

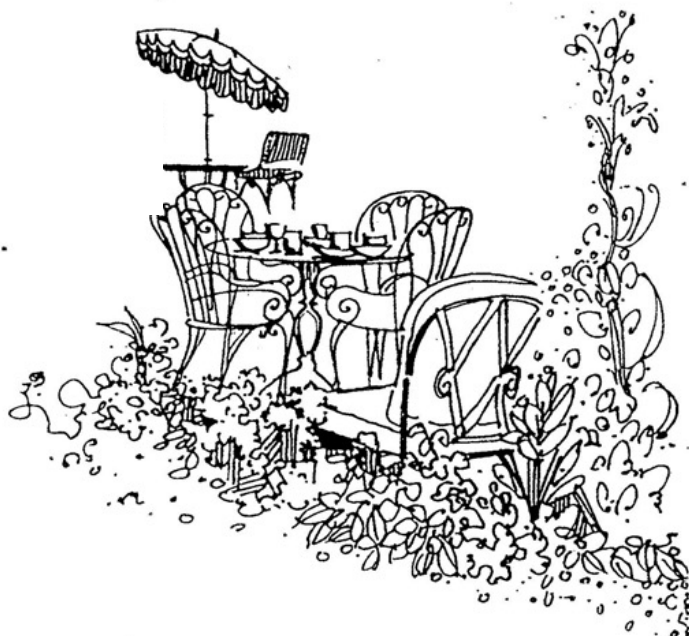
Chez Pierre

Presents ...

Monday, December 8, 2025

12:00 pm -1:00 pm

Duboc Room – 4-331



Chez Pierre Seminar

Gregory Boebinger, Florida State University

“Quasiparticles at the Heart of Quantum Matter”

Within the wide range of materials grouped under the heading of “Quantum Matter”, electron charges and electron spins conspire in weird and collective ways to create new quasiparticles that display unusual properties. Magnetic fields are often valuable for probing these quasiparticles at the heart of Quantum Matter, where Nature creates magnetic Bose-Einstein Condensates in certain two-dimensional insulators. Yet in similar two-dimensional metals, Nature creates high-temperature superconductivity and a simple resistive behavior that causes some to call into question the very existence of distinct quasiparticles. In other two-dimensional insulators, physicists find spin liquids that separate the electron charge from its spin, and, in their three-dimensional analogs, physicists find magnetic monopoles. Finally, we can illustrate how quasiparticle excitations form with precisely $1/3$ of an electron charge in an ideal two-dimensional metal subjected to an intense magnetic field.