Abstract Submitted
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Supernova Neutrino Estimation for Present and Future Telescopic Survey[1] EMILY KEHOE, Department of Physics, Clarkson University, Potsdam, NY, SEAN HESTON, SHUNSAKU HORIUCHI, Department of Physics, Virginia Tech, Blacksburg, VA — Most massive stars will end their life with a violent explosion known as a core collapse supernova. The majority of a core collapse supernova's energy comes from neutrinos. Neutrinos give substantial information about the physics of a supernova. At present, there have only been approximately 20 neutrinos detected from supernovae, which all originated from SN1987A. Currently, there are programs that are continually looking for supernovae, such as the All Sky Automated Survey for SuperNovae, and the Zwicky Transient Facility. Data from these on-going surveys was visualized to gauge the importance of several factors. This information was used to estimate the total number of neutrino events that could be detected at the Hyper-Kamiokande (Hyper-K) detector from an energy range of 16-30 MeV. New telescopes are being constructed, such as the Legacy Survey of Space and Time (LSST), that will detect supernovae from further distances, which will increase the number of neutrino events seen. Observation time since the explosion and distance of the supernovae are important factors when determining how many neutrino events can be observed. We have predicted the number of supernovae LSST will detect over a range of distances with the hopes of determining the best strategy to find neutrinos.

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Emily Kehoe
Department of Physics, Clarkson University, Potsdam, NY

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