Weekly Seminar

Nonabelian Anyon Condensation in 2+1d Topological Orders: A String-Net Model Realization

Yidun Wan

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Time: 3:00 pm, Oct. 16, 2024 (Wednesday)

时间：2024年10月16日 （周三）下午3:00

Venue: Room w563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

We develop a comprehensive framework for realizing anyon condensation of topological orders within the string-net model by constructing a Hamiltonian that bridges the parent string-net model before and the child string-net model after anyon condensation. Our approach classifies all possible types of bosonic anyon condensation in any parent string-net model and identifies the basic degrees of freedom in the corresponding child models. Compared with the traditional UMTC perspective of topological orders, our method offers a finer categorical description of anyon condensation at the microscopic level. We also explicitly represent relevant UMTC categorical entities characterizing anyon condensation through our model-based physical quantities, providing practical algorithms for calculating these categorical data.

About the speaker

Yidun Wan is a tenured professor of physics at Fudan University. He has a diverse educational background, with bachelor degrees in computer science and economics from South China University of Technology (1998), master of computer science from University of Pennsylvania (2002), master of physics from University of Ottawa (2004), and PhD in theoretical physics from University of Waterloo and Perimeter Institute for Theoretical Physics (2009). He also did postdoctoral research at Kinki University, Tokyo University, and Perimeter Institute for Theoretical Physics from 2009 to 2016. He joined Fudan as a professor in 2016. His research interests include cosmology, topological orders, quantum information and computation, quantum gravity, and their interdisciplinary studies.