Abstract Submitted
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Development of a systematic studies apparatus at NC State for the Neutron Electric Dipole Moment collaboration K. LEUNG, R. GOLUB, D. HAASE, A. HAWARI, P. HUFFMAN, E. KOROBKINA, A. REID, C. SWANK, A.R. YOUNG, North Carolina State University, R. ALARCON, R. DIPERT, Arizona State University, P.-H. CHU, H. GAO, Y. ZHANG, Duke University, L. BARTOSZEK, Bartoszek Engineering, C. CRAWFORD, W. KORSCH, University of Kentucky — An apparatus is being developed for use at the UCN source at the 1 MW NCSU PULSTAR reactor. The goal is to study several critical aspects of the SNS neutron EDM experiment without the electric field. Detailed studies of the interactions between the ^{3}He and UCNs, measurements of the correlation functions determining the geometric phase systematic effect, optimization of the parameters for critical dressing, and the pseudomagnetic field caused by neutron scattering from polarized ^{3}He will be made. Because of the extremely long turn around times, these would be almost impossible with the SNS apparatus. In this setup, polarized UCNs and ^{3}He will be repeatedly loaded into an acrylic cell coated with deuterated TPB and polystyrene on the inner walls. Scintillation light produced in the superfluid ^{4}He also in the cell after spin-dependent capture of UCNs on ^{3}He will be used to measure the Larmor precession frequency difference between the two species in an external magnetic field. An overview of the experiment will be presented.

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