CMGO(GDFM-I)

EoS Submission Details

EoS name	CMGO(GDFM-I)
category	nuclear
submitted by	Author who submits the table
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sheet creation date	July 18, 2023

Abstract

This table corresponds to the realization (model-I) 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 Properties[1]

	Quantity	Unit	
n_S	saturation density in symmetric matter	fm^{-3}	0.16194209
E_0	binding energy per baryon at saturation	MeV	-15.526417
K	incompressibility	MeV	249.10229
K'	skewness	MeV	1593.2117
J	symmetry energy	MeV	32.908066
L	symmetry energy slope parameter	MeV	53.129645
K_{sym}	symmetry incompressibility	MeV	-156.06294

Neutron Star Properties[1]

	Quantity	Unit	
M_{max}	maximum mass	M$_{sun}$	2.30883
$M_{DU,e}$	mass at DUrca threshold (1/9) w/o μ^-	M$_{sun}$	0
$R_{M_{max}}$	radius at maximum NS mass	km	11.3041
$R_{1.4}$	radius at 1.4 M$_{sun}$ NS mass	km	12.8175
$\tilde{\Lambda}$	tidal deformability for GW170817 at a mass ratio of $q = 0.8$	-	651.8237

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	1383

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[1]0-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	1.532568	1383
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 -