

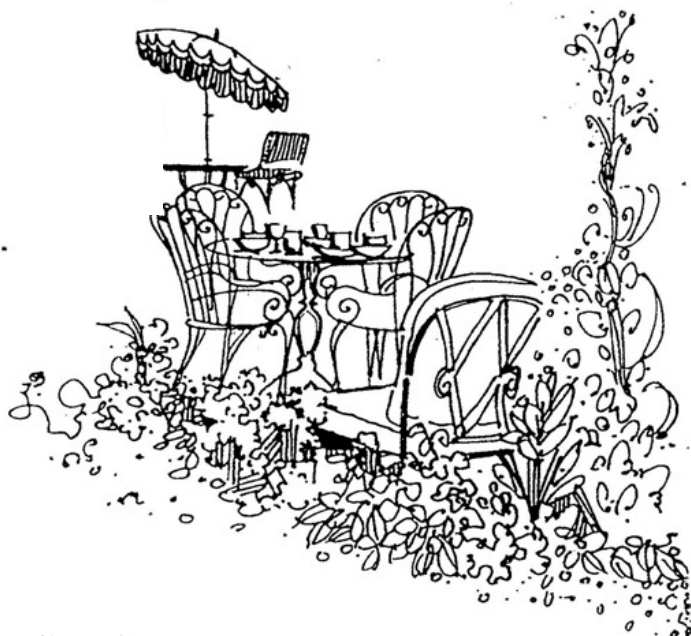
Chez Pierre

Presents ...

Tuesday, September 23, 2025

12:00 pm - 1:00 pm

Duboc room – 4-331



Special Chez Pierre Seminar

Chenhao Jin, UC Santa Barbara

“Beyond the Ground State: Nonequilibrium Probes of the Correlated Flatland”

A plethora of correlated many-body ground states have been reported in two-dimensional (2D) van der Waals systems. On the other hand, the dynamics and excitations associated with these correlated states remain largely unexplored, which are crucial for understanding the underlying physics. In this talk, I will discuss our recent efforts in investigating excitations in 2D flatband systems, particularly the neutral modes that are often inaccessible to conventional experimental probes. By combining exciton sensing with optical pump-probe spectroscopies, we reveal the presence of unusually long-lived isospin (spin and valley) modes in magic-angle twisted bilayer graphene (MATBG), which can give rise to strong isospin fluctuations. The integration of wide-field imaging further allows us to track the full space-time evolution of neutral modes and to disentangle multiple coexisting modes from their distinct propagation. Our results open new avenues for studying and engineering flatband systems through nonequilibrium approaches.