

Nathanial P. Brown

Department of Mathematics • Penn State University
Phone: 814-880-1896 • E-Mail: nbrown@math.psu.edu

Education

- Ph.D. Mathematics, Purdue University, 1999.
- B.A. Mathematics, Lake Superior State University, 1993.

Professional Experience

- Co-Associate Head for Graduate Studies, Department of Mathematics, Penn State University 2017-2018
- Associate Head for Equity and Diversity, Department of Mathematics, Penn State University 2016-2018
- Professor of Mathematics, Penn State University 2013-present
- Associate Professor, University of Hawai'i (sabbatical) 2009-2010
- Associate Professor, Penn State University 2008-2013
- Visiting Associate Professor, University of Tokyo, Japan 2004-2005
- Assistant Professor, Penn State University 2002-2008
- NSF Postdoctoral Fellow, Michigan State University 2001-2002
- Assistant Professor, Central Michigan University 2001-2002
- Postdoctoral Fellow, Mathematical Sciences Research Institute, Berkeley, California 2000-2001
- Visiting Assistant Professor, University of California-Berkeley Spring 2000
- Visiting Researcher, Institut Henri Poincaré, Paris, France Fall 1999

Awards

- Robinson Equal Opportunity Award, Penn State University 2017
- Eberly College of Science Climate and Diversity Award, Penn State University 2014
- Donald C. Rung Distinguished Undergraduate Teaching Award, Department of Mathematics, Penn State University 2008
- Distinguished Teaching Award, Department of Mathematics, University of California-Berkeley 2000
- Graduate Student Teaching Award, Department of Mathematics, Purdue University 1995 and 1998

Teaching

Millennium Scholars

I've coordinated the math component of Penn State's Millennium Scholars Program since its inception in 2013, which includes teaching a real-analysis based calculus course during their summer bridge.

Graduate Courses

I've taught several graduate courses on C^* -algebras, von Neumann algebras and special topics. I've also supervised numerous reading courses, from introductory functional analysis to cutting-edge research (e.g. nuclear dimension).

Graduate Textbook

In 2008, Narutaka Ozawa and I published an advanced graduate-level textbook " C^* -algebras and finite-dimensional approximations."

Undergraduate Courses

I've taught all levels of calculus; partial differential equations; linear algebra; real analysis; numerical analysis; discrete math; and topology.

Advising and Mentoring

Postdoctoral Mentees

- Sarah Browne, 2017 – present.
- Jianchao Wu, 2016 – present.
- José Carrión, NSF Postdoc, 2013-2015.

PhD Students

- Hung-Chang Liao, PhD 2016.
- Aleksey Zelenberg, PhD 2015.
- Michael Tseng, PhD 2012.
- External examiner for the Ph.D. theses of Alessandro Vignati, York University (2017); Valerio Capraro, University Roma Tor Vergata (2011); Luis Santiago, University of Toronto (2008); Alin Cuiperca, University of Toronto (2008); David Kerr, University of Toronto (2001).
- Served on many comprehensive exam and thesis committees of Penn State PhD students.

Undergraduate Students

- I serve as an Alliance Mentor for Math Alliance, the nation's largest network devoted to ensuring every underrepresented or underserved student with talent and ambition has an opportunity to pursue a PhD in mathematics. I mentored Tyrone Brock (University of Arkansas at Pine Bluff) and Michael Zazula (Kean University) in 2017, and Thomas Benitez (Cal State Longbeach) and Jonathan Tostado-Marquez (Swarthmore College) in 2018.
- Since 2010 I've served as academic adviser for 4-6 Schreyer Honors College students per year.

Service

Public

- In 2009, Melissa Wilson (then a graduate student at Penn State) and I wrote several public service announcement-type spots promoting STEM to children. We worked with the local PBS station, WPSU, to shoot and edit eight videos. These videos aired during children's programming from 2010-2013. www.youtube.com/view_play_list?p=AB85BA8C92A1BFA8
- In August 2014, Lilith Antinori (then an undergraduate student at Penn State) and I launched the website stemfeminist.com. This site gives voice to women and allies in STEM fields who experience sexism. I am the financier and sole administrator of the site.
- In December 2014, Diane Henderson and I organized and hosted a public screening of the Empowerment Project.

Profession

- Editor of Transactions of the American Mathematical Society (2012-2014).
- Grant review panelist for National Science Foundation.
- Grant proposal reviewer for Natural Sciences and Engineering Research Council of Canada.
- External reviewer for the promotion and tenure cases of 12 colleagues.

