

Abstract Submitted  
for the OSS15 Meeting of  
The American Physical Society

**Multi-band** **nature**  
**and anisotropy of heavily doped  $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$** <sup>1</sup> SHUAI ZHANG, XINYI HUANG, YOGESH SINGH, CARMEN ALMASAN, Kent State University — We have carried out a detailed study on single crystals of  $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$  with doping level  $x$  very close to 1,  $\text{Ba}_{0.05}\text{K}_{0.95}\text{Fe}_2\text{As}_2$  with  $T_c = 6.6$  K, which exceeds the Lifshitz transition around  $x = 0.9$ . The heat capacity  $C(T)$  shows a relatively large nodeless energy gap of  $1.93 k_B T_c$  based on a three-band BCS model analysis, which suggests that the SC state with the biggest gap value shows a fully opened s-wave superconducting characteristic and a possible nodal gap that shows a rather small gap value. A full H-T phase diagram has been determined by measuring  $C(T)$  and resistivity under fields in ab plane and c direction. Angle-resolved resistivity measurements at low temperatures were used to probe the angular dependence of upper critical field, showing an anisotropy well explained by using the Ginzburg-Landau theory.

<sup>1</sup>This work was supported by the National Science Foundation (Grant No. NSF DMR-1006606) and the Ohio Board of Regents (Grant No. OBR-RIP-220573) at KSU.

Xinyi Huang  
Kent State University

Date submitted: 06 Mar 2015

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