

CURRICULUM VITAE

Carla Farsi

EDUCATION:

Laurea	University of Florence	1983
Ph.D.	University of Maryland	1989

EXPERIENCE:

Teaching Assistant	University of Maryland	1985–87 & 1988–89
Research Assistant	University of Maryland	1987–1988
Postdoctoral Fellow	University of Toronto	1989–91
Assistant Professor	University of Colorado	1991–97
Associate Professor	University of Colorado	1997–2011
Professor	University of Colorado	2011–present

HONORS AND AWARDS:

- (1) *Scholarship*, CNR (Italian Research Council), 1985–1988.
- (2) *Fellowship*, University of Maryland Graduate School, 1987–88.
- (3) *Summer Support*, Graduate Student, NSF (National Science Foundation), University of Maryland, 1987 and 1989.
- (4) *Junior Faculty Fellowship*, CRCW (Council on Creative Work and Research), University of Colorado, 1992.
- (5) *Travel Grant*, Association for Women in Mathematics, 1994.
- (6) (co-PI, with J. Fox and G. Yu) *CRCW Conference Award*, 1995–1996 Special Year in Algebraic Topology and Index Theory at the University of Colorado/Boulder.
- (7) (co-PI, with J. Fox and G. Yu) *NSF CBMS (Conference Board of the Mathematical Sciences) Award*, Conference on Index Theory, Coarse Geometry and Topology of Manifolds, August 1995, University of Colorado/Boulder.
- (8) (co-PI, with J. Fox and G. Yu) *NSF Award*, Special Year in Index Theory, Coarse Geometry and Topology of Manifolds at the U. of Colorado/Boulder (including Baum Fest, a conference in honor of the 60th birthday of P. Baum), 1995–96.
- (9) AARMS (Atlantic Association for Research in the Mathematical Sciences) Scientific Panel, 2019–2022.
- (10) PI, *NSF Research Planning Grant* “Coarse Geometry, Index Theory, the Novikov Conjecture, Orbifolds and \mathbb{Z}_k -manifolds,” July 1996–December 1997.
- (11) *Invitation* to write an article for *The Mathematical Intelligencer*, 1996. Declined.
- (12) *Ph.D. Thesis Examiner*, La Trobe University, Australia, 2000.
- (13) (PI, with co-PI’s A. Ramsay and G. Yu) *CRCW Conference Award*, West Coast Operator Algebra Seminar 2002.
- (14) (PI, with co-PI’s A. Ramsay and G. Yu) *NSF 0201068*, West Coast Operator Algebra Seminar 2002.

- (15) *2005 CU Special Year in Art and Mathematics*, CU Sponsors: College of Engineering, College of Music, CU Art Museum, Dean's Fund for Excellence, Department of Art and Art History, Department of Mathematics, Vice Chancellor for Academic Affairs.
- (16) PI, *Colorado Council on the Arts Grant*, 2005 CU Special Year in Art and Mathematics 2004-2005.
- (17) PI, *UROP Team Grant*, Undergraduate Research Opportunities, Math/QRMS 1130: Mathematics in Other Cultures April 2005 Art Show.
- (18) PI, *UROP Team Grant*, Undergraduate Research Opportunities, "Celestial Ecstasy: Between Space," Core New Art Space Gallery, June 2005 Show.
- (19) Invitation to write an article for Cambridge U. based on-line *Plus Magazine*, <http://plus.maths.org/>.
- (20) Cover Image for Cambridge University based internet *Plus Magazine*, Issue 37.
- (21) *UROP Grant Supervisor*, Undergraduate Research Opportunities, Symmetries.
- (22) *NSF Review Panels*, 2006, 2010, 2020.
- (23) (PI, with co-PI's A. Gorokhovsky, J. Packer, M. Pflaum, and M. Walter) *NSF 0852527*, SM: Collaborative Research: GPOTS (Great Plains Operator Theory Symposium) Special Meetings 2009-2010-High Altitude Training for the Next Generation of Operator Theorists and Operator Algebraists, 4/1/09-3/31/11.
- (24) *CU-Boulder Team Member*, New Geometry of Quantum Dynamics, PI Piotr Hajac (IMPAN, Institute of Mathematics Polish Academy of Sciences, Warsaw).
- (25) Recommended for funding at first level review. *Fulbright Fondazione CON IL SUD*, k -graph C^* -algebras from a dynamics viewpoint, January 1 June 30, 2017.
- (26) *AMS (American Mathematical Society) travel grant for attending MCA (Mathematical Congress of the Americas) in Montreal, July 2017.*
- (27) *Simons Foundation Collaboration Grants for Mathematicians*, Orbifolds, Singular spaces and their invariants: a C^* -algebraic approach, September 1, 2017-August 31, 2022, \$42,000.

