Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Re-examination of the interpretation of NMR spin-lattice relaxation measurements in cuprates PETER FRITZ MEIER, ANNE-CHRISTINE ULDRY, Physics Institute, University of Zurich — We have examined measurements of the nucleus spin-lattice relaxation rates on Cu, planar O and Y reported for optimally doped $YBa_2Cu_3O_7$ in the temperature range between 100 and 300 K. In a representation appropriate to anisotropic materials there is no striking different temperature dependence between the three sites. We have analyzed all the data with the model of fluctuating magnetic fields, factorizing the temperature dependence into a product of two temperature-dependent terms $V(T)$ and $\tau_{\mathit{eff}}(T)$. $V(T)$ contains the static antiferromagnetic spin-spin correlations and their changes in temperature which determine the influence of the hyperfine interaction energies. The effective relaxation time $\tau_{\mathit{eff}}(T)$ reflects the dynamics of the spins. We present a fit of the model parameters to the data and compare the model predictions extrapolated to higher temperatures with experiments. The model predicts two independent contributions to τ_{eff} which will be discussed in detail.

Anne-Christine Uldry
Physics Institute, University of Zurich

Date submitted: 22 Mar 2013 Electronic form version 1.4