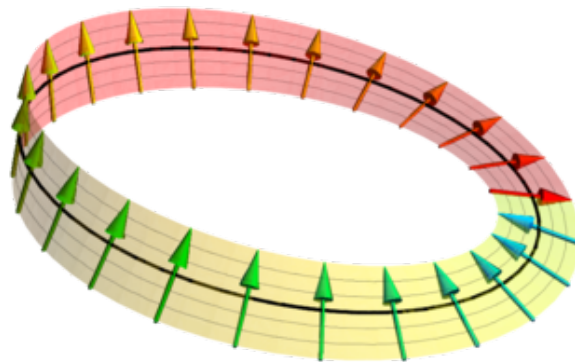


CASSIOPEIA'S ToE

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Exclusion Principle

Exclusion – rotation of 360 degrees results in negative wave function – Why? Mathematically, it is because the “spin” of the electron (fermion) is described by a “spinor” which is an element of a complex vector space. A 360 degree rotation in this complex space flips the direction of the spin and introduces a minus sign in the overall wave function. Put another way, a 360 degree rotation includes a phase change of 180 degrees which introduces a minus sign. Physically it can be represented by a Mobius strip...



How should we represent this in the wormhole view – this is a really important aspect as it will explain Parity violation in the Weak Interactions later on.

So ...a rotation of 360 degrees in Spinor space reverses the direction of the one-way wormholes — so that the wave function now has a minus sign... they are anti-symmetric??

Or, a rotation of 360 degrees

Imagine this as a two story space, the first 360 degrees of travel points the wormholes in the other direction... changes the direction of the field lines... effectively putting a minus sign in front of the wave function. The second 360 degrees of rotation brings us back to our starting point

Bosons on the other hand have a characteristic having wormholes at both layers of the 720 degrees of rotation, so a 360 degree rotation just swaps the wormholes — symmetric under rotation of 360 degrees.

OR

Maybe the two floors in the fermion

space are two different Fields - the Higgs Field and the Gravity Field

OR

This two- story helix is slightly easier to travel clockwise than counter clockwise

Parity

Also matter and antimatter ?

Uncertainty Principle

It is the Uncertainty Principle that causes the wormholes to be less than constant. They form and die and reform just like everything else in this quantum realm. But the fundamental modes of vibration of the elemental objects cause them to form and reform most probably according to the wave function description of the object. The Uncertainty Principle is also responsible for the spontaneous appearance of particles in "empty space". And in the wormhole view, we don't need to create energy from nothing to create these particles. We can visualize the creation energy being borrowed from another place in space-time via a wormhole. So there is an average energy throughout space-time, but the wormholes and the Uncertainty Principle describe how **highs and lows** provide the energy for the creation of particles out of the vacuum.

Uncertainty and Higgs

The gravity Field always existed, and along comes the Higgs scalar field and causes inflation. The Higgs is a sea of random energy ... like the waves in a choppy sea it is constantly cresting in spots then dropping back. This is the source of energy in the uncertainty principle. Occasionally this sea -- which has zero quantum numbers -- forms pairs of particles that extend into the other Fields. We see this as vacuum pair production. If nothing happens to give permanent energy to them, they disappear back into the Higgs Field. But they also interact in their destination Fields of creation while they exist. These interactions can give them permanent stability