Modeling Neutral-Current Neutrino Interactions in Liquid Argon[1] CYNTHIA NUNEZ, Florida International University, KATE SCHOLBERG, ERIN CONLEY, Duke University, DEEP UNDERGROUND NEUTRINO EXPERIMENT COLLABORATION — Studies of supernova neutrinos provide knowledge of neutrino oscillations and supernova physics. The Deep Underground Neutrino Experiment (DUNE) will enable exploration of the three-flavor model of neutrino physics and solve questions in regards to the dynamics of supernova, the stability of matter, and matter-antimatter asymmetry. DUNE will use a Liquid Argon Time-Projection Chamber (LArTPC) which will be able to detect charged-current, neutral-current, and elastic-scattering interactions. The neutral current $\nu - {}^{40}Ar$ interaction leaves an excited ${}^{40}Ar$ nucleus that releases a 9.8 MeV gamma which is analyzed for the LArTPC. This project creates a smearing file for SNOwGLoBES, an event rate calculator, that corresponds to the DUNE detector simulation for this interaction. The expected number of neutral current supernova neutrino events in liquid ${}^{40}Ar$ is determined and the observable energy distribution is examined.

Cynthia Nunez
Florida International University

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