Penn State University

- STEM Museum Committee (2015-2016).
- Search Committee for Director of Millennium Scholars Program, Chair (2017-2018).

Eberly College of Science

- STRIDE Team (2018 – present).
- Service and Mentoring Task Force (2017 - 2018).
- Committee of Associate Heads for Equity and Diversity, Chair (2017-2018).

- Search committee for ECoS Data Analyst position (2017).
- Search Committee for Associate Dean for Diversity and Inclusion (2017).
- Inclusive Workplace Subcommittee (2015).
- Climate and Diversity Committee (2014-2017).
- Graduate Student Initiatives Subcommittee, Chair (2014-2017).
- Staff Advisory Committee, external evaluator (2012).
- United Way Committee (2008-2016).

Department of Mathematics

- Graduate Studies Committee, Chair (2017-2018).
- Personnel Committee (2016-2018).
- Climate and Diversity Committee (2016-2017).
- Promotion and Tenure Committee (2014-2017).
- Department Head Search Committee (2012).
- Maintain departmental Facebook page, with Diane Henderson (2011-present).
- Analysis Qualifying Exam Committee (2008).
- Climate and Diversity Committee, co-Chair (2006-2009).
- Undergraduate Studies Committee (2003-2006, 2009-2012, 2015-2017).
- Graduate Teaching Assistant Oversight Committee (2002-2003, 2010-2013).

Grants

Research¹

- “Noncommutative Dimension Theories”; NSF Award Number:1564401; 06/01/2016-5/31/2019; \$527,000.
- “Nuclearity, Group C*-algebras and II₁-factors”; NSF Award Number:1201385; 07/01/2012-06/30/2016; \$220,000.
- “Approximation Theory and Operator Algebras”; NSF Award Number:0856197; 07/15/2009-06/30/2013; \$216,623.
- “Approximation Theory and C*-algebras”; NSF Award Number:0554870; 06/15/2006-6/14/2009; \$147,516.
- “Invariant Means and Representation Theory of C*-algebras”; NSF Award Number:0244807; 05/01/2003-4/30/2006; \$118,226.

¹ All research grants are single-PI and all work was carried out at Penn State University.

Conference

- “US Participation in the ICM Operator Algebras Satellite Conference”; NSF Award Number 1763278; Principal Investigator: Nathaniel P. Brown; Co-Principal Investigator:; Organization: Pennsylvania State Univ; 06/01/2018-5/31/2019; \$32,000.
- “US Participation in the Centre de Recerca Matematica Research Program: Operator Algebras: Dynamics and Interactions”; NSF Award Number:1665118; Principal Investigator: Nathaniel Brown; Co-Principal Investigator:; Organization: Pennsylvania State Univ; 03/01/2017-2/28/2018; \$43,500.
- “Noncommutative Dimension Theories: Connections and Applications”; NSF Award Number:1546917; Principal Investigator: Nathaniel Brown; Co-Principal Investigator: Rufus Willett, Guoliang Yu; Organization: Pennsylvania State Univ; 11/01/2015-10/31/2016; \$44,014.
- “The Cuntz Semigroup and Classification of C^* -algebras”; NSF Award Number:1067890; Principal Investigator: Nathaniel Brown; Co-Principal Investigator: Andrew Toms; Organization: Pennsylvania State Univ; 03/01/2011-2/28/2012; \$80,500.
- “Conference Support: Sixth East Coast Operator Algebras Symposium”; NSF Award Number:0803490; Principal Investigator: Nigel Higson; Co-Principal Investigator: John Roe, Nathaniel Brown; Organization: Pennsylvania State Univ; 02/01/2008-1/31/2009; \$27,600.

Outreach

- “Public Service Announcements Promoting Careers in Science and Mathematics”; Outreach Thematic Initiative Fund, Penn State University; Co-Principle Investigators: Babs Bengston, Nathaniel Brown, Barbara Houtz, Betsy Hutton, Melissa Wilson; 05/01/09-12/31/09; \$11,180.

