

Abstract Submitted
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Magnetic penetration depth in KFe_2As_2 JOE WILCOX, LIAM MALONE, University of Bristol, FREDERIC HARDY, Karlsruhe Institute of Technology, CARSTEN PUTZKE, University of Bristol, THOMAS WOLF, PETER ADELMANN, CHRISTOPH MEINGAST, Karlsruhe Institute of Technology, ANTONY CARRINGTON, University of Bristol — KFe_2As_2 is the end member of the $(\text{Ba}_{1-x}\text{K}_x)\text{Fe}_2\text{As}_2$ series of iron-pnictide superconductors. Previous measurements have suggested that the gap structure of KFe_2As_2 is nodal, either accidentally or due to the symmetry of the pairing state, in contrast to the rest of the series. Our measurements of the magnetic penetration depth, $\lambda(T)$ of $(\text{Ba}_{1-x}\text{K}_x)\text{Fe}_2\text{As}_2$ for $x = 0.85, 0.91, 1.0$ all show $\lambda(T)$ saturates at low temperature, which is indicative of either a small energy gap or a small amount of residual disorder. To differentiate between these possibilities we studied both the effect of non-linear, field dependent, corrections, as well as the effect of disorder, on $\lambda(T)$.

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