

Spin-phonon interaction and the EPR linewidth in La₂CuO₄ and related cuprates

Kochelaev B.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The spin-phonon interaction is derived for Cu²⁺ ions strongly coupled by the Isotropic exchange interaction. It is shown that in a two-dimensional quantum Heisenberg antiferromagnetic this interaction due to its antisymmetric structure couples the phonon modes near the wave vectors $(\pm\pi/a, \pm\pi/a)$ to the staggered magnetization. A contribution of the spin-phonon interaction to the EPR linewidth is calculated and its temperature dependence compared with other sources of the broadening. © 1999 Plenum Publishing Corporation.

Keywords

2D QHAF, Spin-phonon interaction, The EPR linewidth