

Abstract Submitted  
for the APR09 Meeting of  
The American Physical Society

**Diamond-like-Carbon Coated Copper Guides for use in Polarized UCN Transport** RUSSELL MAMMEI, Virginia Tech, UCNA COLLABORATION  
— The UCNA experiment at Los Alamos National Lab (LANL) employs ultracold neutrons (UCN) to measure the beta-asymmetry in polarized neutron decay. Currently our beamline makes use of polished stainless steel and copper guides to transport and bottle the UCN. Due to their high Fermi potential and low expected depolarization per bounce, Diamond-like-Carbon (DLC) coated copper guides should increase the neutron density in our decay volume. However there have been challenges in obtaining a well-adhered DLC coating on the copper substrate. Although a variety of production processes have been explored, a pulsed laser deposition process, similar to ion-bombardment coating techniques, has been found to produce a successfully bonded coating. To this end two DLC coated copper guides were produced with this method and tested with UCN at LANL. An overview of the coating process will be given along with UCN bottle/transmission results.

Russell Mammei  
Virginia Tech

Date submitted: 09 Jan 2009

Electronic form version 1.4