THE COLLOQUIUM
Introduction to Unified Field Mechanics:
Formalizing the Protocol

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A brief introductory survey of Unified Field Mechanics (UFM) is given from the perspective of a Holographic Anthropic Multiverse cosmology in 12 'continuous-state' dimensions. The paradigm with many new parameters is cast in a scale-invariant conformal covariant Dirac polarized vacuum utilizing extended HD forms of the de Broglie-Bohm and Cramer interpretations of quantum theory. The model utilizes a unique form of M-Theory based in part on the original hadronic form of string theory that had a variable string tension, T_S and included a tachyon. The model is experimentally testable, thus putatively able to demonstrate the existence of large-scale additional dimensionality (LSXD), test for QED violating tight-bound state spectral lines in hydrogen 'below' the lowest Bohr orbit, and surmount the quantum uncertainty principle utilizing a hyperincursive Sagnac Effect resonance hierarchy.

Keywords: Calabi-Yau mirror symmetry, Dirac vacuum, String tension, Tachyon, Tight-bound states, Unified field mechanics

Part 1: Amoroso Keynote Address Transcription

If [all physicists] follow the same current fashion in expressing and thinking about electrodynamics or field theory, then the variety of hypotheses being generated ... is limited. Perhaps rightly so, for possibly the chance is high that the truth lies in the fashionable direction. But, on the off chance that it is in another direction - a direction obvious from an unfashionable view of field theory - who will find it? Only someone who sacrifices himself ... from a peculiar and unusual point of view, one may have to invent for and himself - *Richard Feynman*, Nobel Prize lecture.

1. Introduction

(Delay because of trouble with computer)

SABAH E. KARAM
Anyway, you can blame me Richard.

RICHARD L AMOROSO
I'll try but I don't think they'll accept it (laughter).

Anyway the culmination of today is the roundtable discussion after lunch to continue some work started by Vigier in 1999-2000 on tight-bound states in hydrogen describing new orbits below the lowest Bohr orbit [1,2] which at that time I thought was nonsense. How could there be additional Bohr orbits below the lowest orbit by definition. And in addition Vigier was using this scenario to try to explain cold fusion, which even today it is considered to be on the foolish fringe; but I won't go into that now. Something happened in 2012 that made me think the theory was well worth pursuing [3].

So our challenge is that this problem is not just atomic/nuclear physics but also a form of higher dimensional M- theory. If you've delved into string / M-Theory one can see it is quite a menagerie. Proponents don't fully know what to do, they're trying everything hoping to find out of a $10^{Googolplex}$ or infinite number of possible string vacuums to try and find the one unique vacuum that makes correspondence to the standard model. I merely took all the pieces that were pertinent to my model off the shelf and used them to develop the framework for this new model of tight-bound states (TBS). We started 100s of years ago with Classical Newtonian Mechanics in a 3D Euclidean

space. Einstein and his contemporaries developed a 4D Minkowski-Riemann space for quantum mechanics and relativity; comprising the 2nd regime. The 3rd regime is suggested to be the realm where unified field mechanics (UFM) exists. The model used here is 12 dimensional; adding an additional UFM control factor to the 11D currently in vogue in M-Theory. Just as the tools of quantum mechanics were invisible to the tools of Classical Mechanics, so until now the tools of UFM are putatively invisible to the contemporary tools of experimental physics. As generally known spacetime is considered a stochastic foam with a zero point field (ZPF) from which virtual particles restricted by the quantum uncertainty principle (to the Planck time) wink in and out of existence with *Zitterbewegung* explained as an interaction of a classical particle with the ZPF. Peter has extended this nicely with his space anti-space model [4].

The de Broglie Bohm theory didn't work very well formulated in 4D. Our program extends this model along with Cramer's Transactional Interpretation into HD space where it seems to work better. As you may know in the de Broglie Bohm model there is said to be no collapse of the wave function as in the Copenhagen interpretation but a continuous evolution where space-time and matter are continuously created annihilated and re-created with this evolution governed by a pilot wave or quantum potential.

This back cloth in our model is considered to be a covariant polarized vacuum of the Dirac type. A Dirac vacuum because it's proponents have applied extended electromagnetic theory with photon mass, m_γ and such; but because of the great success of gauge theory the physics community has marginalized it perceiving a conflict. The best evidence for a Dirac vacuum is the Casimir affect. Lesser indicia of a Dirac vacuum include the Zeeman Affect and the Aharanov-Bohm Affect.

Regarding the putative Tight-Bound State (TBS) regimes in the hydrogen atom; what we are proposing in regards to these higher dimensions is to demonstrate their existence by observing new spectral lines in hydrogen. What this means as I will try to show is that the uncertainty principle is a manifold of finite radius (of 3 to 6 dimensions still to be determined). So we have a 3D asymptotically flat Euclidean space that we observe; then we have this manifold of the uncertainty blocking another realm of dimensionality that is infinite in size. Lisa Randall is a major proponent of infinite size extra dimensions [5]. This model does not work in a 4D Big Bang cosmology. But because of certain inherent parameters within the new continuous-state HAM cosmology it seems to work fine therein. This could be a good thing, suggesting that we are on

the correct track to new physics that might putt another nail in the coffin of Big Bang cosmology. The main reason HAM cosmology is perceived to have this success is that the continuous-state process allows the highest package of dimensions to be causally free of Euclidean space - crucial for surmounting uncertainty.

If one dabbles in string theory one knows that the Planck constant is not considered fundamental. String tension, T_S is a factor added to the Planck constant. I was nonplussed for a while because the HAM model conflicts with the current incarnation of string theory in several ways. But this changed about a year or so ago when I uncovered the original hadronic form of string theory. String tension in the current model is fixed, one tension, T_S fixed for all strings. In the original hadronic model T_S fluctuated which is much more compatible with my multiverse cosmology. Another reason that the original hadronic form was rejected was that it contained a tachyon considered to be nonphysical. But the tachyon in terms of the Cramer model where the 'present is a standing-wave of the future-past' is a key element also deemed compatible with Calabi-Yau mirror symmetry. The tachyon may generally be virtual along with the tardyon as an interesting component allowed by the new set of UFM transformations beyond the Galilean-Lorentz-Poincairé; but that's an issue for later [6].

Following below is a brief outline of some of the things I will try to cover.

2. Outline of Salient Premises Introduced

A) NEW HOLOGRAPHIC ANTHROPIC MULTIVERSE (HAM) COSMOLOGY
- Derivation of Continuous-State Hypothesis
- Unique String Vacuum
- Derivation of Variable String Tension,
  $T_s = e / l = \left(2\pi\alpha' \right)^{-1}$
- The Least Cosmological Unit (LCU) and relation to the Space-Antispace Quaternion Vertex
- Quantum Mechanical Uncertainty as a Manifold of Finite Radius
- Simplistic Calculation of New Spectral Lines Utilizing Common Hypervolume Formula

B) 12D M-THEORETIC CALABI-YAU MIRROR SYMMETRY
- The Conformal Covariant Dirac Polarized Vacuum With Continuous-State HD Copies of the Quaternionic or 4D Quantum 'Particle in a Box'.

C) TBS EXPERIMENTAL DESIGN
- Utility of Complex Quaternion Clifford Algebra for Protocol Design

- Sagnac Effect Incursive oscillator Resonance Hierarchy
- Refined TBS Spectral line prediction utilizing Bessel Function parameters with corrections from string tension, Ts and the Fine Structure Constant.

TABLE 1. Mandatory Key Elements

- **Multiverse Cosmology**
  - Continuous-State Hypothesis
- **Least Cosmological Unit (LCU)**
  - Closed-Packed Spacetime Tessellation
- **Surmounting Quantum Uncertainty**
 – A new transformation beyond the Galilean-Lorentz-Poincairé Transform

3. Indicia of 'Our' TBS Model

A) SEARCH FOR LARGE-SCALE ADDITIONAL DIMENSIONS (LSXD)

CERN has begun a new program to find evidence of another host of particles that can only exist if there are more dimensions than found in the Standard Model of particle physics; Proposed, but not yet performed.
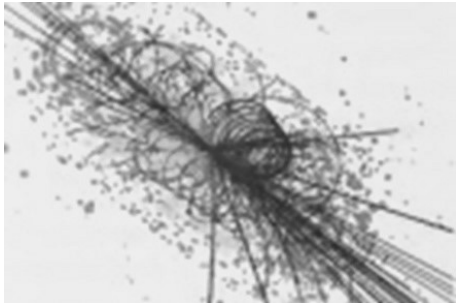

Figure 1. CERN high energy collision cross section particle spray of the type that uncovered the Higgs mechanism.
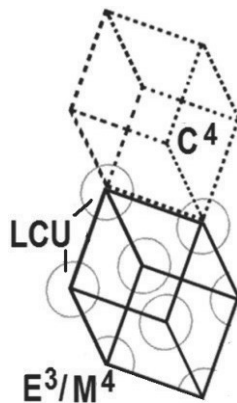
Figure 2. Conceptual view of the Rauscher HD Complex C^4 space added to Minkowski space.

B) THE CONTINUOUS-STATE HYPOTHESIS

Derivation of continuous-state multiverse postulates led to a unique string vacuum with as I've mentioned contains a variable string tension and a virtual tachyon [6,7]. I will do my best to define this continuous-state process which is still very difficult for me to do. The Planck scale is currently called the basement of reality starting from an essentially infinite size Hubble radius cosmology that reduces to a rigid microscopic Planck scale. In the holographic multiverse model, built partly by the way on an extension of Elizabeth's complex 8-space, where she added a 4D complex space, C^4 to standard 4D Minkowski space, M^4 which didn't quite work for me because her 4D complex space still reduced to a fixed rigid Planck barrier (Figure 2).
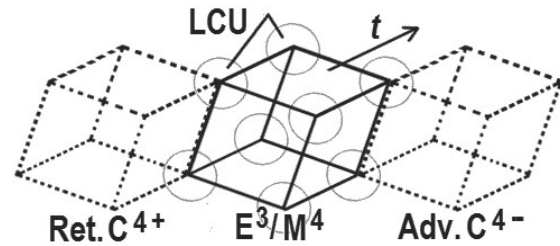
Figure 3. 12D HAM cosmology with the addition of a 2nd complex 4-space resulting in $\hat{M}_4 \pm C^4$. The $\pm C^4$ spacetime packages must become involute (Fig. 5) before the continuous-state process can occur.

What I needed to develop the continuous-state model was to have a fundamental basis of reality that acted as if it was in a self-contained inherent freefall. So I added another set of complex dimensions to allow reality to cycle continuously at the fundamental level.

However Elizabeth's complex 8-space also included superluminal Lorenz transformations that boosted a spatial dimension, s into a temporal dimension, t enhancing my process for conceptualizing the continuous-state scenario [7]. I then applied a second set of superluminal Lawrence transformations boosting a temporal dimension, t to dimension of energy, e. The energy dimension becomes compatible with a super-quantum potential eventually becoming synonymous with the ontological force of coherence of the unified field. This addition along with the second complex 4-space, $\pm C^4$ dimensions completed geometrically at least the necessary components for continuous-state cyclicality providing a key framework for one of the most key elements of the model within which we propose new spectral lines in hydrogen [8].

The other key element is that it is mandatory to surmount the uncertainty principle [7,9], which as you

all know has been sacrosanctly demonstrated by Copenhagen interpretation. We'll get into that in a little bit; the track or whatever you want to call it is simplistically to do something else!

Also in terms of the Dirac vacuum for some of you, if you've read a blurb on Calabi-Yau mirror symmetry which is a 6D or 9D manifold like a dual 3-torus with a left-right symmetry. String theorists are searching for one unique compactification which will provide correspondence to the 4-space of the standard model. In physics generally a new theory must make satisfactory correspondence to existing theory.

