Cu-NMR Study on Disordered Sr$_{14}$Cu$_{24}$O$_{41}$

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The ladder-Cu NMR spectrum of a structural disordered single crystal Sr$_{14}$Cu$_{24}$O$_{41}$ (Sr14-B) under a magnetic field $H \sim 11$ T gradually splits into two spectra with Curie-like broadening as $T$ decreases from $T_{SP} \sim 150$ K. Short-range (SR) staggered polarization (SP) on the ladder planes, originating from single-hole localization, occurs. The separation of the Sr14-B spectrum $\Delta H$ deviates from the Curie-like $T$ dependence below 20 K. This assures that spontaneous moments appear below $T_N \sim 20$ K in $H \sim 11$ T.

Key words: Spin Ladder; Sr$_{14}$Cu$_{24}$O$_{41}$; Cu NMR; Field-induced Long-range Order.