PHYSICS

PHYSICS COLLOQUIUM

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Nematicity studied with strain-dependent ARPES

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Nematicity is a phenomenon found in an increasing number of quantum materials with strong electronic correlations. It appears in close proximity to other quantum phases such as unconventional superconductivity. It is therefore important to understand its microscopic origin. The phase diagram of most iron-based superconductors contains a nematic phase. It breaks rotational symmetry and involves an in-plane anisotropy of lattice, spin and charge degrees of freedom. It is currently debated whether spin or orbital degrees of freedom are the driving force and whether there is a common microscopic mechanism in iron-based superconductors with and without magnetic order. To address these questions, we combine angel-resolved photoemission spectroscopy (ARPES) with in-situ tuneable uniaxial strain in order to gain access to the orbital contribution of the nematic susceptibility. In my talk I will present our recent results on the momentum dependence of the nematic order parameter in FeSe and BaFe2As2 .