Problems with the Big Bang

Infinite Energy is pleased to present the paper "Big Bang's Quantum Problem" by father/son team John Wallace and Michael Wallace [p. 18]. The Wallaces have published numerous books, including: *Yes Virginia, Quantum Mechanics Can Be Understood*; *The Principles of Matter: Amending Quantum Mechanics*; *Terrestrial Nuclear Processes: Zero Momentum Light Element Reactors*; *Dark Matter from Light: Extending Quantum Mechanics to Newton's First Law*. A number of their papers are available on John's Casting Analysis Corp. website: https://www.castinganalysis.com

Marianne Macy conducted an interview with John Wallace in preparation for the publication of the paper.

Marianne Macy: Your paper "Big Bang's Quantum Problems" goes after a lot of esteemed people and territory. You tee off in your intro by saying that the early 20th century produced the beginnings of quantum mechanics and the big bang, but went off the rails and quantum mechanics did not recover. In our communications, you accuse Neils Bohr and Werner Heisenberg of "supplying quantum mechanics with a universal get out of jail card that allowed everything while forbidding inspection." You say that when cold fusion came along and could not be explained, it showed "how primitive and broken were the nuclear theories of the day, so it had to be purged." To help get things back on track your paper takes aim at "the creation myth of this New Age physics that Edwin Hubble's work produced, the big bang." Your intro prepares us to consider an intimate connection between cold fusion and "the improbability of any great bang emanating from a point." Let's start there. You're not big on the Big Bang theory, is that right? You said to me that this "New Age creation myth" involved "a very public fraud in education and research by suppressing fundamental questions."

John Wallace: Big bang is a good example of a terrible physical model emanating from a mathematical point that has no counterpart in the physical universe. It provides a great example of one of the fundamental problems that has troubled physics from Newton's time onward, the static potential. Einstein solved part of the gravitational potential problem by curving space so there was no active action at a distance affecting particle dynamics. His general relativity did not solve the energy conservation for a massless field when the photon has to do work to escape the gravitational potential. Planck's simple quantum energy equation, $E = \hbar\omega$, for radiation is not complete and it picks up a gravitational potential term because the photon in its own reference frame is a spherical propagating field that will be continually red shifted as it does work while its propagation encompasses more matter. This single detail eliminates the need for an expanding universe to explain the red shift.

Generating a universe from a non-physical point qualifies as a very dubious creation myth.

Macy: You related to me that "There is a simple historical logical line in this business of cold fusion and how it collided with the status quo on the science side and that can be made very clear." Do you think the problem is, as you put it, "the suppression of the development of quantum mechanics and relativity"?

Wallace: The suppression of the examination of the foundational problems of quantum mechanics and relativity has been very successful. This is an educational problem stemming from the widespread adoption of the Copenhagen version of quantum mechanics. Everything that is taught should be organically derived. That limits the mistakes that can be passed on. Unfortunately, that is not how physics education has evolved. In physics only one poor assumption at the beginning of a text is sufficient to ruin the entire text. The simplest example of a bad assumption is having point particles that can never be accurately described as physical. Original sources, particularly experimental sources, are the materials that should be used, as they provide usable data. So if physics teaching is ruined for a few generation of students the subject has been successfully suppressed. Then it becomes very difficult for the next generation of student to try to solve problems as tough as cold fusion.

Macy: You think there are three main lobbies that contribute to censorship in physics. Do you really think the Big Bang theory was a palliative to keep the public satisfied with something that would cover the concerns and areas of these three main groups?

Wallace: These three lobbies are very real and easily identifiable in any of our national labs and their contractors. You will also find the same lobbies associated with universities. The big bang was simply too good of a marketing vehicle for fund raisers to pass up. It appeared easy to understand if you did not ask too many questions.

Macy: You think cold fusion was an affront to establishment science. You say it managed to challenge all three lobbies and therefore was immediately labeled pathological physics. You write in the paper, "the smear was done so rapidly after the announcement it was obvious as a political rather than a deliberative decision."