In the continuous-state paradigm compactification is different than in M-theory; rather than one unique compactification making correspondence to the standard model, compactification is a 'continuous-state spin-exchange dimensional reduction process occurring from 12D to ~0D where Riemann sphere (Kahler-Calabi-Yau) properties of the Least Cosmological Unit (LCU) rotate from zero to infinity in the same continuous-state standing-wave hyper-spherical cycle such as left-right $11 \rightarrow 10 \rightarrow 9$ etc. down to ~ zero with alternating Calabi-Yau dual mirror symmetry.

Liz once told me she didn't like the idea of a standing-wave as it seemed too simplistic; yes when thought of as a 1D string on a musical instrument or even a 2D drum topology. But as a hyper-spherical hyperdimensional Calabi-Yau 6D or 9D brane conglomerate one should be able to see sufficient complexity to satisfy involute continuous-state process modeling.

The other important issue for the Dirac polarized vacuum is that it is conformally scale-invariant. Because as we will see momentarily in terms of our 3D of 4D quantum particle in a box, that the continuous-state cycle has inherent HD formatted Calabi-Yau mirror symmetric brane copies of the resultant 3D quantum state. This becomes important for surmounting the Uncertainty Principle as it is postulated that at 12D the 'copy' is causally free of the 3D resultant all of which is nilpotent. The 12D 'mirror image of the mirror image' is the minimum dimensionality required for this to occur.

This is a boon for quantum theory because the quantum uncertainty principle in terms of decoherence is the last main hurdle for the implementation of universal bulk quantum computing [10]. Whatever action is performed on the 12D copy has no effect on the 3D quantum particle in a box. There is in addition the other ontological properties associated with topological switching that may affect the dimensionality required for the process. Not only decoherence itself but the aspects of time related to being able to maintain coherence. We won't get into

this today because it is off the topic of formulating Unified Field Mechanics (UFM).

(Amoroso fires a BBC Dr. Who time lord sonic screwdriver at the presentation screen)

Concerning the importance of the original hadronic form of variable string tension; the main reason I was able to discover a unique string vacuum was by finding an alternative derivation of string tension; for which the traditional formula is, $T_s = e/l = (2\pi\alpha')^{-1}$. The HAM UFM formula in unexpanded form became,

$$F_{(N)} = \frac{\varepsilon}{\rho} \tag{1}$$

where instead of energy, e over the length of the string, l topological charge or brane energy, ε was put over the brane topological radius, ρ of the relativistically rotating Riemann sphere LCU hyperstructure. $F_{(N)}$ is the noetic force of coherence of the unified field [7].

Of interest to note, which we will not get into here is that the fine structure constant is part of these parameters also. If any of you have delved into any of the fundamental constants you know that the fine structure constant and many other fundamental constants are derived in terms of themselves and therefore not fully fundamental. When we get into UFM further we will probably find that the regime of unified field mechanics will be where light is shed on the origin of the nature of the fine structure constant.

In Peter's new book [10] we find a brief discussion of the abilities of complex quaternion Clifford algebra which we will need to design the experimental protocol to search for new HD spectral lines in hydrogen. There are indicia for this model. One of the main indicia put forward by people like Nima Arkani-Hamad at the Princeton IAS and Lisa Randall [5] at CERN are to search for artifacts that will be indicative of additional dimensions in particle sprays. Such experiments have been suggested but not performed.

4. Building the UFM TBS Experimental Protocol

The best indicia for our model experimentally is suggested by work done by Chantler [11,12]. The data from his experiments over the last 10 years or so on hydrogen showed only a minute artifact proposed to violate QED; but more recently in 2012 for work on Titanium the QED violation effect was much larger. The beauty of this is that they stripped all the electrons off the Titanium atom except one creating a large hydrogen-like atom [12]. One wants to maintain the simplicity of the hydrogen atom to perform the

experiment. You can find Chantler's paper in your Vigier memory stick.

Vigier's seminal papers in 1999/2003 [1,2] (also on your memory stick handout) are similar theoretically in some ways to Chantler's model. Vigier describes the first exploration made by Corben in an unpublished paper. Corben noticed that motion of a point charge in the field of magnetic dipole at rest, is highly relativistic and that the orbits are of nuclear dimensions. Further investigation has been undertaken by Schild [13], but the most systematic treatment of this problem is given by Barut (see for example [14]) A 2-body system where magnetic interactions play the most significant role is in positronium. Both electron and positron have large magnetic moments which contribute to the second potential well in an effective potential, at distances much smaller than the Bohr radius. Barut and his coworkers predicted that this second potential well can support resonances. A 2-body model, suitable for non-perturbative treatment of magnetic interactions is presented by Barut [14] and Vigier [l,2].

Our approach doesn't fully correlate with Vigier's because at that time he had no consideration of additional dimensionality which is a dominant element in our multiverse model. For the first 10 years of Chantler's work the artifact said to violate QED was so small that it was essentially ignored by the physics community. But in the 2012 experiment [12] the QED violation was great enough that some elements in the news media suggested Nobel Prize; but as yet the majority of the physics community said the artifact is insufficient.

Now the reason I think the continuous-state model will work is for example if you take the Bohr model of the hydrogen atom spectroscopic measurements are taken as a 3D volume measurement from the space between the nucleus and the electrons orbit. For hydrogen the first Bohr orbit has a radius of a .5 Angstrom, and the second or orbit a radius of ~2 Å. This is the hundred year history of spectroscopic measurements taken from within the fixed regime of the 4D standard model. A spectroscopic cavity is going to have different properties in a 12D holographic multi-verse regime.

Firstly we must make a postulate regarding the volume of additional dimensionality both within the finite radius manifold of uncertainty and beyond into the regime of LSXD. It's not clear to me how to make this assumption in a manner that you will 'adore'. It is only necessary to make it in a manner in which you can understand the conditions sufficiently metaphorically that we are attempting to apply. Remember that we have elevated wave particle duality to a principle of cosmology as it applies especially to the continuous-

state postulate. We continue to mention in terms of the complex quaternion Clifford algebra required to describe the continuous state process; that the cyclicality has an inherent commutativity anti-commutativity that the algebra can handle with a 3D or 4D Euclidean/Minkowski space resultant with 8D or 9D complex cycling dimensions built on top of it. In the initial case of a single space anti-space dualing, the manifold of uncertainty represents a 4th 5th and 6th additional hyperspherical dimensionality.

Recall our use of the Rauscher superluminal Lorentz transformation that boosts a spatial dimension into a temporal dimension wherein noetic HAM cosmology has added a second boost of dimensionality from temporal to that of energy as the exchange mechanism for topological charge in unified field theory. What I am trying to say is that behind or within the veil of uncertainty these additional dimensions open and close volumetrically from zero i.e. the usual 3D Euclidean QED cavity to the added volumetric structure of the 4th 5th and 6th dimensions yielding: $r_1V_{3D}, r_2V_{4D}, r_3V_{5D}, r_4V_{6D}$ enabling us to calculate the wavelength of three additional spectral lines in hydrogen based on the volume of these respective hyperspherical cavities.

I haven't given it enough thought to consider whether it's a viable addition, but Von Neumann postulated a speed for collapse of the wave function, suggesting that if we also used a hydrogen-like Titanium atom there might be an additional helpful time delay factor. In any case the success of this experiment would provide the first indicia that something exists beyond the regime of QED.

I believe applying the resonance hierarchy to open the 4D cavity will be relatively easy, but to open the 5th and 6D cavities probably requires the addition of some kind of Bessel function to the resonance hierarchy that because of additional artifacts like found in the refinements of the Born-Sommerfeld model; it will be a little tricky to master the protocol to measure these additional spectral lines. I do not means this in calculating the wavelength, but the tiniest property we do not sufficiently understand will probably keep the uncertainty principle sufficiently active to keep the 5D cavity closed!

We haven't finished the calculation but at the moment we preliminarily predict that these additional spectral lines will be between the .5 Angstrom first Bohr orbit and the 2 Å second Bohr orbit.

I mentioned that this model only works within the continuous-state holographic multiverse scenario simply because without that utility physics would not go beyond the Kaluza-Klein and remain a 'curled up at the Planck scale' model of additional dimensionality.

It is only the continuous-state process of open-closed cyclicality that allows access (by violating the uncertainty principle) to the additional infinite size dimensions. This restriction is not a negative aspect of this proposed multiverse cosmology but we feel rather that it is suggestive of the correct path to take as it is the actuality of reality.

The key element in this cosmology is the Least Cosmological Unit (LCU). I did not fully invent this concept; but extended the idea found within a chapter called" The size of the least unit" in a collection edited by Kafatos [15]. But Stevens of course utilizing only the 4D of the standard model attempted to describe a Planck scale least unit. But hopefully you have realized by now that our LCU oscillates from virtual Planck, $(\hbar + T_s)$ to the Larmor radius of the hydrogen atom relative to the nature of its close-packing tiling the spacetime foam.

Since the Planck scale is no longer considered the basement of reality the 12D continuous-state process changes the size of the LCU in the process of Riemann sphere rotation from zero back to infinity continuously.

My choice of the upper limit of the Larmor radius is somewhat arbitrary. I have not defined this rigorously yet; but I assume it is in this ballpark. So just to make a note we have this oscillating Planck unit, $\Delta\hbar$ at the microscopic level in conjunction with an oscillating $\Delta\Lambda$ lambda or cosmological constant at the macroscopic level.

As an aside this gives us the ability to describe dark matter/energy as an artifact of the rest of the multiverse outside our ~ 14.7 bly radius Hubble sphere. The multiverse has 'room for an infinite number of nested Hubble spheres each with their own fine-tuned laws of physics'. That scenario provides our model of dark energy. These nested Hubble spheres are closed and finite in time and causally separate in the dimensionality where gravity would take effect, so it's not like there is an infinite mass acting on us but something more subtle. As you should know the postulate of dark energy and dark matter comes from the knowledge that galactic rotation occurs like a phonograph record not a vortex.

If we think of these nested Hubble spheres like a bunch of grapes they are currently invisible to us because of the nature of the stalk holding the grapes, however it will soon be possible to design what we have called a Q-telescope to visualize them utilizing UFM [7]. Also see the Drake equation therein.

One of the main conditions of the continuous-state hypothesis comes from an HD extension of Cramer's Transactional Interpretation with future-past conditions resulting in a present moment [6]. This is considered by Cramer as a standing-wave of the future-past so

higher dimensionally we can elevate wave-particle duality to a principle of cosmology and by building on Elizabeth's work as I mentioned one then has a central 3D or 4D Minkowski spacetime package coupled to an advanced-retarded future-past complex as a 4D pair as shown in Fig. 3.
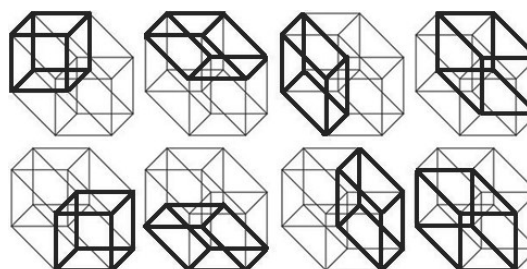
Figure 4. View of 8 3D cubes comprising a 4D hypercube. See continuous-state involution metaphor in Fig. 5
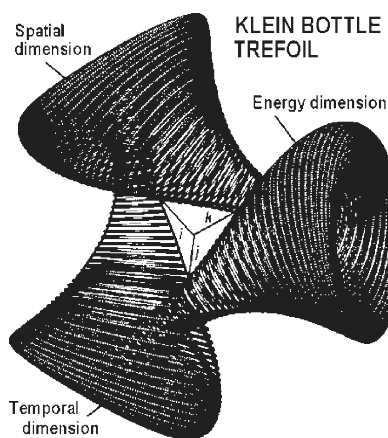
Figure 5. A Klein bottle trefoil. A 6D Calabi-Yau 3-torus could also be used. A primitive metaphor to show rotation of continuous-state components. Does not really work in 4D. But I wanted to try to illustrate the cycling of dimensional parameters if the eight cubes of the hypercube put into motion not just exploded as an the figure.

