




CompOSE: a repository for neutron star equations of state and transport properties

Danai Antonopoulou^{1,a}, Enrico Bozzo^{2,b}, Chikako Ishizuka^{3,c}, David Ian Jones^{4,d}, Micaela Oertel^{5,e}, Constança Providencia^{6,f}, Laura Tolos^{7,8,9,g} , Stefan Typel^{10,11,h}

¹ Jodrell Bank Centre for Astrophysics, School of Physics and Astronomy, University of Manchester, Manchester M13 9PL, UK

² Department of Astronomy, University of Geneva, Chemin d'Ecogia 16, Versoix, 1290 Geneva, Switzerland

³ Institute of Innovative Research, Tokyo Institute of Technology, Ookayama 2-12-1, Meguro, Tokyo 152-8550, Japan

⁴ Mathematical Sciences and STAG Research Centre, University of Southampton, Southampton SO17 1BJ, UK

⁵ LUTH, Observatoire de Paris, CNRS, Université PSL, Université Paris Cité, 5 place Jules Janssen, 92195 Meudon, France

⁶ CFisUC, Department of Physics, University of Coimbra, 3004-516 Coimbra, Portugal

⁷ Institute of Space Sciences (ICE, CSIC), Campus UAB, Carrer de Can Magrans, 08193 Barcelona, Spain

⁸ Institut d'Estudis Espacials de Catalunya (IEEC), 08034 Barcelona, Spain

⁹ Frankfurt Institute for Advanced Studies, Ruth-Moufang-Str. 1, 60438 Frankfurt am Main, Germany

¹⁰ Fachbereich Physik, Institut für Kernphysik, Technische Universität Darmstadt, Schlossgartenstraße 9, 64289 Darmstadt, Germany

¹¹ GSI Helmholtzzentrum für Schwerionenforschung GmbH, Theorie, Planckstraße 1, 64291 Darmstadt, Germany

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The CompOSE Topical Issue is a compendium of several works on neutron star equations of state (EoS) and transport properties related to the online repository CompOSE (CompStar Online Supernovae Equations of State).

CompOSE provides data tables for different state-of-the-art EoSs ready for further usage in astrophysical applications, nuclear physics and beyond, that is, for compact stars, core-collapse supernovae and neutron-star mergers (see <https://compose.obspm.fr/>). The main services that are offered via the website can be summarized as follows. First, it offers a collection of data tables in a flexible and easily extendable data format for different kind of EoSs and related physical quantities. No filters have been considered with respect to the approaches applied to obtain the provided EoS data. However, the available documentation on the EoS itself and

related properties as well as the indicated references to the original work should allow each user to choose the best adapted EoSs concerning composition and properties. Second, it provides software to extract and interpolate these data and to compute additional quantities. Finally, it features webtools to generate EoS tables that can be customized to the needs of the users and allow these same users to illustrate dependencies of various EoS quantities in different graphical forms.

The articles that are part of the CompOSE Topical Issue have been developed under the umbrella of CompOSE. An introduction to the CompOSE repository is presented [1], as well as the detailed CompOSE manual for users and providers [2]. Several contributions explore a range of effects (such as temperature, phase transitions, and new degrees of freedom) and experimental/astrophysical constraints on the EoS and associated quantities, and provide new data to the CompOSE repository. Others investigate astrophysical applications, from supernova explosions to neutron star mergers, by making use of CompOSE.

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Enrico Bozzo, Chikako Ishizuka, David Ian Jones, Micaela Oertel, Constança Providencia, Laura, Tolos and Stefan Typel contributed equally to this study.

^a e-mail: antonopouloudanai@gmail.com

^b e-mail: enrico.bozzo@unige.ch

^c e-mail: chikako@lane.iir.titech.ac.jp

^d e-mail: d.i.jones@soton.ac.uk

^e e-mail: micaela.oertel@obspm.fr

^f e-mail: cp@uc.pt

^g e-mail: tolos@ice.csic.es (corresponding author)

^h e-mail: stypel@ikp.tu-darmstadt.de

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Danai Antonopoulou, Enrico Bozzo, Chikako Ishizuka, Ian Jones, Micaela Oertel, Constança Providencia, Laura Tolos and Stefan Typel (Guest editors)

Table of contents

1. CompOSE - A repository of equations of state for astrophysical applications (S. Typel) [1]
2. CompOSE: CompStar Online Supernovae Equations of State (S. Typel, M. Oertel, T. Klähn, D. Chatterjee, V. Dexheimer, C. Ishizuka, M. Mancini, J. Novak, H. Pais, C. Providencia, A. Raduta, M. Servillat and L. Tolos) [2]
3. Neutron star crustal properties from relativistic mean-field models and bulk parameters effects (M. Dutra, C. H. Lenzi, W. de Paula and O. Lourenço) [3]
4. Binding energy shifts from heavy-ion experiments in a nuclear statistical equilibrium model (S. Mallik, H. Pais and F. Gulminelli) [4]
5. QCD phase transition drives supernova explosion of a very massive star - Dependence on metallicity of the progenitor star (T. Fischer) [5]
6. The effect of the energy functional on the pasta-phase properties of catalysed neutron stars (H. Dinh Thi, A. F. Fantina and F. Gulminelli) [6]
7. Equations of state for hot neutron stars (A. R. Raduta, F. Nacu and M. Oertel) [7]
8. Equations of state for hot neutron stars-II. The role of exotic particle degrees of freedom (A.R. Raduta) [8]
9. Equation of state and neutrino transfer in supernovae and neutron stars (K. Sumiyoshi) [9]
10. Unbiased interpolated neutron-star EoS at finite T for modified gravity studies (E. Lope-Oter and F.J. Llanes-Estrada) [10]
11. An analytic parametrization of the hypernuclear matter equation of state (H. Kochankovski, A. Ramos and I. Vidaña) [11]
12. Transport coefficients of magnetized neutron star cores (P. Shternin and D. Ofengeim) [12]
13. Isoentropic equations of state of β -stable hadronic matter with a quark phase transition (D. Logoteta, I. Bombaci and A. Perego) [13]
14. Confronting a set of Skyrme and χ_{EFT} predictions for the crust of neutron stars - On the origin of uncertainties in model predictions (G. Grams, J. Margueron, R. Somasundaram and S. Reddy) [14]
15. Ensembles of unified crust and core equations of state in a nuclear-multimessenger astrophysics environment (W. G. Newton, L. Balliet, S. Budimir, G. Crocombe, B. Douglas, T. Head, Z. Langford, L. Rivera and J. Sanford) [15]
16. Simulating neutron star mergers with the Lagrangian Numerical Relativity code SPHINCS_BSSN (P. Diener, S. Rosswog and F. Torsello) [16]
17. Many-body approximations to the superfluid gap and critical temperature in neutron stars (M. Drissi and A. Rios) [17]
18. Hybrid Equations of State for Neutron Stars with Hyperons and Deltas (A. Clevinger, J. Corkish, K. Aryal and V. Dexheimer) [18]
19. Neutrino emission from binary neutron star mergers: characterizing light curves and mean energies (M. Cusinato, F.M. Guercilena, A. Perego, D. Logoteta, D. Radice, S. Bernuzzi and S. Ansoldi) [19]
20. Delta-resonances and hyperons in proto-neutron stars and merger remnants (A. Sedrakian and A. Harutyunyan) [20]
21. A new class of hybrid EoS with multiple critical endpoints for simulations of supernovae, neutron stars and their mergers (O. Ivanytskyi and D. Blaschke) [21]
22. Inner crust equations of state for CompOSE (T. Malik and H. Pais) [22]

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