



THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Illuminating Quantum Phases Emergent Under High Pressure

by

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Place: Rm G25, Science Centre North Block, CUHK

ALL INTERESTED ARE WELCOME

Abstract

High pressure provides a powerful and clean means of tuning the interactions that govern quantum materials, often revealing phases inaccessible at ambient conditions. By compressing a system, we can modify lattice geometry, electronic bandwidth, and competing orders, allowing us to disentangle the interplay among spin, orbital, and lattice degrees of freedom. Although optical studies in these extreme environments must contend with stringent experimental constraints, they offer unique access to the evolution of excitations and symmetry changes across a wide range of materials. In this talk, I will discuss how we employ complementary optical techniques to probe the quantum physics of the strongly spin orbit coupled Mott insulator and Weyl semimetal under extreme conditions. Taken together, these experiments open new windows into quantum materials by providing multiple probes for accessing and studying novel phases.