

***Moiré-induced non-linearities: From multi-photon resonance to translational symmetry breaking in driven-dissipative moiré systems***

Abstract:

Moiré lattices formed from semiconductor bilayers host tightly localised excitons that simultaneously couple strongly to light and possess a large electric dipole moment. In this talk, we will show that the moiré platforms enable the realization of a new form of polaritons that exhibit strong optical non-linearities controlled by the underlying discrete character of the matter excitations. We will demonstrate the emergence of multi-photon resonances, “discrete” bi-stabilities, the appearance of states with broken translational symmetry, and discuss the role of free carriers on the optical response.