

## **Detecting Topological Superconductivity via Quantum Geometric Effects**

**Yi-Ting HSU**

**Department of Physics and Astronomy, University of Notre Dame**

**Email: [yhsu2@nd.edu](mailto:yhsu2@nd.edu)**

Unambiguous identification of topological superconductivity (TSC) remains a central challenge in condensed matter physics. While most experimental efforts have focused on detecting Majorana boundary modes, bulk signatures of TSC remain far less explored. In this talk, I will present a strategy for predicting and identifying non-Majorana signatures of TSC based on quantum geometric quantities, including momentum- and phase-space Berry curvatures. I will discuss qualitative fingerprints of TSC in thermoelectric responses and angle-resolved photoemission spectroscopy (ARPES), highlighting experimentally accessible criteria for diagnosing two-dimensional (2D) TSC phases. Our predictions provide broadly applicable diagnostic criteria for emerging 2D superconducting platforms, including monolayer and few-layer van der Waals materials.