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Electronic structure of WSe_2 and monolayer CrSBr on template-stripped gold



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This talk will present μ ARPES studies of WSe_2 and CrSBr on ultraflat template-stripped gold (TSG). In the case of WSe_2 , the Au substrate provides a model platform for understanding the interface formed during gold-assisted exfoliation. μ ARPES, core-level spectroscopy, and first-principles calculations reveal rigid band shifts together with pronounced hybridisation near Γ , consistent with interfacial charge transfer and an interaction strength best described as covalent-like quasi-bonding.

Building on this, I will discuss monolayer CrSBr on Au. μ ARPES reveals charge transfer from the substrate, populating the conduction band of monolayer CrSBr and producing a pronounced reduction in the quasiparticle band gap. Furthermore, two separate conduction bands are observed, with a splitting at the X point. This indicates a breaking of the glide-mirror symmetry, which in the bulk or in a freestanding monolayer protects band degeneracies at the Brillouin-zone boundary.

Together, these results demonstrate that ultra-flat gold substrates do more than modify carrier density and screening: they can lift symmetry-protected degeneracies and fundamentally reshape the low-energy electronic structure of 2D materials.

