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The Ratio of Proton to Neutron Magnetic Moment via the Proton to Electron Mass Ratio

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Abstract
This article determines the ratio of proton to neutron magnetic moment and CODATA [1] values are used to verify the formula.

Formula

Formula (1) was obtained by the consistent application of the philosophical attitude that there is a unity between the universe as a whole and its parts, which is the basis for all the results obtained in my previous articles. The constants in the formula and their values are shown in Table 1.

$$\frac{\mu_p}{\mu_{ne}} = \sqrt{\frac{2m_p / m_{el}}{1+4\pi/\alpha}} * \left[1+\alpha^2/(2\pi)^{3/2}\right] \qquad (1)$$

The fact is that the first member in the product: $\sqrt{[(2m_p/m_{el})/(1+4\pi/\alpha)]}$ = 1.45989312 is dominant in relation to the second: $(1+\alpha^2/(2\pi)^{3/2})$ = 1.00000338. It is interesting that on the right side of the formula there is no mass of the neutron, which can be explained by the fact that the proton, rather than the neutron, is the central particle around which the creation of matter takes place mathematically. This makes sense because the accumulation of neutrons in the atomic nucleus is a consequence, while the cause is in the uniqueness of the proton as a particle, for which the following is true:
"***Only for the proton the opposite radius is equal to the Compton wavelength***" [2, formula 25]:

The above-stated is easier to comprehend if we rearrange (1) into (2):

$$\frac{\mu_p^2 / m_p}{\left[1+\alpha^2/(2\pi)^{3/2}\right]^2} = \frac{2*\mu_{ne}^2 / m_{el}}{1+4\pi/\alpha} \qquad (2)$$

The formula shows that the left side, with the parameters of the proton, is the result of the right side, where the neutron and electron parameters are. The same applies to the neutron to proton

mass ratio in [3], where there is also the proton to electron mass ration on the right side, rather than the neutron to electron mass ratio.

The formula looks simple and all its constants (2, 2π, 4π and α) can often be found in electromagnetism, which further assures us that it is not a coincidence. Formula (2) can be simplified by squaring the divisor on the left side and neglecting the square of the small value, so we get (3):

$$\frac{\mu_p^2 / m_p}{1+2*\alpha^2/(2\pi)^{3/2}} \approx \frac{2*\mu_{ne}^2 / m_{el}}{1+4\pi/\alpha} \qquad (3)$$

If we transfer all magnetic moments and masses on one side, we get a dimensionless form (4):

$$\frac{m_p / m_{el}}{\mu_p^2 / \mu_{ne}^2} = \frac{1/2+2\pi/\alpha}{\left[1+\alpha^2/(2\pi)^{3/2}\right]^2} \qquad (4)$$

If in the formula (4) on the right side is not the exact dimensionless relation among physical quantities, then a better alternative should be offered.

VERIFYING THE FORMULA

Formula (1) gives the accurate result with all significant digits, which is in Table 1 shown with CODATA [1] values from 2010 and 2014. The values calculated through the formula are presented in the last row.

Table 1. Calculating the proton to neutron magnetic moment ratio

CODATA recommended values	Symbol	Year 2010	Year 2014
Fine-structure constant	α	0.0072973525698 (24)	0.0072973525664 (17)
Proton/electron mass ratio	m_p/m_{el}	1836.152 672 45 (75)	1836.152 673 89 (17)
Proton/neutron mag. mom. ratio	μ_p/μ_{ne}	-1.459 898 06 (34)	-1.45989805 (34)
Calculated μ_p/μ_{ne} using formula (1)		**-1.459898061**	**-1.459898061**

CONCLUSION

As in some of my previous articles, for example [4], better results are obtained by the use of 2010 CODATA [1] values than those from 2014. I cannot answer with certainty whether formula (1) is exact or mere coincidence, but I am sure that it deserves to be closely examined by scientists active in this field of physics.

REFERENCES:

[1] http://physics.nist.gov/cuu/Constants/, *CODATA internationally recommended values of the Fundamental Physical Constants,* values of the constants

[2] Zivlak B., Cycle towards Methodology of Everything, http://gsjournal.net/Science-Journals/Research%20Papers/View/6731

[3] Zivlak B., Neutron, Proton and Electron Mass Formula, http://vixra.org/abs/1308.0128

[4] Zivlak B., Gravitational Constant Formula, http://gsjournal.net/Science-Journals/Essays/View/6826