

High magnetic field research on correlated electron systems at NTHU

Friday, 7 February 2025 15:00 (30 minutes)

The ability to generate high magnetic field exceeding 30 T in a controlled manner, in combination with the create of ultra-low temperature environment, in large-scale international research facilities have play a pivotal role in uncovering new phenomena in condensed matter research. Transition metal oxides, in particular, offer a fertile playground to realize novel quantum phase of matter, thanks to its diverse structural motifs and electronic configurations. In this talk, I will introduce the research topics that are being actively pursued using large magnetic fields, including the manipulation of electronic ground state in correlated iridate semimetal, investigation of transport phenomenology in new nickelate superconductors, and probing of phase-incoherent superconductivity in overdoped high-T_c cuprates. Challenges, prospects, and collaborative opportunities in these research activities will be discussed.

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