Perspectivity of Classical to Relativistic to Quantum to String Physics

Brinley Patterson[1]
[1] *Email: brinpat@virginmedia.com*

INTRODUCTION

CLASSICAL SPACE TO RELATIVISTIC SPACE

CLASSICAL SPACE TO QUANTUM SPACE

We should expect classical physics to be an estimation of quantum physics as classical physics is observing the physics of objects which to us are perceived as volumes due to our eyes and imagination estimating it as so. In actual fact every single object is the creation of many smaller particles known as atoms. Atoms are made up of protons, neutrons and electrons. Protons and electrons are made up of quarks. Our eyes and imagination estimate individual atoms to be invisible until a certain distribution threshold for of atoms is reached.

Let's use the following equations from transformations of space-time frames where X, Y, Z are sets corresponding to points within the relative x,y,z directions,

$$X^k = \cup_{i=1}^{k} X^i,\ where\ X^{i+1} = \frac{X^i - V^i t}{\sqrt{1 - \frac{(V^i)^2}{c^2}}} \tag{1}$$

$$Y^k = \cup_{i=1}^{k} Y^i,\ where\ \ Y^{i+1} = Y^i \tag{2}$$

$$Z^k = \cup_{i=1}^{k} Z^i,\ where\ \ Z^{i+1} = Z^i \tag{3}$$

$$T^k = \frac{t - \frac{X^k V^k}{c^2}}{\sqrt{1 - \frac{(V^k)^2}{c^2}}}, \tag{4}$$

if all V in V^k are the same for all X then,

$$t = \frac{t - \frac{X^k V^k}{c^2}}{\sqrt{1 - \frac{(V^k)^2}{c^2}}}, \tag{5}$$

Let's observe two different areas of relativistic space $A = (X, Y, Z)^k$ and $B = (X', Y', Z')^k$. We can now use probability rules on classical space transformed by relative perspectivity to analyse these two spaces,

$$P(A \cap B) = P(A|B)P(B), \tag{6}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B), \tag{7}$$

If the spaces are independent then,

$$P(A \cap B) = P(A)P(B). \tag{8}$$

If the spaces are mutually exclusive and cannot occur at the same time then,

$$P(A \cup B) = P(A) + P(B), \tag{9}$$

For Quantum spaces let,

$$P(A) = |\Psi_A^* \Psi_A|^2, \tag{10}$$

$$P(B) = |\Psi_B^* \Psi_B|^2, \tag{11}$$

where,

$$X^k = \Psi(x, t), \tag{12}$$

$$Y^k = \Psi(y, t), \tag{13}$$

$$Z^k = \Psi(z, t), \tag{14}$$

$$\Psi_A = X^k + Y^k + Z^k, \tag{15}$$

$$\Psi_A = \Psi(x, t) + \Psi(y, t) + \Psi(z, t) = \Psi(r, t), \tag{16}$$

There exists a special case where $P(A) = 1$ then the wave function fully explains all particles associated to each wave peak. Hence the number of wave peaks equals the number of actual particles.

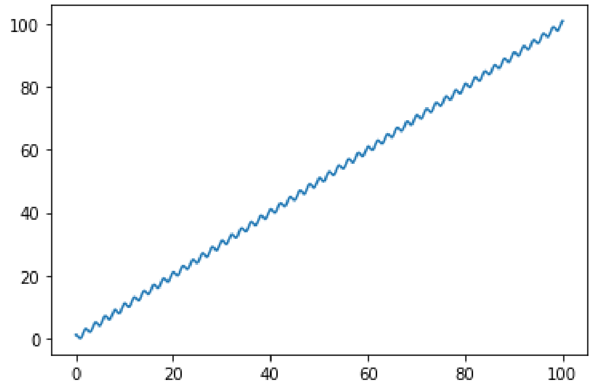

FIG. 1. Euler's equation visualisation.

