



Seminar announcement

Tuesday, June 10, 2025

1:30 pm

WSI, Seminar room S 101

Exclusively in person

“Engineering ultra-pure 2D quantum interfaces: UHV-based twistrionics and device fabrication”

Recent breakthroughs in the manipulation of complex quantum materials—particularly through the fabrication of atomically thin films—have opened new avenues for controlling exotic electronic phenomena via nanoscale engineering. Among these, the development of twisted van der Waals heterostructures stands out as a transformative approach, enabling access to correlated and topological quantum states with high tunability. In this talk, I will present our recent advances in ultra-high vacuum (UHV)-based fabrication techniques that enable the realization of atomically clean, high-quality 2D heterostructures. These methods not only ensure the formation of ultra-pure interfaces free from environmental and process-induced contamination, but also allow for the direct nanofabrication of devices under UHV conditions. This integrated approach is key for preserving delicate quantum properties, particularly in systems such as superconductors and magnetic 2D layers. I will discuss how these techniques contribute to a deeper understanding of emergent quantum phenomena and open new possibilities for next-generation quantum electronic devices.

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