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Low temperature thermal conductivity of single crystal $\mathbf{Ba_{1-x}K_xFe_2As_2}$ J.-P. REID [1] , M.A. TANATAR [2] , X. LUO [1] , N. DOIRON-LEYRAUD [1] , N. NI [3] , S.L. BUD'KO [2,3] , P.C. CANFIELD [2,3] , H. LUP [4] , Z. WANG [4] , H.H. WEN [4] , R. PROZOROV [2,3] , LOUIS TAILLEFER [1] , [1] DÉPARTEMENT DE PHYSIQUE, UNIVERSITÉ DE SHERBROOKE, QUÉBEC, CANADA TEAM, [2] AMES LABORATORY, AMES, IOWA, USA COLLABORATION, [3] DEPARTMENT OF PHYSICS AND ASTRONOMY, IOWA STATE UNIVERSITY, AMES, IOWA, USA COLLABORATION, [4] NATIONAL LABORATORY FOR SUPERCONDUCTIVITY, CHINESE ACADEMY OF SCIENCES, CHINA COLLABORATION — Novel iron-arsenic based superconductors with $T_c > 50$ K form a good reference for studying physical processes, underlyning high-T_c superconductivity. Indeed, the importance of unique features of the superconductivity in cuprates, like proximity to Mott insulating state in the phase diagram, magnetism, d-wave superconducting pairing can be tested experimentally. Here we report a study aiming at understanding the symmetry of the superconducting gap in iron-arsenic compounds. Temperature and magnetic field dependence of low temperature thermal conductivity of $Ba_{1-x}K_xFe_2As_2$ single crystals was studied down to 60 mK ($T_c/500$) and in magnetic fields up to 15 T ($H/H_{c2} \cong 0.25$). We find no residual linear term in zero magnetic field and can therefore exclude a superconducting gap with a line of nodes.

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