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Investigation of alkali-wall interactions in antirelaxation-coated vapor cells R. ZOU, B. PATTON, T.J. SANTOS, N. BADDOUR, Department of Physics, University of California, Berkeley, M. BALABAS, S.I. Vavilov State Optical Institute, St. Petersburg, Russia, D. BUDKER, Department of Physics, University of California, Berkeley; Nuclear Science Division, LBNL — In experiments which employ room-temperature alkali vapors, antirelaxation coatings can dramatically increase the relaxation times of alkali atoms within a vapor cell. These coatings are crucial in many atomic physics experiments, such as: atomic magnetometry, electromagnetically induced transparency, atomic clocks, quantum control and measurement, etc. It is observed that the coatings have strong initial interactions with the alkali vapor after they are prepared, including suppression of alkali-vapor density and modification of the spin relaxation times. Cell curing refers to the change in properties of the internal surfaces of the vapor cells. We aim to understand what is going on during the initial interaction in order to possibly improve the coatings. In this experiment, to investigate how the interaction changes with time, we measure the rubidium vapor density using D1 line while tracking the rubidium vapor diffusing in a long coated glass tube. Further investigations include the relation between light induced atomic desorption and cell curing.

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