

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 L. Chang, Q. Kolt and Z. Wang), Modular data of non-semisimple modular categories, arXiv: 2404.09314.
2. (with E. Rowell, H. Solomon), On near-group centers and super-modular categories, arXiv:2305.09108.
3. (with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), G -crossed braided zesting, *Journal of the London Mathematical Society* (2023).
4. (with J. Plavnik, A. Schopieray and Z. Yu), Modular tensor categories, subcategories, and Galois orbits, *Transformation Groups* (2023): 1-26.
5. (with S.-H. Ng, E. Rowell and Y. Wang), Higher central charges and Witt groups, *Advances in Mathematics* 404 (2022): 108388.
6. (with S.-H. Ng and Y. Wang), Modular categories with transitive Galois actions, *Communications in Mathematical Physics* 390.3 (2022): 1271-1310.

7. (with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), Braided zesting and its applications, *Communications in Mathematical Physics* 386.1 (2021): 1-55.
8. (with X. Cui, P. Gustafson and Y. Qiu), From torus bundles to particle-hole equivariantization, *Letters in Mathematical Physics* 112.1 (2022): 1-19.
9. (with P. Bonderson, E. Rowell and Z. Wang), Congruence subgroups and super-modular categories, *Pacific Journal of Mathematics* 296, no. 2 (2018): 257-270.
10. (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.
11. (with P. Gustafson, A. Kimball and E. Rowell), Braid group representations from twisted tensor products of group algebras, *Peking Mathematical Journal*, 3, 103-130.
12. (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

Differential Equations	Apr 2024 – June 2024
Mathematics Department, UC Santa Barbara	
Differential Equations	Jan 2024 – Mar 2024
Mathematics Department, UC Santa Barbara	
Transition to Higher Mathematics	Jan 2024 – April 2024
Mathematics Department, UC Santa Barbara	
Vector Calculus 1	Sep 2023 – Dec 2023
Mathematics Department, UC Santa Barbara	
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	
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	

AWARDS

Outstanding TA Award	Spring 2017
Mathematics Department, Texas A&M University	
Lechner Graduate Grant	2014-2015
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 TALKS	AMS Special Session on Tensor Categories and Noncommutative Algebras at the Spring Western Sectional Meeting.	May 2024
	AMS Special Session on Modular Tensor Categories and TQFTs beyond the Finite and Semisimple at the 2024 Joint Mathematics Meetings in San Francisco.	Jan 2024
	Conference on C^* -Algebras and Tensor Categories, Fields Institution. Mini-course speaker.	Nov 2023
	Quantum invariants and low-dimensional topology, American Institute of Mathematics.	Aug 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.