

SkMp

EoS Submission Details

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|---------------------|---|
| EoS name | SkMp |
| category | nuclear |
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Abstract

This table corresponds to the zero temperature and β -equilibrium unified EoS by Gulminelli and Raduta [1]. The considered effective interaction is SkMp [2]. Cluster energy functionals are those of Ref. [3].

References to the original work

1. F. Gulminelli and Ad. R. Raduta, arXiv:1504.04493.
2. L. Bennour et al., Phys. Rev. C 40 (1989) 2834.
3. P. Danielewicz et J. Lee, Nucl. Phys. A818, 36 (2009).

Further References

Nuclear Matter Properties¹

| | Quantity | Unit | |
|-----------|---|------------------|--------|
| n_S | saturation density in symmetric matter | fm^{-3} | 0.157 |
| E_0 | binding energy per baryon at saturation | MeV | 15.56 |
| K | incompressibility | MeV | 230.87 |
| K' | skewness | MeV | 0 |
| J | symmetry energy | MeV | 29.89 |
| L | symmetry energy slope parameter | MeV | 70.31 |
| K_{sym} | symmetry incompressibility | MeV | -49.82 |

Neutron Star Properties¹

| | Quantity | Unit | |
|---------------|--|------------------|-------|
| M_{max} | maximum mass | M_{sun} | 2.11 |
| $M_{DU,e}$ | mass at DUrca threshold with μ^- | M_{sun} | 1.32 |
| $R_{M_{max}}$ | radius at maximum NS mass | km | 10.60 |
| $R_{1.4}$ | radius at 1.4 M_{sun} NS mass | km | 12.50 |

eos.thermo

eos.thermo and the three grid defining files are ComPOSE standard data files and by definition available. eos.thermo does not necessarily provide all possible data.

```
table dimension      1
table type          1
total number of grid points 1194
```

Range and density (#) of the grid parameters:

| | Quantity | Unit | min | max | # |
|-------|-------------------|------------------|--------------|--------------|------|
| T | Temperature | MeV | 0. | 0 | 1 |
| n_b | Baryon Nr Density | fm^{-3} | 1.E-07 | 1.591461 | 1194 |
| Y_q | Charge Fraction | | 9.255490e-03 | 4.303763e-01 | 1 |

T, n_b , and Y_q are stored in eos.t, eos.nb, and eos.yq, respectively.

¹0-values indicate, that the corresponding data is not provided.

Further Available Data Files

Files and quantities listed in the following are provided beyond CompOSE's core requirements as outlined in Sec.4.2. of the CompOSE manual.

eos.compo : available

| index | particle |
|-------|------------------|
| 10 | n |
| 11 | p |
| 0 | e^- |
| 1 | μ^- |
| | - end of table - |

further particle sets are defined. One set of quadruples for an unique heavy nucleus, see Table 7.2 of the manual.

Description of Phases

PHASE INDEX #4 : heavy nuclei present

PHASE INDEX #3 : homogeneous matter