

A phased shift conversion process to link cosmology with basic quantum mechanics

William St. John
24136 Highway 11, Pawhuska Oklahoma, 74056
<mailto:william.stjohn@gmail.com>

Abstract

This paper wishes to express to the reader a constant geometrical pattern that exists in atomic structure and that it runs well into the cosmic scale of the universe. This representation demonstrates a small timing or phase shift issue with the existence of mass in the universe. This phase angle parameter also causes large scale expressions that we see in the scale of the universe. This adapts well into the known physical laws and may shine some new light on adapting gravity to basic quantum mechanics and on into relativity.

A constant deterministic phase shift abstraction.

Formula 1 represents the three basic atomic particles that are used to make atoms in nature. This ratio is equal to be the following:

$$\ln 4\pi = \frac{\textit{neutron mass} - \textit{proton mass}}{\textit{electron mass}} \quad (1)$$

The 4π is used in formula 2, represents the phase shift that all matter displaces. If you correct this angle to zero degrees, space-time would become a singularity. In that type of space you could not draw a line in it. The universe would be a kind of a point particle with no diameter. The radian would be of zero value in degrees as well.

The quantity of each stable mass particle has a partial equivalency in the value of the phase shift and the value of a radian for figures 2 & 3.

$$\text{Phase shift: } \phi_S = (\ln 4\pi + 3) \cdot \theta_0 = 5.53^\circ \quad (2)$$

$$\text{radian} = 2\pi \cdot \sqrt{e} \cdot \phi_S \quad (3)$$

e = base natural logarithm = 2.718...

$\theta_0 = 1 \text{ degree}$ (Used as a reference point and is constant)

Mass equivalences to the phase shift above.

Figures 4 thru 9 represent the mass equivalences of the three basic atomic particles of an atom and other phenomenon.

The mass of the electron

$$m_e = \frac{\text{rad}}{\phi_S} \cdot \frac{v_e}{c} \cdot m_p \cdot a \quad (4)$$

$v_e = 2,159,841.185 \text{ m/s}$, this is the velocity the electron around the first S orbital of an atom.

a = fine structure constant

c = speed of light

m_e = mass of an electron

m_p = mass of a proton

The mass of the proton

$$m_p = \frac{\phi_S}{\text{rad}} \cdot \frac{c}{v_e} \cdot m_e \cdot \frac{1}{a} \quad (5)$$

The mass of the neutron

$$m_n = \left(\frac{\phi_S}{\theta_0} \cdot m_e \right) - (3 \cdot m_e) + m_p \quad (6)$$

By using the first part of the formula 6, in formula 7 will show the W boson relationship.

-W boson relationship with the neutron and the proton

$$\frac{\phi_S}{\theta_0} = \frac{\text{radian}}{2\pi \cdot \sqrt{e} \cdot \theta_0} = 0.5 \ln \frac{|-W| - (m_n - m_p)}{(m_n - m_p)} \quad (7)$$

In this formula, the -W boson is $1.46850805 \cdot 10^{-25}$ kg. This is equivalent to 82.378 GeV.

$$\sqrt{e} = \sqrt{2.718 \dots}$$

Weinberg angle (weak mixing angle)

$$\cos \theta_w = \frac{W}{Z} = \frac{\left[(m_n - m_p) \cdot e^{\left(\frac{2\phi_S}{\theta_0} \right)} \right] + (m_n - m_p)}{Z} \quad (8)$$

W = W boson mass in kg, Z = Z boson mass in kg

Alpha Particle's binding energy

The accuracy of this formula is about 99.992% of documented measured value from other sources.

$$\text{Binding energy in eV} = 28.3 \text{ MeV} = \left[\left\{ \left(\frac{\phi_S}{\theta_0} \right) + (16\pi) + \ln \sqrt{\pi} \right\} m_e \right] - m_e \cdot c^2 / q \quad (9)$$

c = Speed of light in a vacuum

q = elementary charge of the electron

Cosmic Equivalences

Formula 10 is an expression of using area density to simplify calculations. On formulas 13 & 14 is a representation of Newton's value of the gravitational constant that is related to the phase angle in formula 2.