LONG-TERM VISITS/SABBATICAL LEAVES:

Sabbatical Leave: Department of Mathematics, Copenhagen University, Denmark, Spring 1998.

Sabbatical Leave: Department of Mathematics, University of Florence, Italy, Fall 2005.

MSRI Analysis on Singular Spaces Program Fall 2008, Research Member, Fall 2008.

Center for Interdisciplinary Mathematical Sciences, Banaras Hindu University, Varanasi, India, September-November 2012.

Department of Mathematics, University of Florence, Italy, November-December 2012 and May-June 2013.

Sabbatical Leave: Department of Mathematics, Harish Chandra Research Institute, Allahabad, India, January-April 2013.

Week-long Visit, University of Oslo, January 2018.

Ten-day visit to the University of Nevada/Reno, March 2018.

Sabbatical visit to the University of La Sapienza, Roma, Spring 2020.

INVITED TALKS:

- (1) *University of Nebraska*, Lincoln, April 1989.
- (2) *Queen's University*, Kingston, Ontario, February 1991.
- (3) *SUNY (State University of New York)*, Buffalo, NY, April 1991.
- (4) *University of Toronto*, Canada, 1990, 1991.
- (5) *University of New Mexico*, Albuquerque, April 1992.
- (6) *Establishing a Teaching Portfolio. Symposium*, CU/Boulder, March 1995 and 1996.
- (7) *Operator Algebras International Conference*, Shanghai, July 1997.
- (8) *AMS Meetings*, Special Session, Maryland and Corvallis, 1997 (invited).
- (9) *University of Copenhagen*, April 1998.
- (10) *Summer Workshop on Geometry and Topology*, U. of Adelaide, January 2001.
- (11) *Aspects of Symplectic Geometry Workshop*, Blekinge Tekniska Högskola, Sweden, March 2001.
- (12) *Symplectic Analysis and Applications Miniconference*, U. of Colorado/Boulder, October 2001.
- (13) *Technical University of Japan*, Tokyo, August 2002.
- (14) *Operator Algebras Shanghai International Conference (ICM, International Congress of Mathematicians, Satellite)*, August 2002.
- (15) *MathFest 2003*, Session on Mathematics and the Visual Arts, Boulder, Aug. 2003.
- (16) *MAA (Mathematical Association of America) Meeting*, Session on Mathematics and the Visual Arts, Phoenix, January 2004 .
- (17) *University of Florence*, Italy, December 2004.
- (18) *University of La Coruña*, Spain, March 2006.
- (19) *University of Florence*, Italy, March 2006.
- (20) *Centro Ricerca Ennio de Giorgi, University of Pisa*, Serie Colloqui di Matematica, Cultura e Società, Italy, March 2006.
- (21) *AMS Meeting*, Special Session, Oxford OH, March 2007.
- (22) *Midwest Geometry Conference*, U. of Iowa, May 2007.
- (23) *MAV (Mathematical Association of Victoria) Annual Conference*, Australia, December 2007.
- (24) *AMS Meeting*, Special Session, San Diego, January 2008 (invited).
- (25) *AMS Meeting*, Special Session, Vancouver, CA, October 2008 (invited).
- (26) *AMS Meeting*, Special Session, San Francisco University, April 2009 (invited).
- (27) *Invitation to Attend*, Noncommutative Geometric Methods in Global Analysis: Conference in honor of Henri Moscovici, Bonn University, June 29-July 4 2009.
- (28) *International Conference on Mathematics*, Allahabad, India, January 2011.
- (29) *Workshop on "Recent developments on Orbifolds"*, Chern Institute, China, July 2011. Declined.

