Chez Pierre

Presents ...

Monday, November 14, 2022
12:00 pm
Duboc Room - 4-331

Chez Pierre Seminar

Debanjan Chowdhury, Cornell University

"Superconductivity and competing orders in the flat-band limit".

Superconductivity in the limit of a vanishing bandwidth in isolated bands is a classic example of a non-perturbative problem, where BCS theory does not apply. What sets the superconducting phase stiffness, and relatedly the transition temperature, in this limit is of both fundamental and practical interest. This question has become especially relevant with the discovery of superconductivity in moiré materials. I will begin by examining critically the relevance of various proposed bounds on the superconducting transition temperature and propose a non-perturbative upper bound on the integrated optical spectral weight for partially filled electronic flat bands with generic density-density interactions. I will also present numerically exact results for the interplay between superconductivity and various competing orders in models of interacting flat-bands.