What I have poorly tried to illustrate in Figs. 4,5,6 is some of the underlying topology of continuous-state topology. Figure 4 shows the dramatic increase in the number of cubes comprising HD space as we travel rectilinearly up the dimensional ladder. Figure 5 shows a key condition of involution allowing the continuous-state process to cycle continuously when set in motion by the nature of HD reality. Figure 6 is also an attempt to speak to the rotational properties of cyclicality. Out 12D model must cycle through nodes of commutativity and anti-commutativity where one mode is degenerate and the other closed.

Figure 6 came to me serendipitously in Tehachapi when my car broke down and I had to wait three hours

for a tow truck to come because it was in the middle of nowhere in the Mohave Desert. There were literally about 1000 wind generators covering the Mojave Mountain. The rotating propellers (quaternion vertices) and reality were represented by the configuration of the blades of the propellers on the wind generators. When I looked up on the hill I noticed that the propellers of two wind generators in close proximity periodically came into phase, with the blades forming the face of a cube perhaps suggesting something about the nature of reality in terms of fermion vertices.
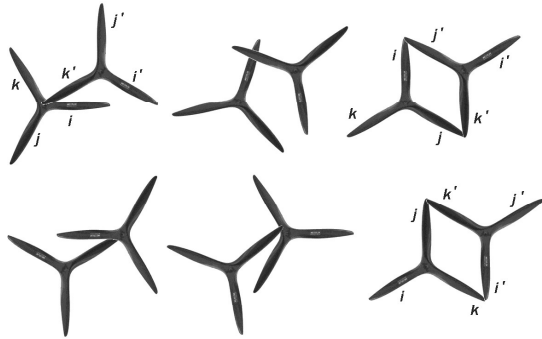

Figure 6. Relativistically rotating quaternion fermionic vertices. In multiverse cosmology the line element, in this case a quaternion Fermionic vertex least cosmological unit, (LCU) undergoes continuous-state evolution where as in the figure symmetry periodically arises from the stochastic quantum foam of spacetime possibly indicative of the emergence of observed 3D reality.

Back to Elizabeth's model of superluminal Lorentz boosts where a spatial dimension at one moment is a temporal dimension at another. Although this helps facilitate the continuous-state process when an additional 4D are added, it doesn't give us what we want because it is still fixed. We need another complex 4D to allow in the involute continuous process that doesn't seem possible in the correct manner in a fixed 8-space. There are not enough degrees of freedom to periodically break the closure of the quaternion algebra. So I boosted her model again to include dimensions of energy also synonymous with the unified field acting as a force of coherence or super quantum potential guiding this Nilpotent continuous-state evolution through the dimensional reduction compactification process which to me is part of the beauty of this model. This also relies on as hinted a HD completion of the de Broglie-Bohm-Vigier models of quantum theory.

Peter has spoken earlier today about a seemingly inherent necessity of 3D for reality, so here we have a doubling of the 1st 3D into another triplet of HD space. This might suggest indicia for the necessity of the 12D

where I want to lead us kicking and screaming if necessary (I'm that confident of the path).
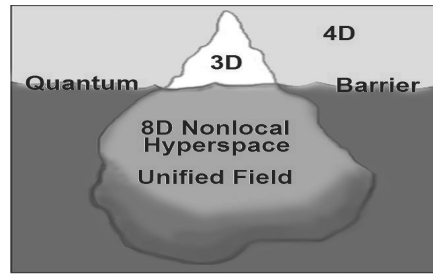
Figure 7. Suggestive of 3D-HD space anti-space corresp-ondence in a 12D multiverse leading to the regime of UFM beyond the observed 3D 'tip of the iceberg'..

I meant to show a demonstration of a 3-blade ceiling fan symbolic of a quaternion fermion vertex of course. If one puts one of these fans in front of a mirror (real space) rotating clockwise the mirror image (anti-space) rotates counterclockwise with the blades coming occasionally into phase as in the Tehachapi wind generator figure. Now I give you a key insight into the TBS experiment that Fig. 6 doesn't have. If there is a light on by the fan in real space, i.e. the rf-pulse of our TBS experiment. Periodically when the blades come into phase (Fig. 6 again) meaning when a blade from real space comes into phase with a blade in the mirror antispace the light is reflected off each blade (the mirror image of the mirror image) and a pulsating reflected flash of light occurs in the direction back towards the source/detector! This is representative of how we will find the new spectral lines in hydrogen; that we would expect to see a flashing back like a rotating lighthouse beacon when the resonance hierarchy is aligned properly!
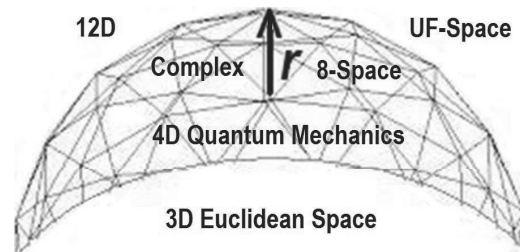
Figure 8. Manifold of Uncertainty. Quantum Mechanical Uncertainty is predicted to be a Manifold of Finite Radius, r. Beyond the manifold LSXD are postulated.

You've heard Peter say these additional space anti-space dimensions are redundant (no new information); but that's fine. That's actually what we want from an infinite potentia that is nilpotent and redundant.

Surmounting the quantum mechanical uncertainty principle occurs by this same process that gives us a beat frequency inherent in the space-time backcloth.
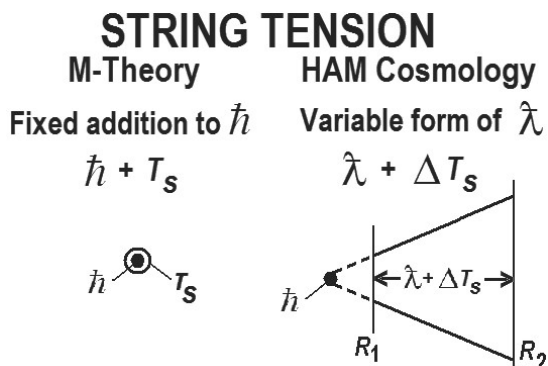
STRING TENSION

Figure 9. Fixed string tension in M-Theory (left) and variable (right) as in the original hadronic form of string theory and HAM cosmology that also reverts to the original Stoney, λ rather that Planck's constant, $\hbar$.

The left-hand part of Fig. 9 shows the current thinking of string tension but. On the right we see a multiverse version with a variable string tension that oscillates from virtual plank to the Larmor radius of the hydrogen. Notice that the symbol for the Planck constant is different, we use the original Stony [7] that preceded Planck because it is electromagnetic and correlates better with the Dirac polarized vacuum which we want available for our resonance hierarchy component of the experimental protocol. Virtual plank is the asymptotic zero point on the Riemann sphere that flips back to infinity in the continuous-state cycle.
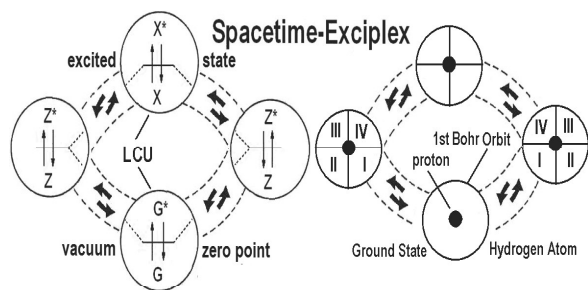
Figure 10. Exciplex Properties of Spacetime. Exciplex complex and conformal scale-invariant properties related to TBS in the hydrogen atom as it pertains to LSXD and an oscillating form of Planck's constant fluctuating from asymptotic virtual Planck to the Larmor radius of the hydrogen atom.

The general equations for a putative experimental spacetime exciplex C-QED TBS emission cavity are (see Fig. 10):

$$G^* + G^* \Leftrightarrow Z^*; \quad Z^* + m_\gamma \Leftrightarrow X^*$$

$$X^* - m_\gamma \xrightarrow{emission} Z^* \text{ or } G^*$$

$$X^* + m_\gamma \to Z^* \text{ or } G^* \tag{2}$$

If you know what an exiplex or excited complex is in chemistry you know that an exiplex never goes back to zero or the ground state. This is in contrast to what is used currently in quantum mechanics where virtual ZPF particles wink in and out of existence at the Planck scale for the Planck time. The space-time exiplex model is one that correlates with the additional parameters of UNF. This again is inherent part of the continuous-state LCU process tessellating space. In terms of cosmology this exiplex provides a mechanism for kicking out a proton [18] where it is said only one proton is needed per 100 cubic kilometers according to Eddington. I mention it of course to lend support to the possible veracity of this multiverse cosmology.

In order to demonstrate existence of new spectral lines the experiment itself requires surmounting the quantum uncertainty principle. I hope when we apply the complex quaternion Clifford algebra it will tell us whether one or two additional doublings of Peter's original space anti-space model are required and then let us know if there's two or three or more consecutive doubling needed to find four or five additional spectral lines which of course tells us the complete size of the manifold of uncertainty.

A couple of months ago I thought the challenge of this colloquium would be to find the required algebra but was wondrously surprised when I looked at Peter's new book and was struck by the ability of complex quaternion Clifford algebra to do the task [10].
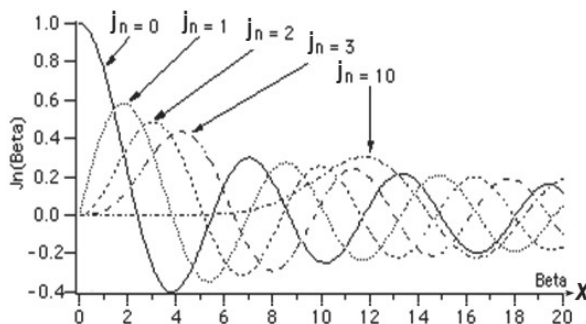
Figure 11. Example of a Bessel Function that may be necessary to couple synchronization with the Dubois incursive oscillator in order access additional TBS beyond the first. Even though we think we know how, surmounting uncertainty will probably not be trivial.

Common example of a Bessel function:

$$x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} + (x^2 - \alpha^2) y = 0 \qquad (3)$$

This isn't the correct Bessel function but I just wanted to put one up as a signpost to illustrate our process because as I mentioned I believe the first spectral line will be relatively easy to find in comparison, and that the next will be more challenging as there will be some unexpected complexity that must be overcome that hasn't revealed itself to us as yet that will require some kind of a Bessel function addition to adjust the spin-spin coupling parameters of the algebra.

5. Issues of Experimental Design

In the simplistic model of doing the TBS experiment we put hydrogen in a sample tube (Fig. 15) and apply a series of resonant pulses in conjunction with the beat-frequency of space-time to open the HD QED-UFM cavity, send the signal in and allow the new spectral line signal to be emitted back to the detector.

Remember we postulated that the HD continuous-state cycle must incorporate cycles of commutativity and anti-commutativity. This can be shown metaphorically in terms of logarithmic spirals applied to what is called perfect rolling motion (Figs 13,14).
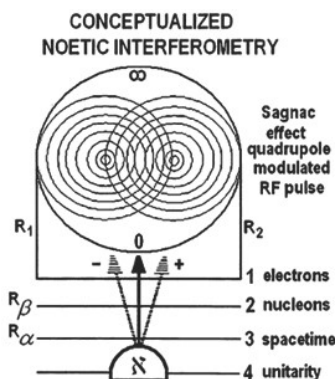
Figure 12. Conceptual model of the Sagnac Effect standing-wave resonance hierarchy couplings for the TBS experiment.

