Robin J. Deeley

Contact Information

Department of Mathematics
University of Colorado Boulder
Campus Box 395
Boulder, CO 80309-0395
USA
Office Math 206

Current Position

Department of Mathematics, University of Colorado, Boulder, Colorado, USA

Associate Professor, since 2023

Assistant Professor, 2017-2023

Postdoctoral Positions

Department of Mathematics, University of Hawaii Manoa, Honolulu, Hawaii, USA

Assistant Professor (non-tenure track) 2015-2017

Laboratoire de Mathématiques, Université Blaise Pascal, Clermont-Ferrand, France

Postdoctoral Fellow, 2013-2015

Mathematisches Institut, Georg-August Universität, Göttingen, Germany

Postdoctoral Fellow, 2010-2013

- NSERC Postdoctoral Fellowship, 2011-2013
- Extended visit: Fields Institute, Focus Program on Noncommutative Geometry and Quantum Groups in honour of Marc A. Rieffel (one month), 2013

Education

Mathematics and Statistics Department, University of Victoria, Victoria, BC, Canada

Ph.D., Pure Mathematics, 2010

- Thesis Title: Geometric K-homology with coefficients
- Advisor: Heath Emerson, Ph.D
- NSERC Postgraduate Scholarship (PGS) Doctoral Award, 2006-2008
- GPA: 9.0 (out of 9.0)
- Extended visit: University of Münster, Focused Semester on KK-theory and its Applications (three months), 2009
- Extended visit: Fields Institute, Thematic Program on Operator Algebras (five months), 2007

M.Sc., Pure Mathematics, 2006

- Thesis Title: The orbit operator and invariant subspaces
- Advisor: A. R. Sourour, Ph.D
- NSERC Canada Graduate Scholarship (CGS) Master's Award, 2004-2006
- GPA: 9.0 (out of 9.0)

Faculty of Mathematics, University of Waterloo, Waterloo, ON, Canada

Honours BMath, Applied and Pure Mathematics Double Major, 2004 (Dean's Honour List)

Grants

Simons Foundation Travel Support for Mathematicians Gift, Project title: C*-algebras associated with dynamical systems, ($42,000 awarded over five years starting in 2023)

National Science Foundation, Division of Mathematical Sciences Grant Award number 2247424 "C*-algebras associated to minimal and hyperbolic dynamical systems" ($322,325 over three years starting August 2023)

National Science Foundation, Division of Mathematical Sciences Grant Award number 2000057 "Dynamics, Groupoids, and C*-Algebras" ($258,217 over three years starting May 2020)

Simons Foundation Grant in Mathematics and Physical Sciences-Collaboration Grants for Mathematicians, Project title: Index theory and dynamics via operator algebras ($42,000 awarded for five years starting in Sept 2019 but terminated early because of the NSF DMS 2000057 grant)

ArXiv Preprints

1. R. J. Deeley and R. Willett "The rational HK-conjecture: transformation groupoids and a revised version" (43 pages) arXiv:2402.06837 (accepted Münster Journal of Math)
2. R. J. Deeley, Menevse Eryuzlu, Magnus Goffeng, Allan Yashinski "Wieler solenoids: non-Hausdorff expansiveness, Cuntz-Pimsner models, and functorial properties" (37 pages) arXiv:2310.00415 (accepted Transactions of the AMS)
3. R. J. Deeley, and A. M. Stocker "Synchronizing Dynamical Systems: Shift Spaces and K-Theory" (36 pages) arXiv:2208.06200

