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Renormalization of the band parameters owing to the phonon interaction in $\text{Bi}_{2-x}\text{Sr}_x\text{CaCu}_2\text{O}_{8-x}$ and determination of the superconducting gap parameters from the temperature dependence of the superconducting current density in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$

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Abstract

A simple description has been proposed for the renormalization of the conduction band parameters in cuprates owing to the interaction of the current carriers with phonons. Kinks in the quasiparticle dispersion law in the optical phonon mode region (70 meV, compound $\text{Bi}_{2-x}\text{Sr}_x\text{CaCu}_2\text{O}_{8-x}$) and data on the temperature dependence of the superconducting current density in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ have been analyzed. Ideas of new experiments have been discussed. © 2012 Pleiades Publishing, Ltd.

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