Area density

This is used as another reference point with respect to two dimensions and a mass of 1 kg. The value does not change and is equivalent to 1.

$$P_A^0 = 1 \text{ kg}/\text{m}^2 \text{ (10), this equals 1 kilogram per meter squared (constant).}$$

Hubble Constant

$$H_0 = \frac{v}{D} = \frac{a_c}{c} = 2\pi \cdot P_A^0 \cdot \frac{G}{c} = 2.306 \times 10^{-18} \text{ 1/s} \text{ (11)}$$

Universal acceleration

$$a_c = H_0 \cdot c = 2\pi \cdot \sqrt{e} \cdot G \cdot P_A^0 = 6.914 \times 10^{-10} \text{ m/s}^2 \text{ (12)}$$

Gravitational constant

$$G = \frac{\phi_S}{\text{rad}} \cdot \frac{a_c}{P_A^0} = \frac{1}{2\pi \cdot \sqrt{e}} \cdot \frac{a_c}{P_A^0} \text{ (13)}$$

$$G = a_c \cdot \frac{\theta_0}{P_A^0 \cdot \text{rad}} \cdot \left(\frac{m_n - m_p}{m_e} \right) + 3 \text{ (14)}$$

Since the explained phase shift is a separate component from mass, it would be conceivable that the phase shift could lag or lead from a geometrical stand point separate from mass. These differences may explain what dark matter is by describing a field of distorted space that is out of phase with normal space and creating a field of gravitation.

Hubble length

This value will be used in figures 17 & 18.

$$\lambda_H = \frac{c}{H_0} = 1.299915373 \times 10^{26} \text{ m} \quad (15)$$

Universal Density of the Universe

Please note that this formula does not require normalization.

$$p_c = \sqrt{e} \cdot \frac{3}{4} \cdot \frac{P_A^2}{\lambda_H} = 9.512472725 \times 10^{-27} \text{ kg}/\text{m}^3 = 4.795237501 \times 10^{-26} h_1^2 \text{ g} \cdot \text{cm}^{-4} \quad (16)$$

h_1 = Normalized Hubble expansion rate of about 0.71

Total gravitational force of the observable universe

$$G_u = \frac{h}{l_p^2} c = G \cdot \left(\frac{M_u \cdot H_0}{c} \right)^2 = G \cdot \left(\frac{M_u}{\lambda_H} \right)^2 = \frac{P_{vac}}{\Lambda} \cdot \frac{8\pi \cdot a_c}{\sqrt{e} \cdot P_A^0 \cdot G} \quad (17)$$

P_{vac} , Equals vacuum density = 98,137,509.55 N/s^2

Λ , Equals the cosmological constant = $2.037939548 \times 10^{-35} 1/s^2$

M_u , Equals the total mass of the observable universe = $4.3879535301 \times 10^{53} \text{ kg}$

G_u , Equals the total gravitational force of the observable universe = $7.604399768 \times 10^{44} \text{ J}/\text{m}$

Universal acceleration

(That is using the total mass of the observable universe.)

$$a_c = 2\pi \cdot \sqrt{e} \cdot G_u \cdot P_A^0 \cdot \left(\frac{\lambda_H}{M_u} \right)^2 \quad (18)$$

Since the expansion of space is not limited by the speed of light or relativity, a speculative adaption of formula 18 would allow faster than light travel.

The Elementary charge

The Heisenberg principle still applies here. By knowing the velocity of the electron, you cannot predict its location with these formulas. Formula 19 represents a type of diagram that is equivalent to formulas 20 & 21.

$$q = \frac{\left(\text{volume of a torus} / R \cdot r^2\right) \text{Planc } k' \text{ s constant}}{\text{Total energy equivalent of an electron} \cdot \text{lorentz contract ion of an orbiting electron}} \quad (19)$$

q = elementary charge

R = Inside Radius of the torus

r = Outside of the torus

$$\bar{q} = A \cdot t_0 = \frac{2\pi^2 \cdot h}{\pm m_e \cdot c^2 \cdot \sqrt{1 - \frac{e(2\pi \cdot n \cdot v_e)^2}{c^2}}} = 1.60217646 \times 10^{-19} \text{ coulombs} \quad (20)$$

A = Ampere, $t_0 = 1$ second, to an observer at rest.

To calculate the fraction charges for quarks, you must divide by 3. For 1/3 charge, 2pi squared stays the same at the top of the formula. For 2/3 charge it will be 4pi squared

Electromagnetic elementary charge relative to a proton

$$\bar{q} = A \cdot t_0 = \frac{h}{\mp m_p \cdot c} \cdot \frac{\pi}{a \cdot v_e \cdot \sqrt{e \left\{ 1 - \frac{e(2\pi \cdot n \cdot v_e)^2}{c^2} \right\}}} \quad (21)$$

n = S orbital number

In Conclusion

The length of a single second is based on a phased shift relationship with matter. I have shown that through an atomic ratio (using a single proton, neutron and an electron) that a phase shift exists between mass and time. I have shown through geometrical expressions of this phase shift, and also the relationship for the value of a radian, stable matter including the W boson (weak force). This also has relevance between time and the gravitational constant. (Phase shift is proportional to the interval of time.) In the subject of relativity, I have shown how the Lorentz contraction is related to the elementary charge through an energy ratio and how the Lorentz contraction is related to the constant phase shift.

Thank you for your time.

References

The source for all the constants was found on the Fundamental Physical Constants from NIST. The website is <http://physics.nist.gov/cuu/Constants/index.html>