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**NMR evidence for inhomogeneous nematic fluctuations in $\mathbf{BaFe_2(As_{1-x}P_x)_2}$** ADAM P. DIOGUARDI, Los Alamos National Laboratory, TANAT KISSIKOV, CHING-HAN LIN, KENT R. SHIRER, MATTHEW M. LAWSON, University of California Davis, Department of Physics, HANS-JOACHIM GRAFE, IFW Dresden, Institute for Solid State Research, Dresden, Germany, JIUN-HAW CHU, IAN R. FISHER, Department of Applied Physics and Geballe Laboratory for Advanced Materials, Stanford University, Stanford Institute of Energy and Materials Science, RAFAEL M. FERNANDES, School of Physics and Astronomy, University of Minnesota, Minneapolis, NICHOLAS J. CURRO, University of California Davis, Department of Physics — We present evidence for nuclear spin-lattice relaxation driven by glassy nematic fluctuations in isovalent P-doped $BaFe_2As_2$ single crystals. Both the $^{75}$As and $^{31}$P sites exhibit stretched-exponential relaxation similar to the electron-doped systems. By comparing the hyperfine fields and the relaxation rates at these sites we find that the As relaxation cannot be explained solely in terms of magnetic spin fluctuations. We demonstrate that nematic fluctuations couple to the As nuclear quadrupolar moment and can explain the excess relaxation. These results suggest that glassy nematic dynamics are a universal phenomenon in the iron-based superconductors.

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