Conference Organization

1. “ICM Operator Algebras Satellite Conference,” Florianópolis, Brazil (July 2018).
2. “Workshop on Noncommutative Dimension Theories,” Texas A&M University, College Station, Texas (February 2018).
3. "Operator Algebras: Dynamics and Interactions" at the Centre de Recerca Matemàtica in Barcelona, Spain (March-July, 2017).
4. Focused Research Group Steering Committee Meeting, University of Hawaii, Honolulu, Hawaii (November 2016).
5. “Noncommutative Dimension Theories,” University of Hawaii, Honolulu, Hawaii (November 2015).
6. “Topological and algebraic regularity properties of nuclear C^* -algebras,” National Science Foundation/Conference Board of the Mathematical Sciences regional conference in the mathematical sciences, University of Louisiana at Lafayette, Lafayette, Louisiana (May 2012).

7. “The Cuntz Semigroup,” American Institute of Mathematics, Palo Alto, California (November 2009).
8. “Sixth East Coast Operator Algebra Symposium,” Penn State University, University Park (October 2008).

Publications²

Book

1. Brown, Nathaniel; Ozawa, Narutaka *C*-algebras and finite-dimensional approximations*. Graduate Studies in Mathematics, 88. American Mathematical Society, Providence, RI, 2008. xvi+509 pp.

Papers

1. Bosa, Joan; Brown, Nathaniel; Sato, Yasuhiko; Tikuisis, Aaron; White, Stuart; Winter, Wilhelm *Covering dimension of C*-algebras and two-coloured classification*, *Memoirs of the American Mathematical Society*, 257 (2018), no. 1233, vi+97pp.
2. Brown, Nathaniel; Tikuisis, Aaron; Zelenberg, Aleksey *Rohklin dimension for C*-correspondences*, *Houston Journal of Mathematics*, 44 (2018), 613-643.
3. Brown, Nathaniel; Carrión, José; White, Stuart *Decomposable approximations revisited*, *Operator algebras and applications: The Abel Symposium 2015*. *Abel Symposia* 12, editors Carlsen, Larsen, Neshveyev and Skau, 45-59, Springer, 2016.
4. Brown, Nathaniel; Guentner, Erik *New C*-completions of discrete groups and related spaces*, *Bulletin of the London Mathematical Society*, 45 (2013), 1181-1193.
5. Brown, Nathaniel; Capraro, Valario *Groups associated to II_1-factors*, *Journal of Functional Analysis*, 263 (2013), 493-507.
6. Brown, Nathaniel *Generalized inductive limits of quasidiagonal C*-algebras*, *Journal of Functional Analysis*, 262 (2012), 451-462.
7. Brown, Nathaniel *Topological dynamical systems associated to II_1-factors*, *Advances in Mathematics*, 227 (2011), 1665-1699.
8. Brown, Nathaniel; Winter, Wilhelm *Quasitraces are traces: A simple proof of the finite-nuclear-dimension case*, with W. Winter, *Comptes Rendus Mathématiques de l'Académie des Sciences. La Société Royale du Canada*, 33 (2011), 44-49.
9. Brown, Nathaniel *The symbiosis of C*- and W*-algebras*, *Contemporary Mathematics*, 534 (2011), 121-155.
10. Brown, Nathaniel; Ciuperca, Alin *Isomorphism of Hilbert modules over stably finite C*-algebras*, *Journal of Functional Analysis*, 257 (2009), 332-339.

² With very rare exceptions, authors in mathematics are listed alphabetically and credit is shared equally.

