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沖縄科学技術大学院大学

VISITING PROGRAM

TSVP TALK

Generalized Symmetries in Quantum Matter

2025 THU. Jun. 19

15:30–16:30

HYBRID L4E48, ZOOM

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Symmetry has long been a cornerstone of physics, underpinning conservation laws, fundamental interactions, and the classification of phases of matter. In recent years, profound generalizations of symmetry have emerged, extending beyond the traditional framework of point-like transformations in closed systems. These include higher-form symmetries, subsystem symmetries, non-invertible symmetries, and symmetries in mixed-state quantum systems, among others. This broader perspective is reshaping our understanding of quantum matter, uncovering deep connections between anomalies, dualities, and phases beyond the conventional Landau paradigm.

In this talk, I will present key examples of generalized symmetries in an accessible manner, highlight their role in modern quantum many-body physics, and discuss how they unify ideas across high-energy physics, condensed matter, and quantum information science.

Georgia Institute of Technology, USA

Zhu-Xi Luo

Dr. Luo obtained her PhD from University of Utah in 2019, after which she moved to Kavli Institute for Theoretical Physics University of California, Santa Barbara as a Simons postdoctoral fellow. In 2022 she joined Harvard University as a postdoc. She has been an assistant professor at Georgia Institute of Technology since 2024. Her research interest lies in strongly correlated electrons and its intersections with other fields in theoretical physics. More specifically, her recent works focus on moiré physics and generalized symmetries.

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