- (30) Harish Chandra Institute: *Colloquium and Seminar*, Allahabad, India, Spring 2013.
- (31) University of Florence: *Colloquium*, Florence, Italy, Spring 2013.
- (32) Groupoidfest and AMS Special Session, St. Louis, Missouri, Fall 2013.
- (33) Invited Talk. Satellite Conference in Geometric Analysis, Seoul, South Korea, August 2014.
- (34) Invited Talk. Workshop on C^* -algebras: Geometry and Actions, Münster, July 13–17, 2015.
- (35) AMS Special Session and GroupoidFest, Memphis, TN, October 2015.
- (36) Invited 30 min talk. GPOTS 2016, University of Illinois at Urbana-Champaign, May 23-27, 2016.
- (37) Invited Talk. Topics from Operator Theory and Applications, Memphis, April 2017.
- (38) Invited Talk. Special Session Stringy Geometry, Mathematical Congress of Americas, Montreal, Canada July 2017.
- (39) Invited Talk. Special Session Noncommutative Geometry and Quantization, Mathematical Congress of Americas, Montreal, Canada July 2017.
- (40) Colloquim, University of Montana, November 2017.
- (41) Invited Talk, New Geometry of Quantum Dynamics, January 15–19, 2018 , Warsaw, Poland.
- (42) Invited. Lorentz Center, Workshop on Cuntz–Pimsner algebras, The Netherlands, June 25–29, 2018.
- (43) Invited. BIRS (Banff Institute Research Station) Women in Operator Algebras, November 4–9. 2018.
- (44) Invited. AMS Sectional Conference in Honolulu, Hawaii: Special Session on Coarse Geometry, Index Theory, and Operator Algebras, March 22-24, 2019.
- (45) Invited. Higher rank graphs: geometry, symmetry, dynamics ICMS, The Bayes Centre, Edinburgh, UK, 15–17 July 2019.
- (46) Contributed. IWOTA 2019, Lisbon, Portugal, July 2019.
- (47) Invited. Workshop on New Geometry of Quantum Dynamics August 12–16, 2019, The Fields Institute.
- (48) Invited. East-Coast Operator Algebras Symposium, Ohio State University, October 2019.
- (49) Invited. The Frontier of Quantum Dynamics, Dec 9–13, 2019, Warsaw, Poland.
- (50) Invited. GPOTS 2020, Washington University, St. Louis, June 2020 (postponed because of Covid-19).
- (51) Invited. NCGFest, Dartmouth College, August 10–14, 2020 (postponed because of Covid-19).

POST-DOCTORAL FELLOW SUPERVISION:

- (1) (with J. Packer) *Elizabeth Gillaspy*: Aug. 2014–May 2016. Operator Algebras.
- (2) (with M. Pflaum) *Jordan Watts*: Aug. 2014–May 2016. Orbifolds and Singular Spaces.

(3) (with J. Packer) *Leonard Huang*: Aug. 2016-May 2018. Operator Algebras.

C. FARSI'S INVITEES AS SEMESTER-LONG ULAM VISITORS AT CU:

- (1) Mike Field: Fall 2005. Art and Mathematics, Differential Equations.
- (2) A. Kumjian: Spring 2017. Operator Algebras.
- (3) P. Hajac: Spring 2019. Operator Algebras and Mathematical Physics.

PUBLICATIONS*:

