Abstract Submitted
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UCN Polarization in the UCNA Experiment A.T. HOLLEY[1], North Carolina State University — The goal of the UCNA experiment is to determine the angular correlation between the electron momentum and the neutron spin (the beta-asymmetry) in free neutron decay using polarized ultracold neutrons (UCN). The experimental strategy is to transport UCN into a decay volume through a 7T static magnetic field, allowing the magnetic potential to polarize the UCN. UCN polarization can then be reversed via an rf adiabatic spin-flipper which sits between the 7T polarizing field and the decay volume. This spin-flipper also allows an *in situ* measurement of the depolarized contamination which develops during a constant-polarization measurement cycle. In order to minimize this spin contamination the UCN guides leading to the decay volume, and the decay volume itself, are constructed of electropolished copper. Early in the 2007 run cycle measurements were made to determine the degree of polarization provided by the 7T polarizing field as well as the absolute efficiency of the spin-flipper. These results, together with the run-by-run depolarization measurements made during UCNA data-taking, can be used to determine the average depolarized fraction present during our beta-asymmetry measurements. Details of the polarization measurements and the limits they place on the spin contamination present in UCNA will be discussed and compared to expectations from Monte Carlo transport models.

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