

Abstract Submitted  
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**Simulation of Light Collection for Neutron Electrical Dipole Moment measurement** PAN JI, Univ of Illinois - Urbana, NEDM COLLABORATION<sup>1</sup> — nEDM (Neutron Electrical Dipole moment) measurement addresses a critical topic in particle physics and Standard Model, that is CPT violation in neutron electrical dipole moment if detected in which the Time reversal violation is connected to the matter/antimatter imparity of the universe. The neutron electric dipole moment was first measured in 1950 by Smith, Purcell, and Ramsey at the Oak Ridge Reactor - the first intense neutron source. This measurement showed that the neutron was very nearly round (to better than one part in a million). The goal of the nEDM experiment is to further improve the precision of this measurement by another factor of 100. The signal from the experiment is detected by collecting the photons generated when neutron beams were captured by liquid helium 3. The Geant4 simulation project that I participate simulates the process of light collection to improve the design for higher capture efficiency. The simulated geometry includes light source, reflector, wavelength shifting fibers, wavelength shifting TPB and acrylic as in real experiment. The UV photons exiting from Helium go through two wavelength-shifting processes in TPB and fibers to be finally captured.

<sup>1</sup>Oak Ridge National Laboratory Neutron Electric Dipole Moment measurement project

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