

Temperature dependence of the Cu(2) NQR line width in YBa₂Cu₃O_{7-y}

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Abstract

Systematic measurements of the ⁶³Cu(2) NQR line width were performed in underdoped YBa₂Cu₃O_{7-y} samples over the temperature range 4.2 K < T < 300 K. It was shown that the copper NQR line width monotonically increases with decreasing temperature in the below-critical region, resembling temperature behavior of the superconducting gap. The observed dependence is explained by the fact that the energy of a condensate of sliding charge-current states of the charge-density-wave type depends on the phase of order parameter. Calculations show that this dependence appears only at T < T_c. Quantitative estimates of the line broadening at T < T_c agree with the measurement results. © 2001 MAIK "Nauka/Interperiodica".

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