

Abstract Submitted  
for the HAW09 Meeting of  
The American Physical Society

**Progress on the Construction of the PULSTAR Solid Deuterium Ultracold Neutron Source** GRANT PALMQUIST, CHRIS COTTRELL, ROBERT GOLUB, PAUL HUFFMAN, ALBERT YOUNG, North Carolina State University Department of Physics, AYMAN HAWARI, EKATERINA KOROBKINA, BERNARD WEHRING, North Carolina State University Department of Nuclear Engineering — An ultracold neutron (UCN) source utilizing solid deuterium is being constructed at the 1MW PULSTAR nuclear reactor on the campus of North Carolina State University. The final stages of assembly and commissioning are underway. The overall design, status of construction, and benchmarking measurements will be discussed. The UCN source design is based on detailed simulations including MCNP, UCN transport Monte Carlo, and CFD of the cryogenic systems. The source will be available for developing general UCN experiment technology, such as guides and detectors in support of current neutron EDM and UCNA projects. Other plans include fundamental physics measurements such as neutron beta decay and gravity measurements, as well as development of new techniques to use UCN in material and surface physics studies. The expected experimental density of UCN will be competitive with currently available sources, including those at significantly more powerful reactors. This work is supported in part by NSF grant #0314114 and funds from the DOE INIE program.

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Date submitted: 02 Jul 2009

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