



THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Average Symmetry-Protected Topological Phases: Construction and Detection

by

Dr. Jian-Hao (Sergio) ZHANG (張健豪博士)

Department of Physics

The Pennsylvania State University, USA

Date: October 11, 2022 (Tuesday)

Time: 3:00 - 4:00 p.m.

Place: Rm. G26, Science Centre North Block, CUHK

ALL INTERESTED ARE WELCOME

Abstract

Symmetry-protected topological (SPT) phases are many-body quantum states that are topologically nontrivial as long as the relevant symmetries are unbroken. In this talk, I will show that nontrivial SPT phases can also be well-defined for average symmetries where the quenched disorders locally break the symmetry, but restore the symmetry on average. The “domain wall decoration” configuration plays an important role in constructing the average SPT phases. In particular, there are an amount of average SPT phases that do not have any clean limit. I will further introduce the notion of a “strange density matrix” to detect the nontrivial average SPT phases in the bulk.