11. Brown, Nathaniel; Dykema, Kenneth; Jung, Kenley *Free entropy dimension in amalgamated free products*, Proceedings of the London Mathematical Society, 97 (2008), 339-367.
12. Brown, Nathaniel; Perera, Francesc; Toms, Andrew *The Cuntz semigroup, the Elliott conjecture, and dimension functions on C^* -algebras*, Journal für die Reine und Angewandte Mathematik, 621 (2008), 191-211.
13. Brown, Nathaniel; Toms, Andrew *Three Applications of the Cuntz Semigroup*, International Mathematics Research Notices 2007, 19, rnm068, 14 pages.
14. Brown, Nathaniel *Inductive limits, unique traces and tracial rank zero*, Bulletin of the London Mathematical Society, 39 (2007), 377-383.
15. Brown, Nathaniel *Quasidiagonality and the finite section method* Mathematics of Computation, 76 (2007), 339-360.
16. Brown, Nathaniel *Invariant means and finite representation theory of C^* -algebras*, Memoirs of the American Mathematical Society, 184 (2006), no. 865, vi+105pp.
17. Brown, Nathaniel *AF embeddings and the numerical computation of spectra in irrational rotation algebras*, Numerical Functional Analysis and Optimization, 27 (2006), 517--528.
18. Brown, Nathaniel *Kazhdan's Property T and C^* -algebras*, Journal of Functional Analysis, 240 (2006), 290-296.
19. Brown, Nathaniel *Finite free entropy and free group factors*, International Mathematics Research Notices, 28 (2005), 1709-1715.
20. Brown, Nathaniel *Excision and a theorem of Popa*, Journal of Operator Theory, 54 (2005), 3-8.
21. Brown, Nathaniel; Guentner, Erik *Uniform embeddings of bounded geometry spaces into reflexive Banach space*, Proceedings of the American Mathematical Society, 133 (2005), 2045-2050.
22. Brown, Nathaniel; Dykema, Kenneth *Popa algebras in free group factors*, Journal für die Reine und Angewandte Mathematik, 573 (2004), 157-180.
23. Brown, Nathaniel *Characterizing type I C^* -algebras via entropy*, Comptes Rendus Mathématique. Académie des Sciences. Paris. 33 (2004), 827-829.
24. Brown, Nathaniel *Connes' embedding problem and Lance's WEP*, International Mathematics Research Notices, 10 (2004), 501-510.
25. Brown, Nathaniel *On quasidiagonal C^* -algebras*, Operator algebras and applications, 19-64, Advanced Studies in Pure Mathematics, 38, Mathematical Society of Japan, Tokyo, (2004).
26. Brown, Nathaniel; Dadarlat, Marius *Extensions of quasidiagonal C^* -algebras and K -theory*, Operator algebras and applications, 65-84, Advanced Studies in Pure Mathematics, 38, Mathematical Society of Japan, Tokyo, (2004).
27. Brown, Nathaniel; Germain, Emmanuel *Dual entropy in discrete groups with amenable actions*, Ergodic Theory and Dynamical Systems, 22 (2002), 711-728.

28. Brown, Nathaniel; Dykema, Kenneth; Shlyakhtenko, Dimitri *Topological entropy of free product automorphisms*, Acta Mathematica, 189 (2002), 1-35.
29. Brown, Nathaniel; Choda, Marie *Approximation entropies in crossed products with an application to free shifts*, Pacific Journal of Mathematics, 198 (2001), 331-346.
30. Brown, Nathaniel *Herrero's approximation problem for quasidiagonal operators*, Journal of Functional Analysis, 186 (2001), 360-365.
31. Brown, Nathaniel *Topological entropy, embeddings and unitaries in nuclear quasidiagonal C^* -algebras*, Proceedings of the American Mathematical Society, 128 (2000), 2603-2609.
32. Brown, Nathaniel *Crossed products of UHF algebras by some amenable groups*, Hokkaido Mathematics Journal, 29 (2000), 201-211.
33. Brown, Nathaniel *Topological entropy in exact C^* -algebras*, Mathematische Annalen, 314 (1999), 347-367.
34. Brown, Nathaniel *AF-embeddability of crossed products of AF algebras by the integers*, Journal of Functional Analysis, 160 (1998), 150-175.
35. Brown, Nathaniel; Dunfield, Nathan; Perry, Greg *Colorings of the plane III*, Geombinatorics, 3 (1994), 110-114.
36. Brown, Nathaniel; Dunfield, Nathan; Perry, Greg *Colorings of the plane II*, Geombinatorics, 3 (1994), 64-74.
37. Brown, Nathaniel; Dunfield, Nathan; Perry, Greg *Colorings of the plane I*, Geombinatorics, 3 (1993), 24-31.

Lectures (last 10 years)

Lecture Series

1. "Nuclear C^* -algebras." Two 50-minute lectures, Virginia Operator Theory and Complex Analysis Meeting, Washington and Lee University (November 2015).
2. "Structure of simple, nuclear C^* -algebras." Three 50-minute lectures, Masterclass on classification, structure, amenability and regularity, University of Glasgow, Scotland (August 2014).
3. "Analytic approximation properties for groups." Six 45-minute lectures, Spring School on Group C^* -algebras, Ben Gurion University, Israel (March 2013).
4. Brown, N.P., "Groups and C^* -algebras." Three one-hour lectures at the Intensive 2-day Minicourse on Operator Algebras, Fields Institute, Toronto, Canada (December 2011).
5. Brown, N.P., "Nuclear dimension of C^* -algebras." Five 45-minute lectures at the Masterclass on Operator Algebras, Copenhagen University, Copenhagen, Denmark (November 2011).