I've been arguing with Lou and Peter for the last couple of years about aspects of quaternion algebra. I'm thankful especially to Peter for helping me learn some of the properties of quaternions. As many of you know Hamilton wanted to extend the complex number system algebraically by adding an additional j term to the i series; but the algebra didn't work. It was only when Hamilton added the 3rd k term that quaternion algebra became complete by closing the algebra and in the process sacrificing commutativity. Is it any wonder that Peter resisted when I told him I wanted to open the

algebra again so that it could cycle between modes of commutativity and anti-commutativity. Peter was very gracious and allowed me to visit him for a week in Liverpool. We did find something interesting (see [19]) that is not yet a complete study, but this was not yet the cycle I've been looking for which with all profundity to me is going to be possible with the complex quaternion Clifford algebra [10].

How can we find this cycle in HD Calabi-Yau mirror symmetry? The logarithmic spirals in Fig. 13A are not free to rotate. If we take pieces of the curve as in Fig. 13B and paste them together as shown; the three cycloids can cycle continuously. Perfect rolling motion in this case means a mechanical process where there is no slippage if this is applied to the mechanics of gears.

If you're not a mechanical engineer you may not have guessed already that after a certain number of cycles the set of three cycloids returns to the precise original position.

Now in terms of the next figure (14) let's apply this to a second doubling or duality of Peter's space anti-space quaternion model which of course is going to have to include Calabi-Yau mirror symmetry. What I'm proposing metaphorically here is that with the utility of the complex quaternion Clifford algebra we can break the closure inherent in one of the mirror symmetric partners and describe cycles relative to both mirror symmetric partners that additionally pass through cycles of commutativity and anti-commutativity with each other. We cannot surmount the uncertainty principle utilizing a closed algebra. I'm talking about the mathematical description of course.
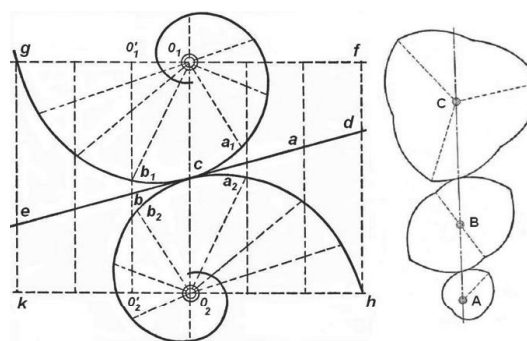
Figure 13. Logarithmic spirals and 'Perfect Rolling Motion. Segments of the logarithmic spiral are put together into the three spheroids on the right, A,B,C. Like the 320° - 720° spinor rotation of the Dirac electron; the speroids will only return to the same configuration after a number of 360° rotations.

As an aside comment in terms of complex self-organized living systems (SOLS) this commutative anti-commutative 2-cycle when it opens and closes the

gate to the HD volumes will ultimately when we pass through the whole manifold of uncertainty, and have access to the unified field, is the gate where the Cartesian form of life principle enters a living system.

We do not observe this; we are embedded in and made out of the matter around us (tapping on table). This is a surface of electrons oscillating relativistically. Our minds don't incorporate a phase controller that would allow us to pass through this configuration that is 90% empty space.

Figure 14. Perfect rolling motion of logarithmic spiral components applied to left-right symmetry transformations of Calabi-Yau brane topology such that while the A,B,C tower represents the usual closed quaternionic algebra a space-antispace; the A,B,C and A' B' C' towers together will be able to cyclically commute and anti-commute (Probably requires additional doublings and parameters of parallel transport to finally cyclically break closure of the algebra.

This is similar to the property revealed in Fig. 6 with the rotating of the wind generator propellers cycling from Chaos to Order; and also similar to passing by a fruit orchard, rows of chairs in an auditorium or the tombstones in a graveyard where one's line of sight is alternatingly blocked and alternatingly open to infinity in similitude also to wave particle duality again in terms of the rotations inherent to the cyclicality of the LCU backcloth tessellating space antispace. I'm talking about nodes in the hyperspherical structure inherent in the HD components 'behind' our 3-space virtual reality.

We assume that all matter emerges from spacetime. In order to perform our experiment we need to 'destructively-constructively' interfere with this process. In the model being developed this requires finding a cyclical beat-frequency to the creation and annihilation process of space-time and matter. We believe this is best done by utilizing HD completed forms of the de Broglie-Bohm-Vigier causal and Cramer transactional interpretations of quantum theory. Once we know the size of the close-packed LCU and apply this to our 'zero to infinity' rotation of the Riemann sphere (Kahler manifold) we will know the radius/time of this putative inherent beat-frequency.

This is where the Sagnac Effect Dubois incursive oscillator is applied to the structure where the Δt hyperincursion [22] would correspond to a specific phase in the beat-frequency of spacetime and size of the hole utilized to send our signal through in order to detect several new TBS spectral lines in hydrogen.

We set the resonance hierarchy up in this case with hydrogen (simplest case with least amount of artifact from other electrons) where we jiggle the electron tuned to resonate with the nucleus tuned with the annihilation - creation vectors in the beat frequency of spacetime which putatively opens a hole into the HD 'manifold of uncertainty' cavities by a process which we have stated numerous times is a direct violation of the quantum uncertainty principle. Which as you recall occurs when a field is arbitrarily set up along the z-axis to separate the states in the Stern-Gerlach apparatus - the historical beautiful empirical proof of the uncertainty principle.

So simplistically we're going to do something else which you should by now have a glimmer of and the additional degrees of freedom required to perform this something else. This is why we have to have access to the physics inherent in this new cosmology. In the current model with the Planck basement there is no understanding of how to pass through; there is no additional dimensional cavities behind the Planck basement. It is finding the LCU beat frequency in the Dirac polarized vacuum that will give us success.

In summary we have the 3-level tiered Sagnac Effect resonance hierarchy of electrons nucleons and spacetime. The counter-propagating properties of the Sagnac Effect that violates special relativity in the small-scale will most likely be relevant to this process.

Figure 15. Conceptual model of a proposed NIST TBS experiment where hydrogen is put in the sample tube to which resonances are applied in a manner opening the manifold of uncertainty for access to HD cavities correlated with new spectral lines in hydrogen.

For the standing-wave oscillator, the gap between R_1 & R_2 (Fig. 12) in the beat frequency of spacetime

we take our 'little laser blaster' starting at the R_1 bandwidth, when we reach the right point we will get a reflected blip, which will be our first new spectral line in hydrogen. So in a sense if you've been following along; you see in general how straightforward and really simple this experiment is (smiles wryly). This is a paradigm shift and beneath this infinite as yet to you concatenation of mumbo-jumbo lies the framework for performing the TBS experiment. Unfortunately one can see that any part of these elements that I've been gerrymandering could each take several hours to describe properly. The continuous-state, deriving the alternative formula for string tension - any of these is in hour lecture in itself. The importance of the LCU could require thousand page treatises. I've been trying to give an overview of the framework for UFM that we're in the process of discovering.

Some experimental evidence has been found to support this view showing the possibility that this is the same property that the interaction of these extended structures in space involve real physical vacuum couplings by resonance with the subquantum Dirac ether. Because of photon mass the CSI model, any causal description implies that for photons carrying energy and momentum one must add to the restoring force of the harmonic oscillator an additional radiation (decelerating) resistance derived from the em (force) field of the emitted photon by the action-equal-reaction law. Kowalski has shown that emission and absorption between atomic states take place within a time interval equal to one period of the emitted or absorbed photon wave. The corresponding transition time correlates with the time required to travel one full orbit around the nucleus [23]. Individual photons with m_γ are extended spacetime structures containing two opposite point-like charges rotating at a velocity near c, at the opposite sides of a rotating diameter with a mass, $m = 10^{-65}$ g and with an internal oscillation $E = mc^2 = h\nu$. Thus a new causal description implies the addition of a new component to the Coulomb force acting randomly and may be related to quantum fluctuations. We believe this new relationship also has some significance for our model of vacuum C-QED blackbody absorption/ emission equilibrium [24].

I look forward to the time when you begin to see the beauty of this framework, the continuous-state compactification process, the beat-frequency of the LCU Exciplex. Inherent in the background of the structure of this multiverse model we get half of the experiment for free because of the synchronization backbone of the continuous-state compactification hierarchy. Incidents like the lightning striking Franklin's kite are inherent in the storm of progress in the evolution of Natural Science.

I'm inviting everyone here who has insight to be part of this work, to be part of this team, this program to discover UFM. Anyone who thinks they can make a contribution. We're modeling this after the format of the famous Solvay conferences which took place over 15 or 17 years in half a dozen conferences that founded quantum mechanics at the turn of the 20th Century.

Even though we (organizers) have been thinking about this a little bit behind the scenes, this is essentially our first Solvay Conference. We need a little math; we need to write up a proposal to apply to NIST, (National Institute of Standards and Technology) in Washington DC, USA which has essentially all the equipment necessary, get into their queue and get the experiment successfully performed! That's it for now. We're past the time for lunch so if there's any questions they could be saved 'til after lunch at the start of the round table discussion which will probably be one big question anyway.

Part 2:   Transcription of the Colloquium Panel Discussion

Colloquium Panel Members: Albrecht Giese, Elizabeth A. Rauscher, Richard L. Amoroso, Louis H. Kauffman, Peter Rowlands, Donald Reed, Albrecht Kracklauer, Jim Beichler.

RICHARD L AMOROSO
I will transcribe this (panel discussion) and put as a document in the V9 proceedings. No idea where it's (the discussion) going to go or if it's going to go anywhere, but let's just have some fun, I don't even know where to start. Does somebody have an opinion on what the most challenging parameters of the model are. We can argue some of them out. Like they say it historically took Solvay 15 or 17 years to found quantum mechanics so this will be an ongoing program. We want to submit a proposal to NIST (National Institute of Standards and Technology) primarily because they already have all the (required) equipment; and there are some people here at Morgan State that have been on the staff of NIST and done experiments at NIST, so we have a little bit of advisory help here to…so…

PETER ROWLANDS: Would you mind explaining what HAM is?

RICHARD L AMOROSO:
(Jokingly) HAM is an insult to Lou (Pats Lou on shoulder) because he originally allowed Elizabeth and I to publish a volume on it…not funny, OK.

HAM stands for a cosmological model called the "Holographic Anthropic Multiverse" [7]. I didn't feel I could continue developing Einstein's Static Universe because that was debunked; and the Narlikar-Hoyle Steady-State Model, I didn't stay with that term because they incorporated inflation or expansion so I came up with a… I needed the term Anthropic because…

SOMEONE FROM AUDIENCE
Can't hear you well...

ELIZABETH A RAUSCHER:
Hand him the microphone
RICHARD L AMOROSO:
OK, well following Descartes I wanted to make room for 'mind stuff' (*res cogitians*) in cosmology which has no place in the Big Bang because it is Darwinian-naturalistic. This is still not popular in physics generally because we have as yet barely gotten to the point of addressing the role of the observer, but following Descartes we wanted an anthropic principle, an anthropic cosmological principle. The term holographic is still unsettled, but if you know the nature of a hologram one can get a nonlocality-like background out of the holographic principle. I don't apologize for the fact that this cosmology is somewhat theological, as it says in Genesis: '*Worlds without number have I created like grains of sand at the seashore*'. Hubble discovered redshift not a Doppler expansion of the universe. HAM cosmology provides viable alternatives to all pillars of the Big Bang. For example the Vigier 'tired light' model provides an alternative reckoning for redshift [24]. HAM is also compatible with certain models of the Dirac vacuum and extended electromagnetic theory, there is good reason to suggest that there is an alternative to the Big Bang, as I said in the prior lecture there are key elements of this particular holographic multiverse, and the essential ingredient is the structure of the Least Cosmological Unit (LCU). There is some vague precedent for that, I know of only one reference in a volume edited by Menas Kafatos where Stephens [7,15] talked about size of a least unit, and ended up having that very close to Planck which is what you would suspect for the Standard Model with its virtual stochastic zero point foam as the basement of reality, but…

Oh one thing I forgot in the prior lecture; most physicists believe that the extra dimensions, if they exist are of the Plank size because we don't observe them. If you use…if you model the arrow of time with subtractive interferommetry… Imagine a movie theater model for this scenario, you have these discrete frames of film at the projector projected on the screen continuously. Even film moving through the projector at a few centimeters per second is too fast for our vision. The model in real reality is relativistic and the observer is embedded in made out of the material. One metaphor for this is the two forms of screen animation. In one you have the little stick figure standing stationary in the center of the screen walking in place with the background moving continuously left or right; in the other one the background is fixed and the stick figure goes off stage right arbitrarily relative to the other one that reappears stage left. I think that kind of duality exists in this model. But if we can add a subtractive interferommetry to this because relativistically what we see as observers is all coupled to prespace. So at the point when one would see something else meaning into additional dimensionality required elements of that framework are subtracted out of our vision apparatus; and as in the movie theater film model we don't see into the gaps between the frames of film.

