

Akmal-Pandharipande-Ravenhall

EoS Submission Details

EoS name	Akmal-Pandharipande-Ravenhall
category	hadronic
submitted by	Micaela Oertel
affiliation	LUTH, CNRS/Observatoire de Paris/Université Paris Diderot
e-mail contact	micaela.oertel@obspm.fr
sheet creation date	January 13, 2015

Abstract

This table represents the zero temperature and β -equilibrium EoS by Akmal, Pandharipande and Ravenhall using variational techniques [1], interaction A18 + δv + UIX*. The inner crust is calculated with SLy4 [2], the outer crust from Baym, Pethick, Sutherland [3]. No compositional information is available.

References to the original work

1. A. Akmal, V. R. Pandharipande and D. G. Ravenhall, Phys. Rev. C **58** (1998) 1804.
2. F. Douchin, P. Haensel, Astronomy and Astrophysics **380** (2001), 151.
3. G. Baym, C. Pethick and P. Sutherland, Astrophys. J. **170** (1971) 299.

Nuclear Matter Properties¹

	Quantity	Unit	
n_S	saturation density in symmetric matter	fm^{-3}	0.16
E_0	binding energy per baryon at saturation	MeV	16.0
K	incompressibility	MeV	266
K'	skewness	MeV	0
J	symmetry energy	MeV	32.6
L	symmetry energy slope parameter	MeV	57.6
K_{sym}	symmetry incompressibility	MeV	0

Neutron Star Properties¹

	Quantity	Unit	
M_{max}	maximum mass	M_{sun}	2.17
$M_{DU,e}$	mass at DUrca threshold (1/9) w/o μ^-	M_{sun}	0
$R_{M_{max}}$	radius at maximum NS mass	km	10.27
$R_{1.4}$	radius at 1.4 M_{sun} NS mass	km	11.33

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 172
```

Range and density (#) of the grid parameters:

	Quantity	Unit	min	max	#
T	Temperature	MeV	0	0	1
n_b	Baryon Nr Density	fm^{-3}	7.9240596E-15	0.1340000E+01	172
Y_q	Charge Fraction		0	0	1

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

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