

README for Angle-Averaged Neutrino Emission Files for 3D FORNAX Supernova Models

May 2020

1 Introduction

We provide here lab-frame neutrino data for 9 progenitors (9-, 10-, 12-, 13-, 14-, 15-, 19-, 25-, 60- M_{\odot}) simulated by FORNAX in our recent publications. The data are based on 1D FORNAX simulations from the bounce to 10 ms, which is then connected to many of the 3D models found in Burrows et al. (2020, MNRAS, 491, 2227) for the rest of their respective postbounce phases. In the 3D simulations, we employ an angular resolution of 128 cells (in θ) and 256 cells (in ϕ), and 12 energy bins to study the neutrino transport (logarithmically spaced from 1-300 MeV for electron-neutrinos, and 1-100 MeV for the electron anti-neutrinos and “heavy”-neutrinos). The data are calculated at 250 km and redshifted (with velocity and GR corrections) to the lab-frame.

2 Angle-averaged and energy-integrated quantities

We provide the angle-averaged energy-luminosity, number-luminosity, and average energy for each of the progenitor models and for each neutrino species in files of the format “d()M_spec_inu().time.lumi_spec_lm0.Num_spec_lm0.eave_spec_lm0.dat”. The first column is time (in seconds), the second is energy-luminosity (10^{50}ergs^{-1}), the third is number-luminosity (10^{50}s^{-1}) and the fourth is average energy (MeV).

3 Angle-averaged luminosity Spectra

We also provide the angle-averaged luminosity spectra for each progenitor model for each neutrino species (27 files in total) in files of the format “lum_spec_(M_inu)_byHN.dat”, e.g. “lum_spec_10M_inu0_byHN.dat.” The first column is time (in seconds), columns 2–13 are the bin center energy (in MeV) for each of the twelve bins, and columns 14–25 are the spectra in each bin (in $10^{50}\text{erg s}^{-1}\text{MeV}^{-1}$) for each time.

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