

Abstract Submitted
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^{75}As NMR Study of the Antiferroelectric Transition in $\text{NH}_4\text{H}_2\text{AsO}_4$ 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 $\text{NH}_4\text{H}_2\text{AsO}_4$ ($T_N=216$ 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.

Ozge Gunaydin-Sen
Florida State University

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