SLy4

EoS Submission Details

EoS name	SLy4
category	nuclear
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Abstract

This table corresponds to the zero temperature and βequilibrium unified EoS by Gulminelli and Raduta [1]. The considered effective interaction is SLy4 [2]. Cluster energy functionals are those of Ref. [3].

References to the original work

1. F. Gulminelli, Ad. R. Raduta, Phys. Rev. C 92 (2015) 055803.
2. E. Chabanat, P. Bonche, P. Haensel, J. Meyer, and R. Schaeffer, Nucl. Phys. A 635 (1998) 231.
3. P. Danielewicz and J. Lee, Nucl. Phys. A 818 (2009) 36.

Further References

Nuclear Matter Properties[1]

	Quantity	Unit	
n_S	saturation density in symmetric matter	fm^{-3}	0.159
E_0	binding energy per baryon at saturation	MeV	15.97
K	incompressibility	MeV	230.0
K'	skewness	MeV	-363.11
J	symmetry energy	MeV	32.04
L	symmetry energy slope parameter	MeV	46.00
K_{sym}	symmetry incompressibility	MeV	-119.73

Neutron Star Properties[1]

	Quantity	Unit	
M_{max}	maximum mass	$\mathrm{M_{sun}}$	2.06
$M_{DU,e}$	mass at DUrca threshold (1/9) w/o μ^-	$\mathrm{M_{sun}}$	0
$R_{M_{max}}$	radius at maximum NS mass	km	10.02
$R_{1.4}$	radius at 1.4 $\mathrm{M_{sun}}$ NS mass	km	11.7
$\tilde{\Lambda}$	tidal deformability GW170817 at $q = M_1/M_2 = 0.8$		396

eos.thermo

eos.thermo and the three grid defining files are CompOSE standard data files and by definition available. eos.thermo does <u>not</u> necessarily provide all possible data.

table dimension	1
table type	1
total number of grid points	197

Range and density (#) of the grid parameters:

	Quantity	Unit	min	max	#
T	Temperature	MeV	0	0	1
n_b	Baryon Nr Density	fm^{-3}	1.0E-7	1.21	197
Y_q	Charge Fraction		0.1175	0.4374	1

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

[1] 0-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.

Descriptoon of phases

PHASE INDEX #4: heavy nucleus present

PHASE INDEX #3: homogeneous matter