

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

^{51}V single-crystal NMR Study on multiferroic FeVO_4
JINSHAN ZHANG, School of Energy, Power and Mechanical Engineering, North China Electric Power University, Beijing, China, LONG MA, WEIQIANG YU, Department of Physics, Renmin University of China, Beijing, China, ZHANGZHEN HE, State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Science, Fujian, China — The multiferroicity in FeVO_4 is so far not well understood because its spin-orbit coupling is probably very weak. In this talk, we report our ^{51}V single crystal NMR study on FeVO_4 under zero field and a finite field. The double magnetic transitions with $T_{SDW} \approx 19$ K and $T_{helical} \approx 13$ K are clearly shown by NMR spectra and the spin-lattice relaxation rate $1/T_1$. Two nonequivalent ^{51}V sites are identified with different hyperfine couplings. Just below $T_{helical}$, a large RF enhancement is seen, which indicates rich magnetic domain walls formed in the helical state and not in the SDW state. Based on our results, we discuss the coupling between the magnetism and the ferro-electricity in FeVO_4 .

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Date submitted: 27 Nov 2011

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