CASSIOPEIA'S ToE

7

Special Relativity

Consider a flash of light as an event…

The Electromagnetic Field that we want to talk about is a group of photons causing a moving configuration of wormholes to form in the quantized space (mostly the EM-Field of space quanta but also the Gravity Field)

Let's explore how an observer in various Reference Frames perceives this event.

Here is the conceptualization question…
If space is quantized, and if there are two frames of reference (inertial frames) in relative motion, then Special Relativity says that length is shortened in the direction of motion (similar arguments will work for time)

So if we see length as shortened in a moving object,
1) Is each space quanta shortened?
2) Are the wormholes shortened?
3) Are there fewer quanta being taken into account?
4) Is it a measurement result of the limitation of the speed of light affecting the simultaneous measurement of the ends of the object?
5) And (of course) … it is #4 resulting in #3 happening

If an object is moving in quantized space, its associated Field(s) of wormholes must move with it (in all Fields). Visualize the wormholes forming in front of the moving object and disappearing behind it (remember these are the fields associated with the vibrational modes of the energy). And **simultaneity** is the solution… measuring the location of the wave front and the trailing wave simultaneously returns exactly the transformation equations of Special Relativity – the well-known Lorentz Transformations. But this result is only true if…

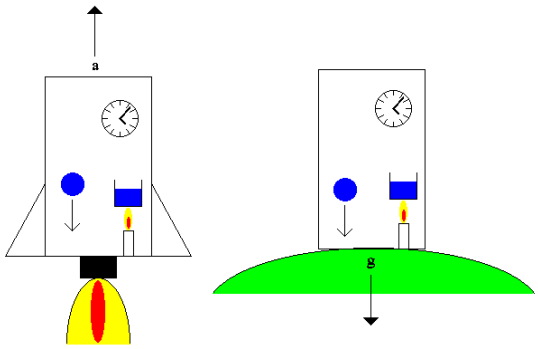
POSTULATE 1: Space Quanta are at rest in all inertial reference frames

This is a direct Corollary to the Special Relativity Postulate that the speed of light is constant in all inertial reference frames. And all by itself, it makes quantized space completely consistent with special relativity. All the standard measurements that result in the Lorentz Transformations work exactly the same in a quantized space.

If we visualize the wave function – which represents the shape of the wormhole topology – then the shape of space itself appears (is) shortened in the direction of motion when viewed by an observer from another frame of reference in relative motion to the first.

General Relativity

"At any point of space-time the effects of a gravitational field cannot be experimentally distinguished from those due to an accelerated frame of reference." This is Einstein's Equivalence Principle. The non-gravitational, accelerated frame is often visualized using elevators or rocket ships…



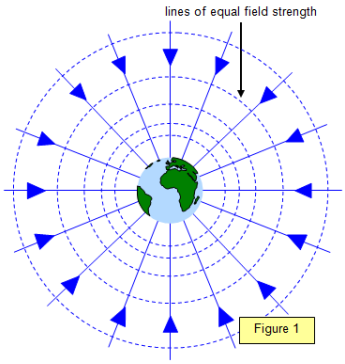
…but we will approach it from the concept of the Force Field that gives rise to the accelerated frame. This is important because we want to consider Fields other than the Gravity-Field.

(If we can't make a quantized gravity look like the other forces, then maybe we need to realize the other forces are modifying space-time just like gravity does.)

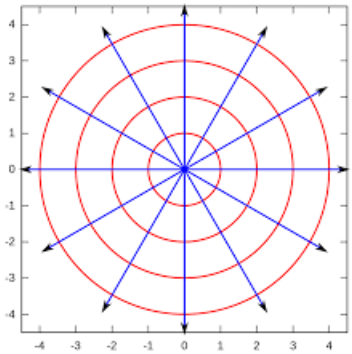
The laws of physics for an object that responds to a gravity field are the same for that object as they would be in any frame where acceleration of the frame **exactly matches** that of the corresponding gravity field.

The laws of physics for an object that responds to an electromagnetic field are the same for that object as they would be in any frame where acceleration of the frame exactly matches that of the corresponding electromagnetic field.

We can view any accelerated frame as a force field with a gradient of force lines. Here is a representation of a gravity field from a non-rotating body…



Obviously, any frame where we can match those field lines of force will be indistinguishable from the gravitational field…



Notice that the field lines from both the gravitational field and the other accelerated frame are radial and therefore the density of the field lines is decreasing as we move away from the center. Since rocket ships and elevators cannot match this field topology, technically, they are not equivalent to a gravitational field. (These "tidal" forces are usually ignored in the analogy)

However, our model of wormholes EXACTLY matches the gravitational lines of force because they ARE the lines of force. And this is true on both macroscopic and quantum levels.

We do need to acknowledge that a wormhole radiating outward from the generating source does not itself generate *multiple* wormholes further out along radial lines – one wormhole closer in equals one wormhole further out – on average - (unless of course the gauge boson carries the charge generating the wormholes). This observation ensures that the strength of the field will obey the inverse-square law.

Later we will address the elephant in the room … **Black Holes.**