Publications

1. R. J. Deeley, and A. M. Stocker "Synchronizing Dynamical Systems: their groupoids and C*-algebras" Trans. Amer. Math. Soc. 377 (2024), 3055-3093 arXiv:2310.00415
2. R. J. Deeley, Ian F. Putnam and K. R. Strung "Classifiable C*-algebras from minimal Z-actions and their orbit-breaking subalgebras" Mathematische Annalen 388, 703-729 (2024) arXiv:2012.10947
3. R. J. Deeley, "A counterexample to the HK-conjecture that is principal" Ergodic Theory Dynam. Systems, 43 (2023) no. 6 1829–1846 arXiv:2106.01527
4. R. J. Deeley, Ian F. Putnam and K. R. Strung "Minimal homeomorphisms and topological K-theory" Groups Geom. Dyn. 17 (2023), 501–532 arXiv:arXiv:2012.10950
5. R. Chaiser, M. Coates-Welsh, R. J. Deeley, A. Farhner, J. Giornozi, R. Huq, L. Lorenzo, J. Oyola-Cortes, M. Reardon, and A. M. Stocker "Invariants for the Smale space associated to an expanding endomorphism of a flat manifold" Münster J. Math 16 (2023), 177–199 arXiv:2208.02231
6. R. J. Deeley, M. Goffeng and A. Yashinski "Fell algebras, groupoids, and projections" Proc. Amer. Math. Soc. 150 (2022), 4891–4907 arXiv:2109.10820
7. R. J. Deeley, Ian F. Putnam and K. R. Strung "Non-homogeneous extensions of Cantor minimal systems", Proc. Amer. Math Soc. **149** (2021), no. 5, 2081–2089 arXiv:1907.04153
8. R. J. Deeley, M. Goffeng and A. Yashinski "Smale space C*-algebras have nonzero projections", Proc. Amer. Math. Soc. **148** (2020), no. 4 1625–1639 arXiv:1901.10324
9. R. J. Deeley and A. Yashinski "The stable algebra of a Wieler solenoid: inductive limits and K-theory", Ergodic Theory Dynam. Systems **40** (2020), no. 10, 2734–2768 arXiv:1803.08975

10. R. J. Deeley and K. R. Strung, "Group actions on Smale space C^*-algebras", Ergodic Theory Dynam. Systems **40** (2020), no. 9, 2368–2398 arXiv:1709.01897

11. R. J. Deeley and M. Goffeng, "Relative geometric assembly and mapping cones, Part II: Chern characters and the Novikov property", Münster J. Math. 12 (2019), no. 1, 57–92 arXiv:1705.08467

12. R. J. Deeley, I. F. Putnam, and K. R. Strung, "Constructing minimal homeomorphisms on point-like spaces and a dynamical presentation of the Jiang–Su algebra", J. Reine Angew. Math. **742** (2018), 241–261 arXiv:1503.03800

13. R. J. Deeley, M. Goffeng, B. Mesland, and M. F. Whittaker, "Wieler solenoids, Cuntz-Pimsner algebras and K-theory", Ergodic Theory Dynam. Systems **38** (2018), no. 8, 2942–2988 arXiv:1606.05449

14. R. J. Deeley and M. Goffeng, "Relative geometric assembly and mapping cones, Part I: The geometric model and applications", J. Topol. **11** (2018) no. 4 967–1001 arXiv:1507.01735

15. R. J. Deeley, M. Goffeng, and B. Mesland, "The bordism group of unbounded KK-cycles", J. Topol. Anal. 10 (2018), no. 2, 355–400 arXiv:1503.07398.

16. R. J. Deeley "A signed version of Putnam's homology theory: Lefschetz and zeta functions" 2016 MATRIX annals, 263–276, MATRIX Book Ser., 1, Springer, Cham, 2018 arXiv:1612.02066.

17. R. J. Deeley and K. R. Strung, "Nuclear dimension and classification of C*-algebras associated to Smale spaces", Trans. Amer. Math. Soc. 370 (2018), no. 5, 3467–3485 arXiv:1601.02432.

18. R. J. Deeley, "Index theory for manifolds with Baas-Sullivan singularities", J. Noncommut. Geom. 12 (2018), 1–28 arXiv:1402.4996

19. R. J. Deeley and M. Goffeng, "Applying geometric K-cycles to fractional indices", Math. Nachr. 290 (2017), no. 14-15, 2207–2233. arXiv:1211.1553

20. R. J. Deeley and M. Goffeng, "Realizing the analytic surgery group of Higson and Roe geometrically, Part I: The geometric model", J. Homotopy Relat. Struct. 12 (2017) no. 1 109–142 arXiv:1308.5990.

21. R. J. Deeley and M. Goffeng, "Realizing the analytic surgery group of Higson and Roe geometrically, Part III: Higher invariants", Mathematische Annalen 366 (3), 1513-1559 (2016) arXiv:1412.1768.

