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Performance of the Los Alamos National Laboratory spallation-driven solid-deuterium ultra-cold neutron source CHRISTOPHER MORRIS, Los Alamos National Laboratory, THE UCNA COLLABORATION — The performance of the Los Alamos spallation-driven solid-deuterium Ultra Cold Neutron (UCN) source will be described. The source uses 800 MeV protons from the LANSCE accelerator impacting a tungsten target to produce spallation neutrons, which are then reflected by a beryllium shield, cooled by a polyethylene moderator, then downscattered to ultra-cold temperatures in a solid deuterium converter. Measurements of the cold neutron flux, the very cold neutron production rate, and the UCN rates and density at the exit from the biological shield will be presented and compared to Monte Carlo simulations. The cold neutron rates compare well with predictions from the Monte Carlo code MCNPX and the UCN rates agree with results from our UCN Monte Carlo code. The maximum delivered UCN density at the biological shield exit was 52(9) UCN/cc.

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