

Abstract Submitted
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In-plane transport anisotropy study of oxygen doped iron telluride MBE thin films on LaAlO₃ substrate¹ CAN ZHANG, HUIHUO ZHENG, MAO ZHENG, BRIAN MULCAHY, XIAOXIAO WANG, University of Illinois at Urbana Champaign, YING JIA, ULRICH WELP, Argonne National Laboratory, JAMES ECKSTEIN, University of Illinois at Urbana Champaign — FeTe is well known for its simple crystal structure in the 11 family iron-based high temperature superconductors. We have observed two distinct in-plane transport phenomena in MBE grown FeTe thin films on LaAlO₃ substrates. The first one is an unexpected global alignment of the in-plane transport anisotropy. A low temperature resistivity upturn feature has been observed in the neighborhood of the superconducting transition temperature as a function of transport direction. The resistivity upturn feature emerges from 8K to 20K. The second one is the coexistence of superconductivity with the low temperature resistivity upturn. We will report our studies of these distinct transport anisotropy experimental results comparing them with first principle simulations.

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Can Zhang
University of Illinois at Urbana Champaign

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