

Abstract Submitted  
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**Direct evidence for predominantly phonon-mediated pairing in high-temperature superconductors** GUO-MENG ZHAO, Department of Physics and Astronomy, CSULA — The spectra of the second derivative of tunneling current  $d^2I/dV^2$  in the high-temperature superconductors  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  and  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  show clear dip and peak features due to strong coupling to the bosonic modes mediating electron pairing. The energies of all the peaks in  $-d^2I/dV^2$ -like spectra match precisely with the energies of the peaks in the phonon density of states obtained by inelastic neutron scattering. The results clearly demonstrate that the bosonic modes mediating the electron pairing are phonons and that high-temperature superconductivity arises primarily from strong coupling to multiple phonon modes.

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