Quantum Geometricdynamics

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The Relativistic Unit Circle

Imaginary Numbers

In the following section imaginary numbers are indicated in red, real numbers in **black**, where the product of an imaginary number and either an imaginary number or a real number remains imaginary:

$i \cdot i = i^2 \neq -1$ but is an imaginary area. Note that $2a(ib) = 2(ab)i$ which is a line along the complex axis, and that $\left[2(ab)i\right]^2 = \left[2(ab)\right]^2 i^2 = \left[2(ab)\right]^2$ is an imaginary area in the imaginary plane. For the imaginary and real line to be the same order, the bases must be $\left(i, \sqrt{1}\right)$ so that the basis for second order is $\left(i^2, 1\right) = \left(i^2, \left(\sqrt{1}\right)^2\right)$. A "complex" number consisting of both real and imaginary elements of the same order is indicated by the color green.

$$\varphi = \psi = \sqrt{1} + i$$
$$\varphi^2 = \left(\sqrt{1} + i\right)\left(\sqrt{1} + i\right) = 1 + i^2 + 2(1)(i) = 1 + i^2 + 2i$$
$$\psi\psi^* = \left(\sqrt{1} + i\right)\left(\sqrt{1} - i\right) = 1 + i^2$$

The interaction $2i$ between the complex and real line has been eliminated by imaginary conjugation. (This is related to Russell's barber paradox, in which the barber is conceptualized to be shaving in front of an imaginary mirror.)

(Einstein imagined himself to be "riding on a photon", but the correct analysis is that he is at the business end of a geodesic ("parallel infinitesimal" bundle), where looking behind him is imaginary and the real and complex line do not interact at an origin between them. Rather, the complex line and the real line both have their own origins, which are taken to be the midpoints of all possible lines in each of their domains, joined only at the "zero point". If there is an interaction, then it is equal and opposite ("zero point") energy; $\overleftrightarrow{E_0} = E_0\left[\overleftrightarrow{0}\right] = 2i\left[\overleftrightarrow{0}\right]$

(Imaginary numbers are only complex for those who think that some of them may be real; however complex numbers exist only at the "zero point" energy.) For physics, the origin is at the center of axes, which can be expanded by the Binomial or Multinomial theorems for $n \geq 2$; n as both the particle number and power is interpreted as the entropy (which also applies to sets of particles. An entropy of zero specifies the existence of an element or set of elements $a^0 = 1$, where a can either be a single element or a set of elements, and for Special Theory of Relativity $(c_0\tau_0)^0 = 1 \Leftrightarrow (c_0\tau_0)^1 = c_0\tau_0 \Leftrightarrow (c_0\tau_0)^2 = (c_0\tau_0)^2$ For Imaginary elements

$(c_0\tau_0)^0 = 1 = i^2 \Leftrightarrow (c_0\tau_0)^0 = \left(\sqrt{-1}\right)^2$, which shows that the imaginary line and the real line are independent because their elements are of different power (entropy).

(Note that the boundary conditions do not exist for the real number plane in two dimensions if the interaction energy $E_{v',c} = 2(v\tau)'(c\tau)$ is included; there is only a boundary (either radial or cartesian) in the case $E_{v',c} = 2(v\tau)'(c\tau) = 0$, in which case the "time dilation" equation results because of the elimination of the interaction energies

$$E_{\tau'<\tau} = \frac{\beta}{\gamma}: \ \tau' = \tau\gamma, \ \gamma = \frac{1}{\sqrt{1-\beta^2}}, \ \beta = \frac{v}{c}; \ \beta = \sin\theta, \ \gamma = \cos\theta; \ 1^2 = \sin^2\theta + \cos^2\theta$$

$$E_{\tau'=\tau}: \gamma = 1, \beta = \frac{v}{c} \Leftrightarrow v = 0$$

$$E_{\tau'>\tau} = \beta\gamma: \ \gamma = \frac{\tau'}{\tau}, \ \gamma^2 = 1^2 + (\gamma\beta)^2; \ E_{\gamma\beta} = 2i\gamma\beta$$

For $c\tau = 0$, nothing exists, since $c\tau = 1$ is the basis of the real line in one dimension, and $\frac{c\tau}{c\tau} = 1$ is the basis of the static "$c\tau$" axis and $\frac{v\tau'}{v\tau'} = 1$ is the basis of the "change" axis, separated on the static axis by the metric "distance" γ.

Interpretation of the Planck Length

$$L = \sqrt{\frac{hG}{c^3}}$$ (Planck Length - Wikipedia)

Fundamental Relations

$$L^2 = \frac{hG}{c^3} = \frac{h}{c}\frac{G}{c^2}$$

$$1^2 = \frac{1}{L^2}\frac{h}{c}\frac{G}{c^2}$$

Maxwell and Relativity/Quantum Mechanics

$$c_0 = \frac{1}{\sqrt{\varepsilon_0 \mu_0}} = c\tau_0 = c,\ \tau_0 = 1$$

$$c' = \frac{1}{\sqrt{\varepsilon' \mu'}} = c\tau'$$

$$E_0 = m_0 c^2 \Leftrightarrow c_0 = \sqrt{\frac{E_0}{m_0}} = \sqrt{\frac{E'}{m'}}$$

$$E_0 = \frac{hc}{\lambda_0} \Leftrightarrow h = E_0 \tau_0$$

Relativistic Energy

$$\varphi = \psi = E_0 + Pc$$

$$\varphi^2 = \left(E_0 + Pc\right)^2 = \left(E_0\right)^2 + \left(Pc\right)^2 + 2E_0 Pc$$

$$\psi\psi^* = \left(E_0 + iPc\right)\left(E_0 - iPc\right) = \left(E_0\right)^2 + \left(Pc\right)^2$$

Where the interaction between rest energy and relativistic "momentum" (actually an energy that depends on v) has been eliminated through the use of imaginary numbers.

