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Quasiparticle Interference Imaging of the Nematic Electronic Structure in the Parent State of Iron-Based Superconductor $Ca(Fe_{1-x}Co_x)_2As_2$ TIEN-MING CHUANG, Cornell University, National High Magnetic Field Lab, MILAN ALLAN, Cornell University, University of St. Andrews, JINHO LEE, Cornell University, Brookhaven National Lab, YANG XIE, Cornell University, NI NI, SERGEY BUD'KO, Ames Laboratory, GREGORY BOEBINGER, National High Magnetic Field Laboratory, PAUL CANFIELD, Ames Laboratory, J. C. SEAMUS DAVIS, Cornell University, Brookhaven National Lab, University of St. Andrews — Spectroscopic imaging STM is used to study the electronic structure of $Ca(Fe_{1-x}Co_x)_2As_2$ (x=0.03) in the parent state from which the superconductivity emerges. The electronic structure in k-space determined by Fourier transform of real-space conductance images reveals the unidirectional dispersion along b-axis with additional apparent band folding along a-axis. These C2 symmetric quasiparticle interference modulations rotate with orthorhombic twin boundaries. These observations indicate a more complicated electronic nematicity than originally expected in the ferropnictide parent state.

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