



THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Surface Magnetism and Fractionalization

by

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Time: 4:00 - 5:00 p.m.

Place: L2, Science Centre, CUHK

ALL INTERESTED ARE WELCOME

Abstract

I will first talk about the interplay between the surface magnetism and time reversal symmetry protected Dirac electrons on the surface of 3d topological insulator. In addition to the simple ferromagnetism, there exist other competing magnetic states that include spiral antiferromagnets and skyrmion lattice. We further show that the novel magnetic structure feeds back to the itinerant electrons on the surface, generating distinct electron structures and surface states. I will then discuss the surface fractionalization in a 3d cluster Mott insulator. It is observed that, the surface generates local moments in an anomalous fashion and these moments could lead to exotic fractionalized spin liquid states.

References:

Twisted magnetic topological insulators
CK Li, XP Yao, G Chen
Phys. Rev. Research 3, 033156 (2021)

Fractionalization on the surface: Is type-II terminated 1T-TaS₂ surface an anomalously realized spin liquid?
CK Li, XP Yao, G Chen
arxiv preprint 2109.08093

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