

Re: Quantum Phase Compactification via Spacetime Expansion

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Question:

Let T be a metric space with distance function $r(x,y)$ expressing the definitive predication that involves T with the real numbers, R .

Therefore the juxtaposition of left and right hemispheres resonates in perfect accordance with the proposition that T and R are embedded simultaneously in the full structure of manifold M . Ergo we pass on to an enlargement $*M$ of M , whereby the non-standard metric space is diffeomorphism invariant.

So if $f(x)$ is a homeomorphism from T onto S , then for every point p in T , does $f(u(p)) = u(f(p))$?

The metric space has distance function $r(x,y)$, definitively characterized by involvement with the real numbers, R , such that the metric space and R are embedded simultaneously in the full structure of manifold M . A topological space consists of sets of points which are defined[in this case] to be the intersections of cotangent bundles.

We move on to functions of a complex variable in the 2-D Euclidean space Z , utilizing the algebraic structure of complex numbers, where points of Z may be regarded as pairs of real numbers, R . Formal statements concerning Z , are also expressable as statements about R .

Complex-valued functions e.g. $w = f(z)$, can also be represented as binary, or quaternary relations, these sets of complex valued polynomials then have elements that map Z into Z . Every complex valued polynomial subset $p(z)$, has natural number coefficients a_k , or the "kth" coefficient of $p(z)$..

So, for non-zero polynomials, we take into account the number of zeros OF the polynomial $O[p(z)]$ with O ranging over the natural numbers such that $O[p(z), R] = v$, where v is a finite natural number.

Thus if G is a metric group and E is a topological group, such, that an open neighborhood U , of the identity is a metric space, with a compliant metric, specifiable to the topology of U , then the distance

$r(a,b)$ between any two points (a,b) in U , then in terms of the distance $u(E) = J$, consists of the points a of U with the fact that $r(a,E)$ is an infinitesimal.

$f(x)$ is a homeomorphism from T onto S , then for every point p in T , $f(u(p)) = u(f(p))$

If $f(u(v)) = u(f(v))$ the physics for a circle of radius R , is equivalent to the physics for a circle of radius $1/R$.

A point without another "reference" does not exist; the complement of a thing distinguishes it from the thing itself. What is the dynamic of space-time? Is it a ratio? $S/T = c$?

When space is taken as a measure of length, space/time is the speed of light in vacuum for a photon of light:

$$\text{space/time} = c$$

Where, length = perception of separation between two reference points.

$$E = mc^2$$

$$E/\text{momentum} = E/p = c$$

$$\text{energy/momentum} = \text{space/time}$$

What is the EPR "superluminal?" connection? A shortcut through configuration space? Phase space?

A point can be defined as an "infinitesimal". The Topological spaces are defined as being diffeomorphism invariant. Intersecting cotangent bundles[manifolds] are the set of all possible configurations of a system, i.e. they describe the phase space of the system.

Potential infinity is defined as a limit via Newton's calculus, while actual infinity is a Cantorian Cardinal number, which is a Platonic form, which is also a type of potential.

[abstract representation]---->[semantic mapping]---->[represented system]

[axiomatic]---->[Isomorphism]<----[Induction]

An abstract representation is exactly that, "abstract". It is not a space, or time, but is instead a product of consciousness, or a mental construct; topologically it is equivalent to a "point". The abstract description contains the concrete topology. Likewise, the concrete contains the abstract.

A duality?

A point/intersection/overlap contains an infinite expanse of space and time?

Language describes the universe, because the universe is isomorphic to a description on some level, and reality can only refer to itself, because, there is nothing outside of ..."total existence" which becomes equivalent to a self referential system, which must be a self aware system. Since descriptions make distinctions, or references to other entities, and distinctions are tautologically logical, [A or ~A], reality is logical, in that its contents can be described by a language. The contents within reality are distinctive entities, individually different from the others, yet consisting of the same foundational substance. [\leftarrow -[\rightarrow][\leftarrow -[U]- \rightarrow][\leftarrow - \rightarrow]

Universe, $U(T) = 0$.

On one level of stratification, two photons are separate. On another level, of stratification, the photons have zero separation. Instantaneous communication between two objects, separated by a distance interval, is equivalent to zero separation[zero boundary] between the two objects.

According to the book "Gravitation", chapter 15, geometry of spacetime gives instructions to matter telling matter to follow the straightest path, which is a geodesic. Matter in turn, tells spacetime geometry how to curve in such a way, as to guarantee the conservation of momentum and energy. The Einstein tensor[geometric feature-description] is also conserved in this relationship between matter and the spacetime geometry. Eli Cartan's "boundary of a boundary equals zero."

A quote from the book "The Expanding Universe" by Sir Arthur Eddington:
quote:

All change is relative. The universe is expanding relatively to our common standards; our common standards are shrinking relatively to the size of the universe. The theory of the "expanding universe" might also be called the theory of the "shrinking atom" .