6. Brown, N.P., “Quasidiagonality, finite dimensional approximations and operator algebras.” Five 90-minute lectures at the School and Workshop on Topics in Operator Algebras and Some Applications, Universidad Complutense de Madrid, Madrid, Spain (September 2010).
7. Brown, N.P., “The structure of nuclear C^* -algebras.” Five one-hour lectures at the Summer School on Operator Algebras and Non-commutative Geometry, University of Victoria, Victoria, British Columbia, Canada (June 2010).
8. Brown, N.P., “Amenable actions, C^* -crossed products and applications to von Neumann algebras.” Three 50-minute lectures at the Concentration Week in Operator Algebras, Dynamics and Classification, Texas A\&M University, College Station, Texas (August 2008).
9. Brown, N.P., “Amenability, hyperbolic groups and operator algebras.” Three 90-minute lectures at the summer school Aspects of Operator Algebras and Applications, Universidad Internacional Menéndex Pelayo, Santander, Spain (July 2008).
10. Brown, N.P., “ C^* -approximation theory.” Three one-hour lectures at the Simposium Análisis y Física Matemática 2008, Universidad Autónoma del Estado de Hidalgo, Pachuca, Mexico (January 2008).
11. Brown, N.P., “Three applications of exactness and quasidiagonality”. Three two-hour lectures at Seoul National University, Seoul, South Korea, (June 2007).

Colloquia

1. “Elliott’s Classification Program.” Dartmouth College Mathematics Colloquium (October 2017).
2. “Nuclear C^* -algebras.” University of Virginia Mathematics Colloquium (November 2015).
3. “The structure of simple operator algebras.” Dartmouth College Mathematics Colloquium, Hanover, New Hampshire (October 2013).
4. “Classification of operator algebras: past, present and future.” Purdue University Mathematics Colloquium, West Lafayette, Indiana (January 2011).
5. “Approximation theory and operator algebras”, Queen’s University, Kingston, Ontario, Canada (January 2009).
6. “ C^* -approximation theory.” University of Waterloo Mathematics Colloquium, Waterloo, Ontario, Canada (January 2007).

Invited Conference Talks

1. “Roadmaps and Analogies.” Symposium on K -theory and Noncommutative Topology, University of Puerto Rico, San Juan, Puerto Rico (October 2018).
2. “Noncommutative Topological Dimension.” Wabash Mini-Conference, Indiana University-Purdue University at Indianapolis, Indianapolis, Indiana (September 2018).

3. "Simple C^* -algebras and Topological Dimension." 50th Anniversary of the Northern British Functional Analysis Seminar, International Centre for Mathematical Sciences, Edinburgh, Scotland (April 2018).
4. "The K-Computability Project." Workshop on Computability of K-theory for C^* -algebras, Texas A&M University, College Station, Texas (February 2018).
5. "Nuclear C^* -algebras and Analogies." Great Plains Operator Algebras Symposium, Texas Christian University, Fort Worth, Texas (May 2017).
6. "The K-computability Project." Focused Research Group Steering Committee, University of Hawaii, Honolulu, Hawaii (November 2016).
7. "The obstinate audacity of George Elliott." Canadian Operator Algebra Symposium, University of Waterloo, Waterloo, Canada (June 2015).
8. "Operator algebras: an overview." Special week on operator algebras, East China Normal University, Shanghai, China (March 2015)
9. "The Toms-Winter conjecture." Special week on operator algebras, East China Normal University, Shanghai, China (March 2015).
10. "Toms-Winter conjecture." East Coast Operator Algebra Symposium, Fields Institute, Toronto (October 2014).
11. "The structure of simple operator algebras." AMS special session on Classification Problems in Operator Algebras, Baltimore, Maryland (January 2014).
12. "Structure of simple operator algebras." Canadian Operator Algebra Symposium, Fields Institute, Toronto (May 2013).
13. "Nuclear dimension vs. decomposition rank." Workshop on C^* -algebras and Noncommutative Dynamics, Ben Gurion University, Israel (March 2013).
14. "The structure of simple operator algebras." Special week on operator algebras, East China Normal University, Shanghai, China (June 2012).
15. "Analogies in the structure of W^* - and C^* -algebras." C^* -algebras and index theory, American Mathematical Society regional meeting, University of Hawaii, Honolulu (March 2012).
16. "Dynamical systems associated to II_1 -factors." Canadian Mathematical Society Winter Meeting, Toronto, Canada (December 2011).
17. "Dynamical systems associated to II_1 -factors." Workshop in honor of Kirchberg's 65th birthday, Copenhagen University, Copenhagen, Denmark (November 2011).
18. "New C^* -completions of groups and related spaces." Conference on C^* -algebras and related topics, Research Institute Mathematical Sciences, Kyoto University, Kyoto, Japan (September 2011).

