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Prediction for fingerprints of bosonic modes through self-energy effects in LiFeAs KYUNGMIN LEE, MARK FISCHER, EUN-AH KIM, Department of Physics, Cornell University, Ithaca, NY — The role of bosonic modes has been of great interest in the research of Fe-pnictides. We aim at identifying fingerprints of specific bosonic modes in the spectral properties of the multi-orbital superconductor LiFeAs. For this, we contrast the lowest order contributions to the self energy of Bogoliubov quasiparticles from two bosonic modes: antiferromagnetic(AF) fluctuation and E_g phonon. Focusing on the largest hole pocket in LiFeAs, we find that E_g phonon leads to an almost completely isotropic self energy. In contrast, AF mode leads to a pronounced angle dependent self energy. We predict signatures of such self-energy in ARPES and quasiparticle interference measured by spectroscopic imaging STM.

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