QUANTUM MASS

Euler's equation

$$e^{i\pi} + 1 = 0, \tag{17}$$

Euler's equation visualised with x is

$$f(x) = e^{i\pi x} + x, \tag{18}$$

Euler's derivative is

$$f'(x) = i\pi e^{i\pi x} + 1, \tag{19}$$

Euler's second derivative is

$$f''(x) = -\pi^2 e^{i\pi x}, \tag{20}$$

Hence Euler's equation visualised with x becomes,

$$f(x) = -\frac{f''(x)}{\pi^2} + x, \tag{21}$$

$$f''(x) + \pi^2(f(x) - x) = 0, \tag{22}$$

and so Euler's equation is when x = 1,

$$f(1) = -\frac{f''(1)}{\pi^2} + 1, \tag{23}$$

Next let's observe Dirac's equation,

$$i\hbar\gamma^\mu \partial_\mu \Psi(x) - mc\Psi(x) = 0, \tag{24}$$

$$i\hbar\gamma^\mu \partial_\mu \Psi(x) = mc\Psi(x), \tag{25}$$

$$i\hbar\gamma^\mu \frac{\partial_\mu}{\partial_t} \Psi(x) = mc\frac{\partial}{\partial_t}\Psi(x), \tag{26}$$

Let,

$$c = \frac{\partial}{\partial_t}\Psi(x), \tag{27}$$

$$H\Psi = E\Psi, \tag{28}$$

$$E = mc^2, \tag{29}$$

$$E\Psi(x) = m\Psi(x)c^2, \tag{30}$$

$$H = i\hbar c\gamma^\mu \partial_\mu, \tag{31}$$

$$i\hbar c\gamma^\mu \partial_\mu \Psi(x) = mc^2\Psi(x), \tag{32}$$

$$dr^2 = dx^2 + dy^2 + dz^2, \tag{33}$$

$$m = A_m \Psi_m dr, \tag{34}$$

QUANTUM FORCE

$$F = ma = A_m \Psi_m dr \frac{dv}{dt}, \tag{35}$$

QUANTUM SPACE TO RELATIVISTIC SPACE

Let us start with Einstein's mass to energy equation,

$$E = mc^2. \tag{36}$$

We will be observing the quantum formation of mass via the following equation,

$$m_\Psi = m + \Psi(x), \tag{37}$$

and hence we find that the mean of the quantum mass distribution is in fact classical mass,

$$m \approx mean(m_\Psi). \tag{38}$$

Let us incorporate quantum mass distribution within our well known Einstein energy equation,

$$E = m_\Psi c^2 = (m + \Psi(x))c^2, \tag{39}$$

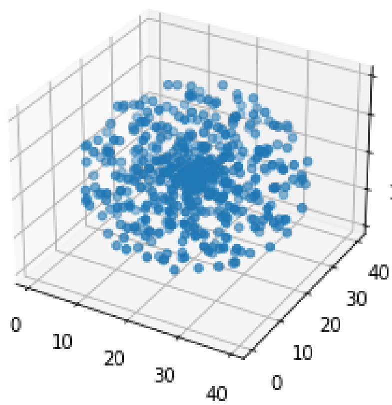

FIG. 2. Quantum mass of Wavelength 1E-10. Many degrees of freedom with contained normal distribution of random moving particles.

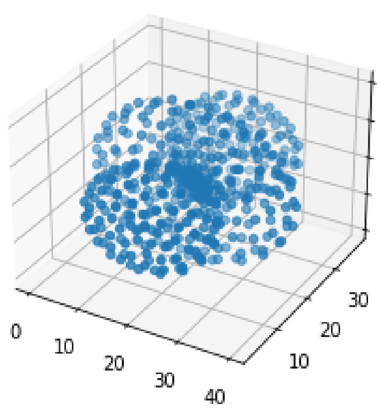

FIG. 3. Quantum mass of Wavelength 4E-9. Displays spherical particle harmonics as the many smaller particles degrees of freedom reduces causing resonant waves.

QUANTUM GRAVITY

$$F_1 = F_2 = G_m \frac{m_{\Psi 1} m_{\Psi 2}}{r^2}, \tag{40}$$

$$F_1 = F_2 = G_m \frac{(m + \Psi(x))(m + \Psi(x))}{r^2}. \tag{41}$$

When simulating mass with changing wavelengths, we model the following figures in

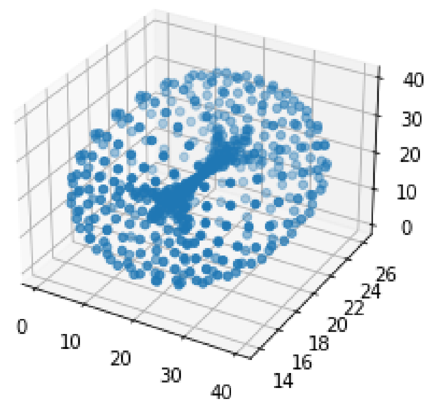

FIG. 4. Quantum mass of Wavelength 6E-9. Displays the inner particle splitting as the degree of freedom decreases from many to one.

