Abstract Submitted
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^{75}As NMR Study of the Antiferroelectric Transition in $NH_4H_2AsO_4$ OZGE GUNAYDIN-SEN, Florida State University, PHIL KUHNS, ARNEIL REYES, National High Magnetic Field Laboratory, NARESH DALAL, Florida State University — ^{75}As NMR on single crystals has been used to investigate the mechanism of the antiferroelectric phase transition in $NH_4H_2AsO_4$ (T_N= 216 K), using the temperature dependence of ^{75}As chemical shift at high Zeeman fields. Angular variation of the NMR spectra was studied with the Zeeman field in the crystal ab and ac (bc) planes. Frequency sweeps were made at fixed fields between 3 T and 11.75 T and at a temperature range of 300 K-200 K. Temperature dependence has also been measured at a fixed angle (H//c and H//a or b) to understand whether the mechanism involves a displacive character. For that purpose, we utilized the fact that an anomaly in the isotropic chemical shift δ_{iso} at a transition provides a direct evidence for a displacive behavior of the transition, since δ_{iso} is not affected by any reorientational change or a spatial displacement that are involved in an order-disorder behavior [1]. Standard models of phase transition mainly involve the order-disorder dynamics of the H's above the phase transition, and their ordering in the O-H...O bonds below the transition temperature. Whether the mechanism also involves displacive behavior of the $H_2AsO_4^-$ units, as reported for ferroelectric KD_2PO_4 [1] will be discussed. [1] A. Bussmann-Holder, N.S. Dalal, R. Fu, R. Migoni, J. Phys.:Condens. Matter 13, (2001), L231-L237.

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