SEMINAR: Twisted trilayer graphene under the microscope

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12:00 to 13:00
Blue Lecture Room

The twist angle between adjacent van der Waals layers provides a powerful tuning knob to control band structure. In this talk, I will describe single-electron transistor microscopy of twisted trilayer graphene which reveals a rich interplay between its structural and electronic degrees of freedom. In devices with one small and one large twist angle, we demonstrate coexisting flat and dispersive bands and map how the resulting correlated ground states evolve with interlayer angle. In a contrasting limit of helical trilayer graphene with equal angles, we observe periodic spatial modulations in electronic character. This indicates relaxation into a superstructure of large domains with uniform moire periodicity, enabling tuning of electronic properties on two independent length scales. I will discuss how our results inform the broader phase diagram of twisted graphene multilayers and their unique quantum electronic phases.

Hosted by: Prof. Dr. Frank Koppens