Verification of the Calculations in "The Derivation of Dirac's Equation" and a Prediction to detect Dark Matter.

George Gerhab

Abstract: Quantization of time means time progresses in integral steps of the universal elementary time unit dt_p = Planck's time = $(G\hbar/c^5)^{1/2}$. Our real, observable elementary unit of time is $(3/5)dt_p$, which was indicated by the calculation (see my first paper, "The Derivation of Dirac's Equation", sciencepub.net/academia, Vol 5 No 9)) of the elementary unit of charge, **$e= (dt/u_0)^{1/2} = 1.604 \times 10^{-19}$ C,** where $dt = (3/5)dt_p$. Since 3/5 is cos 53, this indicates that the time vector for our observable universe is 53°. The only 90° triangle which contains an integral number for each of its three sides is the 3,4,5 triangle, whose two angles are 37° and 53°. Since time can proceed only in integral steps, this is the only triangle that nature allows for the time vector. Hence, the two angles 37 and 53 are the only phase angles allowable for the time vector besides 0°. Our time vector's phase angle is 53. Since the hypotenuse of the 3,4,5 triangle is 5, time moves in intervals of $5dt_p$ in a 5 step ½ cycle of a wave-like motion which is the basis of the Dirac matrices and the matter wave.. Our time moves in intervals of $3dt_p$.

[George Gerhab. **Verification of the Calculations in "The Derivation of Dirac's Equation" and a Prediction to detect Dark Matter.** *Academ Arena* 2013;5(10):37-38] (ISSN 1553-992X). http://www.sciencepub.net/academia. 6

Keywords: Quantization; time; integral steps; universal elementary; Dirac's Equation; triangle; Dirac matrices; matter wave

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Space-time consists of virtual pairs of points, one point moves forward in time, an amount dt_p, while the other point moves backward in time the same amount. Their time vectors are in synchronization and both click to the imaginary axis and disappear in a time dt_p or dt for us.

An unpaired point cannot disappear since it does not have an opposite partner. To move, a virtual pair must occur near the unpaired point (UP) in which both points are a distance dx away from the UP. The UP can then share time with the opposite virtual point and disappear. The virtual partner then becomes the new UP. The UP then has suddenly jumped a distance dx in a time dt at the speed of light. N=1/dt is the number of random UP jumps per second and the UP is racing around randomly at the speed of light within a volume of radius ~ 10^{-15} m.

When an unpaired point makes a sudden jump, it kicks a virtual point out of synchronization with its virtual partner, by giving it a small impulse, I_{min}. The virtual pair now cannot disappear, but transmits this small impulse through space time at the speed of light.

Calculation of I_{min}

In my first paper I calculated I_{min} to be: $I_{min} = (dt/(4(pi)3_0))^2 = h/c^4$ where h = Planck' constant.

Verification of I_{min} Calculation

$.dt_p = (G\hbar/c^5)^{1/2} = [(G/(2(pi)c))x(h/c^4)]^{1/2} = [(G/(2(pi)c))I_{min}]^{1/2}$

Hence $dt_p = (G/(2(pi)c))^{1/2} \times ((dt/(4(pi)3_0))^2)^{1/2}$

Since $G/(32(pi)^3 c\ 3_0^2) = (5/3)^2$ we have that $dt_p = (5/3)dt$ or $dt = (3/5)dt_p$
This confirms that our real, observable elementary unit of time is 3/5 or cos53 of the universal elementary unit of time and that our time vector's phase angle is 53^o.

I_{min} can also be written as: $I_{min} = (5/3)^2\ 4(pi)\ hc\ dt$

Since $h = (e^2/(4(pi)3_0^2))^2$ and $e^2 = dt/u_0$ we have $h = (dt/(4(pi)u_0 3_0^2))^2$ and using $(5/3)^2$

We have:

$$.h_u = (5/3)^2\ h = ((5/3)dt/(4(pi)u_0 3_0^2))^2 = (dt_p/(4(pi)u_0 3_0^2))^2$$

Which is the same for all the phase angle universes, hence $I_{min} = 4(pi)h_u c\ dt_\Theta$ where dt_Θ = elementary time unit for phase angle Θ and $dt_\Theta = e^{i\Theta}\ dt_p$ where $e^{i\Theta}$ is the time vector phase factor for the differential time wave fuction. Θ = 0, 37 and 53.

Since the elementary time unit is different for each phase angle universe, the electric force in each phase angle universe is different and cannot interact with the electric force in any other phase angle universe and, consequently cannot be detected. They would appear "dark" to each other.

Prediction to observe dark matter

A black hole gravitationally attracts all matter in all three phase angle universe's.

Nearing a black hole slows time. In terms of the elementary time unit, this would mean lengthening the unit of time.

I propose that our elementary unit of time, $(3/5)dt_p$, will, since it's shorter, lengthen faster that the longer two time units of $(4/5)dt_p$ and dt_p. At two distances, our time unit will equal one of the two other ones. At these two distances, our ordinary matter will be able to electronically interact with the other two phase angle universes (considered here to be dark matter). Consequently, with far more matter to interact with, our ordinary matter should heat up tremendously, and there may exist two sharp increases in energy around a black hole.

If the time units remain the same length once they achieve the same length until they reach infinity (stopped time) then there should be two steps of increased energy for the ordinary matter instead of a continuous increase as you get closer to the black hole.

If the inner realm of the accretion disk of a black hole is emitting more energy than would be expected, this would be a strong indication that ordinary matter is interacting with dark matter via the electric interaction.

9/12/2013