

Abstract Submitted
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Presupernova neutrinos: realistic emissivities from stellar evolution KELLY PATTON, Univ of Washington, CECILIA LUNARDINI, ROB FARMER, FRANK TIMMES, Arizona State University — We present a calculation of neutrino emissivities and energy spectra from a presupernova, a massive star going through the advanced stages of nuclear burning before becoming a supernova. Neutrinos produced from beta decay and electron capture, as well as pair annihilation, plasmon decay, and the photoneutrino process are included. We use the state of the art stellar evolution code MESA to obtain realistic conditions for temperature, density, electron fraction, and nuclear isotopic composition. We have found that beta processes contribute significantly to the neutrino flux at potentially detectable energies of a few MeV. Estimates for the number of events at several current and future detectors are presented for the last few hours before collapse.

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