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NMR study of the FeAs parent compounds, AFe_2As_2 (A=Ba,Ca)
ERIC BAUER, SEUNG-HO BAEK, Los Alamos National Laboratory, NICHOLAS CURRO, U. of California, Davis, FILIP RONNING, JOE THOMPSON — We present ^{75}As NMR results of the FeAs 122 parent compounds, AFe_2As_2 (A=Ba,Ca) single crystals. For $BaFe_2As_2$, we find that Sn impurities in the single crystal dramatically alter the low energy spin fluctuations and suppress the ordering temperature from 138 K to 85 K, and that the temperature dependence of the ^{75}As NMR spectra and spin lattice relaxation rates reveal a second order phase transition to a state of incommensurate magnetic order. On the other hand, $CaFe_2As_2$ shows a commensurate first order magnetic transition which is coupled to the structural transition. By comparing the two compounds, we show that the static and dynamic properties of the FeAs systems is extremely sensitive to the microscopic out-of-plane structure in microscopic level. Our results may shed light on the superconductivity observed under pressure.

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