

Erratum to “Various Empirical Equations to Unify between the Gravitational Force and the Electromagnetic Force” [Journal of Modern Physics 12 (2021) 859-869]

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Abstract

The original online version of this article (Miyashita, T. (2021) Various Empirical Equations to Unify between the Gravitational Force and the Electromagnetic Force, *Journal of Modern Physics*, Vol. 12, 859-869. <https://doi.org/10.4236/jmp.2021.127054>) unfortunately contains the very important mistakes. The author discovered the possible problem in Equation (26) shown in Appendix. To fix the problem, the author wishes to change Equation (2) and make it more accurate.

Keywords

Erratum

1) Page 2 Equation (2) should be revised to the following:

$$\frac{Gm_p^2}{e^2} = \frac{4.5}{2\pi} \times \frac{m_e}{e} \times hc \times \left(1 \frac{\text{C}}{\text{J} \cdot \text{m}} \times \frac{1}{1 \text{ kg}} \right) \quad (2)$$

where h is the Planck constant.

2) So, the following Equation (12) cannot be used.

$$\hbar c = \left(\frac{e^2}{4\pi\epsilon_0} \right)^{\frac{1}{2}} \left(\frac{q_m^2}{\mu_0\pi} \right)^{\frac{1}{2}} \quad (12)$$

Then,

$$\frac{Gm_p^2}{e^2} = \frac{1.8672 \times 10^{-64}}{2.3071 \times 10^{-28}} = 8.0936 \times 10^{-37} \quad (A)$$

$$\frac{m_e}{e} \times hc = \frac{9.1094 \times 10^{-31}}{1.6022 \times 10^{-19}} \times 1.9864 \times 10^{-25} = 1.1294 \times 10^{-36} \quad (\text{B})$$

Regarding the factor of $9/2$, we used 4.48870 instead of 4.5. Regarding the factor of π , we used 3.13189 instead of 3.14159. So,

$$\frac{4.5}{2\pi} = \frac{4.48870}{2 \times 3.13189} = 0.71661 \quad (\text{C})$$

$$\frac{4.5}{2\pi} \times \frac{m_e}{e} \times hc = 0.71661 \times 1.1294 \times 10^{-36} = 8.0936 \times 10^{-37} \quad (\text{D})$$

Equation (D) is equal to Equation (A). Therefore, the compensation method is perfect.

Equation (2) should be changed, but any other equations can be unchanged.