22. R. J. Deeley and M. Goffeng, "Realizing the analytic surgery group of Higson and Roe geometrically, Part II: Relative eta-invariants", Mathematische Annalen, 366 (3), 1319-1363 (2016) arXiv:1403.5406.

23. R. J. Deeley, D. B. Killough, and M. F. Whittaker, "Dynamical correspondences for Smale spaces", New York Journal of Mathematics Volume 22 (2016) 943–988 arXiv:1505.05558.

24. R. J. Deeley, "Analytic and topological index maps with values in the K-theory of mapping cones", Journal of Noncommutative Geometry Volume 10, Issue 2, (2016) 681-708 arXiv:1302.4296.

25. R. J. Deeley, D. B. Killough, and M. F. Whittaker, "Functorial properties of Putnam's homology theory for Smale spaces", Ergodic Theory Dynam. Systems **36** (2016), no. 5, 1411-1440. arXiv:1407.2992.

26. R. J. Deeley, "$\mathbb{R}/\mathbb{Z}$-valued index theory via geometric K-homology", Münster J. of Math., 7 (2014), 697-729 arXiv:1206.5662.

27. R. J. Deeley, "Geometric K-homology with coefficients II: the analytic theory and isomorphism", J. K-Theory 12 (2013), no. 2, 235-256 arXiv:1101.0703.

28. R. J. Deeley, "Geometric K-homology with coefficients I: $\mathbb{Z}/k\mathbb{Z}$-cycles and Bockstein sequence", J. K-theory, 9 (2012) no. 3, 537-564. arXiv:1101.0697.

29. R. J. Deeley, "The range of the orbit operator and invariant subspaces", C. R. Math. Rep. Acad. Sci. Canada, 29 (2007) no. 4 123-127.

30. W. C. Lim, R. J. Deeley, J. Wainwright, "Tilted Bianchi VII_0 cosmologies- the radiation bifurcation", Class. Quantum Grav. 23 (2006) 3215-3234.

31. R. J. Deeley, J. T. Horwood, R. G. McLenaghan, R. G. Smirnov, "Theory of algebraic invariants of vector spaces of Killing tensors: Methods of computing the fundamental invariants", Proceedings of Institute of Mathematics of NAS of Ukraine, Vol 50 (2004) 1079-1086.

Presentations

Lecture series

- GOALS (Groundwork for Operator Algebras Lecture Series), Purdue University: "K-theory", 2023 (two lectures)
- Refining C*-algebraic invariants for dynamics using KK-theory, MATRIX, Creswick: "Groupoids and C*-algebras", 2016 (five lectures)

Conference Presentations

- Great Plains Operator Theory Symposium 2024, University of Nebraska Lincoln "Expansive systems and their C*-algebras", 2024
- Workshop on non-commutative geometry and higher index theory, University of Puerto Rico, Rio Piedras "Hilsum bordism and relative constructions in unbounded KK-theory", 2024
- Workshop on Operator Algebras and Applications: Groups and Group Actions, Fields Institute, Toronto: "A counterexample to the HK-conjecture that is principal", 2023
- Canadian Mathematics Society Summer Meeting, C*-algebras and their applications session, University of Ottawa: "Solenoids and their C*-algebras", 2023
- Canadian Operator Theory Symposium (COSy), Western University "Expansive systems and their C*-algebras", 2023
- Young Mathematicians in Noncommutative Geometry and Analysis, Texas A&M University, "A counterexample to the HK-conjecture that is principal", 2022
- K-theory of operator algebras and its applications to geometry and topology, University of Puerto Rico, Rio Piedras, "Smale spaces and dynamic asymptotic dimension", 2022
- Great Plains Operator Theory Symposium 2022, Washington University in St. Louis "Expansive systems and their C*-algebras", 2022
- Groupoidfest 2021, University of Colorado, Colorado Springs "A counterexample to the HK-conjecture that is principal", 2021
- Great Plains Operator Theory Symposium 2021, Washington University in St. Louis "Smale space C^*-algebras", 2021 (given via Zoom)
- Canadian Operator Theory Symposium (COSy), Fields Institute Toronto "Minimal dynamical systems and groupoids with prescribed K-theory", 2020 (given via Zoom)
- Groundwork for Operator Algebras Lecture Series (GOALS), Michigan State University "Groupoid C*-algebras", 2020 (given via Zoom)
- Workshop on Cuntz-Pimsner Algebras, University of Houston "The K-theory of the stable and stable Ruelle algebras of a Wieler solenoid", 2019

