Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

**Angle Dependent Specific Heat Study of $BaFe_2(As_{0.7}P_{0.3})_2$** LIAM MALONE, University of Bristol, YUTA MIZUKAMI, Kyoto University, PHILIP WALMSLEY, University of Bristol, S. KASAHARA, T. SHIBAUCHI, Y. MATSUDA, Kyoto University, ANTONY CARRINGTON, University of Bristol — The structure of the superconducting gap of the pncitide superconductors is an unresolved but crucial issue to understanding their mechanism of superconductivity. While some experiments and theories support a fully gapped s+/s- state, several experiments have revealed evidence for nodes in some families of pnictides. Detailed knowledge of the superconducting gap structure and how it varies between different families can be useful in helping to decide between microscopic theories. $BaFe_2(As_xP_{1-x})_2$ is a pnictide family where penetration depth and thermal conductivity measurements show evidence for nodes [1]. We have measured the specific heat of a single crystal of $BaFe_2(As_{0.7}P_{0.3})_2$ ($T_c$ ~29 K) at low fields and as a function of applied field angle. The angle dependence of specific heat at low fields and low temperature is expected to show minima whenever it is along a nodal direction and can be used to differentiate between gap symmetries [2]. Our results show a clear angle dependent component consistent with the presence of nodes and we discuss the implications on the gap structure of $BaFe_2(As_{0.7}P_{0.3})_2$.

[1] K. Hashimoto et al, Phys. Rev. B, 81, 220501R,(2010).
[2] A. B. Vorontsov et al, Phys. Rev. Lett. 105 ,187004 (2010)

Liam Malone
University of Bristol

Date submitted: 02 Nov 2012 Electronic form version 1.4