

ERIC C. ROWELL

Texas A & M University
Department of Mathematics
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College Station, TX 77843

Curriculum Vitae

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EMPLOYMENT

- Professor, Texas A&M University: 09/2017-
Presidential Impact Fellow
- Associate Professor, Texas A&M University: 09/2012-08/2017
- Consultant, Microsoft Research, Santa Barbara Q: 04/2015-
- Assistant Professor, Texas A&M University: 08/2006-08/2012
- Postdoctoral Fellow, Indiana University: 08/2003-07/2006

EDUCATION

- **Ph.D. Mathematics** University of California, San Diego: 2003
Advisor: Hans Wenzl
- **B.A. Mathematics** University of California, San Diego: 1997
summa cum laude (GPA 4.0), Phi Beta Kappa

RESEARCH INTERESTS

- Mathematics of topological quantum computation and topological phases of matter.
- Representation theory: braid groups, mapping class groups and motion groups.
- Categories with algebraic structure: fusion, braided and modular categories.
- Low-dimensional topology: link invariants, topological quantum field theory.

AWARDS

- Gerald L. Alexanderson Award, 2019 (with Bruillard, Ng and Wang).
- Simons Fellow, 2019-2020.
- Presidential Impact Fellow, Texas A&M 2018

GRANTS AND VISITING POSITIONS

- PI, NSF DMS-2205962: 09/2022-08/2025 \$194,902
- PI, NSF DMS-2000331: 08/2021-05/2023 \$243,828
- PI, NSF (FRG) DMS-1664359: 12/2017-11/2022 \$307,894
- PI, NSF DMS-1410144: 12/2015-12/2017 \$89,999
- PI, NSF DMS-1108725: 9/2011-8/2015 \$193,326
- PI, NSA standard grant: 3/2012-3/2014 \$58,726 (awarded, declined by PI)
- PI, NSA grant H98230-10-1-0215: 3/2010-3/2012 \$30,000
- PI, NSA grant H98230-08-1-0020: 3/2008-3/2010 \$30,000
- PI, NSF Conference Grant DMS-2327208 09/2023-08/2024 \$36,000
- Organizer, MSRI, 01/21/2020-05/29/2020.
- Visiting Scholar, Math. Dept. UC Berkeley: 09/2019-12/2019.
- Distinguished Visiting Professor, BICMR, Peking University: 05/2018-04/2021
- Visiting Professor, BICMR, Peking University: 08/2013-10/2013
- Simons Fellowship, 09/01/2019-08/31/2020: \$101,302
- Texas A&M T3 Grant: 01/2019-12/2020 (with Brannan and Klappenecker): \$32,799

