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Nuclear magnetic resonance studies of coexisting antiferromagnetism and superconductivity in $\mathbf{Ba(Fe_{1-x}Co_x)_2As_2}$ ADAM DIOGUARDI, JOHN CROCKER, ABIGAIL SHOCKLEY, NICHOLAS APROBERTS-WARREN, CHING LIN, KENT SHIRER, DAVID NISSON, UC Davis, ALEX THALER, PAUL CANFIELD, Ames Laboratory, NICHOLAS CURRO, UC Davis — We present ^{75}As nuclear magnetic resonance (NMR) spectra and spin lattice relaxation data from $Ba(Fe_{1-x}Co_x)_2As_2$ for $x = 0.05757$, 0.05898, and 0.06163, with $T_C = 21.5$ K, 22 K, and 22.7 K respectively. The spectra become broadened below the antiferromagnetic (AFM) phase transition. Spin lattice relaxation was measured by inversion recovery at the central line with $H \perp \hat{c}$ down to 4.5 K into the coexistence region. As temperature is decreased toward the AFM phase transition, the exponential inversion recovery curve begins to deviate from the theoretical prediction. The curves were fit to a stretched exponential to characterize this deviation as a function of temperature. This behavior persists into the coexistence region and may be related to nematic fluctuations.

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