

RICE QUANTUM GROUP MEETING SEMINAR SERIES



Date: March 25, 2022, Friday

Time: 3PM - 4PM

Venue: SST 300

Research Group: Prof. Ming Yi's Group

Presenter: [Jianwei Huang](#)

Title: [Angle-Resolved Photoemission Spectroscopy and Its Revealing of a Topological Phase Transition in Bi₄I₄](#)

Abstract: Angle-resolved photoemission spectroscopy (ARPES) is a direct method to probe the electronic structures of quantum materials, which fundamentally determine their physical properties. It has proven to play a significant role in exploring the exotic phenomena of a variety of quantum materials, e.g., high temperature superconductors, topological materials, transition metal dichalcogenides, heavy fermion systems, etc. Recently, one kind of quasi-one-dimensional (1D) material, Bi₄X₄ (X = Br, I), was proposed as a fascinating new platform superior for studying diverse topological phases and tuning their topological phase transitions. In this talk, I will mainly present our recent results on revealing a temperature-induced topological phase transition at 300 K in Bi₄I₄ by tracking its electronic structure evolution with ARPES technique. Specifically, this transition is identified for the first time to be a rare topological phase transition between a first-order topological insulator (TI) and a higher-order TI. I will also talk about some of our recent ARPES results on different quantum materials and our efforts in extending the abilities of ARPES technique through applying external perturbations in situ on materials.

Short Bio: Jianwei Huang received his Ph.D. degree at Institute of Physics, Chinese Academy of Sciences, and now is a postdoc working with Prof. Ming Yi at Rice University. His research interests are experimental condensed matter physics, particularly in using angle-resolved photoemission spectroscopy to study strongly correlated electronic systems like high temperature superconductors, low-dimensional materials and topological materials.

Note: Snacks and Coffee will be served during the event.