PUBLICATIONS AND PREPRINTS

- (65) C. Galindo, G. Mora, E.C.R., Braided Zestings of Verlinde Modular Categories and Their Modular Data. arXiv:2311.17255.
- (64) J. Hietarinta, P. Martin, E.C.R., Solutions to the constant Yang-Baxter equation: additive charge conservation in three dimensions. arXiv:2310.03816.
- (63) S.-H. Ng, E.C.R., X.-G. Wen, Classification of modular data up to rank 11, arXiv:2308.09670.
- (62) E.C.R., H. Solomon, Q. Zhang, On near-group centers and super-modular categories, arXiv:2305.09108.
- (61) P. Martin, E.C.R., F. Torzewska, Classification of charge-conserving loop braid representations, arXiv:2301.13831
- (60) C. Delaney, C. Galindo, J. Plavnik, E.C.R., Q. Zhang, G-crossed braided zesting, to appear in *J. London Math. Soc.* arXiv:2212.05336
- (59) E.C.R., Braids, Motions and Topological Quantum Computing, to appear in *Encyc. of Cond. Matter Phys. 2e*, Springer. arXiv:2208.11762
- (58) S.-H. Ng, E.C.R., Z. Wang, X-G. Wen, Reconstruction of modular data from $SL(2, \mathbb{Z})$ representations, *Comm. Math. Phys.* **402**, (2023) 2465–2545.
- (57) Z. Feng, E.C.R., S. Ming, Reconstructing Braided Subcategories of $SU(N)_k$, *J. Algebra* **635** (2023) 436–458.
- (56) P. Martin, E.C.R., Classification of spin-chain braid representations, arXiv:2112.04533.
- (55) C. Damiani, P. Martin, E.C.R., Generalisations of Hecke algebras from Loop Braid Groups, *Pacific J. Math.* **323** (2023), no. 1, 31–65.
- (54) E.C.R., Y. Ruan, Y. Wang, The Witt classes of $SO(2r)_{2r}$, *Comm. Algebra* 50:12 (2022), 5246–5265.
- (53) C. Delaney, C. Galindo, J. Plavnik, E.C.R., Q Zhang, Braided zesting and its applications, *Comm. Math. Phys.* **386** (2021), 1–55.
- (52) C. Jones, S. Morrison, D. Nikshych, E.C.R., Rank-finiteness for G-crossed braided fusion categories, *Transform. Groups* **26** (2021), no. 3, 915–927.
- (51) P. Bruillard, J. Plavnik, E.C.R., Q. Zhang, On Classification of super-modular categories of rank 8, *J. Algebra Appl.* **20** (2021), no. 1, 2140017
- (50) S.-H. Ng, E.C.R., Y. Wang, Q. Zhang, Higher central charges and Witt groups, *Adv. Math.* **404** (2020) Paper No. 108388.[§]
- (49) V. Ostrik, E.C.R., M. Sun, Symplectic level-rank duality via tensor categories, *J. Lie Theory* 30 (2020), No. 4, 909–924.
- (48) P. Bonderson, E.C.R., Z. Wang, On realizing modular data, *J. Math. Sci. Univ. Tokyo.* **27** (2020), 65–79.
- (47) A. Kimball, P. Gustafson, E.C.R., Q. Zhang, Braid group representations from twisted tensor products of algebras, *Peking Math. J.* **3** (2020), no. 2, 103–130.
- (46) A. Deaton, P. Gustafson, L. Mavrakis, E.C.R., S. Poltoratski, S. Timmerman, B. Warren, Q. Zhang, Integral Metaplectic Modular Categories, *J. Knot Theory Ramifications*, 29 (2020), no. 5, 2050032.
- (45) A. Bullivant, A. Kimball, P. Martin, E.C.R., Representations of the Necklace Braid Group: Topological and Combinatorial Approaches, *Comm. Math. Phys.* **375** (2020), no. 2, 1223–1247.
- (44) P. Gustafson, E.C.R., Y. Ruan, Metaplectic categories, gauging and property F, *Tohoku Math. J.* **72** (2020) no. 3, 411–424.
- (43) P. Bruillard, P. Gustafson, J. Plavnik, E.C.R., Dimension as a quantum statistic and the classification of metaplectic categories, in *Topological phases of matter and quantum computation*, 89–113, Contemp. Math., 747, Amer. Math. Soc., Providence, RI, 2020.
- (42) P. Bruillard, C. Galindo, S.-H. Ng, J. Plavnik, E.C.R., Z. Wang, Classification of super-modular categories by rank, *Algebr. Represent. Theory* **23** (2020), no. 3, 795–809.

[§]Highlighted in <https://mathinstitutes.org/highlights/quasisymmetries-for-quasiparticles> for general audiences.

