

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

High-field NMR spectroscopy of the iron based superconductor LiFeAs HANNES KUEHNE, A.P. REYES, P.L. KUHNS, M.J.R. HOCH, S. YUAN, Florida State University/National High Magnetic Field Laboratory, H.-J. GRAFE, S. ASWARTHAM, S. WURMEHL, B. BUECHNER, Institute for Solid State Research, Dresden, Germany — The stoichiometric compound LiFeAs is unique among the iron based superconductors. It exhibits superconductivity below 18 K without the usually necessary introduction of chemical doping. From a number of macroscopic experiments, upper critical fields of 26 T or higher for a magnetic field orientation parallel to the FeAs planes were reported. But, until now, no local probe techniques were applied for the characterization of the microscopic electronic properties in this high-field parameter regime. On our poster, we present the results of recently performed high-field (up to 30 T) NMR experiments on three high quality LiFeAs single crystals, suggesting an upper critical field much lower than 26 T. We discuss the implications of the observed, field-induced suppression of the superconducting gap in this compound and its manifestation in the temperature dependent Knight shift, nuclear spin-lattice and spin-spin relaxation rates for fields and temperatures in the normal and superconducting state.

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Date submitted: 04 Nov 2012

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