# Relation: Fine Structure Constant - Gravitational Coupling Constant - Proton/Electron Mass Ratio

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**Abstract.** This paper is about relations between fundamental physical constants.

## Relation

Let as use the definition from Wikipedia:

*"$\alpha_G$ can be defined in terms of any pair of elementary particles that are stable and well-understood. Pair of electrons, of protons, or one electron and one proton all satisfies this criterion. Assuming two electrons, the defining expression and the best current estimate of its value are":*

$$\alpha_G = \frac{Gm_e^2}{\hbar c} = (\frac{m_e}{m_{pl}})^2 \approx 1.7518E-45 \qquad \text{(1)}$$

G is the Newtonian constant of gravitation;
$m_e$ is the mass of the electron;
c is the speed of light in a vacuum;
ħ ("h-bar") is the reduced Planck constant;

$m_{pl}$ is the Planck mass.

If we use mathematical constants:

Cycle  c=exp(π')= 535.49165552477
two pi  π'=6.283185..

And physical constants:

| | | |
|---|---|---|
| Inverse fine structure constant | ά =137.035 999 074 | [1] |
| Proton-electron mass ratio | μ=1836.152 672 45 | [1] |
| Proton shift | zp=( μ/ά+1)/( μ/ά+2)+1 | [2] |

We get:

$$\alpha_G = 2^{3zp/2-c/4} * \pi'^{3/2} * \mu^{-2} = 1.7516874575E-45 \qquad \text{(2)}$$

So, because zp=f(μ,ά), we have $\alpha_G$=f(zp,ά)=f(μ,ά). Therefore, Gravitational coupling constant can be determined from another coupling constant and one mass ratio.

Also, it is possible to make link between three coupling constants if we use proposed coupling constant in [3], equations (2-6).

# Conclusion

*"In science always talk affirmatively",*
*You will never say: it is not rainy, rather, it is sunny.*
*Prof. Marijan Čadež*

Using the above attitude, here I will say, just a simple ancient wisdom that promotes cyclicality, which is the basis of this and all my other works, published through Vixra [2], [3], [4]:

## From: **http://en.wikipedia.org/wiki/Ouroborus**

**The Ouroboros often represents *self-reflexivity* or cyclicality, especially in the sense of something constantly re-creating itself, the *eternal return*, and other things perceived as cycles that begin anew as soon as they end (compare with *phoenix*).**

Indeed, using only two values of physical constants and taking into account the cyclic pattern of the universe, one can easily calculate many fundamental physical constants. In the articles [2], [3], [4], I showed some of them. Many other constants, not shown, are directly derived from these publications. A wide range of phenomena of Astrophysics, Atomic physics and Classical physics could be explained by cyclicality and using the fundamental constants c = exp (π ') and zp. Even many so-called paradoxes of the presented approach, cease to be a paradox. Some phenomena such as, for example, those in nuclear physics, Biology, Biochemistry ..., are not included due to lack of specific knowledge of the author, but with the belief that the same approach can incorporate this phenomenon.

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## References:

1. CODATA internationally recommended values of the Fundamental Physical Constants, (2010) values of the constants.

2. Branko Zivlak, Calculate Universe 2, viXra: 1304.0051

3. Branko Zivlak, Fine Structure Constant And Relations Between Dimensionless Constants, viXra: 1301.0139

4. Branko Zivlak, Calculate Universe 1, viXra: 1303.0209