Max-Planck-Institut für Struktur und Dynamik der Materie

Max Planck Institute for the Structure and Dynamics of Matter

IMPRS UFAST Call for PhD applications 2024/2025

JS1 & FM - Moiré quantum materials

Title of PhD Project	**Moiré quantum materials**
Type	Experimental
Supervisor(s)	Prof. Kin Fai Mak and Prof. Jie Shan
Affiliation(s):	Max Planck Institute for the Structure and Dynamics of Matter
Number of positions:	Multiple
Abstract:	We will explore exotic quantum states of matter and their quantum phase transitions in highly tunable moiré materials. Examples include fractional Chern and fractional topological insulators, unconventional superconductivity, exciton condensates and quantum spin liquids. We will study these states of matter using a wide range of experimental tools, including nanofabrication, optical microscopy and spectroscopy, quantum transport measurements, scanning probe microscopy and thermodynamics probes. As an experimental group, we are also interested in developing new nanoscale device platforms and measurement techniques to tackle specific problems of interest.
Contact person for scientific questions about the project:	Prof. Kin Fai Mak: km627@cornell.edu Prof. Jie Shan: jie.shan@cornell.edu
Research Group Website:	https://sites.google.com/site/makshangroup/home