

Séminaire

Mercredi 13 juin

11 heures

Salle Pierre Grivet (Salle 44) du C2N site Orsay

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“Twistable electronics with dynamically rotatable heterostructures”

Abstract:

The electronic properties of two-dimensional materials and their heterostructures can be dramatically altered by varying the relative angle between atomic planes. This makes it theoretically possible to realize a new class of twistable electronics in which device properties can be manipulated on-demand by simply rotating the structure. A significant limitation to exploiting this unique degree of freedom, however, has been the difficulty to precisely vary the rotational order. Here, we demonstrate a new device architecture in which a layered heterostructure can be dynamically twisted, in situ. We study graphene encapsulated by boron nitride where at small rotation angles the device characteristics are dominated by coupling to a large wavelength Moiré superlattice. The ability to investigate arbitrary rotation angle in a single device reveals new features in the optical, mechanical and electronic response in this system. Our results establish the capability to fabricate twistable electronic devices with dynamically tunable properties.

