

Tabulated Equation of state

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Instructions for computing initial data using LORENE for Neutron Stars having Tabulated Equation of state

1. Install LORENE and make the executable `init_bin` and `coal`
2. Use the website: <https://stellarcollapse.org/SROEOS> to download the tabulated EOS table.
3. Use the python script called `slicetable.py` to get the equation of state in tabulated EOS format as read by LORENE. You will need `script.py` to run `slicetable.py`. You will need to mention at the temperature at which you want to slice the table in `scripts.py` using the variable `slicetemp`. Both `slicetable.py` and `script.py` were initially developed by Leo Werneck and `script.py` was further edited by Tanmayee Gupte
4. The output of `script.py` is called `test.txt` which will be read by Lorene. It contains the tabulated EOS in standard format as mentioned in https://lorene.obspm.fr/Refguide/classLorene_1_1Eos__CompOSE.html
5. The input file `par_eos1.d` and `par_eos2.d` should be edited according to instructions given at https://lorene.obspm.fr/Refguide/classLorene_1_1Eos__CompOSE.html where the second line will be the following as we will be using standard format
0 0: standard format 1: ComPOSE format
the fourth line has the path to the tabulated EOS (for example path to the file `test.txt` as mentioned above).
6. Adjust the central enthalpy in the file `par_init.d` for both the stars to get the required masses and radii.
7. Run the executable `init_bin` and `coal`