



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: A web of dualities in many-body quantum physics

Speaker: Chong Wang 王翀 (*Harvard University*)

Time: 4:00pm, Tuesday, March 13, 2018
(3:30~4:00pm, Tea and Coffee)

Venue: Conference Hall 322, Science Building, Tsinghua University

Abstract

Two seemingly different quantum field theories may secretly describe the same underlying physics — a phenomenon known as “duality”. Duality has been proved powerful in condensed matter physics, since many difficult questions can be drastically simplified in certain “dual” pictures. This is especially valuable for strongly interacting many-body problems, for which traditional tools (such as perturbation theory) are often not applicable.

Recent developments on dualities have also revealed deep connections between several previously unrelated topics in modern condensed matter physics, including topological insulators, fractional quantum Hall effects and quantum phase transitions. Connections were also made between dualities in condensed matter physics and in high energy physics. I will give a brief review of some of these developments.