19. "Analogies in the structure of C^* - and W^* -algebras." Conference on Structure and Classification of C^* -algebras, Centre de Recerca Matemàtica, Barcelona, Spain (June 2011).
20. "Dynamical systems associated to finite factors." London Mathematical Society Midlands Workshop on C^* -algebras, University of Nottingham, Nottingham, United Kingdom (September 2010).
21. "Fundamental facts about nuclear C^* -algebras." C^* -algebren, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany (March 2010).
22. "Embeddings into R^ω ." Von Neumann algebras and group actions, University of Copenhagen, Copenhagen, Denmark (January 2010).
23. "The definitions of the Cuntz semigroup." Workshop on the Cuntz Semigroup, American Institute of Mathematics, Palo Alto, California (November 2009).
24. "The Cuntz Semigroup." 37th Canadian Symposium on Operator Algebras and Their Applications, University of Regina, Regina, Saskatchewan, Canada (May 2009).
25. "Classifying Hilbert modules." AMS Spring Central Sectional Meeting, University of Illinois at Champaign-Urbana, Urbana, Illinois (March 2009).
26. "Hilbert modules and the Cuntz semigroup." Winter Meeting of the Canadian Mathematical Society, Ottawa, Ontario (December 2008).
27. "Hilbert modules and the Cuntz semigroup." Summer Informal Regional Functional Analysis Seminar, Texas A&M University, College Station, Texas (August 2008).
28. "The Cuntz semigroup." 36th Canadian Symposium on Operator Algebras and Their Applications, University of Toronto, Toronto, Ontario, Canada (May 2008).
29. "Metric spaces associated to embeddable factors." Fields Workshop around Connes' Embedding Problem, University of Ottawa, Ottawa, Ontario, Canada (May 2008).
30. "Connes' embedding problem: an introduction." Fields Workshop around Connes' Embedding Problem, University of Ottawa, Ottawa, Ontario, Canada (May 2008).
31. "Function representation of the Cuntz semigroup." International Conference on Operator Algebras and Applications, Marrakech, Morocco (April 2008).
32. "Metric spaces associated to tracial C^* -algebras." Workshop on the Structure of C^* -algebras, Fields Institute, Toronto, Ontario, Canada (November 2007).
33. "Embeddings into R^ω ." Workshop on von Neumann algebras, Fields Institute, Toronto, Ontario, Canada (October 2007).
34. "Toward the C^* -classification of classical dynamical systems." Workshop on Noncommutative Dynamics and Applications, Fields Institute, Toronto, Ontario, Canada (July 2007).
35. "Revisiting Elliott's Classification Program." Korea Operator Theory and Its Applications Conference, Hanyang University, Seoul, South Korea (June 2007).

36. "Classification via the Cuntz Semigroup." C*-Algebras and their Invariants, Centre de Recerca Matemàtica, Universitat Autònoma de Barcelona, Bellaterra, Spain (June 2007).
37. "Applications of the Cuntz Semigroup." American Mathematical Society Sectional Meeting, University of Arizona, Tucson, Arizona (April 2007).
38. "The Cuntz Semigroup." Operator Algebras and Related Fields, Combined Japan-US and West Coast Operator Algebra Seminar, University of Hawaii, Honolulu, Hawaii (January 2007).

