ICFO

SEMINAR: Mapping the Moire Potential in Multi-Layer Rhombohedral Graphene

ERIC SEEWALD

June 18, 2026
15:00 to 16:00
Seminar Room

Rhombohedral graphene (rG) aligned with hexagonal boron nitride (hBN) has been shown to host flat bands that stabilize various strongly correlated quantum phases, including Mott insulators, integer, and fractional quantum anomalous Hall phases. In this work, we use scanning tunneling microscopy/spectroscopy (STM/STS) to visualize the dispersion of flat bands with doping and applied displacement fields in a hBN-aligned rhombohedral trilayer graphene (rtG)/hBN moire superlattice. In addition to the intrinsic flat bands of rtG induced by the displacement field, we observe low-energy features originating from moire potential-induced band folding. Real-space variations of the spectroscopic features allow us to quantify the spatial structure of the moire potential at the rtG/hBN interface. Importantly, we find that accurately capturing the moire site-dependent spectra requires incorporating a moire potential acting on the top graphene layer with a sign opposite to that of the bottom layer into the continuum model. Our results thus provide key experimental and theoretical insights into understanding the role of the moire superlattice in rG/hBN heterostructures.

Hosted by: Prof. Dr. Carmen Rubio-Verdu