

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Field dependence of the thermal conductivity in the iron-based superconductor  $\text{KFe}_2\text{As}_2$**  A. JUNEAU-FECTEAU, F.F. TAFTI, S. RENÉ DE COTRET, N. DOIRON-LEYRAUD, L. TAILLEFER, University of Sherbrooke, A.F. WANG, X.G. LUO, X.H. CHEN, University of Science and Technology of China — The behavior of the thermal conductivity in the iron-arsenide  $\text{KFe}_2\text{As}_2$  at low temperature provides compelling evidence of d-wave superconductivity [1]. Here we report a detailed study of the thermal conductivity in  $\text{KFe}_2\text{As}_2$  as a function of magnetic field, for two field orientations: perpendicular and parallel to the FeAs planes. The data are in excellent quantitative agreement with theoretical calculations for a d-wave superconductor [2]. Our study also highlights the power of thermal conductivity as a technique to directly measure the upper critical field  $H_{c2}$  in a clean type-II superconductor.

[1] J.-Ph. Reid et al., Phys. Rev. Lett. 109, 087001 (2012).

[2] A. B. Vorontsov and I. Vekhter, Phys. Rev. B 75, 224502 (2007).

Alexandre Juneau-Fecteau  
University of Sherbrooke

Date submitted: 08 Feb 2013

Electronic form version 1.4