物理学术报告
Physics Seminars (biweekly)

Title: **Monopoles in algebraic spin liquids:
towards a unified view on 2D quantum magnetism**

Speaker: **Chong Wang 王翀**
(Perimeter Institute for Theoretical Physics)

Time: **4:00pm, Tuesday, September 18, 2018**

(3:30~4:00pm, Tea and Coffee)

Venue: **Conference Hall 322, Science Building, Tsinghua University**

Abstract

Quantum magnets provide the simplest example of strongly interacting quantum matter, yet they continue to resist a comprehensive understanding above one spatial dimension. In this talk I will discuss a single effective theory, Quantum Electrodynamics (QED3), that describes multiple orders on different two dimensional lattices in a unified framework. This theory includes photons, four flavors of Dirac fermions, as well as monopoles, an important class of excitations that drive confinement. By resolving the long standing open issue of monopoles and their symmetry properties, we naturally account for various orders on both bipartite lattices such as the square and honeycomb as well as non-bipartite triangular and Kagome lattices. Our theory points to two different scenarios for these two types of lattices. In particular, in spin models on non-bipartite lattices, the QED3 theory may be stabilized, giving rise to a stable algebraic spin liquid phase.