Wallace: Cold fusion exposed a deep ignorance of both nuclear and solid state processes, particularly the Standard Model and fundamental quantum mechanics. Cold fusion as an experimental reality and Carpinteri's work on fracture induced fission represent the most glaring examples of the shortcomings in nuclear theory. These challenges threatened significant budgets that are now having to look for new homes in quantum computing. Some of the originators of the Standard Model in their old age have backed away from their creations. These were poor models based on poor assumptions but too complex to sell to the public, unlike the Big Bang.

Macy: And you say that another successfully suppressed idea is

the foundational problem of quantum mechanics?

Wallace: This is well documented in works by Gamow and Ferry and in our own experience of trying to publish in this field. We had to go into writing books and setting up a publishing operation to comment on these problems. Publicly funded research in physics is a public welfare project for the middle class for those with politically acceptable beliefs that will not challenge the wisdom delivered by the DOE, NSF, their contractors, universities, and the publishers they support. The tenure system then freezes in the fraud.

Macy: What is the background of you and your son?

Wallace: Both Mike and I were lucky. If you want to do physics you really have to start on your own solving real problems and reading about the subject and its history before going to college. Mike started by working the geophysical problem of the earth's magnetic field and then worked on ULF geomagnetic fields of the earth in his high school science projects. I worked on classical mechanics and trying to understand quantum mechanics while in high school while learning how to build equipment to study the diffraction of particles. I went to Columbia, where there were still some first rate people—starting with freshman physics—who explained the shortcomings of quantum mechanics by developing only that which could be shown to work with a strong emphasis on the limitations of those methods taught. My first research job at the end of my freshman year was to help on an experiment to show that quantum electrodynamics was not a valid physical theory run by an experimentalist who won a Nobel prize for the data that kicked off quantum electrodynamics. It was a good experiment in 1967 but it took us until 2015 to show it was indeed correct and the theory was invalid. Mike at Hampden-Sydney College had a very good experimental physicist who taught in the style of Enrico Fermi, the importance of estimating real contributions numerically and verifying outcomes. The real education is doing and explaining experiments on a wide variety of problems and both of us in our jobs do that almost continuously. Practice in solving different problems is essential training before tackling cold fusion. In fact, our start on revising quantum mechanics came from a single work-related problem of trying to understand how hot steel reflects electromagnetic radiation. Even though we have advanced degrees, our formal physics education in university physics after the introductory courses were for the most part of little use because of the errors introduced in the subject from the 1930s to the present.

Macy: You and your son have written that as an event, the Big Bang did not occur.

Wallace: The red shift is not from receding mass, so then there is no big bang. The red shift data at large distances used to promote dark energy can be explained by the photon's gravitational red shift function that is very different from what is predicted by Hubble's law at high z. This implies there is no evidence for dark energy and the experimental results confirm the conservation of energy argument we used to modify Planck's radiation energy law.

Macy: In Section IV of your paper, "Gravitational Red Shift," you point out failures of the classical model and gravitational potential of the photon and that it must overcome on a large scale traverse—which you say was ignored and was an error that should have been caught in the 1920s.

Wallace: Gravitational red shift is an error of omission made because in the 1920s they really did not have a good understanding of the photon in its own frame of reference, in other words a good mathematical description. Once we had that then it was easy to add the correction to the Planck energy equation. This is something that is not treated by the stress-energy relation of general relativity as it is a quantum property of the photon. However, the same argument we proposed could have been stated in the 1920s, because Einstein and those that understood relativity knew the photon had to overcome a gravitation potential as a form of work. The question simply was how does one compute that potential.

Macy: You really close in on the big bang theory like a merciless shark, pointing out that "The other main pillar supporting the big bang and the expanding universe depended on the lack of a nuclear pathway to produce deuterium except by condensing it from the high energy soup that followed the big bang." You describe another pathway, the pep weak fusion process that was detected by the Borexino facility. How solid is that—meaning, is that definitely nailed down?

