

Spin Dynamics in the Pressure-induced Two-leg Ladder Cuprate Superconductors

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Within the two-leg t - J ladder, the spin dynamics of the pressure-induced two-leg ladder cuprate superconductors is studied based on the kinetic energy driven superconducting mechanism.¹ It is shown that in the pressure-induced superconducting state,² the incommensurate spin correlation appears in the underpressure regime, while the commensurate spin fluctuation appears in the optimal pressure and overpressure regimes. In particular, the spin-lattice relaxation time is dominated by a temperature linear dependence term at low temperature followed by a peak developed below the superconducting transition temperature, in qualitative agreement with the experimental observation on the pressure-induced two-leg ladder cuprate superconductors.³

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³N. Fujiwara, N. Móri, Y. Uwatoko, T. Matsumoto, N. Motoyama, and S. Uchida, Phys. Rev. Lett. **90**, 137001 (2003).