

Qing Zhang

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POSITIONS

Visiting Assistant Professor
UC Santa Barbara
Mentor: Zhenghan Wang

July 2023 – now

Golomb Visiting Assistant Professor
Purdue University
Mentor: Xingshan Cui

Aug. 2020 – May 2023

Postdoctoral Fellow
MSRI Program on Quantum Symmetries
Mentor: Richard Ng

Jan. 2020 – May 2020

EDUCATION

Ph.D. in Mathematics
Texas A&M University
Advisor: Eric Rowell
Thesis: Super-modular Categories

Aug. 2014 – Dec. 2019

M.Sc. in Mathematics
Beihang University, China

Sept. 2011 – Jan. 2014

B.Sc. in Mathematics
Hefei University, China

Sept. 2007 – Jul. 2011

RESEARCH INTERESTS

Tensor categories, topological quantum computation, braid group representation, low dimensional topology

PUBLICATIONS AND PREPRINTS

1. (with E. Rowell, H. Solomon), On near-group centers and super-modular categories, arXiv:2305.09108.
2. (with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), G -crossed braided zesting, arXiv:2212.05336.
3. (with J. Plavnik, A. Schopieray and Z. Yu), Modular tensor categories, subcategories, and Galois orbits, *Transformation Groups* (2023): 1-26.
4. (with S.-H. Ng, E. Rowell and Y. Wang), Higher central charges and Witt groups, *Advances in Mathematics* 404 (2022): 108388.
5. (with S.-H. Ng and Y. Wang), Modular categories with transitive Galois actions, *Communications in Mathematical Physics* 390.3 (2022): 1271-1310.
6. (with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), Braided zesting and its applications, *Communications in Mathematical Physics* 386.1 (2021): 1-55.

7. (with X. Cui, P. Gustafson and Y. Qiu), From torus bundles to particle-hole equivariantization, *Letters in Mathematical Physics* 112.1 (2022): 1-19.
8. (with P. Bonderson, E. Rowell and Z. Wang), Congruence subgroups and super-modular categories, *Pacific Journal of Mathematics* 296, no. 2 (2018): 257-270.
9. (with P. Bruillard, J. Plavnik and E. Rowell), On classification of super-modular categories of rank 8, *Journal of Algebra and Its Applications* 20, no. 01 (2021): 2140017.
10. (with P. Gustafson, A. Kimball and E. Rowell), Braid group representations from twisted tensor products of group algebras, *Peking Mathematical Journal*, 3, 103-130.
11. (with A. Deaton, P. Gustafson, L. Mavrakis, E. Rowell, S. Poltoratski, S. Timmerman, B. Warren), Integral metaplectic modular categories, *Journal of Knot Theory and Its Ramifications* 29, no. 05 (2020): 2050032.

TEACHING	Ordinary Differential Equations	Jan. 2023 – May 2023
	Mathematics Department, Purdue University	
	Ordinary and Partial Differential Equations	Aug. 2022 – Dec 2022
	Mathematics Department, Purdue University	
	Linear Algebra	Jan. 2022 – May 2022
	Mathematics Department, Purdue University	
	Ordinary Differential Equations	Aug. 2020 – Dec 2021
	Mathematics Department, Purdue University	
	Teaching Assistant	June 2019 – July 2019
	The Mathematics of Topological Quantum Computing, Research School on Quantum Symmetries, Universidad de los Andes, Bogotá	
AWARDS	Teaching Assistant	June 2018 – July 2018
	REU on Mathematics of Topological Quantum Computation	
	Mathematics Department, Texas A&M University	
	Mathematical Concepts – Calculus	Jan. 2018 – May 2018
	Mathematics Department, Texas A&M University	
	Teaching Assistant	Aug. 2014 – Dec. 2019
	Mathematics Department, Texas A&M University	
	Outstanding TA Award	Spring 2017
	Mathematics Department, Texas A&M University	
	Lechner Graduate Grant	2014-2015
CONFERENCE TALKS	Mathematics Department, Texas A&M University	
	Second Prize Scholarship	2011-2012
	Department of Mathematics, Beihang University	
	National Scholarship	Fall 2009
	Department of Mathematics, Hefei University	
	Conference on C^* -Algebras and Tensor Categories, Fields Institution.	
	Mini-course speaker.	Nov 2023
	Scientific session on Hopf Algebras and Related Topics at the 2023 CMS summer meeting.	June 2023
	Quantum Symmetries at the CRM, Université de Montréal.	Oct. 2022

AMS Special Session on Quantum Algebra and Quantum Topology at the Spring Central Sectional Meeting. Mar. 2022

AMS Special Session on Fusion Categories and Their Applications in Physics at the 2022 Joint Mathematics Meetings. April 2022.

