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Guide coating and evaluation techniques for Ultracold Neutrons transport XINJIAN DING, Virginia Tech University, UCN COLLABORATION — Ultracold neutrons (UCN) are produced when a cold neutron flux down-scatters in a solid deuterium source in UCN Facility of Los Alamos National Laboratory (LANL) and are then transported to the experimental decay volume of the UCNA experiment and to other UCN experiments through a sequence of guide. These tubes are coated with diamond-like carbon (DLC) films to maintain UCN polarization and maximize material potential. We will briefly review the guide system at UCN Facility of LANL, the requirements for UCN guides, and the pulsed-laser deposition (PLD) process we use to produce diamond-like carbon (DLC) films. Different characterization methods (AFM,XPS,Profilometry etc.) and the results obtained by applying them to our coatings will be discussed, as will data from a series of UCN guide tests performed earlier this year on guides coated with our approach. We will also present future research and development in UCN guide coating techniques and materials.

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