

Abstract Submitted
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Phonon modes in cuprates possibly related to the 10 meV ARPES kink¹ ADRIAN MERRITT, University of Colorado - Boulder, SEUNG-RYONG PARK, Incheon National University, JOHN-PAUL CASTELLAN, Karlsruhe Institute of Technology, GENDA GU, Brookhaven National Laboratory, DMITRY REZNIK, University of Colorado - Boulder — One of the possible mechanisms of high T_c superconductivity is Cooper pairing with the help of bosons responsible for kinks in electronic dispersion observed by angle-resolved photoemission (ARPES). Up to now most effort has been devoted to the kinks near 70 meV. More recent ARPES experiments revealed an additional energy scale near 10 meV. Since no magnetic excitations peaked at these energies have been identified, the likeliest candidates appear to be phonons. We recently performed measurements of low-energy phonons in a large single crystal sample of optimally-doped 2212 BSCCO. We measured all phonons below 15 meV. There are many branches, in particular an optic branch disperses from 7 meV from the zone center with an anticrossing with an acoustic branch near $h=0.2$. In addition, there is evidence for a very low energy branch dispersing through 3-4 meV. I will present these results as well as similar data on LSCO and YBCO. A comparison with recent ultrafast optics experiment detecting lattice modes around 10 meV will also be made.

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