- [1]. *Equivariant Spin Bordism in Low Dimensions*, Top. Appl. **43 n. 2** (1992), 167–180.
- [2]. *K-Theoretical Index Theorems for Orbifolds*, Quart. J. Math., **43 n. 170** (1992), 183–200.
- [3]. *A Note on K-theoretical Index Theorems for Orbifolds*, Proc. Royal Math. Soc. Ser A, **437 n. 1900** (1992), 429–431.
- [4]. *K-Theoretical Index Theorems for Good Orbifolds*, Proc. Amer. Math. Soc., **115 n. 3** (1992), 769–773.
- [5]. (with N. Watling), *Fixed Point Subalgebras of the Rotation Algebra*, C.R. Acad. Sci. Canada **XIII** (1991), 75–80.
- [6]. (with N. Watling), *Corrigendum: Fixed Point Subalgebras of the Rotation Algebra*, C.R. Acad. Sci. Canada **13 n. 5**, 234.
- [7]. (with N. Watling), *Quartic Algebras*, Canad. Jour. of Math., **44 n. 6** (1992), 1167–1191.
- [8]. (with N. Watling), *Trivial Fixed Point Subalgebras of the Rotation Algebra*, Math. Scand., **72 n. 2** (1993), 298–302.
- [9]. (with N. Watling), *Elliptic Algebras*, J. Functional Analysis **118 n.1** (1993), 1–21.
- [10]. (with N. Watling), *Symmetrized Non-Commutative Tori*, Math. Ann. **296 n. 4** (1993), 739–741.
- [11]. *Topological Orbifolds*, Proc. Amer. Math. Soc. **119 n. 3** (1993), 761–764.
- [12]. (with N. Watling), *Cubic Algebras*, J. Operator Theory **30 n. 2** (1993), 243–266.
- [13]. (with N. Watling), *C*-Algebras of Dynamical Systems of Quasi Rotations on the Non-Commutative Torus*, Math. Scand. **75 n.1** (1994), 101–110.
- [14]. (with N. Watling), *Abstract Characterization of Fixed Point Subalgebras of the Rotation Algebra*, Canad. J. Math. **46 n. 6** (1994), 1211–1236.
- [15]. (with N. Watling), *Fixed Point Subalgebras of Rational Higher-Dimensional Non-Commutative Tori*, Proc. Amer. Math Soc **195 n. 1** (1997), 209–217.
- [16]. *Soft Non-Commutative Toral C*-Algebras*, Jour. Funct. Anal. **151 n. 1** (1997), 35–49.
- [17]. *Orbifold Spectral Theory*, Rocky Mountain J. Math., **31 n. 1** (2001), 215–235.
- [18]. (with N. Watling), *C*-algebras of Dynamical Systems of Quasi Rotations on Tori.*, Rocky Mountain J. Math. **31 n. 3** (2001), 939–954.
- [19]. *Soft C*-algebras*, Proc. Edinburgh Math. Soc. (2) **45 n.1** (2002), 59–65.
- [20]. (with Neil Watling) *Discretized C*-Algebras*, Bolletino U. M. I. (Unione Matematica Italiana), **(8) 9-B** (2006), 697–709.
- [21]. *A Non-Commutative n-Nomial Formula*, Rocky Mountain J. of Mathematics **37 n. 5** (2007), 1527–1540.
- [22]. *An Orbifold Relative Index Theorem.*, J. Geom Phys. **57 n. 8** (2007), 1653–1668.
- [23]. *Orbifold Eta Invariants*, Indiana Univ. Math. J. **56 n. 2** (2007), 501–521.
- [24]. *Orbifold Index Cobordism Invariance*, Topology Appl. **156 n. 10** (2009), 1770–1775.
- [25]. *Dirac Operators on Non-Compact Orbifolds*, J. Geom. and Phys. **59 n. 2** (2009), 197–206.
- [26]. (with Christopher Seaton), *Nonvanishing Vector Fields on Orbifolds*, Trans. Amer. Math. Soc. **362 n. 1** (2010), 509–535.
- [27]. (with Christopher Seaton), *Generalized Twisted Sectors of Orbifolds*, Pacific J. Math. **246 n. 1** (2010), 49–74.
- [28]. (with Christopher Seaton), *Generalized Orbifold Euler Characteristics for General Orbifolds and Wreath Products*, Alg. & Geom. Topology **11** (2011), 523–551.
- [29]. (with Christopher Seaton), *Algebraic Structures Associated to Orbifold Wreath Products*, J. K-Theory **5** (2010), 1–16.

