

Abstract Submitted
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Quasiparticle dynamics across the multiple superconducting gaps in the electron doped BaFe1.85Co0.15As2 YUHANG REN, YU GONG, TETIANA NOSACH, Physics, Hunter College, the City University of New York, L. J. LI, G. H. CHAO, ZHUAN XU, Physics, Zhejiang University, China — Understanding the nature of the low-lying electronic structures is extremely important in establishing the microscopic origin of superconductivity in iron pnictides. In this work, we used the time-resolved optical spectroscopy to study the quasiparticle dynamics in high-quality single crystals of electron-doped superconductor, BaFe1.85Co0.15As2 (BFCA). We show that the electron-doped BFCA is a multi-gap s-wave superconductor. Moreover, we reveal that the electron-phonon interaction alone is not strong enough to induce a superconducting phase transition in BFCA, and a new attractive pairing mechanism is necessary. Our results support a picture of electron pairing via AF fluctuations and point to the possibility that the FeAs-family of superconductors and the high-Tc cuprates may share a similar spin mediated pairing mechanism

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