

Erratum: “Neutron stars for undergraduates” [Am. J. Phys. 72 (7), 892–905 (2004)]

Richard R. Silbar and Sanjay Reddy

Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico 87545

(Received 30 November 2004; accepted 3 December 2004)

[DOI: 10.1119/1.1852544]

The following typos were noted by Bijay K. Agarwal of Texas A & M University, and Irina Sagert and Matthias Hempel of the Goethe University, Frankfurt am Main. Also, the symbols k , k_F , etc., represent momenta, not wave numbers. Some of our correspondents were confused on this point.

- Equation (11): include a factor of c^2 in the first term on the right-hand side.
- Equation (25): the exponent of the term in square brackets should be $1/(\gamma - 1)$.
- Equation (57): there should be a factor of $1/(\pi^2 \hbar^3)$ before the integral. Note that, in this section, we have set $c = 1$. Compare with Eqs. (10) and (13) for the electron Fermi gas case.
- Equation (58): in view of the correction in Eq. (57), it might have been more felicitous to have defined ϵ_0 without the factor of 3 in the denominator. However, as we have emphasized, ϵ_0 is an *arbitrary* dimensional constant.
- Equation (59): with ϵ_0 defined as in Eq. (58), then there should be a factor of 3 before the integral.
- Equation (60): x_i should be written as k_F/m_n , not k_F/m_i .
- Equation (62): there should be a factor of $1/(3\pi^2 \hbar^3)$ before the integral.
- Equation (69): the factor of \hbar^2 in the second term on the right-hand side should not be there. (This equation is for an energy and we forgot that k_F is a momentum, not a wave number.)
- Section VI A, last paragraph: the relativistic gas has $p = \epsilon/3$, not $\epsilon = p/3$.
- After Eq. (82): the text should read “For $n = n_0$ we note that $\langle E_F \rangle = \langle E_F^0 \rangle$,” i.e., the factor of 3/5 should be dropped.
- Equation (86): it would be more consistent with our earlier use of “energy per particle” to have written this equation with each term divided by A .
- Equation (87): in view of the correction after Eq. (82), drop the factor of 3/5 before $\langle E_F^0 \rangle$.
- Equation (89): likewise, the denominator before $\langle E_F^0 \rangle$ is 3, not 5.

The errors in Eq. (25) and in Eqs. (57)–(62) are only typos resulting from bad transcription from the MATHEMATICA files to the LaTeX manuscript. The numerical value of ϵ_0 in Eq. (29) and the masses in Table I are correct. Likewise, the fitted coefficients in Eq. (64) are correct and the concluding sentence of Sec. V is still valid.