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Measurement of UCN Spectra and Al Window Fermi Potentials using the Retarding Potential of a Solenoidal Magnet as an Analyzer A.T. HOLLEY, for the UCNA Collaboration — One of the 7T polarizer magnets which forms part of the UCNA experiment at LANSCE was used to measure the velocity spectrum of neutrons produced by our ultra-cold neutron (UCN) source. By observing the change in UCN flux through the magnet as the polarizing field was increased, we were able to obtain directly a longitudinal velocity profile for the UCN. Monte Carlo simulations then yield an estimate for the full velocity spectrum. This technique also allows us to evaluate the Fermi potential of foils placed in the experimental geometry. We present results for measurements, performed during the 2006 run period at LANSCE, of the UCN spectrum and two Al foils, one in the high-field region of the analyzer magnet and another covering our ^{3}He UCN detector.

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