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**Solid State Ultra-Cold Neutron Detectors** SETH HOEDL, University of Washington, ADAM HOLLEY, North Carolina State University, ALEJANDRO GARCIA, University of Washington, PETER GELTENBORT, Institut Laue-Langevin, DAN MELCONIAN, University of Washington, ANNE SALLASKA, University of Washington, SKY SJUE, University of Washington, ALBERT YOUNG, North Carolina State University, UCNA COLLABORATION — The reflective properties of Ultra-Cold Neutrons (UCN) enable easy transport and bottling, but, make neutron detection a technical challenge. Typically, UCN are allowed to accelerate in the Earth's gravitational field to sufficient velocity to penetrate an aluminum entrance window of a $^3$He proportional counter. Here we describe the construction and characterization at the ILL of two kinds of prototype solid-state detectors which can be used to monitor the UCN density inside the UCNA spectrometer without gravitational acceleration, and perhaps more critically, without the danger of $^3$He leaks. The first type consists of 300 $\mu$g/cm$^2$ of LiF (natural isotopic abundance) evaporated on $\sim 1\mu$m thick nickel foils. The second type consists of $\sim 10^{18}$ $^{10}$B ions implanted in a 2000Å thick vanadium layer, also evaporated onto nickel foils. We find that both types have a lower critical velocity than aluminum, and thus, outperform aluminum window proportional counters for *in-situ* density measurements.

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