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ARPES investigations of single unit cell iron selenide JAMES LEE, FELIX SCHMITT, Stanford Univ, ROBERT MOORE, Stanford Institute for Materials and Energy Sciences, STEVE JOHNSTON, University of British Columbia, YONGTAO CUI, WEI LI, MING YI, ZHONGKAI LIU, Stanford Univ, MAKOTO HASHIMOTO, Stanford Synchrotron Radiation Lightsource, YAN ZHANG, Stanford Univ, DONGHUI LU, Stanford Synchrotron Radiation Lightsource, TOM DEVEREAUX, Stanford Institute for Materials and Energy Sciences, DUNG-HAI LEE, University of California, Berkeley, ZHI-XUN SHEN, Stanford Univ — Recent spectroscopic measurements on single unit cell iron selenide (1UC FeSe) films have indicated the opening of a superconducting-like gap at temperatures near 65K. A current goal is to understand the cause of such a high gap-opening temperature in this system and its relation to superconductivity. Here we present in-situ angle-resolved photoemission studies of 1UC FeSe films grown via molecular beam epitaxy. We find signatures of strong coupling between the electrons in the FeSe and the phonons in the substrate, which manifest as replica bands in the spectra. The implications of this electron-phonon coupling on the Cooper-pairing interaction strength are discussed.

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