

CMGO(GDFM-II)

EoS Submission Details

EoS name	CMGO(GDFM-II)
category	nuclear
submitted by	Author who submits the table
affiliation	Author's affiliation
e-mail contact	Author's e-mail
sheet creation date	July 18, 2023

Abstract

This table corresponds to the realization (model-II) of the unified crust-core EOS for the relativistic metamodel [1]. The core is modelled with a density-dependent RMF functional [2]. The crust is calculated within a CLDM model [3]. The core contains the homogeneous $npe\mu$ matter.

References to the original work

1. P. Char, C. Mondal, F. Gulminelli, M. Oertel, in preparation.
2. P. Gogelein, E. N. E. van Dalen, C. Fuchs, and H. Muther, Phys. Rev. C **77**, 025802 (2008)
3. T. Carreau, F. Gulminelli, and J. Margueron, Eur. Phys. J. A **55**, 188 (2019)

Nuclear Matter Properties¹

	Quantity	Unit	
n_S	saturation density in symmetric matter	fm^{-3}	0.16249048
E_0	binding energy per baryon at saturation	MeV	-15.082767
K	incompressibility	MeV	236.40272
K'	skewness	MeV	1728.8502
J	symmetry energy	MeV	31.465153
L	symmetry energy slope parameter	MeV	76.468950
K_{sym}	symmetry incompressibility	MeV	158.18981

Neutron Star Properties¹

	Quantity	Unit	
M_{max}	maximum mass	M_{sun}	2.30272
$M_{DU,e}$	mass at DUrca threshold (1/9) w/o μ^-	M_{sun}	0
$R_{M_{max}}$	radius at maximum NS mass	km	12.2781
$R_{1.4}$	radius at 1.4 M_{sun} NS mass	km	13.7942
$\tilde{\Lambda}$	tidal deformability for GW170817 at a mass ratio of $q = 0.8$		1094.1291

eos.thermo

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

```
table dimension      1
table type           1
total number of grid points 1410
```

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

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-10	1.54152	1410
Y_q	Charge Fraction		0	0	1

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

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 : Not available

index	particle
0	e
	- end of table -