SuperNu

Radiation Transport Software for Explosive Outflows

Version 1.0

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Thank you,

The authors

2 SuperNu Methods and Papers

Wollaeger, van Rossum et al. 2013, ApJS 209, 37
Wollaeger & van Rossum 2014, ApJS 214, 28
van Rossum & Wollaeger 2015, in preparation

3 Program Units and Subdirectories

4 Input

4.1 Input.par

4.2 Input.str

The `input.str` file header is three lines long and has the following layout

```
# geometry
# nx ny nz ncolumn nabundance
# column_labels
```

Geometry is one of the following strings: "spherical", "cylindrical", "cartesian".

The `input.str` file body consists of one row for each grid cell and one column for each variable. The order of variables is as follows:

1. cell position boundaries: 2 columns per dimension.
2. cell mass: 1 column. This column needs to be labeled as "mass"
3. cell temperature (optional): 1 column. This column needs to be labeled as "temp"
4. additional optional columns, these are ignored.
5. abundances: elemental and isotope abundances. These are labeled by their element name and isotope name like in "Ni" and "Ni56".

There are two types of abundance columns: element abundances, and isotope abundances. The element abundances together need to add up to 1 in each cell. Duplicate element or isotope names are not permitted. The list of isotopes treated in SuperNu can be found in `gasmod.f` or `inputstrmod.f`. It includes the unstable alpha-chain isotopes ^{56}Ni, ^{52}Fe, and ^{48}Cr, and the products of their decay chain. The isotope abundances are assumed to be included in the element abundances. Each isotope abundance shall not be greater than the corresponding element abundance.

Example `input.str` files are available in the `Input/` directory.

4.3 Data Files

5 Output

6 Tools

7 Frequently Asked Questions

How can I ask questions?

Email the authors.

References