Gravity exists because the information[event] density of space-time is increasing. This creates a "pressure force" where processed space, compresses mass-energy, and mass-energy reacts by compressing space. The process is "time", which becomes dilated due to the increased information density of massive objects. Stephen Hawking's excellent book, "Universe in a Nutshell", explains holography as a phenomenon of interference of wave patterns. Light from a laser is split into two separate beams, one bounces off the object and gets reflected onto a photo-sensitized plate. The other beam is reflected into a lens and collides with the reflected light of the object. When a laser is shone

through the developed plate, a fully three dimensional image of the original object is created. According to conventional theories, the surface area of the horizon surrounding a black hole, measures its entropy, where entropy is defined as a measure of the number of internal states that the black hole can be in without looking different to an outside observer, who can only measure mass, rotation and charge. This leads to another theory which states that the maximum entropy of any closed region of space can never exceed one quarter of the area of the circumscribing surface, with the entropy being the measure of the total information contained by the system. So the theorists came to realize that the information associated with all phenomena in the three dimensional world, can be stored on its two dimensional boundary, like a holographic image.

Very interesting: http://www.space.com/scienceastronomy/time_theory_030806.html

quote:

"There isn't a precise instant underlying an object's motion," he said. "And as its position is constantly changing over time -- and as such, never determined -- it also doesn't have a determined position at any time."

Heisenberg uncertainty: $\Delta x \Delta p \geq \hbar/2$

As the observed expansion of the universe continues, and, as the mean temperature of the universe continues to approach absolute zero, could the universe transform into a condition analogous to a "Bose Einstein condensate"?

Is it possible to develop warp drive technology? or more correctly, warp drive ... "trek" nology?

<http://arxiv.org/abs/gr-qc/0204012>

<http://www.wired.com/news/technology/0,1282,20152,00.html>

Here are some more writings on the plausibility of interstellar travel via warp drive:

<http://www.astro.cf.ac.uk/groups/relativity/papers/abstracts/migue194a.html>

http://arxiv.org/PS_cache/gr-qc/pdf/0107/0107097.pdf

Frame Dragging:

<http://msnbc.msn.com/id/3077887/>

Impulse Gravity Generator Based on Charged
Y Ba₂Cu₃O₇ Superconductor with Composite Crystal Structure:

<http://superconductors.org/gravity.pdf>

Back on topic:

When $y(x,t)$ is the transverse displacement of a vibrating string, $y(x,t)$ can be determined by the wave equation

$[\partial^2 y / \partial t^2] = v^2 [\partial^2 y / \partial x^2]$, where ∂ denotes the partial derivative symbol.

Standing waves can be set up in an n -dimensional string, analogous to that in a violin string. The form of the standing wave becomes $y(x,t) = \psi(x) \sin(\omega t)$

Two sinusoidal travelling waves with the same amplitude and wavelength moving in opposite directions on a string, become resonating "standing waves":

$$y(x,t) = y_1(x,t) + y_2(x,t) = A \sin(kx - \omega t) + A \sin(kx + \omega t) = [2A \sin(kx)] \cos(\omega t).$$

As the entropy continues to increase in the universe, and if the universe is a closed system, the entropy may be considered to be the result of a "damping force". This damping force may also be one possible solution to the dark matter enigma.

Solve the Schwarzschild solution for the entire universe. Since the universe can be postulated to be a closed system with "nothing" outside the universe. The condition of "nothingness" leads one to ask "What are the properties of nothingness?" Of course there are no measurable properties, but nothingness in itself must be a type of massless solid. A condition that has no distance – metric scales. In other words, there is no outside to the universe, no measurable border between something and nothing.

Nothing then becomes analogous to a perfectly symmetrical pressure force on the surface of existence.

----->|U|<-----

U stands for universe. So it becomes reasonable to assume that the entire universe is analogous to that which is inside the event horizon of a black hole. The universe becomes a quantum superposition of states, collapsing under the crushing force of "nothingness".

Analytically continue the Schwarzschild solution to the imaginary values of the time variable. The Schwarzschild solution becomes periodic in the imaginary time direction.

All waves would then be standing waves in the closed universe. A Schrodinger wave equation in one dimension is of the form:

$$d^2 \psi / dx^2 + 2m / \hbar^2 [E - U(x)] \psi(x)$$

$U(x)$ is the potential energy and E is the total energy.

$\psi(x)$ is the wave function for a state in which the energy E is constant in time. Such states are called stationary states. Certain definite vibration frequencies are allowed multiples of fundamental wavelengths

$$\lambda = h/p$$

$|\psi(x)|^2 dx$, is the probability of finding a particle(universe) in a certain state between the region x and $x+dx$

$\psi^2 = \psi \psi^*$. When ψ is complex, ψ^* is the complex conjugate of ψ . $\psi^2(x)$ is the probability density.

So the goal must be to derive a nonlinear Schrodinger equation that gives local the invariances that we currently observe! A global nonlinear, locally invariant system ...?

<http://lsec.cc.ac.cn/~ttang/MMref/references/budd99.pdf>