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Suppression of Ultracold Neutron Depolarization on Material Surfaces with Magnetic Holding Fields RAYMOND RIOS[1], Los Alamos National Lab, UCNA COLLABORATION — The depolarization of Ultracold Neutrons(UCN) was measured within 1-m long, 2 3/4" diameter electropolished copper, diamondlike carbon-coated copper, and stainless steel guide tubes as a function of magnetic holding field. The UCN were trapped between a 6 Tesla solenoidal magnetic field and a 3/8" copper aperture. A series of Helmholtz coils produced a magnetic field over the length of the test guide of either 10 or 250 Gauss. The surface depolarization was observed to be suppressed at the higher holding field on the measured copper guides. These measurements will aid in the determination of the upper limit of depolarization of UCN in the UCN beta asymmetry measurement at LANL (UCNA) and in understanding the mechanisms for depolarization in non-magnetic guides.

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