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Symmetry breaking orbital anisotropy observed in detwinned $Ba(Fe_{1-x}Co_x)_2As_2$ above the spin density wave transition MING YI, Stanford University, D.H. LU, J.-H. CHU, J.G. ANALYTIS, A.P. SORINI, A.F. KEMPER, S.-K. MO, R.G. MOORE, M. HASHIMOTO, W.-S. LEE, Z. HUSSAIN, T.P. DEVEREAUX, I.R. FISHER, Z.-X. SHEN — Nematicity has recently been observed in the competing phases in proximity to the superconducting phase in the cuprates. Similarly, the iron pnictides exhibit symmetry breaking competing phases in the form of a tetragonal to orthorhombic structural transition and a collinear spin density wave (SDW) transition in the underdoped regime. Evidence for strong in-plane anisotropy in the SDW state has been reported by neutron scattering, scanning tunneling microscopy, and transport measurements, but the nature of this nematic behavior is still elusive. Here we present the results of an ARPES study of detwinned single crystals of underdoped $Ba(Fe_{1-x}Co_x)_2As_2$, resolving single domain electronic structure in the orthorhombic SDW state which exhibits strong in-plane anisotropy consistent with other probes. The anisotropy is evident in a large splitting of the dxz and dyz bands, which is seen to develop almost fully above the onset of the long range magnetic order.

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