The main requirement of HAM cosmology is this 'continuous-state' process of the fundamental LCU. And an equally important key element is that in the hierarchy of dimensionality this entails a 'spin exchange dimensional reduction compactification process': The mantra of this continuous-state principle. When the process arrives near the zeroth dimension the Riemann sphere properties of the LCU array cause the Riemann sphere to rotate from zero back to infinity and repeat continuously. The structure is highly symmetric and ordered and is driven by the super-quantum potential or force of coherence of the unified field guiding the evolution of some aspects of our virtual reality - such as 'Laws of Form' wherein all protons are the same, not individuals etc. I realize there is a lot of detail to swallow; but after all; it is a paradigm shift and it can all be put together in a very rigorous manner as we go along.

To me it seems essential that we initially understand conceptually at least so we know why we need to use the specific form of resonance hierarchy to search for new spectral lines. There are no hidden HD QED cavities in the Standard Model.

To surmount the uncertainty principle we need to find the tiny periodic cavities that come into the pockets of the higher dimensions cyclically in the continuous-state process. Because as I talked about at the end of my keynote presentation: Uncertainty is a 'manifold of finite radius' (Fig. 8) meaning of finite dimensionality. This is where there are little complex dimensional pockets putatively yielding new spectral lines correlating with their volume.

Elizabeth helped me realize the obvious point that

this might entail the 4th, 5th and possibly 6th dimensions because all of spectroscopy is done in 3D. I was originally thinking that this concatenation might start with the 5th dimension because of the 4D of Minkowski/Riemann space. When we fully understand how Peter's space and tie space model [4] applies, if a second duality is required, the manifold of uncertainty might entail in addition a 7th, 8th and 9th dimensions. 6D or 9D is compatible with Calabi-Yau mirror symmetry; but with no potential redundancy reality could end up being composed of either scenario. Please understand with respect to either case, either the 6th or 9th dimension will be degenerate because as in the model of excited atomic structure that represents the point at infinity where the electron has enough energy to fly off and escape so that in the first case when we say three spectral lines we would really mean only two because the 3rd would be the degenerate infinity point.

In conjunction with the continuous-state model this is the only way to surmount the uncertainty principle. To review, historically a continuous field is sent out along the z-axis arbitrarily in the Stern-Gerlach apparatus where we get the separation of quantum states demonstrating uncertainty in measurement. So the key is to do something else; this is what we have been trying to paint a picture of - an understanding of that something else that needs to be done to find the realm of Unified Field Mechanics (UFM). The setting of which is the covariant, conformal polarized Dirac vacuum amenable to manipulation by electromagnetic resonance. When our version of M-Theory is added to this conformal scale-invariant structure, there are mirror symmetric copies of the 3D quantum state that exist up through the brane topology hierarchy to 9D or 12D depending on how we end up defining the super-quantum potential control factors. This is of course a nilpotent structure in terms of the de Broglie-Bohm continuous quantum evolution with the inherent annihilation creation vectors. This was an incomplete theory that didn't work very well historically in 4D but when extended to the higher dimensions (HD) of UFM it is a profound addition to the model that seems to complete quantum theory. Both the de Broglie-Bohm causal and Cramer transactional models have been marginalized by the physics community because it has been perceived that they had nothing new; but as I tried to show their parameters are essential components to HAM cosmology. Cramer's standing-wave of the future-past aligns with Calabi-Yau mirror symmetry and the de Broglie-Bohm model also couples with a super-quantum potential in HD with the force of coherence of the unified field; and both align beautifully with the continuous-state scenario which is why obviously that I incorporate these models as the

foundational elements of the continuous-state process. As most of you know Cramer derived his Transactional model from the Wheeler-Feynman absorber theory which wasn't completely successful either.

The Dirac polarized vacuum correlates somewhat with Einstein's energy dependent space-time metric, $\hat{M}_4$. The primary indicia for a Dirac vacuum is the Casimir affect; secondary indicia are the Zeeman and Aharanov-Bohm affects. But proponents of extended electromagnetic theory talk about finite photon mass, m_γ or the tired-light phenomena which is rejected because it is believed to interfere with Gauge Theory but it can easily be shown that this is not the case. Gauge Theory is an approximation suggesting that there is additional physics.

Then we take the Sagnac Effect which interferes in the small-scale with special relativity. Next we incorporate the Dubois incursive oscillator [22] in conjunction with the Sagnac resonator where the size of Δt in the incursive oscillator relates to the HD hole we wish to open in the Dirac vacuum which we correlate with the rest of the experimental design for action on the hydrogen atom.

My position on the quantum backcloth is that the realm of the Schrödinger cat is a regime of infinite potentia where nothing exists until a measurement is taken which to me means whichever species atom one applies a field to one would obtain similar results but hydrogen is chosen for simplicity assuming there would be little additional artifacts from the extra neutrons and protons. It would be interesting to use the one electron hydrogen-like Titanium atom [12].

In the history of spectroscopy the Bohr orbits were the simplest, and then they found additional spectral lines. We originally assumed the nucleus was a fixed rigid point. Then we found out that the nucleus wiggled minutely and the Bohr-Sommerfeld corrections made refinements to these spectral lines. It is these wiggles in the HD spin-spin coupling or the spin-orbit coupling I assume might cause trouble in finding the new Bohr orbits beyond the first one in 4D. As I said the best indicia of the timeliness for presenting our model is the Chantler experiment at NIST [12]. Chantler's original experiments over the 10 prior years or so were done on hydrogen but the QED violation was much smaller and generally ignored by the physics community [11]. But in the 2012 experiment the QED violation was significant to the extent that notice began to be taken. I thought it was quite clever to strip all the electrons off Titanium but one so that it was in essence a large hydrogen-like atom. I recommend reading Chantler's paper; it is in your Vigier 9 memory stick [11,12].

The early von Neumann wavefunction 'collapse

postulate' [25] considered the speed of wavefunction collapse; I do not have an opinion yet but could it be possible that the size of titanium versus hydrogen is responsible for the more salient QED violation artifact?

CERN has begun a program to search for additional dimensions in particle spray cross-sections radically different from our tabletop low-energy resonance hierarchy method; which if successful could put an end to the era of accelerator physics which shall be replaced by HD UFM cross-sections.

In summary, in conjunction with hydrogen we set up our Sagnac Affect incursive oscillator resonance hierarchy time with the beat frequency of spacetime a consideration of the continuous-state phenomena to cyclically open the HD cavities sending in our rf-pulse and hopefully we get a pulse back related to a new tight-bound state spectral lines in hydrogen

We want to shake electrons with some kind of resonance. They will resonate no matter what frequency we use, but we want to use a specific frequency that creates the spin-spin coupling or spin-orbit coupling with the nucleons, then we need to discover (and I hope the algebra will somehow allow this to fall into place) the size of the LCU and complete the resonance hierarchy by a resonant coupling of the electrons tuning the nucleons to the beat-frequency of spacetime. There is no beat frequency of spacetime in the Standard Model which arises in part from the application of Cramer's Transactional Interpretation to Calabi-Yau mirror symmetry in conjunction with the key elements of the continuous-state principle. There being no need to look for this kind of beat-frequency of spacetime if the universe merely reduces to the Planck scale as the basement of reality. It is possible there is a frequency to the creation of virtual particles or *Zitterbewegung* in the ZPF if there is some kind of quantum oscillation; but in HAM cosmology we have a different kind of beat-frequency related to rotation of the complex Riemann sphere LCU array. And since they're close-packed; you've all seen the little toy with a couple of dozen bar magnets on pins like compass needles in close proximity. If another magnet is brought close, the array of other magnets spins around in various ways. So using that metaphor we are going to set up the LCU array. The LCU is not one magnet on a pin, but a complex 12D structure of topological brane related UFM charges. When we understand its close-packed structure we can finish the electron-nucleon coupling with the LCU beat-frequency of spacetime and by applying the Dubois incursive oscillator Sagnac Effect to Calabi-Yau mirror symmetry we make our attempt to send our signal into the HD cavity such that it reflects or emits a new TBS spectral line in Hydrogen. There is a fair amount of work on cellular

automata programming of the vacuum so a bandwidth may be applied in this regard also. Because of the nature of tessellation any bandwidth will have some effect on the vacuum. Maybe as a nuclear/particle physicist, Elizabeth has some insight into how to create these spin couplings which has never been done yet.

Currently we don't have a full understanding of the nature of a particle from the point of view of 4-space; when we can Gödelize into the HD space of UFM we will be able to complete this picture.

So to summarize, or try to get out of this infinite loop I'm stuck in. So in that sense the experiment is that simple based on these cosmological premises: shake the electrons in a manner coupling them to the nucleons that then resonate with the LCU structure in terms of the incursive oscillator resonance hierarchy to open the HD QED cavity, send in a signal and a new spectral line is reflected back. The continuous-state dimensional reduction blah blah blah hierarchy is something that's going on behind the scenes; it is an inherent part of fundamental reality greatly simplifying the ability to perform the TBS experiment. All we have to do is tack on our little resonance bits and the experiment essentially runs itself.

Feynman in his suggestion of how to build a quantum computer said it would be facilitated by utilizing a synchronization backbone. Physicists gave up on Feynman's premise as intractable because no such thing existed in the 4D of the Standard Model. Attempts were made to utilize bilateral symmetry but that wasn't sufficient. But a synchronization backbone is an inherent property of the continuous-state dimensional reduction process of HAM cosmology making it that much easier to gain access to higher dimensions.

The first Bohr orbit is .5 Å and the second four times further out at 2 Å. Using the common HD volume formula we can predict what these additional orbits might be (I have not done the calculation yet) for example .8, 1.0 and 1.2 Å could apply. The higher dimensional volume formulas are mathematical and not physical, but they may give us an approximate prediction to begin with. As part of preparing our proposal to NIST some of these calculations are work that any of us could to do who want to be part of the program.

The putative volume of the cavity gives us the wavelength prediction and then using the complex quaternion Clifford algebra we can hopefully find the refinements that will allow us to define the structure of the resonance hierarchy in order to perform the actual experiment. The beat-frequency will tell us how many nanoseconds, picoseconds or femtoseconds for example a cavity will be open for. But what could be

incredibly interesting is in terms of and infinite nilpotent potentia back cloth is that it may be possible to somewhat arbitrarily open the cavity with any radius if the associated parameters are aligned with the proper symmetry conditions relative to poking a hole in the manifold of uncertainty. We send in a signal through the arbitrary hole, the signal is reflected back into the NIST interferometer. At this point in my understanding of the theory I assume the hole, a door or window or whatever of arbitrary size may have nothing to do with the size of the HD cavity behind which would be an inherent property of the manifold of uncertainty. Hopefully that was a fair overview if there's something that still not understood please ask a question. If not the microphone to Lou.

