

Abstract Submitted
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Doping-induced crossover of the pairing symmetry in iron- pnictide superconductors MAHMOUD ABDEL-HAFIEZ, ZHENG HE, Center for High Pressure Science and Technology Advanced Research, Shanghai, 201203, China, XINGYE LU, HUIQIAN LUO, PENGCHENG DAI, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China, XIAO-JIA CHEN, Center for High Pressure Science and Technology Advanced Research, Shanghai, 201203, China, HPSTAR TEAM, CHINESE ACADEMY OF SCIENCES TEAM — Iron pnictides present a rich phase diagram and superconductivity coexists and competes with the spin density wave and the nematic order, giving unconventional pairing mechanisms. Although various efforts have put forth to clarify pairing symmetry of the Cooper pair, experimental confirmations of the precise symmetry of the superconducting (SC) order parameter and its evolution with doping remains highly controversial. Here we present the investigation results of the low-temperature specific heat down to 70 mK for high-quality $\text{BaFe}_{2-x}\text{Ni}_x\text{As}_2$ single crystals. For $x \leq 0.12$, the temperature dependence of the SC-state specific heat provides strong evidence for a two-band s -wave order parameter. Upon doping for $x \geq 0.15$, we find the temperature and magnetic field contributions to the specific heat in T^2 and $H^{0.5}$, respectively, which strongly indicate the nodes in the SC gap.

Mahmoud Abdel-Hafiez
Center for High Pressure Science and Technology Advanced Research,
Shanghai, 201203, China

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