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Log-T upturn in resistivity of lightly-doped oxypnictide superconductor in an intense magnetic field Z. STEGEN, S.C. RIGGS, J.B. KEMPER, Y. JO, L. BALICAS, G.S. BOEBINGER, National High Magnetic Field Laboratory, Florida State University, F.F. BALAKIREV, A. MIGLIORI, National High Magnetic Field Laboratory, Los Alamos National Laboratory, H. CHEN, R.H. LIU, X.H. CHEN, Hefei National Laboratory for Physical Science at Microscale and Department of Physics, University of Science and Technology of China — We report the resistivity of a series of fluorine-doped $SmFeAsO_{1-x}F_x$ polycrystalline superconductors in magnetic fields up to 60 T. For underdoped samples ($x < 0.15$), the low-temperature resistive state is characterized by pronounced magneto-resistance including an upturn in the resistivity at low temperatures. The "insulating behavior" is characterized by a log-T divergence observed over a decade in temperature. In contrast, samples with doping $x > 0.15$ display metallic behavior with little magnetoresistance, where intense magnetic fields serve to broaden the superconducting transition rather than significantly suppress T_c. The doping regime for the log-T behavior coincides with the spin density wave (SDW) in the phase diagram for $SmFeAsO_{1-x}F_x$.

Zachary Stegen
National High Magnetic Field Laboratory, Florida State University

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