

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Observed magnetism and its field dependence in c-axis-oriented YBCO vortex states. C. BOEKEMA, San Jose State University, C. TEICHGRAEBER, UC Berkeley, WISE@SJSU COLLABORATION — Muon-spin-resonance (μ SR) data of c-axis-oriented YBCO [1] vortex states are analyzed to determine the field dependence of observed AF magnetism. Field distributions are obtained from μ SR data using Maximum-Entropy (ME). We found [2] that well below T_c YBCO vortex signals are best fitted by a Gaussian and a Lorentzian; the latter indicating AF in and near the vortex cores. The field dependence of the AF Lorentzian width is about linear. [2] ME- μ SR analysis of c-axis-oriented YBCO data also suggests a field *direction* dependence, pointing toward 3-dim magnetism. Our results show contradictions to curve fitting and FFT results. [1] An LSCO neutron study agrees with 3-dim field-induced AF. [3] An AF presence in and near vortex cores supports theories predicting a magnetic origin for cuprate superconductivity. [3, 4] Research supported by NSF-REU, DOE-LANL and WiSE@SJSU. [1] Lichti *et al*, Hpf Int's 63 (1990) 73; [2] Boekema *et al*, Physica C460-462 (2007) 1255 and ref's therein; [3] Lake *et al*, Nature Materials 4 (2005) 658; [4] Chen, Zhang *et al*, Phys Rev B 67 (2003) 22051.

C. Boekema
San Jose State University

Date submitted: 14 Dec 2007

Electronic form version 1.4