

Séminaire général de physique de l'Institut Polytechnique de Paris
Département de physique de l'École polytechnique

TUNING FLAT BAND IN FLATLANDS



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In a flat band system, the charge carriers' energy-momentum relation is very weakly dispersive. The resultant large density of states and the dominance of Coulomb potential energy relative to the kinetic energy favor the formation of strongly correlated electron states, such as ferromagnetism, nematicity, and superconductivity. The advent of two-dimensional (2D) materials and their heterostructures has ushered in a new era

for exploring, tuning and engineering of flat band system. Here I will present our recent works, including tunable magnetism in rhombohedral graphene, experimental resolution of the paradox of flat band superconductivity by quantum geometry in twisted bilayer graphene, and *in operando* tuning Coulomb interactions. I will conclude with a brief outlook on outstanding questions in the field of moiré-tronics.

MONDAY,
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5:15 pm - 6:30 pm
AMPHITHÉÂTRE :
1002 - BEM
ÉCOLE POLYTECHNIQUE