Gravity

$$F_g = \frac{m' m_g}{r_g}$$

$$m' = Gm_g \,,\ r_g = c_g \tau_g = c_g \,,\ \tau_g = 1$$

$$F_g = G\left(m_g\right)^2$$

$$m_g = c_g \tau_g$$

$$F_g = G\left(c_g\right)^2 = E_g$$

$$E_g = m_G c_g{}^2 \Leftrightarrow G = m_G \Leftrightarrow c_g{}^2 = \frac{E_g}{m_g}$$

$$G = \frac{E_g}{\left(c_g\right)^2} \ ,$$

$$E_0 = \frac{hc_h}{\lambda_h} = \frac{hc_h}{c_h \tau_h}$$

$$\frac{E_0 \tau_h}{c_h} = \frac{h}{c} \Leftrightarrow \tau_h = 1_h$$

$$L = \left(c_m \tau_m\right)$$

$$L^2 = \left(c_m\right)^2 \,,\ \tau_m = 1$$

$$E_0 = m_0 c^2 = L^2$$

$$\frac{E_0}{L^2} = \frac{1}{L^2} \Leftrightarrow E_0 = 1$$

Special Relativity and Quantum Mechanics (photo-equivalent electrons),

Relativistic final state $\tau' = \tau_0,\ v = 0$

$$\tau_0 = \tau_c = \tau_h = 1$$

$$1^2 = \frac{E_0}{L^2}\left[\frac{E_h}{c_h}\right]\left[\frac{E_g}{\left(c_g\right)^2}\right]$$

$$L^2 = E_0\left[\frac{E_h}{c_h}\right]\left[\frac{E_g}{\left(c_g\right)^2}\right]$$

$$\left(L_{h,c,g}\right)^2 = \left(c_{h,c,g}\tau_{h,c,g}\right)^2 = m_{_{h,c,g}}\left(ch,c,g\tau_{h,c,g}\right)^2$$

$$m_{_{h,c,g}} = 1$$

$$\left(L_{h,c,g}\right)^2 = \left(m_{_{h,c,g}}\right)\left(c_{h,c,g}\tau_{h,c,g}\right)^2 = E_0\left[\frac{E_h}{c_h}\right]\left[\frac{E_g}{\left(c_g\right)^2}\right]$$

Note that this is an interaction between three independent energies

$\left(E_0, E_h, E_g\right)$ for $c_0, c_h, c_g = 1_0, 1_h, 1_g$, where $\left(\frac{c_0\tau}{c_0\tau}\right)^2 = \left(1_0\right)^2$, $\left(\frac{c_h\tau}{c_h\tau}\right)^2 = \left(1_h\right)^2$, $\left(\frac{c_g\tau}{c_g\tau}\right)^2 = \left(1_g\right)^2$

This suggests the multinomial expansion for the case $n = 2$:

$$\varphi = \psi = \left(\left[E_0 + E_h\right] + E_g\right)$$

$$\varphi^2 = \left(\left[E_0 + E_h\right] + E_g\right)^2 = \left[E_0 + E_h\right]^2 + \left(E_g\right)^2 + 2E_g\left[E_0 + E_h\right]$$

$$\psi\psi^* = \left(\left[E_0 + E_h\right] + iE_g\right)\left(\left[E_0 + E_h\right] - iE_g\right) = \left[E_0 + E_h\right]^2 + \left(E_g\right)^2$$

Note that the interaction between gravitational and relativistic/QM has been eliminated by assuming the gravitational forces (energy) is imaginary. One can also assume the gravitational energy real and the Relativity/QM imaginary:

$$\varphi = \psi = \left(\left[E_0 + E_h\right] + E_g\right)$$

$$\varphi^2 = \left(\left[E_0 + E_h\right] + E_g\right)^2 = \left[E_0 + E_h\right]^2 + \left(E_g\right)^2 + 2E_g\left[E_0 + E_h\right]$$

$$\psi\psi^* = \left(E_g + i\left[E_0 + E_h\right]\right)\left(E_g - i\left[E_0 + E_h\right]\right) = \left(E_g\right)^2 + \left[E_0 + E_h\right]^2$$

For the complete expansion, however, one should also expand

$$\varphi_{0,h} = \left[E_0 + E_h\right]$$
$$\left(\varphi_{0,h}\right)^2 = \left[E_0 + E_h\right]^2 = \left(E_0\right)^2 + \left(E_h\right)^2 + 2E_0E_h$$
$$\psi\psi^* = \left[E_0 + iE_h\right]\left[E_0 - iE_h\right] = \left(E_0\right)^2 + \left(E_h\right)^2$$

Which asserts that Maxwell's results are real and Relativity/QM is imaginary by eliminating the interaction $2E_0E_h$

By choosing one of the energies to be real, and the others imaginary by eliminating their interactions, one can choose the realm of experimental evidence to be shared (i.e., with other imaginary physicists…☺

For Wheeler, et. al.,

1/12 “No one has found any way to escape this prediction”

Wheeler introduces “coordinates” via 2π , where π is the relation between Cartesian and radial coordinates)

$$\left(L*\right)^2 = 2\pi L^2$$

$$\left(L*\right)^2 = 2\pi L^2 = 2\pi\left\{E_0\left[\frac{E_h}{c_h}\right]\left[\frac{E_g}{\left(c_g\right)^2}\right]\right\}$$