- (41) P. Bruillard, J. Plavnik, E.C.R., Modular categories of dimension p^3m with m square-free, *Proc. Amer. Math. Soc.* **147** (2019) no. 1, 21–34.
- (40) P. Bonderson, C. Delaney, C. Galindo, E.C.R., A. Tran, Z. Wang, On invariants of modular categories beyond modular data, *J. Pure Appl. Algebra* **223** (2019) no. 9, 4065–4088.
- (39) E.C.R., Review of: Tensor categories by Pavel Etingof, Shlomo Gelaki, Dmitri Nikshych, and Victor Ostrik. *Bull. Amer. Math. Soc.* **55** (2018) no. 4, 545–551.
- (38) C. Galindo, E.C.R., Z. Wang, On acyclic anyon models, *Quantum Inf. Process* **17** (2018), 245.
- (37) P. Bonderson, E.C.R., Z. Wang, Q. Zhang, Congruence subgroups and super-modular categories, *Pacific J. Math.* **296** (2018), No. 2, 257–270.
- (36) E.C.R., Z. Wang, Mathematics of topological quantum computing, *Bull. Amer. Math. Soc.* **55** (2018) no. 2, 183–238.
- (35) P. Bruillard, C. Galindo, T. Hagge, S.-H. Ng, J. Plavnik, E.C.R., Z. Wang, Fermionic modular categories and the 16-fold way, *J. Math. Phys.* **58** (2017), 041704.
- (34) Z. Kadar, P. Martin, E.C.R., Z. Wang, Local representations of the loop braid group, *Glasgow Math. J.* **59** (2017), no. 2, 359–378.
- (33) E.C.R., H. Wenzl, $SO(N)_2$ braid group representations are Gaussian. *Quantum Topol.* **8** (2017), no. 1, 1–33.
- (32) C. Delaney, E.C.R., Z. Wang, Local unitary representations of the braid group and their applications to quantum computing, *Rev. Colombiana Mat.* **50** (2016) no. 2, 207–272.
- (31) E. Ardonne, M. Cheng, E.C.R., Z. Wang, Classification of metaplectic modular categories, *J. Algebra* **466** (2016) 141–146.
- (30) P. Bruillard, S.-H. Ng, E.C.R., Z. Wang, On classification of modular categories by rank, *Int. Math. Res. Not.* **2016** no. 24, 7546–7588.
- (29) P. Bruillard, S.-H. Ng, E.C.R., Z. Wang, Rank-finiteness for modular categories, *J. Amer. Math. Soc.* **29** (2016) no. 3, 857–881.*
- (28) E.C.R., An invitation to the mathematics of topological quantum computation, *J. Phys. Conf. Ser.* **698** (2016), 012012.
- (27) E.C.R., Z. Wang, Degeneracy and non-abelian statistics, *Phys. Rev. A*, **93**, (2016) 030102(R).
- (26) P. Bruillard, C. Galindo, S.-H. Ng, J. Plavnik, E.C.R., Z. Wang, On the classification of weakly integral modular categories, *J. Pure Appl. Algebra*, **220** (2016), no. 6, 2364–2388.
- (25) E.C.R., Parameter dependent Gaussian (z, N) -generalized Yang-Baxter operators, *Quantum Inf. Comput.* **16** (2016), no. 1&2, 0105–0114.
- (24) P. Bruillard, L. Chang, S.-M. Hong, J.Y. Plavnik, E.C.R., M.Y. Sun, Low-dimensional representations of the three component loop braid group, *J. Math. Phys.* **56**, no. 11 (2015), 11707.
- (23) C. Galindo, E.C.R., Braid representations from unitary braided vector spaces. *J. Math. Phys.* **55** (2014), 061702.
- (22) P. Bruillard, C. Galindo, S.-M. Hong, Y. Kashina, D. Naidu, S. Natale, J. Y. Plavnik, E. C. R., Classification of integral modular categories of Frobenius-Perron dimension pq^4 and p^2q^2 , *Canad. Math. Bull* **57** (2014), no. 4, 721–734.
- (21) C. Galindo; E. C. R., S.-M. Hong, Generalized and quasi-localization of braid group representations, *Int. Math. Res. Not.* **2013** no. 3, 693–731.
- (20) P. Bruillard; E. C. R., Modular categories, integrality and Egyptian fractions, *Proc. Amer. Math. Soc.* **140** (2012), 1141–1150.
- (19) E. C. R.; Z. Wang, Localization of unitary braid representations, *Comm. Math. Phys.* **311** (2012) no. 3, 595–615.
- (18) D. Naidu; E. C. R., A finiteness property for braided fusion categories, *Algebr. Represent. Theory.* **15** (2011) no. 5, 837–855.