- [30]. (with Christopher Seaton), *Functional equations for orbifold wreath products*, Jour. Math. Phys. 120 (2017), 37–51.
- [31]. (with Hans-Christian Herbig and Christopher Seaton), *On orbifold criteria for symplectic toric quotients*. *SIGMA Symmetry Integrability Geom. Methods Appl.* 9 (2013), 33 pages.
- [32]. (with Emily Proctor and Christopher Seaton), Γ -extensions of the spectrum of an orbifold, *Trans. Amer. Math. Soc.* 366 (2014), no. 7, 3881–3905.
- [33]. (with Markus Pflaum and Christopher Seaton), *Stratifications of inertia spaces of compact Lie group actions*. *J. Singul.* 13 (2015), Volume in Honor of D. Trotman, ,107–140.
- [34].(with Elizabeth Gillaspy, Sooran Kang, and Judith Packer), *Separable representations, KMS states, and wavelets for higher-rank graphs*, *J. Math. Anal. Appl.* 434 (2016), 241–270.
- [35]. (with Elizabeth Gillaspy), *Twists over étale groupoids and twisted vector bundles*, *Proc. Amer. Math. Soc.* 144 (2016), no. 9, 3767–3779.
- [36].(with Elizabeth Gillaspy, Sooran Kang, and Judith Packer), *Wavelets and graph C^* -algebras*, Excursions in harmonic analysis. Vol. 5, 3586, Appl. Numer. Harmon. Anal., Birkhauser/Springer, Cham, 2017.
- [37].(with Elizabeth Gillaspy, Antoine Julien, Sooran Kang, and Judith Packer), *Wavelets and spectral triples for fractal representations of Cuntz algebras*, Problems and recent methods in operator theory, 103–133, Contemp. Math., 687, Amer. Math. Soc., Providence, RI, 2017.
- [38]. (with Markus Pflaum and Christopher Seaton), *Differentiable stratified groupoids and a de Rham theorem for inertia spaces*, *arXiv:1511.00371*, under revision..
- [39]. (with Emily Proctor and Christopher Seaton), *Approximating orbifold spectra using collapsing connected sums*, *arXiv:arXiv:1611.07676*, submitted.
- [40]. (with Piotr M. Hajac, Tomasz Maszczyk, and Bartosz Zielinski), *Rank-two Milnor idempotents for the multipullback quantum complex projective plane*, *arXiv:1803.08779*, submitted.
- [41]. (with Elizabeth Gillaspy, Palle E. T. Jorgensen, Sooran Kang, and Judith Packer) Representations of higher-rank graph C^* -algebras associated to Λ -semibranching function systems, *J. Math. Anal. Appl.* 468 (2018), no. 2, 766–798.
- [42]. (with Elizabeth Gillaspy, Antoine Julien, Sooran Kang, and Judith Packer) Spectral triples and wavelets for higher-rank graphs, *J. Math. Anal. Appl.* 482 (2020), 39 pp..
- [43]. (with Elizabeth Gillaspy, Palle E. T. Jorgensen, Sooran Kang, and Judith Packer) Monic representations of finite higher-rank graphs, *arXiv:1804.03455*, *Ergodic Theory Dynam. Systems* 40 (2020), no. 5, 1238–1267..
- [44]. (with Elizabeth Gillaspy, Antoine Julien, Sooran Kang, and Judith Packer) Spectral triples for higher-rank graph C^* -algebras, *Math. Scand.*,*Math. Scand.* 126 (2020), no. 2, 321–338..
- [45]. (with Elizabeth Gillaspy, Palle E. T. Jorgensen, Sooran Kang, and Judith Packer) Purely atomic representations of higher-rank graph C^* -algebras, *Integr. Equ. Oper. Theory* (2018) 90:67 <https://doi.org/10.1007/s00021-018-2493-z>.
- [46]. (with Elizabeth Gillaspy, Nadia Larsen, and Judith Packer) Generalized gauge actions on k-graph C -algebras: KMS states and Hausdorff structure, *arXiv:1807.08665*, *Indiana Journal of Mathematics*, to appear.
- [47]. (with Alex Kumjian, David Pask, and Aidan Sims) Ample groupoids: equivalence, homology, and Matui’s HK conjecture, *Münster J. of Math.*12 (2019), 411–451.
- [48]. (with Laura Scull and Jordan Watts) Classifying spaces and Bredon (co)homology for transitive groupoids, *Proc. Amer. Math. Soc.* 148 (2020), no. 6, 2717–2737..
- [49]. (with Leonard Huang, Alex Kumjian and , and Judith Packer) Cocycles on Deaconu-Renault Groupoids and KMS States for Generalized Gauge Dynamics, submitted..
- [50]. (with Chris Seaton) Orbifold Euler characteristics of non-orbifold groupoids, submitted..

