Abstract Submitted
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The low temperature Fermi surface of IrTe2 probed by quantum oscillations. SAMUEL BLAKE, AMALIA COLDEA, MATTHEW WATSON, ARJUN NARAYANAN, Oxford University, ALIX MCCOLLAM, HFML, Radboud University, Nijmegen, SHIGERU KASAHARA, TAKUYA YAMASHITA, DAIKI WATANABE, TAKASADA SHIBAUCHI, YUJU MATSUDA, Kyoto University, ROBERT SCHOONMAKER, Durham University — The transition metal dichalcogenide IrTe2 undergoes a structural transition at 280K [1]; doping on the Ir site suppresses this transition and induces superconductivity with Tc of about 3K [2]. The nature of the structural transition is possibly driven by charge disproportionation and the effect this has on the electronic structure of the superconducting state is not fully understood. We report a low temperature investigation of the Fermi surface of IrTe2 from quantum oscillations, using torque measurements performed in magnetic fields up to 33T and temperatures down to 0.3K. The observed extremal areas of the Fermi surface likely correspond to frequencies of a reconstructed Fermi surface, with light effective masses below 0.8me. The angular dependence of these frequencies across multiple crystals of IrTe2 suggests these materials are prone to domain formation upon cooling. We compare our measured Fermi surface with those predicted by electronic structure calculations, based upon the existing structural models, for both above and below the structural transition. This work was supported by EPSRC (UK) and partly by EuroMagnet (EU contract number 228043). [1] Matsumoto et al., J. Low Temp. Phys. 117, 1129 (1999) [2] Fang et al., Sci. Rep. 3, 1153 (2013)

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