



**HAL**  
open science

# Inner crust of a neutron star at the point of crystallization in a multicomponent approach (Corrigendum)

T. Carreau, A. F. Fantina, F. Gulminelli

► **To cite this version:**

T. Carreau, A. F. Fantina, F. Gulminelli. Inner crust of a neutron star at the point of crystallization in a multicomponent approach (Corrigendum). *Astronomy and Astrophysics - A&A*, 2021, 645, pp.C1. 10.1051/0004-6361/202038347e . hal-03104421

**HAL Id: hal-03104421**

**<https://hal.science/hal-03104421>**

Submitted on 8 Jan 2021

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Inner crust of a neutron star at the point of crystallization in a multicomponent approach (Corrigendum)

T. Carreau<sup>1</sup>, A. F. Fantina<sup>2</sup>, and F. Gulminelli<sup>1</sup>

<sup>1</sup> LPC (CNRS/ENSICAEN/Université de Caen Normandie), UMR6534, 14050 Caen Cédex, France  
e-mail: [carreau@lpccaen.in2p3.fr](mailto:carreau@lpccaen.in2p3.fr), [gulminelli@lpccaen.in2p3.fr](mailto:gulminelli@lpccaen.in2p3.fr)

<sup>2</sup> Grand Accélérateur National d'Ions Lourds (GANIL), CEA/DRF - CNRS/IN2P3, Boulevard Henri Becquerel, 14076 Caen, France

A&A 640, A77 (2020), <https://doi.org/10.1051/0004-6361/202038347>

**Key words.** stars: neutron – dense matter – plasmas – errata, addenda

The original article contains two misprints, which are corrected below. These misprints do not affect any of the published numerical results, the calculations having been performed using the correct expressions.

*Section 2.1.* In the first paragraph, it is the proton chemical potential  $\mu_p$  that never exceeds  $-20$  MeV in the density and temperature domain studied in the paper, and not the proton fugacity  $z_p = \exp[(\mu_p - m_p c^2)/(k_B T)]$ , where  $m_p$  is the proton mass,  $c$  the speed of light, and  $k_B$  the Boltzmann constant.

*Section 2.3.* Deriving the expression of the nuclear finite-size correction from the Gauss theorem for a spherical cluster of charge  $Z$ , mass  $A$ , asymmetry  $I = 1 - 2Z/A$ , and average density  $n_0$  in a spherical Wigner-Seitz cell characterized by proton density  $n_p$ , the factor  $3/10$  is missing with respect to Eq. (32):

$$E_{fs} = \frac{3}{10} \frac{2n_p}{n_0(1-I)} \frac{e^2}{r_0} \frac{Z^2}{A^{1/3}}, \quad (1)$$

where  $r_0 = (4\pi n_0/3)^{-1/3}$  and  $e$  is the elementary charge.