



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

学术报告

- Title:** Synthetic topological defects and synthetic spaces in ultracold atoms
- Speaker:** Qi Zhou 周琦 (*Purdue University*)
- Time:** 3:00pm, Friday, September 14, 2018
- Venue:** Conference Hall 322, Science Building, Tsinghua University

Abstract

I will discuss how to engineer laser-atom interactions for creating synthetic topological defects and synthetic spaces. Engineered couplings between internal states of ultracold atoms have allowed experimentalists to deliver a Yang monopole in laboratories. I will show that interactions lead to topological defects beyond the descriptions of single particle physics. Discrete defects may even be turned into continuous ones, a new type of “more is different” phenomena. I will also discuss a recent progress towards creating a synthetic Hall cylinder, a cylindrical surface with a net effective magnetic flux. Such Hall cylinder offers a Bose-Einstein condensate a range of intriguing properties that are distinct from their counterparts living in planar spaces.