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Spin freezing in $Sm_{1.85}Ce_{0.15}CuO_{4-y}$ R.W. GIANNETTA, D.D. LAWRIE, Loomis Laboratory of Physics, Univ. of Illinois at Urbana-Champaign, R. PROZOROV, Dept. Physics and Astronomy, Univ. of S. Carolina, I. HETEL, P. FOURNIER, Departement de Physique, Univ. de Sherbrooke — Insulating Sm_2CuO_4 shows antiferromagnetic ordering of Sm spins at $T_{Neel} = 6$ K. T_{Neel} is insensitive to external fields. Penetration depth measurements in superconducting $Sm_{1.85}Ce_{0.15}CuO_{4-y}$ ($T_C = 23$ K) reveal a sharp increase of diamagnetism below $T^* = 4.2$ K. A c-axis magnetic field rapidly suppresses T*. The strong field dependence of T* suggests a spin-freezing transition below which spin-flip scattering is reduced, the density of states becomes sharper and Meissner screening is enhanced.[1] We discuss the role of Cu $^{2+}$ spins in the observed behavior. Work at UIUC supported through NSF DMR 01-01872. Work at USC supported by the NSF/EPSCoR, Grant No. EPS-0296165. PF acknowledges the support of CIAR, CFI, NSERC, FQRNT and the Universite de Sherbrooke.[1] R. Prozorov et. al., Phys. Rev. Lett. **93**, 147001 (2004)

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