TCSUH SPECIAL TEAMS WEBINAR

Thursday, November 5, 2020 – 12:00 p.m. to 1:00 p.m.

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Scanning Tunneling Microscopy of Emergent Topological Matter

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ABSTRACT: The search for topological matter is evolving towards strongly interacting systems including topological magnets and superconductors, where novel effects and unusual phases emerge from the quantum level interplay between geometry, correlation, and topology. Equipped with unprecedented spatial resolution, electronic detection, and magnetic tunability, scanning tunneling microscopy has become an advanced tool to probe and discover the emergent topological matter. In this talk, I will review the proof-of-principle methodology to study the elusive quantum topology in this discipline, with particular attention on the studies under a vector magnetic field as the new direction, and project future perspectives in tunneling into other hitherto unknown topological matter.

BRIEF BIO: Dr. Jiaxin Yin is currently a Postdoctoral Researcher in Prof. Zahid Hasan's team at Princeton University, and focuses on the scanning tunneling microscopy of emergent topological matter, including topological magnets and superconductors. He received his Ph.D. degree in 2016 from the Institute of Physics, CAS, under Prof. Hong Ding and Prof. Shuheng Pan. In 2015, he observed a Majorana-like zero-energy mode in an iron-based superconductor Fe(Te,Se), which directly simulates later theoretical and experimental confirmation of nontrivial topology in several iron-based superconductors. Recently, he developed a vector magnetic field based scanning tunneling microscopy technique to discover unpredicted topological phases in several classes of magnets, including $TbMn_6Sn_6$, Fe_3Sn_2, $Co_3Sn_2S_2$, Mn_3Sn and CoSn families.