SEMINAR: Accessing topological properties of 2D materials using scanning tunneling microscopy

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12:00 to 13:00
Seminar Room

2-Dimentional stacks are versatile platforms that host many correlated phases. Some of these exotic phases not only rely on electronic correlations but also the non-trivial topology of the bands of these systems. This is the case in twisted bilayers of graphene (TBLG), for the orbital magnet state for example [1] ; or in twisted MoTe2, in which topology expresses with th apparition of the fractional quantum anomalous Hall effect [2]. I will discuss how it is possibl to access this non-trivial topology with scanning tunneling microscopy, using th atomic-scale local density of states (LDOS) of 2D materials as a topological observable. I wil present two different approaches to tackle this : exploiting the energy dependence of t e LDOS in tMoTe2, or using defects to create interferograms in tBLG.

[1] Lu. X et al. Nature 574 (2019) 653
[2] H. Parks et al, Nature 622, 2023

Hosted by: Prof. Dr. Carmen Rubio-Verdu