

Abstract Submitted
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Observation of pseudogaplike feature in LiFeAs by ultrafast optical spectroscopy KUNG-HSUAN LIN, KUAN-JEN WANG, CHUNG-CHIEH CHANG, YU-CHIEH WEN, DZUNG-HAN TSAI, YU-RUEI WU, YAO-TSUNG HSIEH, MING-JYE WANG, Academia Sinica, Taiwan, BING LV, PAUL C.-W. CHU, University of Houston, USA, MAU-KUEN WU, National Dong Hwa University, Taiwan — We utilize ultrafast optical spectroscopy to study the quasiparticle relaxation in stoichiometric LiFeAs crystals. According to our temperature-dependent studies, we have observed three electronic phases in LiFeAs. Below the superconducting (SC) temperature T_c ($= 15$ K), the relaxation time of quasiparticles due to the SC gaps is far longer than 50 ps in our experimental conditions. In addition to SC gaps, we have also found a gaplike feature in SC state. This gaplike feature is evident up to 40 K, which is above the SC temperature. Because this is similar to pseudogap in curate superconductors, we call this new electronic phase as pseudogaplike feature. The quasiparticle relaxation time due to pseudogaplike feature is in the range of 1-2 ps. We suggest the pseudogaplike feature in LiFeAs is induced by magnetic fluctuations.

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