*Gerald L. Alexanderson Award, 2019

- (17) E. C. R., A quaternionic braid representation (after Goldschmidt and Jones), *Quantum Topol.* **2** (2011), 173–182.
- (16) E. C. R., Braid representations from quantum groups of exceptional Lie type, *Rev. Un. Mat. Argentina* **51** (2010) no. 1, 165–175.
- (15) S.-M. Hong; E. C. R., On the classification of the Grothendieck rings of non-self-dual modular categories, *J. Algebra* **324** (2010) no. 5, 1000–1015.
- (14) I. Tuba; E. C. R., Finite linear quotients of \mathcal{B}_3 of low dimension, *J. Knot Theory Ramifications* **19** (2010) no. 5, 587–600.
- (13) E. C. R.; Y. Zhang; Y.-S. Wu; M.-L. Ge, Extraspecial two-groups, generalized Yang-Baxter equations and braiding quantum gates, *Quantum Inf. Comput.* **10** (2010) no. 7-8, 0685–0702.
- (12) E. C. R.; R. Stong; Z. Wang, On classification of modular tensor categories, *Comm. Math. Phys.* **292** (2009) no. 2, 343–389.
- (11) E. C. R., Two paradigms for topological quantum computation, in Advances in Quantum Computation, *Contemp. Math.* **482**, 165-178, Amer. Math. Soc. Providence, RI 2009.
- (10) M. J. Larsen; E. C. R., Unitary braid group representations with finite image, *Algebr. Geom. Topol.* **8** (2008), no. 4, 2063–2079.
- (9) S.-M. Hong; E. C. R.; Z. Wang, On exotic modular tensor categories, *Commun. Contemp. Math.* **10** (2008), no. Suppl. 1, 1049–1074.
- (8) E. C. R., Unitarizability of pre-modular categories, *J. Pure Appl. Algebra* **212** (2008) no. 8, 1878-1887.
- (7) M. J. Larsen; E. C. R., An algebra-level version of a link-polynomial identity of Lickorish, *Math. Proc. Cambridge Philos. Soc.* **144** (2008) no. 3, 623-638.
- (6) P. Etingof; E. C. R.; S. Witherspoon, Braid group representations from quantum doubles of finite groups, *Pacific J. Math.* **234** (2008) no. 1, 33-41.
- (5) E. C. R., From quantum groups to unitary modular tensor categories, in Representations of Algebraic Groups, Quantum Groups and Lie Algebras (Snowbird, UT, 2004). *Contemp. Math.* **413**, 215-230, Amer. Math. Soc. Providence, RI 2006.
- (4) J. Franko; E. C. R.; Z. Wang, Extraspecial 2-groups and images of braid group representations, *J. Knot Theory Ramifications* **15** (2006) no. 4, 1-15.
- (3) M. J. Larsen; E. C. R.; Z. Wang, The N -eigenvalue problem and two applications, *Int. Math. Res. Not.* **2005** no. 64, 3987–4018.
- (2) E. C. R., On a family of non-unitarizable ribbon categories, *Math. Z.* **250** (2005) no. 4, 745–774.
- (1) E. C. R., A note on tensor categories of Lie type E_9 , *J. Algebra* **284** (2005) no. 1, 296–309.

CONFERENCE PRESENTATIONS

- (65) NCGOA Spring Institute, Vanderbilt University, May 2023.
- (64) Quantum symmetries: tensor categories, topological quantum field theories, vertex algebras, CRM, Montreal, Canada, October 2022.
- (63) Quantum Topology and Geometry, IHP, Paris, France, June 2022.
- (62) VOAs and Tensor categories, BIRS Hangzhou, China, (virtual) September 2021.
- (61) Quantum Groups - Algebra, Analysis and Category Theory, Oberwolfach, Germany, September 2021.
- (60) Mathematical Congress of the Americas, Argentina (virtual) July 2021.
- (59) Quantum Symmetries, Introductory Workshop, MSRI January 2020.
- (58) Topological Quantum Computation, SuSTech, ShenZhen China, December 2019.
- (57) QuantumFest, CINVESTAV, Mexico City, October 2019.
- (56) In and Around Topological Physics, Beijing, China, July 2019.
- (55) Quantum 60, Huerta Grande, Argentina, December 2018.
- (54) Subfactors and Fusion Categories, Banff, Canada, October 2018.

