CONDENSED MATTER SCIENCES SEMINAR

Professor Onur Erten

Arizona State University

Host

Dr Hitesh Changlani

Title

Emergent phases in Kitaev spin-orbital magnets

Friday, November 6th, 2026

1st Floor – B101

15:00-16:00

Abstract

The Kitaev model provides an elegant framework for realizing quantum spin liquids, yet it is notoriously fragile since most perturbations that fail to commute with the flux operators. A promising route to overcome this limitation lies in spin-orbital generalizations of the Kitaev model. In this talk, I will discuss the rich landscape of emergent phases stabilized in these systems [1,2,3]. I will further show that the coexistence of local and topological order enables the emergence of novel fractional excitations, including fractionalized Goldstone modes [4].

[1] A. Vijayvargia, E. Day-Roberts, A. Botana, O. Erten Phys. Rev. Lett. 135 166701 (2025).

[2] M. Akram, A. Vijayvargia, H.-Y. Kee, O. Erten npj Quantum Materials (2026).

[3] M. Keskiner, M. Oktel, N. Perkins, O. Erten Mat. Today Quantum, 100038 (2025).

[4] A. Vijayvargia, E. Nica, R. Moessner, Y.-M. Lu, O. Erten PRR 5 2, L022062 (2023).

Short Bio

Onur Erten received his Ph.D. from The Ohio State University. He held postdoctoral positions at Rutgers University and the Max Planck Institute for the Physics of Complex Systems before joining Arizona State University, where he is currently an associate professor. His research focuses on theoretical condensed matter physics, with interests spanning strongly correlated electron systems, quantum magnetism, superconductivity, and topological phases in quantum materials.