



Purdue Quantum Science and Engineering Institute



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Shawn Xingshan Cui is an assistant professor in the Departments of Math, Physics and Astronomy at Purdue University. He obtained a bachelor's degree from Sun Yat-Sen University (China) in 2010, and a PhD in Mathematics from UCSB in 2016. He then spent two years (2016-2018) at Stanford University as a postdoc. From 2018 to 2019, he was an Assistant Professor at Virginia Tech.

Cui's research lies in the area of quantum mathematics, i.e., quantum topology, quantum algebra, and quantum computation. Among other subjects, he is interested in topological quantum field theories, higher categories, low dimensional topology, and topological quantum computation.

On Topological Quantum Computing

Tuesday, October 15, 2019

3:30 – 4:30 p.m.

MRGN 129

We give an introduction to the theory of topological quantum computing (TQC), which is an approach to realizing quantum computation with non-Abelian anyons. In terms of computational power, TQC is equivalent to other models of quantum computation such as the quantum circuit model, but TQC has the advantage of being automatically fault-tolerant. We discuss some issues in TQC regarding universality, entanglement, and leakage.