ARKYA CHATTERJEE

arkyac.github.io

ACADEMIC POSITIONS

C.N.Yang Institute for Theoretical Physics, Stony Brook University *2025 – present*
Research Assistant Professor

EDUCATION

Massachusetts Institute of Technology (MIT) *2019 – 2025*
Ph.D. in Condensed Matter Theory, Department of Physics
Advisor: Xiao-Gang Wen

Indian Institute of Technology Bombay (IIT-B) *2015 – 2019*
B.Tech. (with Honors) in Engineering Physics and Minor in Mathematics

ACADEMIC HONORS

Kendall Teaching Fellow for exemplary performance as a Teaching Assistant, MIT *2025*

C.M.Clay and H.W.Kendall Fellowship, MIT *2019*

K.Seshia Research Excellence Award for best undergraduate thesis, IIT-B Physics *2019*

DAAD WISE fellowship awarded by DFG for a research internship in Germany *2018*

Summer Research Fellowship awarded by the Indian Academies of Science *2017*

TEACHING AND MENTORSHIP

Massachusetts Institute of Technology, Cambridge, MA

- Teaching Assistant for quantum, statistical, and classical mechanics classes at undergraduate & graduate levels; conducted weekly recitations and contributed to setting and grading exams.
- Mentored undergraduate students as part of the Physics Directed Reading Program

Indian Institute of Technology Bombay, Mumbai, India

- Teaching Assistant for first-year undergraduate electromagnetism and calculus classes
- Mentor for the Summer of Science reading projects on advanced physics and math topics

SERVICE AND OUTREACH

Project SHORT, Mentor *2024 – present*
Responsible for providing 1-on-1 graduate school application assistance to prospective Physics PhD candidates; aimed at shrinking the socioeconomic gap in graduate school

Phys. Rev. Lett., **Phys. Rev. B**, and **SciPost Phys.**, Referee *2023 – present*
Refereed articles on condensed matter and quantum information physics

MIT Physics Graduate Students Council (PGSC), Webmaster *2020 – 22*
Responsible for maintaining the PGSC website, providing web-related support to the Physics Values Committee

Harvard Museum of Natural History, Volunteer *2022*
Gallery facilitator for Glass Flowers, Maya Civilization, and Sharks exhibits

IIT-B Maths & Physics Club, Invited Speaker *2020*
Gave a (virtual) pedagogical talk to an undergraduate audience on the quantum Hall effect

IIT-B Physics Academic Mentorship Program, Co-Lead *2018 – 19*
Led a team of 12 mentors to provide academic support and facilitate outreach to $\sim$ 200 students

CONFERENCES AND WORKSHOPS

Paths to Quantum Field Theory 2024: invited talk *Jul 2024*
University of Sarajevo

Prospects in Theoretical Physics 2024 summer school: poster & gong show *Jul 2024*
Institute for Advanced Study

Summer school on "Symmetries and Anomalies": poster & gong show *Jun 2024*
Institut des Hautes Études Scientifiques

Higher Categorical Tools for Quantum Phases of Matter: gong show *Mar 2024*
Perimeter Institute for Theoretical Physics

Simons Ultra-Quantum Matter collaboration meeting: poster *May 2023*
University of Colorado Boulder

INVITED TALKS

Physics journal club, Simons Center for Geometry and Physics (SCGP) *Sep 2025*

Generalized Symmetries in Quantum Field Theory (GENSYM25) workshop talk *May 2025*
Kavli Institute for Theoretical Physics (KITP)

String Theory Seminar, Mathematical Institute, University of Oxford *Dec 2024*

CQIF seminar, DAMTP, University of Cambridge *Nov 2024*

Condensed Matter Seminar (virtual), National University of Singapore *Nov 2024*

Quantum Matter in Mathematics & Physics seminar *Jun 2024*
Harvard University Center of Mathematical Sciences and Applications

Symmetry Seminar (virtual), University of Oxford *May 2024*

CMT seminar, Indian Institute of Science *Apr 2024*

CMT Kids' seminar, Harvard University *Feb 2024*

CMT seminar, Boston University *Nov 2023*

Physics colloquium, IIT-B *Jun 2023*

CMT seminar (virtual), Pennsylvania State University *Apr 2023*

Category and Topological Order seminar (virtual) *Nov 2022*
Beijing Institute of Mathematical Sciences and Applications

PUBLICATIONS AND PREPRINTS

The most up-to-date list of my publications can be found on Google Scholar.

[1] S. D. Pace, M. L. Kim, **A. Chatterjee**, S.-H. Shao, *Parity anomaly from LSM: exact valley symmetries on the lattice*, arXiv:2505.04684 (under review)

[2] S. D. Pace, **A. Chatterjee**, S.-H. Shao, *Lattice T-duality from non-invertible symmetries in quantum spin chains*, SciPost Phys. 18, 121 (2025) [arXiv:2412.18606]

[3] **A. Chatterjee**, S. D. Pace, S.-H. Shao, *Quantized axial charge of staggered fermions and the chiral anomaly*, Phys. Rev. Lett. 134, 021601 (2025) [arXiv:2409.12220]

[4] Z. D. Shi, **A. Chatterjee**, *Analytic framework for self-dual criticality in $\mathbb{Z}_k$ gauge theory with matter*, Phys. Rev. B 112, L081111 (2025) [arXiv:2407.07941]

[5] **A. Chatterjee**, Ö. M. Aksoy, X.-G. Wen, *Gapped phases and phase Transitions in spin chains with noninvertible symmetries*, SciPost Phys. 17, 115 (2024) [arXiv:2405.05331]

[6] I. T. Rosen, S. Muschinske, C. N. Barrett, **A. Chatterjee**, *et al.*, *A synthetic magnetic vector potential in a 2D superconducting qubit array*, Nat. Phys. 20, 1881 (2024) [arXiv:2405.00873]

[7] **A. Chatterjee**, W. Ji, X.-G. Wen, *Emergent generalized symmetry and maximal symmetry-topological-order*, Phys. Rev. B 112, 115142 (2025) [arXiv:2212.14432]

[8] **A. Chatterjee**, X.-G. Wen, *Holographic theory for continuous phase transitions: emergence and symmetry protection of gaplessness*, Phys. Rev. B 108, 075105 (2023) [arXiv:2205.06244]

[9] **A. Chatterjee**, X.-G. Wen, *Symmetry as a shadow of topological order and a derivation of topological holographic principle*, Phys. Rev. B 107, 155136 (2023) [arXiv:2203.03596]

[10] M. Chatterjee, **A. Chatterjee**, A. Nandi, A. Sain, *Dynamics and stability of contractile acto-myosin ring in the cell*, Phys. Rev. Lett. 128, 068102 (2022) [arXiv:2007.13441]

[11] A. Fischer, **A. Chatterjee**, T. Speck, *Aggregation and sedimentation of active Brownian particles at constant affinity*, J. Chem. Phys. 150, 064910 (2019) [arXiv:1811.05746]