

# SLy230a

## EoS Submission Details

EoS name	SLy230a
category	nuclear
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sheet creation date	September 4, 2015

## Abstract

This table corresponds to the zero temperature and  $\beta$ -equilibrium unified EoS by Gulminelli and Raduta [1]. The considered effective interaction is SLy230a [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. E. Chabanat et al., Nucl. Phys. A 627 (1997) 710.
3. P. Danielewicz et J. Lee, Nucl. Phys. A818, 36 (2009).

## Further References

## Nuclear Matter Properties<sup>1</sup>

	Quantity	Unit	
$n_S$	saturation density in symmetric matter	$\text{fm}^{-3}$	0.16
$E_0$	binding energy per baryon at saturation	MeV	15.99
$K$	incompressibility	MeV	229.90
$K'$	skewness	MeV	0
$J$	symmetry energy	MeV	31.99
$L$	symmetry energy slope parameter	MeV	44.30
$K_{sym}$	symmetry incompressibility	MeV	-98.3

## Neutron Star Properties<sup>1</sup>

	Quantity	Unit	
$M_{max}$	maximum mass	$M_{\text{sun}}$	2.11
$M_{DU,e}$	mass at DUrca threshold with $\mu^-$	$M_{\text{sun}}$	2.00
$R_{M_{max}}$	radius at maximum NS mass	km	10.18
$R_{1.4}$	radius at 1.4 $M_{\text{sun}}$ NS mass	km	11.83

## 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 1215
```

Range and density (#) of the grid parameters:

	Quantity	Unit	min	max	#
T	Temperature	MeV	0.	0	1
$n_b$	Baryon Nr Density	$\text{fm}^{-3}$	1.E-07	1.475843	1215
$Y_q$	Charge Fraction		2.923313e-02	4.391021e-01	1

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

<sup>1</sup>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	$\mu^-$
	- 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