- K-theory and C*-algebras, University of Hawaii "The K-theory of the stable and stable Ruelle algebras of a Wieler solenoid", 2019
- Noncommutative Geometry Festival 2019 NCG and Representation Theory, Washington University in St. Louis "Minimal dynamical systems and groupoid with prescribed K-theory", 2019
- AMS Sectional Meeting Western Joint Sectional Meeting Special Session on Coarse Geometry, Index Theory, and Operator Algebras: Around the Mathematics of John Roe, University of Hawaii "Relative geometric K-homology and the Higson and Roe analytic surgery exact sequence", 2019
- Texas Geometry and Topology Conference, Texas Christian University "From Atiyah-Singer to the analytic surgery exact sequence via geometric K-homology" 2019
- West Coast Operator Algebra Seminar: "Minimal dynamical systems and groupoids with prescribed K-theory", 2018
- Spectral analysis in quantum theory, University of New South Whales: "Relative constructions in K-homology and KK-bordism", 2018
- Cuntz–Pimsner Cross–Pollination, Lorentz Center: "Minimal dynamical systems and groupoids with prescribed K-theory", 2018
- Future targets in the classification program for amenable C^*-algebras, BIRS workshop, Banff: "The structure of Smale space C^*-algebras", 2017
- Barcelona conference on C^*-algebras: Structure, Classification and Dynamics, CRM, Barcelona: "Inductive limits of Smale space C^*-algebras", 2017
- Workshop on Analysis, Noncommutative Geometry and Operator Algebras, Gothenburg: "The structure of the stable C^*-algebra of certain Smale spaces", 2017
- SINGSTAR Conference 2017: Index theory and singular structures, Toulouse, "Hilsum bordisms and unbounded KK-theory", 2017
- Computability of K-theory and structure of C*-algebras, University of Hawaii: "The K-theory of certain Smale space C*-algebras", 2016
- Noncommutative index theory, Noncommutative geometry the next generation (Simons Semester) Banach Center, Warsaw: "Dynamically relevant inductive limits for certain Smale space C*-algebras", 2016
- East Coast Operator Algebras Symposium, Loyola University Chicago: "Group actions on Smale spaces and their C*-algebras", 2016
- Workshop on Stratified Spaces: Perspectives from Analysis, Geometry and Topology, Fields Institute, Toronto: "Generalizing the Freed-Melrose index theorem", 2016
- Refining C*-algebraic invariants for dynamics using KK-theory, MATRIX, Creswick: "Smale spaces with totally disconnected stable sets", 2016
- Noncommutative Dimension Theories, University of Hawaii: "Smale space C*-algebras and nuclear dimension", 2015.
- Workshop on C*-algebras: Geometry and Actions, University of Münster: "Relative constructions in geometry K-homology: Mapping cones and surgery", 2015
- Noncommutative geometry and spectral invariants, Université du Québec, Montréal: "Comparing dynamical zeta functions", 2015
- Canadian Operator Theory Symposium (COSy), University of Waterloo: "Bordism for unbounded KK-theory", 2015
- Noncommutative methods in Topology and Geometry, Lyon: "A geometric model for Higson-Roe's analytic surgery group, part 1", 2015
- C*-algebras and Dynamics, Banach Center, Warsaw: "Geometric K-homology and Higson and Roe's analytic surgery exact sequence", 2015
- Journées du sud en Géométrie Non Commutative, Institut de Mathématiques de Toulouse: "The homology of an Axiom A diffeomorphism versus Putnam's homology of their basic sets", 2014
- CNRS-GDR Géométrie Noncommutative, Anogia Academic Village Crete: "Relative constructions in geometry K-homology", 2014
- Workshop on Operator Algebras and Dynamical Systems, University of Wollongong:

