Oxygen Content Dependence of ^{63}Cu(1) NQR and Proton NMR in Hydrogen-Doped Antiferromagnetic $YBa_2Cu_3O_{6+x}H_y$*

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The oxygen content dependence of ^{63}Cu NQR at the Cu(1) site and proton NMR have been measured in the antiferromagnetic phase of powdered samples of hydrogen-doped $YBa_2Cu_3O_{6+x}H_y$ ($0.07 \leq x \leq 0.17$ and $y \approx 1$) from 4.2 to 90 K. The spectrum of ^{1}H NMR is a single line and the line width increases below 15 K due to magnetic interactions. The enhancements of T_1^{-1} and T_2^{-1} of ^{63}Cu(1) NQR occur around 35 and 15 K, respectively. These enhancements increase with increasing oxygen concentration. The maximum values of T_1^{-1} and T_2^{-1} for the sample with $x = 0.17$ reach 200 sec^{-1} and more than 7 msec^{-1}, respectively. The predominant source for the relaxation mechanism of ^{63}Cu(1) NQR and the line broadening of ^{1}H NMR are found to be the fluctuating magnetic field due to the staggered Cu^{2+} moments.

Key words: Antiferromagnetic materials, High-T_c superconductor, Spin-lattice Relaxation Time, Cu NQR, Proton NMR.

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