LOUIS H. KAUFFMAN
OK, I have lots of terminology that I would like to have explained. I'm going to… Let me just list that and then maybe we can start over again. I'm going to just list them:

What is the Holographic Anthropic Multiverse
- Tired -light
- Alternative to Big Bang
- Least Cosmological Unit (LCU)
- Meaning of rotation of the complex Riemann spheres
- Not necessarily $\hbar$ size of extra dimensions
- What is the beat-frequency of spacetime?
- Background/Foreground duality
- Continuous-state dimensional reduction process
- Resonance hierarchy
- Cavities in the pockets of the higher dimensions
- Uncertainty a manifold of finite radius
- Mirror symmetry in this context
- Polarized Dirac vacuum - evidenced by Casimir and Zeeman Effects
- Extended de Broglie-Bohm-Cramer interpretations
- Calabi-Yau mirror symmetry
- Experimental protocol uses Dirac polarized vacuum/Sagnac Effect
- Experiment to use Hydrogen - new hidden lines below lowest Bohr orbit, not refinements to existing spectral lines

So you see there are very many terms for which I do not have any attached meaning and so can't quite follow your form of the large-scale picture.

RICHARD L AMOROSO
Umm, so tell me what is the 1st one on the list again?

LOUIS H. KAUFFMAN
Start with the Least Cosmological Unit (LCU).

RICHARD L AMOROSO
Other than HAM cosmology itself the Least Cosmological Unit (LCU) is key to the whole thing. Without that extension of the fundamental fermion vertex or singularity we have nothing; it's a theory that can't go anywhere and has no meaning. In the history of my development of these ideas a decade or 2 ago Menas Kafatos gave me a copy of his book "Bell's Theorem, Quantum Theory and Conceptions of the Universe" which had a chapter by Steven's called 'Size of the least unit' [15] with a radius of the Planck constant with perhaps a small oscillation factor that I don't recall offhand, but essentially a Planck unit. I had cursory familiarity with crystal structure and knew of the, … what do they call it that builds up…?

PETER ROWLANDS
Unit cell.

RICHARD L AMOROSO
Unit cell, thank you Peter. One unit cell is able to build up the whole of a crystals structure. So my terminology is somewhat arbitrary. When I need a new term I try to make them have correspondence to existing nomenclature. But until now there has been no such thing as a fully developed least cosmological unit (LCU) and in the holographic sense the Gabor Logon remains primarily undefined.

Then in order to move forward and have a beat frequency background spacetime that can be programmed and have a cellular automata-like tessellation, which then as I mentioned in terms of the simplified diagram (Fig. 17) which is quite a curious coincidence looking so much like the logo for the Cross Keys Hotel where most of us are staying, that I used this modeling to try and explain a complex vertex.
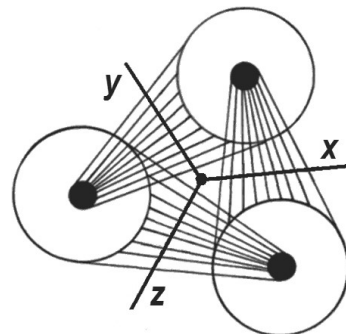
Figure 16. Standard x,y,z Euclidean-Minkowski physical vertex in center with de Broglie-Bohm pilot wave quantum potential field lines conceptualized in the nonlocal backcloth.
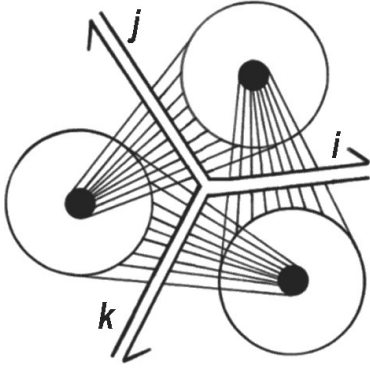
Figure 17. Like Fig. 16 but with addition of the Witten string vertex which as a 1D object instead of a 0D singularity it is free to translate or rotate in and out allowing cyclicality. This represents a 12D brane system where now the de Broglie-Bohm quantum potential-pilot wave field lines become instead like a HD super-quantum potential synonymous with the unified field.

In Figs. 16 & 17 (ignoring the de Broglie-Bohm potential field lines) we have in Fig. 16 a standard model of a fixed singularity or vertex, which because of its fixed rigidity does not allow continuous-state flux. On the other hand as in Fig. 17 with the addition of the Witten string vertex [26] we are able to develop an LCU continuous-state background model adding the additional dimension that allow it to transform.

LOUIS H KAUFFMAN
When you say a vertex you mean a fundamental interaction?

RICHARD L AMOROSO
Do we have to say a fundamental interaction Peter, if we have a fermion?

PETER ROWLANDS
That's what I understand it to be; it's the point where you do have one.

RICHARD L AMOROSO
OK, but I could alternatively just talk about it in terms of a metric?

ELIZABETH A. RAUSCHER
I would say it requires an action, a change from one state to another. However normally it would be used in particle interactions, but there's also the matter of fundamental spacetime structure, a change in structure of that spacetime.

RICHARD L AMOROSO
OK at the moment I'm more concerned with a process that changes the structure of spacetime. But I can get away with this by just saying it's the stochastic quantum foam that is the background of the Standard Model rife with ZPF interactions for example. That would suffice, yes?

PETER ROWLANDS
It's possible, yes.

ELIZABETH A. RAUSCHER
But I don't think that's what you mean though.

RICHARD L AMOROSO
Well we can't throw away physics…

ELIZABETH A. RAUSCHER
No, I'm trying you see what Kafatos said, which is what I said in the early 70's, that the quantum foam was the Planck size, that wasn't acceptable then. But you can quantize matter and time as well as matter and energy and so forth. Like in the Lippman-Schwinger equation for particle collisions'

$$\left|\psi^{(\pm)}\right\rangle = \left|\phi\right\rangle + \frac{1}{E - H_O \pm i\varepsilon} V \left|\psi^{(\pm)}\right\rangle. \qquad (3)$$

Where the independent variables are p and e rather than x and t, so you can talk about a fundamental… Ilya Prigogine did as I did too, talk about … a fundamental structure that is a discreteness that is a form of quantized vacuum, I mean reality itself.

RICHARD L AMOROSO
This is important because when we say empty space between galaxies or something there is nowhere that we consider that there is essentially no matter. So the consensus among contemporary physicists is that if we don't have matter or interaction there…you don't have the…

ELIZABETH A. RAUSCHER
Well the way I would look at it as this, in order to make a spacetime measurement, I'm measuring space I have to bring up a ruler through a process of bringing up my ruler to measure this space, That takes matter and energy and to run our chronometer to measure time takes matter and energy also, probably a battery. So I don't see how to separate spacetime as a fundamental reality from matter and energy as was in my presentation, I see a bunch of these variables as degrees of freedom and dimensionality so that they actually have to all exist at once. I can't have empty space and empty time because I can't tell if it exists and I can't have matter and energy without space and time because it has to be in that arena.

RICHARD L AMOROSO
I think it's OK if we as I like to assume have a space of infinite potentia in the background which is all nilpotent as Peter suggests. This potentia could be doing nothing until we do something to it, so in that sense I think I can get around that…But it's not necessary to get around it as I was thinking at first because the LCU backcloth is a swath of singular interactions just not in the current rigid sense.

ELIZABETH A. RAUSCHER
But the infinite potentia is the potential to be something - to be matter and energy. If one has completely empty spacetime there is no way to measure its existence, there is no knowing without measuring it. That's what the observer is at the microscopic level.

RICHARD L AMOROSO
Right. This experiment is alah observer but if its nilpotent we can say it's nothing until we do something to it which entails a measurement apparatus…What is Nilpotency doing when it's just sitting there ot is that an improper manner to consider it?

ELIZABETH A. RAUSCHER
What do you think Peter?

PETER ROWLANDS
What do I think? Well I agree with Elizabeth on this one. You can't have space without matter, it doesn't mean anything. You can't have matter without space and Nilpotency is the total condition of the universe. Any object has to cancel itself with the rest of the universe. That's what that means.

ELIZABETH A. RAUSCHER
I think Nilpotency means that in order to have a geometry like a right triangle that is involved with squares so you can have $A^2 + B^2 - H^2$, the hypotenuse squared equals zero. When you reduce that equation to A, B & C you get a complex equation, you get an i in there but that equation is based on a physical measurement of reality. The structure of reality has to demand to make a triangle. It can't be just an abstract concept, there has to be a concept of something that triggers that ability to measure and make sure there is a right triangle.

LOUIS H KAUFFMAN
To put it another way, if you think of our universe prior to awareness somehow without observation, then there is no 'distinction'. It's like the nilpotent background.

ELIZABETH A. RAUSCHER
Right.

LOUIS H KAUFFMAN
But when a distinction comes forth then there is the awareness and matter and energy space and time. An entire event universe has occurred there. It isn't like you can just do it abstractly like you can think up the empty set as a mathematician but…

ELIZABETH A. RAUSCHER
That's right you can think of the empty set but is there a parallel between that mathematics and an actual reality?

LOUIS H KAUFFMAN
Well there is if you include the brackets and all the background and have actually created the bag that is the empty bag, and you in the process….(video segment missing)

ELIZABETH A. RAUSCHER
Now I would add one thing to your Sagnac, if the Dirac vacuum definitely affects the proper solutions to the plasma MHD equations that I show using a Feynman graph approach to get the proper conductivity and resistivity of an actual plasma the vacuum state electron positron pair production comes in as a series of Feynman graphs and gets the right answer. So to me plasma intrinsically and explicitly proves the existence of a vacuum, a Dirac type vacuum. So that's another area of experimentation besides the double laser Sagnac Effect experiment to measure the actual qualities and quantities of the vacuum state.

RICHARD L AMOROSO
I don't see this as a conflict per se because the way I've stated it has left out this background. Whenever in the lineage of this we decide to do whatever it is I've been saying to do whether you have to add concepts of the background nature of the universe it's still OK; and I have after all talked of our starting point as the Minkowski 4-space QED particle in a box (hydrogen in this case). When we move this back or up to the point you were saying in doing the actual experiment these principles already apply. I think this is of critical importance especially from a physicist's point of view to have that put into the picture, but would you then agree if I move the context up to the point you were making that it still relates in the same way…

ELIZABETH A. RAUSCHER
I think I would spend more time talking about terminology, I think that's what Lou's talking about,

more on terminology than physics here; and I would say the one question Lou asked I would say the least action, the least unit is more like a Planckian unit, but what do you see in that? What do you picture how that relates to relativity and particle physics? What is that least unit?

RICHARD L AMOROSO

It remains a Planckian unit in the standard 4D cosmological model, but it is not in this HAM cosmology, and it's not a Planckian unit in string theory either with the addition of a fixed string tension, $\hbar + T_S$ albeit a much smaller extension than the variable one I am proposing of, $\hbar + T_S \pm \left(R_{\text{Larmor}} \right)$. So we already have a long precedent for a least unit larger than Planck or beyond $\hbar$. But yes where you still sit in the 4D of the standard model it remains $\hbar$. We've come to the point where $\hbar$ becomes a mathematical construct to do quantum physics equations but has no ultimate basis in Physical reality. This is a key point: Planck appears to be as it is utilized, BUT this is a property of the manifold of the uncertainty principle only! This appears when we add this higher dimensional hierarchy…

ELIZABETH A. RAUSCHER

I think Planck is in n dimensions; I think Planck extends to n dimensions. I don't there is a contradiction with what you are saying at all, I think you are making a statement that might be kind of similar, but you do add the string tension point of view, that the Planckian model per se needs some additional parameters that the string tension plus whatever you are contributing to that concept.