- (53) Quantum Information and Operator Algebras III, Academy of Mathematics and Systems Science, CAS, Beijing, July 2018.
- (52) AMS Special Session on Tensor Categories and Diagrammatic Methods, Vanderbilt U., Nashville, TN, April 2018.
- (51) MRS Special Session on Enabling Quantum Leap: Braiding and Fusing Majoranas, Phoenix, AZ, April 2018.
- (50) Workshop on Higher Gauge Theory, U. Leeds, February/March 2018.
- (49) Texas Geometry and Topology Conference, U. Houston, February 2018.
- (48) AMS Special Session on Tensor Categories: Bridging Algebra, Topology, and Physics, U. C. Riverside, CA, November 2017.
- (47) AMS Special Session on Noncommutative and Homological Algebra, U. North Texas, Denton TX, September 2017.
- (46) Hopf Algebras and the Kitaev Model, Perimeter Institute, Waterloo, Canada, August 2017.
- (45) Math. Congress of the Americas, Montreal, Canada, July 2017.
- (44) Probabilistic and algebraic methods in quantum information theory, Texas A&M, July 2017.
- (43) Quantum Physics and Geometry, Trento, Italy, July 2017.
- (42) (2) Tensor Categories and Field Theories: U. Melbourne, Australia, June 2017.
- (41) Subfactors and Mathematical Physics, Sanya, China, December 2016.
- (40) IX Reunión de la dICu, Monterrey, Mexico, October 2016.
- (39) AMS Special Session on Special Session on Topological Phases of Matter and Quantum Computation, Brunswick, ME, September 2016.
- (38) Hopf Algebras and Tensor Categories, Tianjin, China, September 2016.
- (37) Topological Phases of Matter in (3+1)-Dimensions, Leeds, UK, July 2016.
- (36) AMS Special Session on Fusion Categories and Topological Phases of Matter, Salt Lake City, UT, April 2016.
- (35) QuantumFest 2015, Tec de Monterrey, Estado de Mexico, October 2015.
- (34) Nichols Algebras and Their Interactions with Lie Theory, Hopf Algebras and Tensor Categories, Banff, Canada, September 2015.
- (33) Knot Theory and Quantum Computation, UT Dallas, January 2015.
- (32) AMS Special Session on Hopf Algebras and Tensor Categories, San Antonio, TX, January 2015.
- (31) XX Coloquio Latinoamericano de Álgebra, Lima, Peru, December 2014.
- (30) Quantum Topology, Bannoye, Magnitogorsk, Russia, July 2014.
- (29) 14th Canadian Summer School on Quantum Information, Guelph, Canada, June 2014.
- (28) Subfactors and Fusion Categories, Banff, Canada, April 2014.
- (27) Workshop on Fusion Categories, Dijon, France, May 2013.
- (26) Subfactors in Maui, HI, July 2012.
- (25) AMS Special Session on Tensor Categories and Representation Theory, Boston, MA, January 2012.
- (24) Algebraic Aspects of Quantum Computation, SIAM mini-symposium, Raleigh, NC, October 2011.
- (23) Topological Quantum Computing, Simons Center for Geometry & Physics, Stony Brook, NY, September 2011.
- (22) Hopf Algebras and Tensor Categories, U. Almeria, Almeria, Spain, July 2011.
- (21) Southern Regional Algebra Conference, LSU-Lafayette, LA, October 2010.
- (20) Topological Phases and Emergent Phenomena in Physics, Fudan U., Shanghai, China, July 2010.
- (19) Subfactors and Fusion Categories, Vanderbilt U., February 2010.
- (18) Representation Theory, Quantum Field Theory, etc., UT Tyler, October 2009.
- (17) Colloquium on Hopf Algebras, Quantum Groups and Tensor Categories, La Falda, Argentina, September 2009.
- (16) NSF-CBMS: Knots and Topological Quantum Computing, Edmond, OK, July 2008.
- (15) Classical and Quantum Information Theory, Santa Fe, NM, March 2008.
- (14) Topics in von Neumann Algebras, Banff Research Center, Canada, March 2008.

