

Next Generation Moiré Quantum Matter

Pablo Jarillo-Herrero¹

¹*Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, USA*

pjarillo@mit.edu

The understanding of strongly-interacting quantum matter has challenged physicists for decades. The discovery five years ago of correlated phases and superconductivity in magic angle twisted bilayer graphene has led to the emergence of a new materials platform to investigate strongly interacting physics, namely moiré quantum matter. In this talk I will review recent experiments on next generation moiré quantum matter, both twisted multilayer graphene systems as well as dual (or asymmetric) moiré systems. In particular, first I will briefly discuss our experiments on magic-angle twisted multilayer graphene as a family of robust moiré superconductors. Second, I will discuss the engineering of moiré quasicrystals and a new type of unconventional ferroelectricity and electron ratchet in asymmetric moiré systems.