"Pullbacks and correspondences for Smale spaces", 2014
- Analysis and Topology in Interaction 2014, Cortona: "Geometric K-homology and Higson and Roe's analytic surgery exact sequence", 2014
- Noncommutative Geometry, Number Theory and Dynamics, Mathematics Institute, University of Warwick: "Correspondences for Smale spaces", 2014
- Conference on Noncommutative Geometry and Quantum Groups in honour of Marc A. Rieffel, Fields Institute, Toronto: "A geometric version of the analytic surgery exact sequence", 2013
- Arbre de Noel: the Annual Christmas Conference in Noncommutative Geometry, Metz: "Index theory and mapping cones", 2012
- Analysis and Topology in Interaction 2011, Cortona: "A relative construction in geometric K-homology and $\mathbb{R}/\mathbb{Z}$-valued index theory", 2011
- Canadian Operator Theory Symposium (COSy), University of Victoria: "$\mathbb{R}/\mathbb{Z}$-valued index theory via geometric K-homology", 2011
- Conference on Selected Topics in Noncommutative Geometry, University of Victoria: "A geometric model for K-homology with coefficients", 2010
- Northwest Functional Analysis Seminar, Banff International Research Station (BIRS): "Geometric K-homology with coefficients", 2009
- Canadian Mathematics Society Summer Meeting, Invariant Theory and Differential Geometry session, University of Waterloo: "Invariant classification of Killing tensors on the sphere", 2005

Research Seminars
- Noncommutative Geometry Seminar, University of Hawaii: "C*-algebras associated to Smale spaces and finitely presented systems", 2024
- Noncommutative Geometry Seminar, University of Hawaii: "Expansive systems and their C*-algebras", 2022
- Colloquium, University of Nevada, Reno "Minimal homeomorphisms and K-theory", 2022
- Operator algebras seminar, East China Normal University: "A counterexample to the HK-conjecture that is principal", 2022 (given via Zoom)
- Noncommutative Geometry Seminar, University of Hawaii: "Smale spaces from flat manifolds and their invariants", 2022
- Noncommutative Geometry Seminar, University of Hawaii: "A counterexample to the HK-conjecture that is principal", 2021
- Colloquium, Indiana University - Purdue University Indianapolis"Minimal homeomorphisms and K-theory", 2021
- Analysis seminar, University of Wyoming "Minimal homeomorphisms and K-theory", 2021
- UK virtual operator algebras seminar "The C*-algebras associated to a Wieler solenoid", 2020 (given via Zoom)
- NYC noncommutative geometry seminar "Minimal dynamical systems with prescribed K-theory", 2020 (given via Zoom)
- Global Noncommutative Geometry Seminar (Americas) "The K-theory of the stable algebra and stable Ruelle algebra of a Wieler solenoid", 2020 (given via Zoom)
- Noncommutative Geometry Seminar, University of Hawaii: "Hilsum bordism and unbounded KK-theory", 2020
- Noncommutative Geometry Seminar, University of Hawaii: "Relative constructions in K-homology", 2020
- Colloquium, University of Hawaii, "Minimal Dynamical Systems", 2019
- Noncommutative Geometry Seminar, University of Texas A&M: "Relative constructions in K-homology and KK-bordism", 2018
- Analysis and Probability Seminar, University of Gothenburg: "Minimal dynamical systems and groupoids with prescribed K-theory", 2018