- (13) Knot Theory and Quantum Computing, UT Dallas, December 2007.
- (12) Representation Theory, Quantum Field Theory, etc., UT Tyler, September 2007.
- (11) XVII Coloquio Latinoamericano de Álgebra, Medellín, Colombia, July 2007.
- (10) AMS Special Session on Combinatorial Representation Theory, Fayetteville, AR, November 2006.
- (9) Topics on von Neumann Algebras, Banff Research Center, Canada, October 2006.
- (8) AMS Special Session on Representations of Groups and Algebras, U. of Oregon, November 2005.
- (7) XVI Coloquio Latinoamericano de Álgebra, Colonia, Uruguay, August 2005.
- (6) AMS-IMS-SIAM, Quantum Topology–Contemporary Issues and Perspectives, Snowbird, UT, June 2005.
- (5) Lie Algebras, VOAs and their Applications, North Carolina State U., May 2005.
- (4) AMS Special Session on Knots and Braids, U. of New Mexico, October 2004.
- (3) Representations of Algebraic Groups, Quantum Groups, and Lie Algebras, Snowbird, UT, July 2004.
- (2) Wabash Extramural Modern Analysis Seminar, Wabash College, February 2004.
- (1) AMS Special Session on Lie Algebras, Conformal Field Theory and Related Topics, SUNY Binghamton, October 2003.

COLLOQUIA, PUBLIC LECTURES AND SEMINAR TALKS

- Public Lectures (4): Universidad de los Andes, June 2019 (in Spanish); Aggieland Saturday, Texas A&M, February 2019; Nobel Symposium, Texas A&M, December 2016; Beihang University, June 2016.
- Colloquia (12): Louisiana State U. December 2019; Indiana U. February 2019; Peking U. May 2018; U. Southern California, January 2016; Pacific Northwest National Labs, December 2015; U. of South Alabama, November 2009; Texas A&M U., March 2006; U. of Houston, March 2006; U. of South Florida, February 2006; Virginia Tech, March 2004; Eastern Washington U., May 2003; U. of Maine, March 2003.
- Mini-courses (7): Focus Semester on Quantum Computation, Saarland U. Germany (4.5 hours), November 2022; Graduate Summer School: Mathematics of Topological Phases of Matter, IPAM, UCLA, (2 hours), August 2021; KIAS, South Korea, (7.5 hours, remote) August 2021; CIMPA Research School on Quantum Symmetries Bogotá, Colombia (5.5 hours), June/July 2019; Peking U., China (7.5 hours) August 2018; (5 hours) Encuentro Colombiano de Computacion Cuantica, Bogota, Colombia, May 2015; Peking U., China (6 hours) September 2013.
- Invited Talks: Mathematical Institute of the Romanian Academy, Bucharest, Romania, (remote) May 2023; BIMSA, Tsinghua U., November 2022; UQSL, Ohio State U. March 2021; U. Cardiff GAPT, November 2020; MSRI, May 2020 (online); Stanford U., April 2020 (COVID19–cancelled); AIMR Tohoku University, July 2019; Ohio State U. April 2019; Louisiana State U., March 2019; Fudan U., August 2018; ANU, Australia, Canberra, June 2017; U.T. Austin (Computer Science), April 2017; U.C. Santa Barbara, November 2015, January 2019 and February 2022; Nankai U. and Beijing Institute of Tech., September 2013; Universidad Nacional de Cordoba March 2013; Ohio State U., January 2011, December 2016 and April 2019; Iowa State U., December 2010; U. Texas at Austin, January 2008 and October 2008; UC San Diego, July 2005.
- A&M Talks: Algebra & Combinatorics (6 talks), Working Seminar in Algebra (3), Groups & Dynamics (2), Math. Physics (2), Quantum Computation, CS Dept. (3), Linear Analysis (1), CESC Seminar (April Classification of charge-conserving loop braid representations 2018).
- Outreach Talks: Math Dept. Graduate Student Seminar (2010, 2013, 2014); Math Dept. Visitor Weekend (2013); Student Seminar in Discrete Math (2014); Student Working Seminar in Algebra and Geometry (2016).

