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Spin relaxation in hyperpolarized krypton-83 and xenon-129 THOMAS MEERSMANN, ZACKARY CLEVELAND, KARL STUPIC, GALINA PAVLOVSKAYA, Colorado State University — The potential medical application of hyperpolarized (hp) krypton-83 (spin S = 9/2) [1] make a better insight into the NMR relaxation behavior of this isotope desirable, in particular since the relaxation limits the observed signal intensity but also provides a source for MRI contrast. The quadrupolar relaxation of krypton-83 is shown to be highly dependent on temperature, optical pumping gas mixture, the nature of surrounding surfaces and the applied magnetic field strength [2, 3]. The relaxation is mainly caused by quadrupolar interactions during brief surface adsorption periods of the krypton atoms onto the surrounding container walls. In contrast to xenon-129, interactions with paramagnetic impurities in the surface or with gas phase oxygen are not significant. 1) Pavlovskaya, et al. Proc. Natl. Acad. Sci. U.S.A.,2005. 102: 18275-18279; 2) Cleveland, Z.I., et al. J. Chem. Phys., 2006. 124(4) 044311; 3) Stupic, K.F et al. Solid State Nucl. Magn. Reson., 2006. 29: 79-84.

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