Invited Seminar Talks

1. "Quantitative E-theory." Operator Algebras Seminar, Purdue University, Indiana (September 2018).
2. "The K-Computability Project." Centre de Reserca Matemàtica Seminar, Autonomous Univeristy of Barcelona, Spain (April 2017).
3. "Structure of simple nuclear C*-algebras." Functional Analysis Seminar, Dartmouth College (October 2015).
4. "The Toms-Winter Conjecture." C*-seminar, Autonomous University of Barcelona, Spain (March 2013).
5. "Groups associated to II_1 -factors." Noncommutative geometry seminar, Fudan University, Shanghai, China (June 2012).
6. "New C*-completions of groups and related spaces." C*-algebra seminar, Arizona State University, Tempe, Arizona (April 2011).
7. "New C*-completions of groups and related spaces." C*-algebra seminar, University of Rome "Tor Vergata", Rome, Italy (March 2011).
8. "New C*-completions of groups and related spaces." C*-algebra seminar, Centre de Recerca Matemàtica, Barcelona, Spain (March 2011).
9. "New C*-completions of groups." C*-algebra seminar, Purdue University, West Lafayette, Indiana (January 2011).
10. "C*-algebras and a-T-menability." C*-algebra seminar, University of California at Los Angeles, Los Angeles, California (June 2010).
11. "Generalized inductive limits of quasidiagonal C*-algebras." C*-algebra seminar, University of Nottingham, Nottingham, England (February 2010).
12. "Classifying Hilbert modules." Noncommutative geometry seminar, Vanderbilt University, Nashville, Tennessee (February 2009).
13. "Approximation theory and operator algebras." Queen's University Mathematics Colloquium, Kingston, Ontario, Canada (January 2009).
14. "Applications of the Cuntz Semigroup." C*-algebra seminar, State University of New York, Buffalo, New York (March 2007).

15. "Applications of finite-dimensional C^* -approximation theory." United States Naval Academy Mathematics Colloquium, Annapolis, Maryland (March 2007).
16. "The Cuntz Semigroup." C^* -algebra seminar, University of Waterloo, Waterloo, Ontario, Canada (January 2007).

Outreach

1. "Math People," Penn State Math Club, State College (October 2018).
2. "The Bizarre World of Math," GEM seminar, Mount Nittany Middle School, State College (October 2018).
3. "Weapons of Math Destruction," Penn State Math Club (October 2017)
4. "Diversity in STEM video challenge," Penn State Math Club, Penn State University (October 2016).
5. "Gravity. Waves!" Gem Seminar, Park Forest Middle School, State College (March 2016).
6. "What is dimension?" Penn State Math Club, Penn State University (February 2016).
7. "Introduction to Operator Algebras," Penn State Math Club, Penn State University (November 2015).
8. "Bizarre Math Facts," Greg Somer's Advanced Math Class, State College High School, State College (May 2015).
9. "Scales of the Universe," GEM Seminar, Park Forest Middle School, State College (January 2015).
10. "Our Amazing Universe," Laurie Sigel's Variety Workshop, Delta Middle School, State College (January 2015).
11. "On Cantor's Theorem," GEM Seminar, Mount Nittany Middle School, State College (December 2014).
12. "Our Amazing Universe," GEM Seminar, Park Forest Middle School, State College (April 2014).
13. "The Really Big and Really Small," 3rd grade class at Friends School, State College (March 2014).
14. "Frontiers of Neuroscience," middle school science class at Friends School, State College (March 2014).
15. "Cowlicks, fingerprints, singularities, topology and more!" GEM seminar, Mount Nittany Middle School, State College (January 2013).
16. "Our Awesome Universe," middle school science class at Friends School, State College (May 2013).

17. "What mathematics doesn't teach us," Penn State Math Club, Penn State University (September 2008).
18. "The Freaky Side of Math," Student Colloquium, Department of Mathematics, Bucknell University (November 2007).
19. "What should we learn from mathematics?" Penn State Math Club, Penn State University (October 2007).

Social Science and Education

1. "Tomorrow's STEM Leaders are Diverse," Purdue University (September 2018).
2. "Tomorrow's STEM Leaders are Diverse," Illinois Institute of Technology (April 2018).
3. "Social Science for Mathematicians," Diversity Luncheon Seminar, Department of Mathematics, Penn State University (October 2017).
4. "Calculus and diversity in STEM," The Big Picture, ECoS Staff Advisory Committee Event, Penn State University (July 2017).
5. "Stereotype Threat in the Classroom," Teaching Seminar, Department of Mathematics, Penn State University (October 2016).
6. "Implicit Bias, Stereotype Threat and Diversity in STEM," Penn State Math Club, Penn State University (October 17, 2016).
7. "Anxiety and Stereotype Threat in Class II," Graduate Teaching Assistant and Instructor Training seminar, Department of Mathematics, Penn State University (September 13, 2016).
8. "Anxiety and Stereotype Threat in Class I," Graduate Teaching Assistant and Instructor Training seminar, Department of Mathematics, Penn State University (September 6, 2016).
9. "Empathy in class," Teaching Seminar, Department of Mathematics, Penn State University (January 2009).