AMS Special Session on Tensor Categories and Applications at the Fall Western Sectional Meeting. Oct. 2021

SIAM Conference on Applied Algebraic Geometry. Aug. 2021

AMS Special Session on Hopf Algebras, Tensor Categories, and Related Homological Methods at the Spring Eastern Sectional Meeting. Mar. 2021

AMS Special Session on Hopf Algebras and Tensor Categories at the 2021 Joint Mathematics Meetings. Jan. 2022

AWM Research Symposium Special Session on Homological Methods in Noncommutative Algebra and Representation Theory. Apr. 2019

AMS Special Session on Quantum Symmetries: Subfactors and Fusion Categories (a Mathematics Research Communities Special Session) at the 2019 Joint Mathematics Meetings in Baltimore. Jan. 2019

AMS Special Session on Tensor Categories and Diagrammatic Methods at the AMS Sectional Meeting in Nashville. Apr. 2018

Special Session on Mathematics of Quantum Phases of Matter and Quantum Information at Math Congress of the Americas. Centre Mont-Royal and McGill University, Montreal, Canada. July 2017

AMS Special Session on Fusion Categories and Quantum Symmetries at the 2017 Joint Mathematics Meetings in Atlanta. Jan. 2017

SEMINAR TALKS

The Algebra of Topological Quantum Computing, Purdue AWM Symposium. Purdue University. Apr. 2023

From Congruence Representations to Super-modular Categories, Quantum Topology Seminar. Indiana University Bloomington. Feb. 2023

Braided Zesting and its applications, The TACO Seminar, Loyola University Chicago Nov. 2022

Classification of Modular Categories by Galois Orbit Count, Algebra & Combinatorics Seminar, North Carolina State University Nov. 2022

Classifying Modular Categories, Quantum Symmetry at the CRM, Montreal, Canada Oct. 2022

From torus bundles to particle-hole equivariantization, Quantum Topology Seminar. Indiana University Bloomington. Dec. 2021

Modular categories with transitive Galois actions, Quantum Symmetries Student Seminar. The Ohio State University. Aug. 2021

Modular Categories with Transitive Galois Actions, Online Seminar. Mathematical Sciences Research Institute. May 2020

Algebraic Questions from Topological Quantum Computation, Quantum Algebra/Quantum Topology Seminar. Ohio State University. Dec. 2019

Algebraic Questions from Topological Quantum Computation, Algebra Seminar. Indiana University Bloomington. Nov. 2019

The Algebra of Topological Quantum Computing, Mathematical Physics Seminar. Purdue University. Nov. 2019

Topological Quantum Computing and Braid Group Representations, Graduate Student Seminar. Texas A&M University. Mar. 2019

Classification of Super-modular Categories, Algebra and Combinatorics Seminar. Texas A&M University. Feb. 2019

WORKSHOP PARTICIPATION Quantum invariants and low-dimensional topology, American Institute of Mathematics, Aug. 14 - 18, 2023

Higher Categories and Topological Order, American Institute of Mathematics, Sep. 26 - 30, 2022

Quantum Topology and Geometry, Institut Henri Poincaré, June 13 - 17, 2022.

Graduate Summer School: Mathematics of Topological Phases of Matter, IPAM, Aug. 29 - Sep. 3, 2021.

Fusion Categories and Tensor Networks, American Institute of Mathematics, Mar. 8 - 12, 2021.

SQuaRE Program, AIM (American Institute of Mathematics), Sep. 30 - Oct. 04, 2019.

In and around Topological Physics, Beijing International Center for Mathematical Research, July 16-20, 2019

Research School on Quantum Symmetries, Universidad de los Andes, June 24 - July 5, 2019

Summer Research Program on Quantum Symmetries, The Ohio State University, June 3-14, 2019

2nd IAMCS Workshop on Quantum Computation, Texas A&M University, May 13-15, 2019

Workshop on Subfactors and Fusion categories at BIRS in Banff, Canada, Oct. 14-19, 2018

1st IAMCS Workshop on Quantum Computation, Texas A&M University, Sep. 20-22, 2018.

AMS Mathematical Research Community on Quantum Symmetries, Whispering Pines,

RI, June 10-16, 2018.