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MaxEnt-MuSR study of GdBCO: potential precursor effects J. WONG, T. SONGATIKAMAS, R. NORRIS, C. BOEKEMA, San Jose State University, WISE@SJSU COLLABORATION — We analyze muon-spin resonance (muSR) data of underdoped ($T_c = 81$ K) and optimal doped ($T_c = 93$ K) superconducting GdBCO showing different precursor effects. [1] Precursors refer to anomalous behavior seen just above T_c . Transverse field muSR data recorded at 1 kOe, RT, and 100 Oe, 120 and 200 K are analyzed by Maximum Entropy. MaxEnt determines the frequency (i.e. magnetic field) distribution from the muSR time series. [2] Two Lorentzians fit the frequency signals much better than two Gaussians, one Lorentzian, or one Gaussian. Thus, in GdBCO the muon probes dynamic fields, caused by muon motion and/or magnetic fluctuations. The number of Balmer (muon-stop) sites [1] has been confirmed. Zero-field muSR curve fitting studies [1] showed irregularities in asymmetry and muon-spin relaxation just above T_c . We apply MaxEnt to these ZF GdBCO data to search for magnetic precursor effects. Research is supported by DOE-LANL and WiSE@SJSU. [1] Dawson *et al*, J Appl Phys 64 (1988) 5809; [2] Lee *et al*, J Appl Phys 95 (2004) 6906; also at scitation.aip.org.

C. Boekema
San Jose State University

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