- Operator Theory Seminar, University of Victoria: "Expansive dynamical systems and C^*-algebras", 2018
- Operator Algebra Seminar, Fields Institute, Toronto: "Smale space C*-algebras", 2016
- Groupe de Travail equipe Geometrie, Algebre, Algebre d'operateurs, Université Blaise Pascal Clermont-Ferrand: "Group actions on Smale spaces", 2016
- Analysseminarium, Chalmers, Gothenburg: "Generalizing the Freed-Melrose index theorem", 2016
- Topology Seminar, Institut de Mathematiques et de Modelisation de Montpellier: "Geometric K-homology and Higson and Roe's analytic surgery exact sequence", 2015
- Operator Algebras and Quantum Groups Seminar, Department of Mathematical Methods in Physics, University of Warsaw: "Pullbacks and correspondences for Smale spaces", 2015
- Operator Algebras Seminar, University of Victoria: "Index theory for manifolds with Baas-Sullivan singularities", 2014
- Operator Algebra Seminar, Fields Institute, Toronto: "Correspondences for Smale spaces", 2014
- Operator Algebra Seminar, Fields Institute, Toronto: "Relative constructions in geometric K-homology", 2014
- Operator Algebra Seminar, University of Copenhagen: "Functorial properties of Smale spaces", 2014
- Noncommutative spaces and their homology theories, Leibniz Universität, Hannover: "Correspondences for Smale spaces", 2014
- Operator Algebra Seminar, University of Copenhagen: "Geometric K-homology and Higson and Roe's analytic surgery exact sequence", 2014
- Oberseminar Analysis, Leibniz Universität, Hannover: "Index theory for manifolds with Baas-Sullivan singularities", 2013
- Operator Algebras Seminar, University of Victoria: "Correspondences for Smale spaces", 2013
- Operator Algebras Seminar, University of Victoria: "Relative geometric K-homology and the analytic surgery exact sequence", 2013
- Oberseminar Global Analysis, Universität of Regensburg: "Index theory, geometric K-homology, and mapping cones", 2012
- Groupe de Travail equipe Geometrie, Algebre, Algebre d'operateurs, Université Blaise Pascal Clermont-Ferrand: "Relative constructions in geometric K-homology", 2012
- Oberseminar Analysis und Theoretische Physik, Leibniz Universität, Hannover: "Real and $\mathbb{R}/\mathbb{Z}$-valued index theory", 2012
- Operator Algebras Seminar, University of Victoria: "Geometric K-homology and $\mathbb{R}/\mathbb{Z}$-valued index theory", 2011
- Student Seminar, Focused Semester on KK-theory and its Applications, University of Münster: "$\mathbb{Z}/k\mathbb{Z}$-manifolds and K-homology with coefficients", 2009
- Ontario Non-Commutative Geometry and Operator Algebra Seminar, Fields Institute, Toronto: "The orbit operator" (Given during the thematic program on operator algebras), 2007

Teaching Experience

Department of Mathematics, University of Colorado, Boulder

- Math 4001 Analysis II, Fall 2024
- Math 8900 Independent Study: KK-theory, Spring 2024
- Math 8304 Topics in Analysis: K-theory, Spring 2023
- Math 2135 Linear Algebra for Math Majors, Fall 2022
- Math 4001 Analysis II, Fall 2022

- Math 4900 Independent Study: Invariants of shifts of finite type, Fall 2022
- Math 3001 Analysis I, Spring 2022 (two sections)
- Math 8900 Independent Study: Groupoid homology, Fall 2021
- Math 8330 Functional Analysis I, Fall 2021
- Math 8304 Topics in Analysis: C^*-algebras, Spring 2021
- Math 8900 Independent Study: Putnam's homology for Smale spaces, Fall 2020
- Math 6210 Topology I, Fall 2020
- Math 3001 Analysis I, Fall 2020
- Math 6210 Topology I, Fall 2019
- Math 8900 Independent Study: Minimal and hyperbolic dynamical systems, Spring 2019
- Math 2002 Number Systems, Spring 2019
- Math 3001 Analysis I, Fall 2018
- Math 8330 Functional Analysis I, Fall 2018
- Math 2135 Linear Algebra for Math Majors, Spring 2018
- Math 3001 Analysis I, Spring 2018
- Math 8900 Independent Study: K-theory for C^*-algebras, Spring 2018
- Math 2135 Linear Algebra for Math Majors, Fall 2017

Department of Mathematics, University of Hawaii Manoa

- Math 331 Introduction to Analysis, Spring 2017
- Math 241 Calculus I, Spring 2017
- Math 649D Topics in Analysis: C*-algebras, Fall 2016
- Math 215 Applied Calculus I, Fall 2016
- Math 321 Introduction to Advanced Mathematics, Spring 2016
- Math 242 Calculus II, Spring 2016
- Math 321 Introduction to Advanced Mathematics, Fall 2015
- Math 215 Applied Calculus I, Fall 2015

Mathematisches Institut, Georg-August Universität Göttingen

- Graduate course: Dirac operators, 2012-2013
- Graduate course: Geometric K-homology, 2012

