



THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Topology, Symmetry, and Locality in Quantum Materials

by

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Place: Rm. G25, Science Centre North Block, CUHK

Join ZOOM Meeting: <https://cuhk.zoom.us/j/97704147633>



ALL INTERESTED ARE WELCOME

Abstract

A typical caricature of topological materials is the existence of robust anomalous surface states reflecting the presence of irremovable quantum entanglement in the bulk. In this talk, we will take a different point of view and emphasize instead the tension between symmetries and locality in such quantum materials. We will illustrate this tension through the example of twisted bilayer graphene, in which the nontrivial band topology, descending from the anomalous nature of Dirac fermions, forbids a manifestly local and symmetric description of the active degrees of freedom. Next, we will consider strongly correlated electronic systems well-described as lattices of quantum spin moments, and discuss how topological obstructions to constructing strongly localized symmetric ground states could be translated into constraints on the possible phases emerging in the system.