FSU2H*

EoS Submission Details

EoS name	FSU2H*
category	Hadronic
submitted by	Hristijan Kochankovski
affiliation	Universitat de Barcelona
e-mail contact	hriskoch@fqa.ub.edu
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Abstract

This is the EOS table of homogenous hadronic and leptonic matter which is based on the RMF interaction FSU2H as defined in Ref. [1,2] with updated hyperonic coupling constants and extended to finite temperatures as in Ref. [3]

References to the original work

1. L. Tolos, M. Centelles, and A. Ramos, Astrophys. J. 834,3 (2017)

2. C. Providência, M. Fortin, H. Pais, and A. Rabhi, Astron. Space Sci. 6, 13 (2019)

3. H. Kochankovski, A. Ramos, and L. Tolos, Mon. Not. Roy. Astron. Soc. 517, 507 (2022)

Nuclear Matter Properties[1]

	Quantity	Unit	
n_S	saturation density in symmetric matter	fm^{-3}	0.1505
E_0	binding energy per baryon at saturation	MeV	16.28
K	incompressibility	MeV	238.0
K'	skewness	MeV	24.6
J	symmetry energy	MeV	30.5
L	symmetry energy slope parameter	MeV	44.5
K_{sym}	symmetry incompressibility	MeV	87.0

Neutron Star Properties[1]

	Quantity	Unit	
M_{max}	maximum mass	M$_{sun}$	2.02
$M_{DU,e}$	mass at DUrca threshold (1/9) w/o μ^-	M$_{sun}$	0
$R_{M_{max}}$	radius at maximum NS mass	km	12
$R_{1.4}$	radius at 1.4 M$_{sun}$ NS mass	km	13.3
$\tilde{\Lambda}$	tidal deformability for GW170817 at a mass ratio of $q = 0.8$	857.6	

eos.thermo

eos.thermo and the three grid defining files are CompOSE standard data files and by definition available.

table dimension	3
table type	1
total number of grid points	27500

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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	0.1	100.0	11
n_b	Baryon Nr Density	fm^{-3}	0.05	1.0	50
Y_q	Charge Fraction		0.01	0.5	50

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 : available

index	particle
0	e
10	n
11	p
100	Λ
110	Σ^-
111	Σ^0
112	Σ^+
120	Ξ^-
121	Ξ^0
	- end of table -