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**Relaxation rates of low-field gas-phase $^{129}$Xe storage cells** MARK LIMES, BRIAN SAAM[1], University of Utah — A study of longitudinal nuclear relaxation rates $T_1$ of $^{129}$Xe and Xe-$N_2$ mixtures in a magnetic field of 3.8 mT is presented. In this regime, intrinsic spin relaxation is dominated by the intramolecular spin-rotation interaction due to persistent xenon dimers, a mechanism that can be quelled by introducing large amounts of $N_2$ into the storage cell. Extrinsic spin relaxation is dominated by the wall-relaxation rate, which is the primary quantity of interest for the various low-field storage cells and coatings that we have tested. Previous group work has shown that extremely long gas-phase relaxation times $T_1$ can be obtained, but only at large magnetic fields and low xenon densities. The current work is motivated by the practical benefits of retaining hyperpolarized $^{129}$Xe for extended periods of time in a small magnetic field.

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