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Pressure dependent resistivity and magnetic measurements on superconducting KFe_2As_2 UDHARA KALUARACHCHI, VALENTIN TAUFOUR, MAKARIY A. TANATAR, STELLA K. KIM, YONG LIU, THOMAS A. LOGRASSO, SERGEY L. BUD'KO, PAUL C. CANFIELD, Ames Laboratory, US DOE, Iowa State University, Ames, Iowa 50011, U.S.A., NEDA FOROOZANI, JINHYUK LIM, JAMES S. SCHILLING, Physics Dept., Washington University, St. Louis, Missouri 63130, U.S.A. — $Ba_{1-x}K_xFe_2As_2$ shows superconductivity at $T_c \approx 38$ K at the optimal doping ($x \approx 0.4$). However, superconductivity is still observed up to the extreme hole doping ($x = 1$) in KFe_2As_2 with a reduced $T_c \approx 3.4$ K. At this extreme limit, there is no observed electron pocket in this compound. The superconducting state is believed to be of a different symmetry than in the other 122 iron based superconductors. By means of resistivity, magnetization and AC susceptibility under pressure, we investigate the properties of this material. The pressure dependence of T_c has a change of slope around 2 GPa possibly consistent with a transition to a superconducting state of a different symmetry [F. F. Tafti, et al., Nature Physics 9, 349 (2013)]. We will compare measurements performed in different pressure media and discuss the evolution of the electronic correlations with applied pressure. Work at Ames Laboratory supported by AFOSR-MURI grant FA9550-09-1-0603 and by US DOE under the Contract No. DE-AC02-07CH11358. Work at Washington University supported by NSF Grant No. DMR-1104742 and by the Carnegie/DOE Alliance Center through NNSA/DOE Grant No. DE-FC52-08NA28554.

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