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Integrating Liquid Noble Dark Matter Detectors into the SuperNova Early Warning System SEBASTIAN TORRES-LARA, ANDREW RENSHAW, University of Houston, KATE SCHOLBERG, Duke University, ELISE MCCARTHY, University of Rochester, DARKSIDE COLLABORATION, SNEWS COLLABORATION — During a stellar core collapse, a large flux of neutrinos (1-100 MeV) is produced, escaping the core before any light can. If detected, these neutrinos can play a crucial role in providing both preliminary evidence of a stellar collapse, and an understanding of the mechanisms behind it. The SuperNova Early Warning System 2.0 (SNEWS 2.0) is a network of neutrino detectors around the globe that aim at detecting these neutrinos. Armed with a diverse array of neutrino detectors, SNEWS 2.0 can triangulate a supernovas direction and notify astronomers up to one day before any photons reach Earth. With the discovery of Coherent Elastic Neutrino-Nucleus Scattering (CEνNS) proving that low-energy nuclear scatterings are observable within noble liquid detectors, next generation of ultra-sensitive dark matter detectors will be suitable for observing the neutrinos from a supernova. Currently SNEWS 2.0 uses a simulation package called SuperNova Observatories with GLoBES (SNOwGLoBES) for understanding detector responses to supernova neutrino interactions. Work done to incorporate the CEνNS interaction and the next generation liquid noble dark matter detectors into the current simulation framework will be presented.

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