RICHARD L AMOROSO

Yes, so this is a good footnote to that concept. In the Standard Model of a singularity or Fermion vertex, the space is a rigid 0D point. The asymptotic continuous-state reduction to asymptotic Planck means we have the Witten string vertex which is able to rotate from higher to lower dimensionality. So we never get to Planck; we get down to the Planck plus string tension. As I mentioned current string theory has a fixed T_S (Fig. 9); where I drew Planck as a dot surrounded by a small circle representing the T_S addition. But our model reverts to the original Hadronic form of string theory with a variable string tension which aids the rotation of the LCU. When continuous-state compactification reduces to near asymptotic Planck the complex Riemann sphere rotates back to infinity restarting the LCU cycle. The Riemann sphere rotation from zero to infinity is an essential part of the LCU. The 12

dimensions are needed to have enough degrees of freedom to surmount the uncertainty principle and have the upper-bound rotation become causally free of the 3D QED resultant. This hierarchy is a new view of reality beyond what we currently are able to observe.

ELIZABETH A. RAUSCHER

Can I ask a question? When you draw the triplet for the Least unit (Fig. 17), why do you use three? Is that because of the Witten vertices?

RICHARD L AMOROSO

Peter has made a strong case, to be silly I'll say worships the 3-fold symmetry for the quaternionic 3-form of the Fermionic singularity or vertex. I think I can get away with saying that the Witten string vertex parallels Peter's space anti-space duality [4]. So that's the starting point - the 3-fold symmetry of the quaternionic Fermion vertex (the most fundamental object in physics); the three i,j,k or x,y,z.

ELIZABETH A. RAUSCHER

Oh yah, I got what you're saying but is there any way you could jump to quarks because with SU(3) it does so well that maybe there's a reason that there is another scale up to get to particles at least and another hyperdimensional compactification cycle that suggests why SU(3) shows up with the 3 quarks.

RICHARD L AMOROSO

Yes that's probably another reason for it. As we develop Unified Field Mechanics (UFM), then yes we'll also be able to play with quark cross sections in low energy apparatus also. We have to perform the seminal experiment first.

I modeled the LCU vertex conceptually, starting with the standard $x.y.z$ Euclidean 3-plex then I put the Witten vertex in the middle of it which is part of how the LCU may rotate from zero to infinity. Then I put in the brane topology cavity the potential lines of topological charge. In Calabi-Yau space the topology of the cavity has this charge derived from extending the de Broglie-Bohm super-quantum potential (circles) pilot wave that are the control factors (this is not a random evolution-Einstein would be happy) of the ontological 'force of coherence' (field lines) of the unified field. There is no phenomenological (quantized) exchange particle in this case. (This relates to why gravity is not quantized-as stated in my interpretation of M-Theory it's action is between the branes an ontological non-quantized).

The unified field control factors of the symmetry guide the evolution of the continuous-state process - As I said there is an inherent Feynman-like synchron-ization backbone! This keeps the cyclicality in flux.

ELIZABETH A. RAUSCHER
This is where you are adding the Wheeler and Cramer models?

RICHARD L AMOROSO
Exactly, adding Cramer and de Broglie-Bohm HD extensions facilitate these unified field control factors in the evolution of this HD topology which you have with the extensions also of your (Rauscher) superluminal boosts of space to time and by my extension of your work to energy with the UFM control factors guiding the evolution of this topology.

LOUIS H KAUFFMAN
There's too much at once for me. The de Broglie-Bohm to me is looking at the Schrödinger evolution in terms of something like a pilot wave or quantum potential; that's one thing. Cramer has a way of understanding in the bra-ket form to understand handshaking between future and past and it's much more conceptual not tied to the indices of the Schrödinger equation. So you're speaking of these in one breath and it confuses me.

RICHARD L AMOROSO
I appreciate that Lou; speaking a volume in one phrase like talking about an automobile and appearing to use gasoline and tires in some entangled fashion! For our limited time today it must suffice to say in terms of this enormous concatenation of detail as a paradigm shift that loosely speaking, yes to the first part of your comment: The de Broglie-Bohm description of Schrödinger evolution was never a complete theory historically. The salient part of my obscure usage is that the interpretation can be completed in HD and the pilot wave-quantum potential be called a 'super quantum potential' synonymous with evolutionary control factors purported to be an aspect of the action of the unified field. As to the handshaking aspects of Cramer's future-past present I see that that extending this to HD correlates well with the 9D left-right symmetry of Calabi-Yau mirror symmetry especially in terms of the continuous-state compactification rotations of the complex Riemann sphere. This is a tower that can be built on Cramer parameters such as the present instant is a standing-wave of the future past. I should apologize however. Not Psychobabble, perhaps I can coin a phrase 'Physicobabble' for the way I banter. I am speaking conceptually and axiomatically. Little of this has as yet been simmered into the full rigor of acceptability. In a sense all of this Physicobabble is irrelevant; I am only trying to paint a picture of the framework for the TBS experiment and possible variables that a description of the protocol would require. I want to hook annihilation creation vectors into Calabi-Yau mirror symmetry.

LOUIS H KAUFFMAN
OK let's slow down again. Calabi-Yau mirror symmetry is about the fact that different Calabi-Yau manifolds which act symmetrically with respect to one another so that the parameters in one term turn into another by a cross transform kind of thing into other parameters in the other one with a perfect match but you're in two different Calabi-Yau manifolds each of which is its own string theory in the usual sense. You have some sort of dynamism that will put them together in your theory that has them interacting with one another.

RICHARD L AMOROSO
Right, exactly. That's one of the whole reasons in a sense why I criticize Elizabeth's 8-space (in terms of continuous-state needs) that it's still reduced to Planck, that it doesn't have that kind of dynamism of existence in its reduction to rigid Planck so that you can get this continuous-state cycle. We do know that Calabi-Yau branes will transform into each other, that's part of string theory that they…

ELIZABETH A RAUSCHER
I also have a 12D space. But the point of the complex 8-space was, what is the least number of additional dimensions one needs that will accommodate nonlocality so the conditions I made on the manifold are not restricted but conditions.

RICHARD L AMOROSO
Right.

ELIZABETH A RAUSCHER
Because I also make in the superluminal boost paper [28] a 12D space which is certainly possible; it's just that I want to have the least amount of added physics to get what I wanted. But I have also a 10D and 12D space so it isn't restricted to that.

RICHARD L AMOROSO
No, I realize that but I just add again this twist as you recall we go past utility of the Lorentz Transformation; we now have a need for a new transformation. The HAM 12D space requires a 12D transformation which entails a different form of complex 12D space in contrast to your 'fixed' forms of complex spaces. So the Lorentz Invariance is still another stepping stone. I don't claim that this modeling is rigorous yet, but I

build, I 'stick' Calabi-Yau mirror symmetry on top of Cramer and give it…I think I've read enough string theory papers that I can 'assign' a continuous-state…

LOUIS H KAUFFMAN
I don't mean to slow you down again but what do you mean by on top of Cramer? Cramer says a quantum event is a handshake between the future and the past. We can kind of grasp that better than all the other concepts…then you say on top of Cramer we put the Calabi-Yau mirror symmetry - What does on top of mean?

RICHARD L AMOROSO
Right. Ahh, do we call it a manifold?

ELIZABETH A RAUSCHER
An addition, an addition to instead of 'on top of'…

RICHARD L AMOROSO
Yes, I think of on top as going up the ladder of dimensions, but Cramer in 4D has that symmetry and then I want to tack on or want to make the addition as Elizabeth said…I don't know if correspondence is a strong enough term. Cramer is a 4D model, Simply I just want to incorporate this Cramer-type handshake into the continuous-state dimensional reduction process of the Calab-Yau brane manifold

LOUIS H KAUFFMAN
Oh you're thinking of past-future as a kind of symmetry. Same as… Oh, all right.

ELIZABETH A RAUSCHER
Yes.

RICHARD L AMOROSO
I realize that now especially, that I have I skipped all that definitionally…So I take the Cramer future-past symmetry, but whether traditional string theorists would do it that way, I don't know but we see where they can transform all of the five string theories cyclically so I don't see that there is a problem generally. So I add on 6 or 9 more dimensions to include the Calabi-Yau left-right mirror symmetry to make correspondence to Cramer's future-past 'handshake' transaction symmetry and then cycle them in some form of continuous-state manner which is essential to the experimental paradigm.

LOUIS H KAUFFMAN
So you have new events that are hand clasped between mirror symmetric string theories.

RICHARD L AMOROSO
Yes.

ELIZABETH A RAUSCHER
When he says above in the hierarchy, he really means in addition to which means like I'm expanding the base of the domain of action considering it exists expanding it into a higher hyperdimensional geometry above and beyond the Cramer model into Calabi-Yau space, I think.

RICHARD L AMOROSO
Exactly, so that's the importance of these definitions.

PETER ROWLANDS
Let's throw this discussion open to any others.

RICHARD L AMOROSO
Any questions or comments?

PETER ROWLANDS
I'm feeling very restricted at the moment.

WOLFGANG BAER
It sounds like your cosmological unit could be, and this is very naïve because many of the terms you're throwing out here are detached from my knowledge. It sounds like, and I do know Kafatos and I do know him personally; You're talking about little quantized chunks of space, so I can visualize it as tiny little things. It sounds as though you're thinking that if there are these multiple dimensions, and that you may be able to do some sort of oscillation that tears these chunks apart then there will be holes in space.

RICHARD L AMOROSO
Actually only the lower ones are quantized, once you get beyond the tip of that iceberg (Fig. 7) in 4-space which is quantized much of the rest is not quantized.

WOLFGANG BAER
I don't know about those higher dimensions, I'm just saying that right now it sounds like I can visualize a couple of little points. When I do this now obviously (shows gap between thumb and forefinger) it's 30 times bigger and there's a hole in space that I think you're explaining in the higher dimensions that something can fall in or generate energy. My question now is, it looks as though the experimental set up that you have shown is very much like Nuclear Magnetic resonance (NMR), so how do you get from that NMR experimental setup to anything like the frequencies that you are talking about? I mean it seems like there would be tremendous energy required for doing that. And

oscillations of the kind of resonances that are accessible to us may just show us NMR again. What kind of energies are you talking about in these oscillations?

ELIZABETH A. RAUSCHER

I think they are very high energy. It has to go along with the energy of a Planckian unit because the energy of a Planckian unit is very large to the mass of 10^{-5} grams. I forget what the energy is but the Planck energy to get to such a small quantized or discreteness in the spacetime manifold would definitely require energy greater than the LHC.

WOLFGANG BAER

Right. So that's my question.

RICHARD L AMOROSO

This is a beautiful question. I'm so glad it was asked.

LOUIS H KAUFFMAN

Maybe you want to use the mike.

RICHARD L AMOROSO

OK. Because I haven't thought of giving that answer in that way. De Broglie matter waves, all we've done so far is to demonstrate a 100 ways that de Broglie matter waves actually exist. And we haven't done anything else; this work is in a sense starting to do something else. So instead we're going to be able to use low energy rf-pulses which is all that's needed if you couple the resonances properly. Because of the nature of Unified Field Mechanics annihilation and creation of the higher dimensional matter copies in this structure.

This means there will also be an end to the need for super colliders. We don't need colliders anymore, once we can access this manifold of uncertainty (with a finite radius) which needs more definition, we perform a new kind of cross section through which we will be able to observe the complete structure of matter in its complete UF form. I hope everyone realizes a 4D view of matter is incomplete. In terms of strings if you accept that matter is a 10D or 11D composition of brane vibrations which in our model is a 9D or all inclusively a 12D UF structure. This is like the flatland 2D circle visited by a 3D sphere that can see the insides of the circle. Yes as Elizabeth and Wolf have mentioned from the point of view of the 100 year history of contemporary collider physics enormous energy is required to try and smash open the Planck scale. The closer we want to get to the Planck scale the more energy is required. The next generation of colliders on the drawing board are being designed to be

100 TeV. Collider physics only allows us to view the structure of secondary bits in the particle spray. But the view of matter when Gödelized the beyond veil of uncertainty into a complete UF view will allow ontological energyless views. Simple rf-energy you realize will be required to create an opening into this regime because of the nature of the realm from which we are observing from.

I can also give an esoteric reason for low energy if you're able to accept it as part of your reality. When God gives a 'revelation' (or psi phenomena) he doesn't use a sledge hammer. Information is transferred by an ontological 'energyless' process of the unified field called 'Topological Switching' [7]!

