fall Central Sectional Meeting, Saint Louis, MO	October 18, 2013
<i>Evaluating Polynomials on Matrices</i> Mathematics Colloquium, University of Colorado, Colorado Springs, CO	August 29, 2013

<i>Generalizations of Shoda's Theorem</i> AMS Spring Central Sectional Meeting, Ames, IA	April 28, 2013
<i>Commutator Rings and Leavitt Path Algebras</i> AMS Spring Western Sectional Meeting, Honolulu, HI	March 3, 2012
<i>Groups Where Free Subgroups are Abundant</i> Fearless Friday Talk Series, Colorado College, Colorado Springs, CO	November 4, 2011
<i>Conjugation of Injections by Permutations</i> Meeting of the North British Semigroups and Applications Network, St Andrews, Scotland	May 7, 2010
<i>Conjugation of Injections by Permutations</i> Mathematics Colloquium, University of Colorado, Colorado Springs, CO	February 25, 2010
<i>Minimal and Ideal Extensions of Rings</i> Algebra Seminar, Bar Ilan University, Ramat Gan, Israel	December 24, 2008
<i>Minimal and Ideal Extensions of Rings</i> Algebra Seminar, Ben Gurion University, Beer Sheva, Israel	December 17, 2008
<i>Minimal Extensions of Rings</i> Algebraic Geometry and Representation Theory Seminar, Weizmann Institute of Science, Rehovot, Israel	December 7, 2008
<i>Minimal Extensions of Rings</i> Ohio State-Denison Mathematics Conference, Columbus, OH	May 17, 2008
<i>Monoids, Groups, and Rings of Endomorphisms</i> Southern California Algebra Conference, Los Angeles, CA	March 3, 2007
<i>Connections Between Infinite Permutation Groups and Endomorphism Rings</i> Algebra Seminar, University of Southern California, Los Angeles, CA	October 16, 2006
<i>Connections Between Infinite Permutation Groups and Endomorphism Rings</i> Metron Scientific Solutions, Reston, VA	July 17, 2006

Other Conference Talks

<i>Graded Semigroups</i> Conference on Rings and Factorizations, Graz, Austria	July 11, 2023
<i>Infinite-Dimensional Triangularization</i> Ohio State-Denison Mathematics Conference, Columbus, OH	May 14, 2022
<i>An Infinite Cardinal-Valued Krull Dimension</i> Southern Regional Algebra Conference, Lafayette, LA	April 6, 2019
<i>Traces on Semigroup Rings</i> Ohio State-Denison Mathematics Conference, Columbus, OH	May 10, 2014

<i>Commutator Rings and Leavitt Path Algebras</i> Ohio State-Denison Mathematics Conference, Columbus, OH	May 25, 2012
<i>Groups Where Free Subgroups are Abundant</i> Groups and Model Theory Conference, Mülheim an der Ruhr, Germany	May 30, 2011
<i>Minimal Extensions of Rings</i> Conference on Algebra and its Applications, Athens, OH	June 21, 2008

Research Students (at UCCS)

Matthew Miller (Ph. D.)	2024–present
Ikuko Saito (M. S.) Thesis: <i>Traceless Matrices That are not Commutators</i>	2015–2016

Courses Taught

At the University of Colorado, Colorado Springs (2010–present)

- Math 1350 - Calculus I
- Math 1360 - Calculus II
- Math 2150 - Discrete Mathematics
- Math 3110 - Theory of Numbers
- Math 3130 - Introduction to Linear Algebra
- Math 4040 - Senior Math Seminar
- Math 4140 - Modern Algebra I
- Math 4150/5150 - Modern Algebra II
- Math 5170/6170 - Rings and Modules I
- Math 5270/6270 - Algebraic Coding Theory
- Math 8000 - Ph. D. Dissertation
- Math 9500 - Independent Study, Graduate

At the University of Southern California (2006–2008)

- Math 117 - Precalculus
- Math 200 - Elementary Mathematics from an Advanced Standpoint
- Math 218 - Statistics for Business
- Math 225 - Linear Algebra and Differential Equations

At the University of California, Berkeley (2004)

- Math 16B - Analytic Geometry and Calculus

Administrative Work

Beiträge zur Algebra und Geometrie Associate Editor	12/2023–present
UCCS Algebra Seminar Organizer	07/2023–present
UCCS Mathematics Website Administrator	07/2021–01/2023
UCCS Mathematics Department Chair	07/2019–06/2022

Committees (at UCCS)

Mathematics Undergraduate Committee	07/2022–present
Mathematics Primary Unit Evaluation Committee (Chair: 08/2023–07/2024)	08/2015–present
Mathematics TT Search Committee (Chair)	09/2024–05/2025
Mathematics Bylaws Committee	11/2022–12/2022
Course Scheduling and Capacity Subcommittee of the UCCS Strategic Enrollment Initiative	07/2019–06/2022
Retention and Graduation Subcommittee of the UCCS Strategic Enrollment Initiative	01/2018–06/2019
Mathematics Undergraduate Committee (Chair: 08/2015–01/2018)	11/2010–06/2019
Mathematics Bylaws Committee	03/2017–11/2018
Discrete Mathematics Book Search Committee	01/2018–04/2018
LAS College Budget and Planning Committee	12/2012–05/2015
Mathematics Program Fee Committee	09/2013–08/2014
LAS College Planning Committee	02/2012–11/2012

Dissertation Committees (at UCCS)

Luke Harmon, Ph. D. (2020)
 Jacob Karn, M. S. (2018)
 Ikuko Saito, M. S. (2016)
 Luke Harmon, M. S. (2015)

Conference Organization

Leavitt Path Algebras at 20, and Gene Abrams at 70 (2025), Colorado Springs, CO (with Greg Oman, Kulumani Rangaswami, and Mark Tomforde)

GroupoidFest 2021, Colorado Springs, CO (with Gene Abrams, Kristen Gearhart, Greg Oman, and Mark Tomforde)

33rd Ohio State-Denison Mathematics Conference Ring Theory Session (2016), Columbus, OH (with Sergio López-Permouth, Pace Nielsen, S. Tariq Rizvi, and Cosmin Roman)

Special Session on Associative Rings and Their Modules, 2013 AMS Spring Western Sectional Meeting, Boulder, CO (with Greg Oman)

Refereeing

Advances in Mathematics, Algebras and Representation Theory

Beiträge zur Algebra und Geometrie

College Mathematics Journal (5)

Communications in Algebra (5)

Forum Mathematicum (2)

Israel Journal of Mathematics

Journal de Mathématiques Pures et Appliquées

Journal of Algebra (3)

Journal of Algebra and its Applications (4)

Journal of Algebra, Number Theory, and Applications

Journal of Pure and Applied Algebra

Journal of the European Mathematical Society

Linear Algebra and its Applications (5)

Linear and Multilinear Algebra (2)

Operators and Matrices (2)

Publicacions Matemàtiques (2)

Semigroup Forum (2)

Topology and its Applications

Transactions of the American Mathematical Society

Turkish Journal of Mathematics