SERVICE/PROFESSIONAL ACTIVITIES

- Editorial Boards: International Journal of Quantum Information (2018-), Quantum Topology (2023-)
- Discovery Grants Evaluation Group: Natural Sciences and Engineering Research Council of Canada (2022-2025)
- Lecturer (with X. Cui): Park City Mathematics Institute, Undergraduate Faculty Program July-August 2023 (30 hours of Lectures)
- Conference Co-Organization:
(Competitive Conference Awards marked with †)
 - (1) Modular Categories and Applications, Indiana University, March 2009 (with Z. Wang and M. Larsen).
 - (2) Fusion Categories and Applications, AMS Special Session, Waco TX, October 2009 (with D. Naidu).
 - (3) Quantum Invariants of 3-Manifolds and Modular Categories, AMS Special Session, St. Paul MN, April 2010 (with T. Le and V. Turaev).
 - (4) Algebraic Aspects of Quantum Computation (minisymposium), SIAM Conference on Applied Algebraic Geometry, Raleigh, NC, October 2011 (with Z. Wang).
 - (5) Classifying Fusion Categories, American Institute of Mathematics workshop, Palo Alto CA, March 2012 (with S. Morrison and N. Snyder).†
 - (6) SQuaREs, American Institute of Mathematics, May 2014, August 2015, May 2016 (with P. Bruillard, C. Galindo, J. Plavnik, S.-H. Ng and Z. Wang).†
 - (7) AMS MRC: Mathematics of Quantum Phases of Matter and Quantum Information, Snowbird, UT June 2014 (with Z. Wang and S.-H. Ng).†
 - (8) Encuentro Colombiano de Computacion Cuantica, Bogotá, Colombia, May 2015 (with J. Plavnik, C. Galindo and Z. Wang).
 - (9) BIRS: Modular Categories–Their Representations, Classification and Applications, Casa Matematica Oaxaca, Mexico, August 2016 (with D. Nikshych, S.-H. Ng and Z. Wang).†
 - (10) AMS Special Session on Fusion Categories and Quantum Symmetries, JMM, Atlanta, GA, January 2017 (with P. Bruillard and J. Plavnik).
 - (11) AMS Special Session: Fusion Categories and Applications, Indiana University, April 2017 (with P. Bruillard and J. Plavnik).
 - (12) Special Session: Mathematics of Quantum Phases of Matter and Quantum Information, Mathematical Congress of the Americas, Montreal, Canada, July 2017 (with Bruillard, Galindo and Plavnik).
 - (13) 1st IAMCS Workshop on Quantum Computation, Texas A&M, September 2018 (with A. Klappenecker, Z. Bei and Z. Wang)
 - (14) 2nd IAMCS Workshop on Quantum Computation, Texas A&M, May 2019 (with M. Brannan and A. Klappenecker)
 - (15) In and Around Topological Physics, Beijing, China, July 2019 (with G. Tian and Z. Wang)
 - (16) SQuaREs, American Institute of Mathematics, October 2019, February 2022, January 2024 (with C. Delaney, C. Galindo, J. Plavnik and Q. Zhang).†
 - (17) MSRI Semester: Quantum Symmetries, Berkeley, CA, Spring 2020 (with V.F.R. Jones, S. Morrison, E. Peters, N. Snyder, V. Ostrik, C. Walton).†
 - (18) SIAM mini-symposium, Texas A&M U. August, 2021 (virtual) (with Q. Zhang)
 - (19) ICMS: Topological Quantum Computation, Edinburgh, Scotland, October 2023 (with X. Cui, P. Martin and Z. Wang).†
 - (20) BIRS: Skew braces, braids and the Yang-Baxter equation, Banff, Canada, May 2024 (with L. Vendramin, J. Plavnik and I. Colazzo).†
- Algebra Qualifying Exam Committee (2009-2011,2014-2015,2021-2022).
- Thesis committee (chair or co-chair: 10 PhD, 4 Masters)
 - Aatmun Baxii, Mathematics Masters, Texas A&M, (2023)

