G4MoNA - A Geant4 Simulation for unbound nuclides detected with MoNA/LISA[1] PAUL GUEYE, JESSICA FREEMAN, Hampton University, NATHAN FRANK, Augustana College, MONA COLLABORATION — The MoNA Collaboration has conducted a plethora of experiments to study unbound nuclei near the neutron dripline using the invariant mass technique since 2005. These experiments used a variety of secondary beams from the Coupled Cyclotron Facility of the National Superconducting Cyclotron Laboratory. The experimental setup consists of a large gap superconducting Sweeper magnet for charged fragments separation and the MoNA/LISA neutron detector arrays for neutron detection. Recently, a multi-layered Si/Be segmented target consisting of three 700 mg/cm^2 thick ^{9}Be slabs and four 140 μm Si detectors were added to the setup. This target improves the resolution of the reconstructed decay energy spectra of the unbound nuclides. The Geant4 Monte Carlo simulation toolkit was used to develop a complete realistic model of the setup including a new class to treat the decay of unbound nuclei, the Si/Be segmented target, the MoNA/LISA and the charged fragments detector systems. Comparison between simulated and experimental data will be presented.

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