

Abstract Submitted
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Pseudogaplike feature of slightly underdoped (BaK)Fe₂As₂ studied by ultrafast spectroscopy KUNG-HSUAN LIN, KUANG-JEN WANG, CHUNG-CHIEH CHANG, YU-CHIEH WEN, Institute of Physics, Academia Sinica, Taipei, Taiwan, BING LV, Department of Physics, The University of Texas at Dallas, Richardson, TX, USA, PAUL CHING-WU CHU, Texas Center for Superconductivity, University of Houston, Houston, TX, USA, MAW-KUEN WU, Institute of Physics, Academia Sinica, Taipei, Taiwan — We have utilized ultrafast optical spectroscopy to study carrier dynamics in slightly underdoped (BaK)Fe₂As₂ crystals without magnetic transition. The photoelastic signals due to coherent acoustic phonons have been quantitatively investigated. According to our temperature-dependent results, we found that the relaxation component of superconducting quasiparticles persisted from the superconducting state up to at least 70 K in the normal state. Our findings suggest that the pseudogaplike feature in the normal state is possibly the precursor of superconductivity. We also highlight that the pseudogap feature of K-doped BaFe₂As₂ is different from that of other iron-based superconductors, including Co-doped or P-doped BaFe₂As₂.

Kung-Hsuan Lin
Institute of Physics, Academia Sinica, Taipei, Taiwan

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