

Chez Pierre

Presents ...

Monday, October 16, 2023

12:00 pm -1:00 pm

Duboc Room – 4-331



Chez Pierre Seminar

Lu Li, University of Michigan

“Quantum Oscillations in Kondo Insulators and Mott Insulators”.

Quantum oscillations in magnetization and resistivity of Kondo insulator YbB12 bring excitations into the possibility of Landau Level quantizations of fermions other than electrons [1, 2, 3]. However, two questions still exist: First, is the oscillation a bulk effect of the whole crystal, not from a minority or a filament phase? Second, is this effect due to the narrow energy gap comparable to the applied magnetic fields? To address the first question, I will discuss our latest thermodynamic evidence of quantum oscillations in YbB12. For the second question, I will review our long effort of searching for quantum oscillations in Mott insulators [4] and recent observations of potential field-driven Dirac fermions.

[1] Z. Xiang, et al. *Science* 362, 65 (2018).

[2] Z. Xiang, et al. *Nature Physics*. 17, 788 (2021).

[3] Z. Xiang, et al. *Physical Review X* 12, 021050 (2022).

[4] T. Asaba et al. *Physical Review B* 90, 064417 (2014).