



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学术报告

Physics Seminars (biweekly)

- Title:** Fermionic SPT Phases in 3D:
“Majorana loops” and Crystalline Equivalence Principle
- Speaker:** Chenjie Wang
The University of Hong Kong
- Time:** 2:00pm, Wednesday, May 22, 2019
(1:30~2:00pm, Tea and Coffee)
- Venue:** Conference Hall 322, Science Building, Tsinghua University

Abstract

Symmetry-protected topological (SPT) phases of bosons have been widely studied in recent years. Extensions of these studies into fermionic systems turn out to be not very straightforward. In this talk, I will discuss some aspects of fermionic SPTs with unitary symmetries in three dimensions, whose existence inevitably requires strong interaction. Both SPT phases with internal and spatial symmetries (e.g., rotations) will be touched. Two results will be emphasized: (1) After gauging the internal symmetries, there exist certain loop-like gauge fluxes, which carry Majorana zero modes if linked with some other loops, but not if unlinked. (2) For the recently proposed correspondence principle between crystalline topological phases and those with internal symmetries to be precisely hold, we show that there is a subtlety involving the central extension structure of the symmetry group by the Z_2 fermion parity.