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Stripe motion in CuO₂ planes of Y_{1-x}Pr_xBa₂Cu₃O₇ as observed from the Cu(2) quadrupole resonance

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Abstract

The NQR spectra of copper in the compounds YBa₂Cu₃O₇, TmBa₂Cu₃O₇, and Y_{0.9}Pr_{0.1}Ba₂Cu₃O₇ at temperatures of 4.2-200 K are investigated by a pulsed NQR technique at frequencies of 28-33 MHz. Quantitative analysis of the spectra shows that the shape of the "plane" Cu(2) spectra is well described by using a model of 1D correlations of the charge and spin distribution in the CuO₂ planes (stripe correlations). In the undoped superconductors the charge-spin stripe structure moves fast in the CuO₂ planes, but doping the YBa₂Cu₃O₇ lattice with praseodymium slows this motion down. © 1997 American Institute of Physics.

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