

Revealing Exotic Quantum Physics in Two-Dimensional Materials

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Reducing the dimensionality of materials often leads to exotic quantum phenomena absent in three-dimensional systems. Two-dimensional materials such as graphene and monolayer transition metal dichalcogenides provide ideal platforms for exploring emergent quantum physics due to their simplified and highly tunable electronic structures. In this talk, I will present recent advances in two-dimensional quantum materials studied using angle-resolved photoemission spectroscopy (ARPES) and time-resolved ARPES (trARPES). These techniques enable direct visualization of electronic band structures and ultrafast dynamics, providing unique insight into quasiparticle interactions and emergent quantum phenomena.