- (Co-chair) Priyanga Ganesan[‡], Mathematics Ph.D., Texas A&M, (2021-2022)
- (Co-chair) John Weeks[‡], Mathematics Ph.D., Texas A&M, (2021-2022)
- Benjamin Warren, Mathematics Ph.D., Texas A&M, (2021-)
- Hannah Solomon, Mathematics Ph.D., Texas A&M, (2020-)
- Zhaobidan Feng, Mathematics Ph.D., Texas A&M, (2020-)
- Yuze Ruan, Mathematics Masters, Texas A&M, (2018)
- Christian Williams, Mathematics Masters, Texas A&M, (2017)
- Qing Zhang, Mathematics Ph.D., Texas A&M, (2015-2019)
- Andrew Kimball, Mathematics Ph.D., Texas A&M, (2015-2019)
- Paul Gustafson, Mathematics Ph.D., Texas A&M, (2015-2018)
- Daniel Creamer, Mathematics Ph.D., Texas A&M, (2015-2018)
- Paul Bruillard, Mathematics Ph.D., Texas A&M, (2010-2013)
- (Co-Chair) Paul Bruillard, Physics Masters, Texas A&M, (2010)
- Member, American Mathematical Society.
- Member in Residence, Kappa of Texas Chapter, Phi Beta Kappa Honor Society.
- Faculty Senator, Texas A&M U. 2012-2019.
- College of Science Climate and Diversity Committee, 2014-2019.
- Chair, Mathematics Department Promotion Committee, (2023-2025).
- Mathematics Department Outreach Committee, 2017-2019.
- Mathematics Department Head Search Committees, 2019 & 2023.
- College of Science Strategic Planning Committee, 2017-2018.
- Mathematics Department Graduate Committee, 2016-2018.
- Honors and Undergraduate Research Scholar Faculty Mentor, Texas A&M U. 2015-2017.
- Mathematics Department Executive Committee, 2014-2016, 2020-2022.
- Participant, Texas A&M Faculty Abroad Seminar, 2007.
- Judging Panellist, Oral Presentations, Student Research Week, Texas A&M U., 2014.
- TOP Grant Selection Committee, Texas A&M U., 2014.
- (4) Postdocs mentored: D. Naidu, 2008-2011, L. Chang, 2013-2016, J. Plavnik 2015-2018, R. Hernández-Palomares 2021-2022.
- (15) Undergraduate Researchers Mentored: Andrew Nemeč* (2014-2015), Bingjin Liu (2014-2015), Humberto Munoz-Bauza (2015-2016), Chanwoo Kim (2015-2016), Christian Williams* (2016-2017), Kevin Matthews* (2016-2017), Yuze Ruan (2016-2017), Jixuan Fan (2017-2018). REU 2018: David Green, Leslie Mavrakis, Benjamin Warren, Sydney Tillerman, Sasha Poltoratski. Hunter Hewitt (2020), Sahil Medepalli (2023).
- *Undergraduate Research Scholars.
- High School Research Mentoring: Rebecca S. Chen, Park Tudor High School, Indianapolis, IN: “Generalized Yang-Baxter Equations and Braiding Quantum Gates” (2010-2011). Awarded \$10,000 Davidson Fellowship.

TEACHING EXPERIENCE (Texas A&M University)

(courses I developed marked with *)

- Discrete Math (M302): Fall 2012
- Linear Algebra for Differential Equations (M309): Spring 2012
- *Topics in Algebra: Representations of Finite Groups (M662): Spring 2011, Spring 2013
- Graduate Algebra (M653-M654): Fall 2009, Spring 2010, Spring 2014, Fall 2021.
- Topics in Applied Mathematics (M311): Fall 2006, 2008, Spring 2009.
- Differential Equations (M308): Spring 2008, Fall 2009.
- Engineering Calculus I (M151): Fall 2007.

[‡] I took over 2 students of Brannan when he left.

- Foundations of Mathematics (M220/M300): Spring 2007, Fall 2010, Fall 2011, Spring 2013, Spring/Fall 2014, Spring 2016, Spring/Fall 2017, Spring 2018, Spring 2021, Spring 2022, Spring 2023, Spring 2024.
- Abstract Algebra (Standard+Honors) (M415-6): Fall 2014, Fall/Spring 2015, Spring 2019.
- *Topics in Topology and Geometry (M485): Summer I 2016 (Study Abroad, Beijing), Fall 2018.
- *Topics in Algebra: Lie Algebras and Representation Theory (M662): Fall 2016, Fall 2023.
- *Special Topics: Topological Quantum Computation (M689): Spring 2018.
- Linear Algebra (M323, Honors): Spring 2019, Spring 2023.
- *Special Topics: Tensor Categories (M689), Spring 2021.

LANGUAGES

- English (native)
- Spanish (fluent)
- French (reading knowlege)
- Mandarin (novice)