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Quest for secondary μSR signals for Fe_3O_4 using MaxEnt: a Verwey phase transition study. C BOEKEMA, A COLEBAUGH, A-L LEE, I LIN, A CABOT, C MORANTE, San Jose State University — Most muon-spin rotation (μSR) time series for magnetite (Fe_3O_4) have been interpreted in terms of *one* μSR frequency signal. [1] Its Fourier transform appears to confirm this internal magnetic field. Yet many time series show a beat pattern, strongly suggesting a second signal with a close-by frequency. We are searching for secondary signals in zero-field Fe_3O_4 μSR data using Maximum Entropy, a recently developed technique [2] more sensitive than curve fitting and/or Fourier transformation. There is also another dilemma namely: the upper signal found for Fe_3O_4 has a local magnetic field larger than the maximum allowable vectorial sum of external and internal contributions. However, the (non)occurrence of secondary signals may shed light on the nature of the Verwey phase transition and its precursors in the Fe_3O_4 Mott-Wigner glass [3] between T_v (123 K) and twice T_v (247 K). [4] Research supported by LANL-DOE, SETI-NASA, SJSU & AFC. [1] C Boekema *et al,* Hpf Interactions 31 (1986) 487; Phys Rev B31 (1985) 1233. [2] C Boekema and MC Browne, MaxEnt 2008, AIP Conf Proc #1073 p260. [3] NF Mott, Metal-Insulator Transitions, Taylor & Francis (1974); C Boekema *et al,* Phys Rev B33 (1986) 210. [4] C Boekema *et al,* Proc 11th Int M2S Conf (2015).

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