

Abstract Submitted
for the DNP12 Meeting of
The American Physical Society

Advanced guide coating techniques for Ultra-Cold Neutron transport XINJIAN DING, UCNA, UCNA COLLABORATION — The UCNA experiment utilizes Ultra-Cold Neutrons (UCN) to measure angular correlations in beta-decay. UCN are produced in a solid deuterium source and then transported to the experimental decay volume through a sequence of guide tubes. Requirements for the UCNA guides include smooth surfaces, high Fermi potentials, and also a very low depolarization probability per bounce. We review the UCNA guide system and the pulsed-laser deposition process we use to produce diamond like carbon (DLC) coatings on Cu and quartz tubes. Several improvements (magnetic field shaping of the plasma plume from the laser target and better guide mounting) over previous coating techniques will be described and their effectiveness presented.

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Date submitted: 03 Jul 2012

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