

Qing Zhang

Department of Mathematics, South Hall, Office 6625
University of California, Santa Barbara, CA 93106
qingzhang@ucsb.edu — <https://zhangqing2513.github.io/>

POSITIONS	<i>Visiting Assistant Professor</i> <i>UC Santa Barbara</i> Mentor: Zhenghan Wang	July 2023 – Present
	<i>Golomb Visiting Assistant Professor</i> <i>Purdue University</i> Mentor: Xingshan Cui	Aug 2020 – May 2023
	<i>Postdoctoral Fellow</i> <i>MSRI Program on Quantum Symmetries</i> Mentor: Richard Ng	Jan 2020 – May 2020
EDUCATION	<i>Ph.D. in Mathematics</i> <i>Texas A&M University</i> Advisor: Eric Rowell Thesis: Super-modular Categories	Aug 2014 – Dec 2019
	<i>M.Sc. in Mathematics</i> <i>Beihang University, China</i>	Sept 2011 – Jan 2014
	<i>B.Sc. in Mathematics</i> <i>Hefei University, China</i>	Sept 2007 – Jul 2011
RESEARCH INTERESTS	Tensor categories, topological quantum computation, braid group representation, low-dimensional topology.	
PUBLICATIONS AND PREPRINTS	<ol style="list-style-type: none">(with Z. Yu), Realizing modular data from centers of near-group categories, arXiv:2412.20763.(with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), The Condensed Fiber Product and Zesting, arXiv: 2410.09025.(with L. Chang, Q. Kolt and Z. Wang), Modular data of non-semisimple modular categories, arXiv: 2404.09314, <i>to appear in International Journal of Mathematics</i>.(with E. Rowell, H. Solomon), On near-group centers and super-modular categories, <i>to appear in Contemporary Mathematics</i>.(with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), G-crossed braided zesting, <i>Journal of the London Mathematical Society</i>, 2024, 109(1): e12816.(with J. Plavnik, A. Schopieray and Z. Yu), Modular tensor categories, subcategories, and Galois orbits, <i>Transformation Groups</i> (2023): 1-26.(with S.-H. Ng, E. Rowell and Y. Wang), Higher central charges and Witt groups, <i>Advances in Mathematics</i> 404 (2022): 108388.(with S.-H. Ng and Y. Wang), Modular categories with transitive Galois actions, <i>Communications in Mathematical Physics</i> 390.3 (2022): 1271-1310.	

9. (with X. Cui, P. Gustafson and Y. Qiu), From torus bundles to particle-hole equivariantization, *Letters in Mathematical Physics* 112.1 (2022): 1-19.
10. (with C. Delaney, C. Galindo, J. Plavnik and E. Rowell), Braided zesting and its applications, *Communications in Mathematical Physics* 386.1 (2021): 1-55.
11. (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.
12. (with P. Gustafson, A. Kimball and E. Rowell), Braid group representations from twisted tensor products of group algebras, *Peking Mathematical Journal*, 3, 103-130 (2020).
13. (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.
14. (with P. Bonderson, E. Rowell and Z. Wang), Congruence subgroups and super-modular categories, *Pacific Journal of Mathematics* 296, no. 2 (2018): 257-270.

TEACHING EXPERIENCE	<i>Transition to Higher Mathematics</i>	Sep 2024 – Dec 2024
	Mathematics Department, UC Santa Barbara	
	<i>Vector Calculus 1</i>	Sep 2024 – Dec 2024
	Mathematics Department, UC Santa Barbara	
	<i>Differential Equations</i>	Apr 2024 – June 2024
	Mathematics Department, UC Santa Barbara	
	<i>Differential Equations</i>	Jan 2024 – Mar 2024
	Mathematics Department, UC Santa Barbara	
	<i>Transition to Higher Mathematics</i>	Jan 2024 – April 2024
	Mathematics Department, UC Santa Barbara	
	<i>Vector Calculus 1</i>	Sep 2023 – Dec 2023
	Mathematics Department, UC Santa Barbara	
	<i>Ordinary Differential Equations</i>	Jan 2023 – May 2023
	Mathematics Department, Purdue University	
	<i>Ordinary and Partial Differential Equations</i>	Aug 2022 – Dec 2022
	Mathematics Department, Purdue University	
<i>Linear Algebra</i>	Jan 2022 – May 2022	
Mathematics Department, Purdue University		
<i>Ordinary Differential Equations</i>	Aug 2020 – Dec 2021	
Mathematics Department, Purdue University		
<i>Teaching Assistant</i>	June 2019 – July 2019	
The Mathematics of Topological Quantum Computing, Research School on Quantum Symmetries, Universidad de los Andes, Bogotá		
<i>Teaching Assistant</i>	June 2018 – July 2018	
REU on Mathematics of Topological Quantum Computation		
Mathematics Department, Texas A&M University		
<i>Mathematical Concepts – Calculus</i>	Jan 2018 – May 2018	
Mathematics Department, Texas A&M University		
<i>Teaching Assistant</i>	Aug 2014 – Dec 2019	
Mathematics Department, Texas A&M University		

AWARDS	Outstanding TA Award Mathematics Department, Texas A&M University	Spring 2017
	Lechner Graduate Grant Mathematics Department, Texas A&M University	2014 – 2015
	National Scholarship Department of Mathematics, Hefei University	Fall 2009
CONFERENCE TALKS	Quantum groups, tensor categories and quantum field theory, workshop at University of Oslo.	Jan 2025
	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		

**SEMINAR
TALKS**

- 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
- Modular Data of Nonsemisimple Modular Categories**, Quantum Symmetries Reunion, Simons Laufer Mathematical Sciences Institute. Aug 2024
- Super-modular Categories from Near-group Centers**, Claremont Topology Seminar, Claremont McKenna College. Mar 2024
- 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 Topology, Quantum Information, and Connections to Mathematical Physics, Texas A&M University, May 27 - 31, 2024

Workshop on Skew Braces, Braids and the Yang-Baxter Equation at BIRS in Banff, Canada, May 5-10, 2024

Conference on C^* -Algebras and Tensor Categories, Fields Institution, Nov. 6 - 10, 2023

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.