

Abstract Submitted
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Search for O^{-1} earthquake-like precursors: a MaxEnt- μ SR MgO study¹ C BOEKEMA, A CABOT, A-L LEE, I LIN, San Jose State University, F FREUND, NASA Ames — We study O^{-1} earthquake-like precursor effects [1,2] by analyzing μ SR MgO data using MaxEnt (ME). [3,4] Due to its presence in the Earth's crust, MgO is ideal to study these features: O^{-1} formation results from a 2-stage break-up in an O anion pair at high-temperatures or high-pressure conditions. [2] As T increases above roomtemperature, a small % is predicted to produce an O^{-1} state. ME analysis of 100-Oe μ SR data of a pure 3N-MgO single crystal show a broad Gaussian at 1.36 MHz and a sharp signal at 1.4 MHz. The latter could be effects of extended O^{-1} states, as positive muons probe near negative O ions. There is no sharp 1.4-MHz signal observed in μ SR data of the insulators Al_2O_3 [5] and PrBCO6, only the expected 100-Oe Gaussian. We have fitted ME- μ SR transforms of MgO to obtain an empirical description of the two peaks. Their T dependences above RT appear to be positive-hole effects. The O-valency effects, related to earthquake-like precursors, are discussed. 1] FT Freund, Nat Hazards Earth Sys Sci **7** (2007) 1. 2] FT Freund *et al*, Phys Chem Earth **31** (2006) 389. 3] C Boekema and MC Browne, MaxEnt 2008, AIP Conf Proc #1073 p260. 4] S Lee *et al*, HUIC Educ, Math & Eng Tech Conf, Uo HI (2013). 5] C Boekema *et al*, Hprfn Inter 32 (1986) 667.

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