[51]. (with Emily Proctor and Chris Seaton) The spectra of digraphs with Morita equivalent C -algebras, submitted..

[52]. (with Daniel Goncalves and Elizabeth Gillaspy) Irreducibility and monicity for representations of k -graph C^* -algebras, in progress..

(*) All publications either submitted or appeared are in peer refereed publications.

REVIEWED FOR:

Mathematical Reviews, approx. 3-4 papers a year 1991–2013; total of 73 reviews in 2013. Current reviewer.

GRADUATE STUDENT SUPERVISION:

- (1) *Alison Marble* (Master's). Master's Thesis, " C^* -algebras of Penrose Tilings."
- (2) *Christopher Seaton* (Ph.D.): Sept. 2000–May 2004. Ph. D. Thesis, "The Gauss–Bonnet and Poincaré–Hopf Theorems For Orbifolds with Boundary."
- (3) *Erich McAlister* (Ph.D.): Sept. 2001– May 2005. Graduation date: May 2005. Ph. D. Thesis, "Non-Commutative CW-Complexes Arising from Crystallographic Groups and their K -theory."
- (4) *Aaron Pence* (Master's): Aug. 2004–December 2005. Master's Project on Crystallographic Groups.
- (5) *Ivyl Boyce, IV* (Master's): Feb. 2006–August 2006. Master's Project on Non-Commutative Hyperbolic Geometry.
- (6) *Jim Johanson* (Master's): Feb. 2006–August 2006. Master's Project on Combinatorics of Stockhausen Music.
- (7) *Masaya Sato* (Master's): 2010–May 2011. Master's Thesis: The h -Cobordism Theorem.
- (8) *Carlos Pinilla*, Comprehensive Ph. D. Exam Fall 2015–Spring 2016.
- (9) *Nicole Sanderson*, Ph. D. student, shared with Applied Math and CS; Graduated December 2018. Thesis: "Topological Data Analyses of Time Series Using Witness Complexes."

RECENT SERVICE

NATIONAL AND INTERNATIONAL:

- (1) (with A. Gorokhovsky, M. Pflaum, J. Packer, and M. Walter) GPOTS, “*Great Plains Operator Theory Symposium*,” An International Conference, University of Colorado/Boulder, June 2–6, 2009.
- (2) (with A. Gorokhovsky, M. Pflaum, J. Packer, and M. Walter) GPOTS, “*Great Plains Operator Theory Special Year*.” Mathematical activities at CU/Boulder throughout the AY 2009-2010: Series of Lectures, a Miniconference, and Workshops. With the participation of faculty and graduate students. Additionally, our graduate students were able to attend several national and international conferences with funding through the *Great Plains Operator Theory Special Year*.
- (3) AARMS Scientific Review Panel, 2019–2022

TO THE UNIVERSITY AND THE DEPARTMENT:

- (1) Associate Chair, *Graduate Studies*, Department of Mathematics, June 2010–May 2012.
- (2) *ASC, College of Arts & Sciences Council*, Math Department Representative Fall 2010 (substituting for Keith Kearnes).
- (3) Elected Member, *Executive Committee*, Department of Mathematics, July 2011–June 2012.
- (4) Member, *January 2012 Topology/Differential Geometry Prelim Committee*, Department of Mathematics.
- (5) Committee Member, *Graduate*, Department of Mathematics, Fall 2013–present.
- (6) Committee Member, *Math, Arts, and Humanities*, Department of Mathematics, Fall 2013.
- (7) Calculus 3 Czar (Coordinator), Department of Mathematics, Fall 2013 and 2014.
- (8) Member, *January 2014 and August 2016 and 2017 Topology/Differential Geometry Prelim Committee*, Department of Mathematics.
- (9) Elected Member, *Executive Committee*, Department of Mathematics, July 2014–June 2016.
- (10) Chair, *PUEC Committee*, Department of Mathematics, 2014-2015.
- (11) Associate Chair, *Graduate Studies*, Department of Mathematics, Spring 2015.
- (12) Chair, *Topology Hiring Committee*, Department of Mathematics, 2015-2016.
- (13) Member, *PUEC Committee*, Department of Mathematics, Fall 2016.
- (14) Member, *Functional Analysis Hiring Committee*, Department of Mathematics, 2016-2017.
- (15) Member, *Graduate Committee*, Department of Mathematics, Fall 2016-Spring 2018.

