



Seminar

Majorana Lattice Gauge Theory: Symmetry Breaking, Topological Order and Intertwined Orders All In One

Jian-Jian Miao

The Chinese University of Hong Kong



Time: 10:00am, Mar. 9, 2023 (Thursday)

时间: 2023年3月9日 (周四) 上午10:00

Venue: Room w563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

The Majorana lattice gauge theory purely composed of Majorana fermions on square lattice is studied thoroughly. The ground state is obtained exactly and exhibits the coexistence of symmetry breaking and topological order. The Z_2 symmetry breaking of matter fields leads to the intertwined antiferromagnetic spin order and η -pairing order. The topological order is reflected in the Z_2 quantum spin liquid ground state of gauge fields. The Majorana lattice gauge theory, alternatively can be viewed as interacting Majorana fermion model, is possibly realized on a Majorana-zero-mode lattice.

About the speaker

Jian-Jian Miao, Research Assistant Professor in The Chinese University of Hong Kong. Miao got Bachelor degree in 2012 and PHD degree in 2017 both from Zhejiang University (ZJU). During 2017-2019, Miao joined as a Postdoctoral Fellow in the Kavli Institute for Theoretical Sciences (KITS) at the University of Chinese Academy of Sciences (UCAS). Since 2019, Miao has served as a Research Assistant Professor in The Chinese University of Hong Kong (CUHK) and currently a Visiting Scholar in The University of Hong Kong (HKU). Miao's research interest has been focused on Theoretical Condensed Matter Physics, mainly about Superconductors and Strongly Correlated Systems. Miao has published more than 10 peer-reviewed journals, including *Physical Review Letters*, *National Science Review* and so on.