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NMR evidence for coexistence of cluster spin glass and superconductivity in $Ba(Fe_{1-x}Co_x)_2As_2$[1] ADAM P. DIOGUARDI, JOHN CROCKER, ABIGAIL C. SHOCKLEY, CHING H. LIN, KENT R. SHIRER, DAVID M. NISSON, MATTHEW M. LAWSON, NICHOLAS APROBERTS-WARREN, University of California Davis, PAUL C. CANFIELD, SERGEY L. BUD'KO, SHENG RAN, Iowa State University, Ames Laboratory, NICHOLAS J. CURRO, University of California Davis — We present ^{75}As nuclear magnetic resonance data from measurements of a series of $Ba(Fe_{1-x}Co_x)_2As_2$ crystals with $0 \leq x \leq 0.075$. Spectral wipeout and the onset of stretched exponential spin-lattice relaxation as a function of decreasing temperature reveal the coexistence of frozen antiferromagnetic domains and superconductivity for $0.060 \leq x \leq 0.071$. Although bulk probes reveal no long range antiferromagnetic order beyond $x = 0.06$, we find that the local spin dynamics reveal no qualitative change across this transition. Domain sizes vary by more than an order of magnitude, reaching a maximum variation at $x = 0.06$. This inhomogeneous glassy dynamics may be an intrinsic response to the competition between superconductivity and antiferromagnetism in this system. We also present field-dependent spin-lattice relaxation studies from 3.5 T to 30.4 T to further probe the glassy dynamics.

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