- (16) Member, *PUEC Committee*, Reappointment, Department of Mathematics, Fall 2017.
- (17) Elected Member, *Executive Committee*, Department of Mathematics, Fall 2018 and Spring 2019.
- (18) Member, *Meyer's Committee*, Department of Mathematics, Fall 2017-present. item Elected Representative, *ASC*, Department of Mathematics, Fall 2018. item Chair, *PUEC Committee*, Reappointment and Promotion to Senior Instructor, Department of Mathematics, Fall 2018. item Member, *PUEC Committee*, Department of Mathematics, Spring 2019-Fall 2019. item Chair, *PUEC Committee*, Reappointment to Instructor, Department of Mathematics, Fall 2020.

TEACHING

UNDERGRADUATE STUDENT SUPERVISION:

Kristopher Collins (Independent Study): Fall 2004, Spring 2005.

Holly Mills (UROP, Undergraduate Research Opportunity) Independent Study: Summer 2006.

University of Colorado at Boulder, Summer 2015 Undergraduate Research Mathematics Program: *N. Downey* (Poincaré conjecture) and *L. Simon* (twisted K -theory for finite groups and groupoids)

COURSE DEVELOPMENT:

Math/QRMS 1130: Mathematics from the Visual Arts.

COURSES TAUGHT RECENTLY:

Spring 2006	M 1130/QRMS 1130	Mathematics from the Visual Arts
Spring 2006	M 1120	Spirit and Uses II
Summer 2006	M 6940	Master's Degree Cand. (Two Students)
Fall 2006	M 6210	Introduction to Topology I
Spring 2007	M 6220	Introduction to Topology II
Spring 2007	M 3200	Introduction to Topology
Spring 2007	M 1130	Mathematics from the Visual Arts
Spring 2008	M 3130-001	Introduction to Linear Algebra
Spring 2008	M 3130-003	Introduction to Linear Algebra
Spring 2008	M 3200	Introduction to Topology
Spring 2009	M 2300-004	Calc II
Spring 2009	M 2300-005	Calc II
Fall 2009	M 6210-003	Introduction to Topology I
Spring 2010	M 3140-002	Abstract Algebra I
Spring 2010	M 6240-001	Intro to Differential Geometry II
Fall 2010	M 8900-906	Independent Study
Fall 2010	M 6210-001	Introduction to Topology I
Fall 2010	M 5905-001	Math Teacher Training
Fall 2010	M 6050-906	Master's Thesis
Spring 2011	M 4001-001	Analysis II
Fall 2011	M 3001-002	Analysis I
Fall 2011	M 3001-003	Analysis I
Fall 2013	M 2400-006	Calculus 3
Spring 2014	M 3130-003	Linear Algebra
Fall 2014	M 2400-006	Calculus 3
Fall 2014	M6280-001	Adv. Algebraic Topology
Fall 2015	M 3130-004	Linear Algebra
Fall 2015	M4200-001	Intro to Topology
Spring 2016	M6220-001	Intro to Topology 2
Fall 2016	M 3130	Linear Algebra
Fall 2016	M 3001	Analysis 1
Fall 2016	M 8909	Thesis Hours
Spring 2017	M 6220	Intro to Topology 2
Spring 2017	M 6220	Intro to Topology 2
Fall 2017	M 3001	Analysis 1
Fall 2017	M6210	Intro to Topologys
Spring 2018	M 3001	Analysis 1
Fall 2018	M6210	Intro to Topology I
Spring & Fall 2018	M 8909	Thesis Hours
Spring 2019	M 3001	Analysis 1 (Sections 001 and 002)
Fall 2019	M 2400	Calculus 3(Sections 011 and 013)
Fall 2020	M 3430	Ordinary Differential Equations
Fall 2020	M 4001	Analysis II

Note: Courses with numbers above 5000 are graduate.