

# CASSIOPEIA'S ToE

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## Spin, Charge, and Magnetic Moment

Several possibilities here to represent SPIN. We reject the concept that nothing is spinning – something is spinning even if we don't yet know what it is and even if it is inherently too small or too hard for us to “see” it.

There is a concept of orbital angular momentum multiplexing that relates the helicity of a photon to its spin angular momentum. And since we are representing the photon as a wormhole between two space quanta, perhaps the wormholes themselves have a twist to them. This fits in with the idea of spinors. Then wormholes could have twists of 360 or 720 degrees. Anyway, putting a twist in the wormholes themselves also allows us to represent chirality – the twists could be clockwise with the one-way direction of the wormhole, or counter-clockwise. This also allows us to easily represent the difference between fermions and bosons -- It is simply the number of twists between the connected space quanta.

Whatever it is, the rotation in the Charge (EM) Field causes the magnetic moment of the electron.

A similar rotation in the Gravity Field causes the quantum angular momentum (SPIN) of the electron.

So why is spin quantized in 1/2-integral units for fermions? If we imagine the wormhole contains vibrational energy that has a wavelength, then we have the intriguing possibility that the quantization comes from half-wavelength steps of a potential standing wave.

Various calculations make it likely that in an electron, the charge density must be different from the mass density in order to get the correct magnetic moment and angular momentum from the same spin. But – since there are two different Fields involved, there is no reason for these distribution densities to be the same in our visualization.

And perhaps the densities are not spherical but cylindrical (like wormholes)

# Mass

What is mass?

Fermions (and W bosons) connect to the Higgs Field. Energy from that Field flows towards that coupling and gets trapped topologically.

Mass is related to inertia. If a particle couples to the Higgs, picture the Higgs wormholes (virtual Higgs bosons) connecting to the particle. The strength of the coupling determines how many wormholes couple and this in turn determines the mass of the particle. In order to move, those Higgs bosons have to disappear and new ones connect. This is comparable to the speed of light in a medium. The photon is constantly being absorbed and re-emitted – forming new wormholes. This process slows it down. Light traveling through a medium and being slowed down is very much like a massive particle traveling through the Higgs Field and being slowed down. For the massive particle, space has a constant “index of refraction” based on the strength of the coupling between the particle and the Higgs Field.

All fermions couple to both the Higgs Field and to the Weak Field. The Higgs carries a Weak Charge as well. Now since fermions oscillate back and forth between left-chiral and right-chiral states, the Weak Field is turned off and on along with this oscillation

Could THAT look like SPIN ?

So decay involves the disappearance of a higher harmonic and the appearance of a separate wormhole (or multiple wormholes) into the Higgs Field

# Time

**What is TIME?**

The direction of the flow of time is related to the direction of wormhole travel. Traveling against the direction of a wormhole is traveling backwards in time. SO The Time Reversal Operator simply changes the direction of the wormhole (as does Charge Conjugation)

The concept of what is time itself will be addressed in a later blog

The speed of the flow of time, and the speed of light, is related to the properties of space known as permittivity and permeability, This will also be addressed later.

## **Gravitons**

Gravitons are the only particles that we think exist within a single Field – the Gravity Field. And the intriguing question is whether they are limited by the speed of light in the space around a black hole. Recent detection of gravity waves that resulted from a double neutron star encounter strongly supports the notion that these waves move through space at the speed of light.

They have very long De Broglie wavelengths due to their tiny energy content.