Abstract Submitted
for the MAS14 Meeting of
The American Physical Society

Hypernovae and Starbursts as Multimessenger High-Energy Sources NICHOLAS SENNO, PHILIPP BAERWALD, PETER MESZAROS, The Pennsylvania State University, University Park — Recently the IceCube collaboration reported its first detection of high-energy (30 TeV – 2 PeV) neutrinos that may have been produced in astrophysical events, thus ushering in a new paradigm for the way we view the universe. We investigate the contribution of hypernovae (HNe) in starburst and normal star-forming galaxies to the diffuse flux of PeV cosmic rays, MeV-TeV γ-rays, and TeV neutrinos by numerically solving the Boltzmann transport equation. Cosmic rays produce γ-rays and neutrinos when they interact with ambient matter. Diffusion of the cosmic rays amplifies the amount of γ-rays and neutrinos that are produced in general. We consider cosmic ray propagation and subsequent neutrino production in both the hypernovae host galaxies and intergalactic space.

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Date submitted: 27 Aug 2014 Electronic form version 1.4