Mathematics and Statistics Department, University of Victoria

- Math 100 Calculus, 2010
- Math 161 Math for Elementary School Teachers, 2009

Service

Mentorship graduate students

- Andrew Stocker, PhD completed 2022, thesis title: "Synchronizing dynamical systems, groupiods, and C^*-algebras"
- Rachel Chaiser, PhD completed 2024, thesis title: "A Low-Dimensional Counterexample to the. HK-Conjecture"
- Levi Lorenzo, current PhD student
- Maggie Reardon, current PhD student
- James Woodcock, current PhD student
- Darwin Tallana, current PhD student

Mentorship undergraduate students

- Robi Huq, Honor's student, completed in 2023, thesis title: "An introduction to Smale spaces and their homology"
- Experimental Mathematics Lab, "Computing invariants for subshifts of finite type", Fall 2022 (five undergraduate students)
- Jamal Giornzi, McNair scholar (research advisor 2021)
- José Oyola Cortes, Summer Multicultural Access to Research Training (SMART) program 2021 (co-advisor with Rachel Chaiser)

- Research Experience for Undergraduates and First-Year Graduate Students, "Computing invariants for expansive dynamical systems", Summer 2021 (four undergraduate students and two first-year graduate students)

Committee Work

- Executive Committee member, Math Dept, University of Colorado, Boulder, since 2024
- Operator algebra mentor network, Treasurer, since 2024
- Graduate committee member, Math Dept, University of Colorado, Boulder, 2020-2023
- Putnam math contest team leader (with Jonathan Wise), University of Colorado, Boulder, 2019-2022
- Undergraduate committee member, Math Dept, University of Colorado, Boulder, 2017-2019

Journal Referee

- Annals of K-theory, Canadian Journal of Mathematics, Communications in Mathematical Physics, Dynamical Systems, Ergodic Theory and Dynamical Systems, European Journal of Mathematics, Journal of Noncommutative Geometry, Mathematische Annalen, the Münster Journal of Mathematics, the Pacific Journal of Mathematics, Proceedings A of the Royal Society of Edinburgh, Proceedings of the AMS, Rocky Mountain Journal of Mathematics and Transactions of the AMS.

Grant Referee

- BIRS reviews for EDI, Israel Science Foundation, NSERC (Canada), Simons Foundation.

Conference Organization

- Co-organizer (with Menevse Eryuzlu, Shegan John, Markus Pflaum), Groupoidfest, University of Colorado, Boulder, Nov. 12-13, 2022
- Organizer, "Smale spaces, their groupoids and C^*-algebras", University of Colorado, Boulder May 13-15 2022 (held via zoom).
- Co-organizer (with Zhuang Niu and Ping Zhong), Joint Mathematical Meeting 2020, AMS Special Session on C^*-Algebras, Dynamical Systems and Applications Jan 16-17, 2020.
- Co-organizer (with Agnès Beaudry and Markus Pflaum), University of Colorado, Boulder, Topology Day, Apr. 16 2019
- Co-organizer (with Magnus Goffeng, Ryszard Nest and Thomas Schick) Workshop entitled "Secondary and delocalized index invariants", June 11-15 2018 in Copenhagen.
- Co-organizer (with Magnus Goffeng, Bram Mesland and Snigdhayan Mahanta) Successful grant application (through Niedersächsisches Ministerium für Wissenschaft und Kultur) for funding for a workshop entitled "Methods of noncommutative geometry in analysis and topology", October 6-9 2014, Hannover.

Seminar Organization

- Co-organizer (with Agnès Beaudry and Markus Pflaum), University of Colorado, Boulder, Topology Seminar (since 2018)
- Co-organizer (with Carla Farsi, Leonard Huang and Judy Packer), University of Colorado, Boulder, Functional Analysis Seminar (since 2017)
- Co-organizer (with Erik Guentner, Rufus Willett and Allan Yashinski), University of Hawaii, Noncommutative Geometry Seminar (2015-2017)
- Co-founder/co-organizer (with Olivier Gabriel), Georg-August Universität Göttingen, Pure Mathematics Postdoctoral Seminar 2012-2013
- Co-founder/co-organizer (with Michael Whittaker) University of Victoria, Mathematics Graduate Student Seminar, 2010