Yes Wolf, it's almost like a standard NMR experiment with T_1 and T_2-like fields in many ways except we don't need a big magnet to align the chemical species for excitation, which is already an inherent part of the UF continuous-state HD synchronization backbone conformal scale-invariant cyclical copy superluminal boost process. NMR is looking at molecules from 3-space and a large magnet etc. is required. But if viewed 'from inside' 12-space all that is required is the gentle force of coherence of the UF to align matter-wave phases coherently. All that is required is a standard low energy electron resonance tuned to spin-spin or spin-orbit coupling with the nucleons of whatever atom is the test variable in conjunction with the Sagnac Effect incursive resonance hierarchy. To repeat the key again is the properties of the LCU continuous-state that allow access to this manifold. The solid electron de Broglie matter-wave surface of all the matter we touch is a domain wall out of phase with our physiology. With the proper phase relations one could pass right through.

If one applies a field in the standard way before one could take the kind of HD cavity measurement we are talking about the Uncertainty Principle kicks in and closes the gate through or into the manifold (requiring a supercollider). Everyone talks about quantum phase as not being physically real, well they aren't in Copenhagen Interpretation's usage of the Schrödinger equation, just part of the mathematics. But with our UF 'beat frequency of spacetime' the situation is different.

We have mentioned the seats in an auditorium or rows of trees in an orchid metaphor where on a drive by line of sight is alternatingly blocked and open to infinity cyclically. So throw a stone in a pool of water one gets a concentric circle of ripples. Harmonically throwing two stones one obtains regimes of constructive and destructive interference. This is what is believed will happen by applying the Sagnac Effect incursive resonance oscillator - Surmount the manifold of uncertainty by 'punching' a destructive resonance

hole in the spacetime manifold.

PETER ROWLANDS

I want to ask a really difficult question, a very simple question but extremely difficult. What is your attitude toward Occam's razor? Because my attitude is I go to the least number of assumptions that can be conceived about anything. But what is your attitude to it?

RICHARD L AMOROSO

I see no conflict with Occam's razor because this is the minimum number of parameters required to take the next step in physical evolution. Perhaps you are not separating my attempted concatenated delineation of the whole HAM cosmology paradigm shift from the more minimal requirements to perform the TBS experiment. Physics is the most complex science there is. This paradigm shift is like going from Classical Mechanics to Quantum Mechanics and I'm thrusting you into the middle of a big picture with new terminology that I have been developing in obscurity for decades that you have had little preparation for.

PETER ROWLANDS

No I mean that you have many aspects to this model and you have to get them all to work at once to get the model to work. I'm talking about the whole model. The whole model has many different aspects, which are currently not conventional physics, some of them are, but a lot of them aren't. I'm not talking about the experiment; I'm talking about the whole model. So how do you show that putting them all together is going to support your story?

RICHARD L AMOROSO

Perhaps not, I'm trying to describe a multiverse from a higher dimensional perspective. All of this so-called Occam's razor 'mumbo-jumbo like the Feynman synchronization backbone for example is inherent in this proposed new model of reality itself. It is already working in and of and by itself. And actually they are based on mostly conventional physics, not generally popular or main stream; one must say leading edge as for example very few like Nima Arkani-Hamed or Lisa Randall who are among the rarefied predicting large scale additional dimensions. But 90% of the physics community is into microscopic 11D M-Theory with Calabi-Yau symmetry. I have really only added two new ideas: That uncertainty is a manifold of finite radius and the Continuous-State properties of a fundamental LCU. I don't see what I'm trying to do as any different than the challenge associated with any major discovery. I have a unique vision but it remains for a similitude of the 17 Nobel originators of Quantum

Mechanics to come forward from our midst and duplicate the process for UFM incorporating ALL? the properties I'm sort of philosophically enumerating.

ALBRECHT KRACKLAUER

Excuse me, can I make some comments and maybe break this loop up? At least I find, and I have too many gaps in my background to understand motivation for this experiment. So let's start at the back. If the experiment is supposed to produce a spectral line it seems that you must imagine that there are some states in which an electron can do a transition from and evidently at least half of those states are states that have never been found in say hydrogen or titanium or whatever. So there are some states and I find that a very plausible possibility if there are some metastable states or transient states that might not have been found with conventional means through spectroscopy. Now if there are some unconventional states, however we get there, the spectroscopy should somehow get us to tickle them. So the question in my mind is just how we should tickle the state of the art that's new and different from events that have been tickled in the past. I find it very improbable that a table top energy level experiment hasn't been tried. Every chief experiment has already been tried. Any experiment can have hundreds of explanations.

RICHARD L AMOROSO

I'm not talking about the interpretation; I'm talking about the context. When we do the Stern-Gerlach experiment we send a signal along the z-axis with a certain set up and it splits the quantum state into its components. We've been looking for spectral lines over the last 100 years or so, we're not going to find any more spectral lines in 3D QED atomic cavities. The whole thrust of TBS spectral lines is to look in HD cavities; and I claim a putative method of investigation in the context I have been over-describing. There has never been done an HD experiment of any sort. CERN is proposing some with as mentioned with mega TeV bombardments.

ALBRECHT KRACKLAUER

The whole field of quantum optics is umpty ump variations of the Stern-Gerlach experiment. The experiments going to be done in a lab.

LOUIS H KAUFFMAN

You find them in a lab.

RICHARD L AMOROSO

Yes, of course, thank you. (everybody laughs)

ALBRECHT KRACKLAUER
Who has the ten dimensional lab?

ELIZABETH A. RAUSCHER
Ha ha, I think a yogi, a meditative yogi might have a 10D lab. You can get to 10 dimensions but I don't know how many experiments you can do in that state.

PETER ROWLANDS
The experiment will either be successful or not, and you don't need to include all this to say this experiment might be worth testing. Just do the experiment.

ELIZABETH A. RAUSCHER
Let me defend Richard a little bit on this. With his model he's getting a different slant on how to modify a Stern-Gerlach type experiment. It might look at the real physical spacetime reality in such a radically different way that the design of the experiment itself might find some new spectral lines just because of his conceptual ideas creating this new direction of exploration.

ALBRECHT KRACKLAUER
Well the personal motivation is one thing, but if you're going to then back up the observations from the experiment and say they prove your personal motivation you really have to have a really well specified line of reasoning that the main purpose of which is to exclude all the other alternatives.

ELIZABETH A. RAUSCHER
Right, right

ALBRECHT KRACKLAUER
And getting there from here as Peter's trying to point out is that if you have a theory with many many new hypothetical inputs is uncomfortable. If you add one new hypothetical input to experiments that have already been done then the experiment will test that hypothesis, but if you add 17 then you've got a mess.

PETER ROWLANDS
It's not possible

RICHARD L AMOROSO
Well I think all that's a little off the point, it's true I have been talking about a forest, but ultimately we will be pulling out one tree to do the experiment on.

PETER ROWLANDS
Well you'll only prove your one tree then; you still won't prove your forest.

ALBRECHT KRACKLAUER

You have to prove that all the other trees can't get there too.

RICHARD L AMOROSO
A metaphor has only so much value in trying to illustrate a point. The uncertainty principle is sacrosanct, the vast majority of physicist strongly believe at the moment that it is inviolate. It seems ridiculini, as Elizabeth would put it, that I could garner support for doing an experiment by saying: I want to simply shine my little modulated laser pointer at a hydrogen atom and poof several new 'hidden' spectral lines will appear from Calabi-Yau branes. All this is for our discussion, to try and understand. When we design the experiment 99% of it will go away and not be included in the design.

PETER ROWLANDS
So in that case you will disprove your model if we don't find it.

ELIZABETH A RAUSCHER
Not finding the spectral line does not disprove the theory because you might not have looked at it right

ALBRECHT KRACKLAUER
Ya, you might have done the experiment wrong.

ELIZABETH A RAUSCHER
You might have to do a whole logic of experiments.

RICHARD L. AMOROSO
Exactly, and that's why I think the other spectral lines will be more difficult to find

PETER ROWLANDS
You won't sell any idea to the physics community as it is unless it's based on minimal assumptions. If it's based on a lot then you will never sell it, never.

JAMES BEICHLER
It's not just minimal assumptions. It's minimal models. Pick a single model.

RICHARD L. AMOROSO
I have always felt, it is inherent in my stupidity or whatever that, I want, I feel the need to try to explain everything conceptually first but after that the pertinent minimal components are pulled out throwing away this whole forest except for one tree or now I better say twiglet. Let's be clear I know perfectly well the critique that Peter was making about experimental physics requiring a minimal domain, number of variables etc. for the design of an experiment. I'm

disappointed that everyone seems to think I've postulated 55 ways to generate electricity (before its discovery) and asking for all 75 ways to be tested simultaneously. We have only talked about a very broad context here today, with essentially no discussion of a fine-tuned experimental design and the required apparatus to perform it. I don't see how I could have gotten away by coming here today and just talking about the experiment ignoring the context to perform it within.

We don't as yet have in essence any of the theater the complex quaternion Clifford algebra will provide; but I could have gotten out all of Dubois mathematics on the incursive oscillator, I could have copied a few pages from Peter's renditions of the Dirac equation within which I think even I could stick in the Sagnac Effect etc. etc. etc. Maybe I've made a mistake but I don't at the moment see that that would have fared any better. What in that concatenation would lead you to think spectral lines would be found under those circumstances? Which I believe can only be found if some cavity is opened up behind the manifold of uncertainty.

I am a visionary. I think I can say not a single person did their homework regarding the materials. Perhaps study the 'stuff' on the memory stick before Vigier 10. As soon as any of you get it; I know some of you will immediately leap frog ahead of me…

PETER ROWLANDS
You need the minimal assumptions needed to find that particular thing.

ALBRECHT GIESE
Can that spectral line be predicted beforehand by calculation?

RICHARD L. AMOROSO
Yes, as I said I have begun with the simplistic formulae for the volume of higher dimensional hyperspherical cavities that are not necessarily physical, but will provide a reasonable predictive starting point.

PETER ROWLANDS
What you have to do is extract out that one component that causes that spectral line to exist. And if you can do that then you can actually maybe write a paper that somebody else can do the experiment from that or you can do the experiment yourself if that can be followed; it can actually be tested out

RICHARD L. AMOROSO
So could I, let's go back to the beginning here in a sense. Could I take Chantler's titanium experiment and

say if we propose to do a similar experiment designed instead for some kind of Kaluza-Klein space. The reason for…

DONALD REED
What does that mean? We're going to do it in the lab not some kind of Kaluza-Klein space.

PETER ROWLANDS
You can do the theory in Kaluza-Klein space, develop some new kind of information, yes I'll buy that.

RICHARD L. AMOROSO
It is our guess that, or whatever the reason is that Chantler got a bigger QED violation artifact using Titanium instead of Hydrogen is…

PETER ROWLANDS
You could sell it if you used Kaluza-Klein because Kaluza-Klein is respectable. So you could put that in…What are the consequences of putting it in Kaluza-Klein? Could we test it out? You could sell that.

RICHARD L. AMOROSO
My first fleeting thought is that that would be a lie; but we have mentioned 4D and 5D. People won't easily buy more. So we can easily skip 12D, manifold of uncertainty, continuous-state etc. and present is a purely a test of K-K theory. Because as I was talking to Elizabeth and we kind of went back and forth concluding that all spectral lines are measured in 3-space. So if we talk about a 5th dimension…a Kaluza-Klein test to see if the Chantler artifact can be increased.

PETER ROWLANDS
And a new test of Kaluza-Klein as well

ELIZABETH A. RAUSCHER
It ties in to the standard model too because the twistor algebra of the Kaluza-Klein geometry is mapable to the spinor calculus, and my complex 8-space which is a subspace of both of these spaces.

The recording ended here and the remaining text is lost.

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