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Low temperature specific heat of the codoped iron-arsenic superconductor $Ba_{0.55}K_{0.45}Fe_{1.95}Co_{0.05}As_2$[1] K. GOFRYK, J. LASHLEY, Los Alamos National Laboratory, A. LEITHE-JASPER, W. SCHNELLE, Max-Planck Institute for Chemical Physics of Solids, Dresden, F. RONNING, Los Alamos National Laboratory, M. NICKLAS, Max-Planck Institute for Chemical Physics of Solids, Dresden, F. WEICKERT, Los Alamos National Laboratory, H. ROSNER, Max-Planck Institute for Chemical Physics of Solids, Dresden, J.L. SMITH, Los Alamos National Laboratory — Despite large experimental and theoretical efforts the structure of the superconducting gap and the origin of the pairing mechanism in iron-based superconductors in still unresolved. Measurements of the low temperature specific heat and its magnetic response inside the superconducting state give important information about the symmetry of the gap. Here, we present results of our studies of codoped $Ba_{0.55}K_{0.45}Fe_{1.95}Co_{0.05}As_2$ with a T_c of 32.5 K. The high quality of the material is marked by a pronounced peak at T_c as well as by a low residual specific heat $\gamma_0 = 2.4$ mJ/mol K^2. We will discuss the implications of the new specific heat results on the symmetry of the order parameter in this system.

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