

Abstract Submitted
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Scintillation Light Detection Using VLPCs for a New Search of the Neutron Electric Dipole Moment AMBER NELSON, Washington and Jefferson College and TUNL, DIPANGKAR DUTTA, TUNL and Duke University, HAIYAN GAO, TUNL and Duke University — The electric dipole moment of the neutron(nEDM) is predicted to be on the order of 10^{-31} e.cm. by the Standard Model. Currently, the experimental limit of this quantity is 6×10^{-26} e.cm. Any non-zero nEDM is a direct violation of time-reversal symmetry, which may lead to a new understanding of CP violation. A new experiment has been proposed aiming at improving the current experimental limit by two orders of magnitude. A critical component of this new nEDM experiment involves detecting the scintillation light from the $\bar{n} + {}^3\vec{H}e \rightarrow p + t$ reaction at 300mK. A new light detection technique using a visible light photon counter(VLPC) is being developed for this experiment. The VLPCs are doped silicon based solid state photo multipliers with a high quantum efficiency and are normally operated at 6.5K. The scintillation light is wave-shifted from XUV to blue using deuterated tetraphenyl butadiene(TPB) and then to green using wavelength-shifting(WLS) fiber. Over the summer, the bench set-up was constructed and preliminary results of these tests will be presented.

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