

Quasiparticle excitations in low-dimensional materials

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Low-dimensional materials, such as layered transition metal dichalcogenides and their single-layers, have gained significant attention in the realm of condensed matter physics due to their unique electronic and optical properties. The reduced dimensionality of these materials plays a pivotal role in offering intriguing characteristics due to strong confinement effect, modified band structure and reduced dielectric screening. Quasiparticles as collective excitations arising from complex interactions between electrons and the surrounding lattice, are indispensable tools for understanding the electronic behaviour of these materials. Angle-resolved photoemission spectroscopy allow for direct observation of these excitations with a very high energy and momentum resolution. In this talk, I will discuss the mightiness of this indispensable technique with some recent results on single-layer and electron-doped transition metal dichalcogenides.