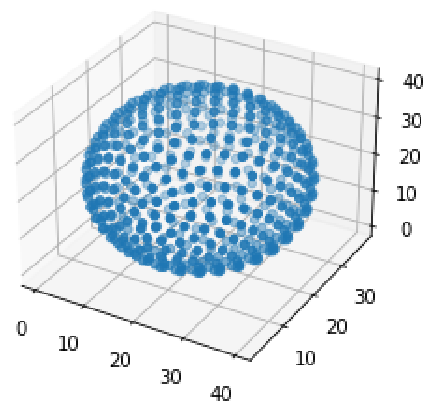

FIG. 5. Quantum mass of Wavelength 1E-8. Displays many smaller particles becoming ordered forming a larger singular particle with one degree of freedom.

ELECTRON GRAVITATIONAL WAVE INTERFERENCE

One electron has the wave function,

$$\Psi_e = Acos(\frac{2\pi}{\lambda}x - wt), \tag{42}$$

Two orbital electrons interfering with each other gravitationally can be observed with the equation,

$$F_1 = F_2 = G_m \frac{\Psi_{e1} S_1 . \Psi_{e2} S_2}{r^2} = G_m \frac{\Psi_{e1}^2 S_1 . S_2}{r^2}. \quad (43)$$

Many distributions of electrons interfering each other requires the summation of a frequency f of electron wave functions. Where,

$$\Sigma_{i=1}^{f} \Psi_e = f(Acos(\frac{2\pi}{\lambda} x - wt)) = f\Psi_e, \quad (44)$$

$$F_{1,i} = \Sigma_{i=2}^{f_2} G_m \frac{f_1 \Psi_{e_1} S_1 \Psi_{e_i} S_i}{r_{1i}^2}. \quad (45)$$

$$F_{1,i} = G_m f_1 \Psi_{e_1} S_1 \Sigma_{i=2}^{f_2} \frac{\Psi_{e_i} S_i}{r_{1i}^2}. \quad (46)$$

Using the electron wave function with the gravitational force equation, one can derive an expression associated to the force of all the electrons causing gravitational force wave interference, as seen in equation .

Let's test out some examples with our local solar system starting with the Earth and the Sun. In "Orbital, thermal and magnetic electrons" I found the Earth to have 1.75E51 total electron numbers, 9.75E40 orbital electron numbers, 1.75E51 free electron numbers, 1.75E51 free electrons causing thermal currents and 4.17E42 free electrons causing magnetic fields.

For the Sun, it was found to have 5.83E56 total electron numbers, 9.71E47 orbital electron numbers, 5.83E56 free electron numbers, 5.81E56 free electrons causing thermal currents and 1.23E54 free electrons causing magnetic fields.

Note that it was also theorised that only orbital electrons cause gravitational force interference which also matches the idea of spherical polar waves representing gravitational waves.

$$F_{1,i} = (6.67E - 11)(1.75E51) \Psi_{e_1} S_1 \Sigma_{i=2}^{f_2} \frac{\Psi_{e_i} S_i}{r_{1i}^2}. \quad (47)$$

Planetary examples such as Earth and Moon, Earth and Sun, Earth and person.

BLACK HOLE GRAVITATIONAL WAVE

$$r_s = \frac{2GM}{c^2}, \quad (48)$$

$$r_s = \frac{2GA_M \Psi_M S}{c^2}, \quad (49)$$

CONCLUSION

This is the first insight into my proposed "Theory of Relative Perspectivity" where we observe how we can change the perspective of space-time within simulations in order to analyse a distribution of smaller particles or waves behaving as a singular larger particle or wave. Furthermore, we can potentially begin observing how quantum waves in quantum systems impact classical or relativistic systems.

CONCLUSION

[1] The TensorNetwork Authors Revision. *Basic Introduction to Matrix Product States.* (2019). `https://tensornetwork.readthedocs.io/en/latest/basic_mps.html`.

[2] Stavros Efthymiou, Jack Hidary and Stefan Leichenauer. *TensorNetwork for Machine Learning.* (2019). `https://arxiv.org/pdf/1906.06329.pdf`.

[3] E.M.Stoudenmire and David J.Schwab. *Supervised Learning with Tensor Networks.* (2016). `https://proceedings.neurips.cc/paper/2016/file/5314b9674c86e3f9d1ba25ef9bb32895-Paper.pdf`.