Wallace: The solar production of deuterium through the weak pep process is well documented in the Borexino data from Italy. The deuterium data we presented showing production on the rocky planets is only one of the many composition modeling problems that plague the big bang's support in terms of isotope and element relative abundances.

Macy: Can you give us some background on lattice driven cold fusion and deuterium production, discussed in the paper?

Wallace: Early on there were geophysicists who were interested in cold fusion to explain both the unaccounted for large heat flux produced by the earth and the distribution of elements in various regions of the earth. However, with the physics community labeling cold fusion as a pathological science, those researchers were frightened off. The most successful group in this area has been Carpinteri's group studying fracture driven fission processes.

Macy: Why is lattice driven cold fusion of particular interest? Why is there a connection to geophysical processes?

Wallace: We noticed that only certain metal lattices support lattice cold fusion and the main two—Pd, Ni and some of their alloys—all were FCC lattices which possessed a high electron density at the metal's fermi surface. These lattices have the only really symmetrical close packed interstitial site that can function as an anvil for driving a pair of ions close together. This combination of properties does not occur in any other metal except for FCC iron at high temperatures that would support terrestrial deuterium production.

Our comments on deuterium production by the pep fusion process deep in the earth then d-d fusion in the volcanoes are speculation, however, there is data in terms of isotope distribution, chemistry and heat transfer around volcanoes that points to nuclear processes. We did a little book on that subject in

2012 called *Terrestrial Nuclear Processes*.

Macy: What do you think are the chances of the broader scientific community rethinking the big bang?

Wallace: Some very good people in the broader scientific community have had their knives out for the big bang since it was proposed. We gave three good references to support this point of view. [See References 10, 11 and 17 at the end of Wallace's paper that follows.] The big bang is really a marketing scheme much like dark matter and dark energy which are used to capture public funding. It is selling a big picture where the details are made artificially too complex to discuss. Complexity is a cloak that is used to hide the ignorance and fraud in the public science funding game.

Macy: What other attempts at working on the foundation of quantum mechanics have you found?

Wallace: There was a very good attempt made by David Bohm in the 1950s derived from the early work of de Broglie using the pilot wave idea. It failed because it did not deal properly with relativity. The key to solving the problem was properly integrating relativity into quantum mechanics and recognizing the spaces that were required.

John S. Bell tried to work out an analysis from inside standard quantum mechanics and produced a result that has been challenged. We tried a different tack also working from inside standard quantum mechanics and produced a result that looked promising but in both cases no real understanding could be extracted. The reason was simple: the starting assumptions for the subject were incorrect.

Bell did, however, make a major contribution to our work in a comment he made in a BBC interview where he pointed out that either relativity or quantum mechanics must be revised, and it actually turned out to be a bit of both.

Successful research into the foundation of quantum mechanics has to generate all the particles and fields and their properties. This is a tall order and we have racked up most of that and have not seen anyone else come close. The real problems now for cold fusion are in the details of the dynamical nuclear processes when things interact; we are just starting on that and those are difficult problems.

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Big Bang's Quantum Problem

John P. Wallace* and Michael J. Wallace

Introduction — *The early twentieth century produced the beginnings of relativity, quantum mechanics and the big bang, but then went off the rails like much of the world in the early 1930s. The rest of the world recovered but quantum mechanics did not recover. Physics was weighed down with a continuum geometry that did not allow quantum mechanics and relativity to be united. Then came 30 years of cold fusion experiments that could not be explained. To get things back on track we will dispense with the creation myth of this New Age physics that Edwin Hubble's work produced, the big bang. There is an intimate connection between cold fusion and the improbability of any great bang emanating from a point. The underlying problem was the suppression of the development of both quantum mechanics and relativity.*

I. The Reason for Censorship

Censorship is widespread in physics as certain subjects have been labeled off limits. Censorship in physics became rampant after the 1960s in order to protect the people involved in contract physics: the funders being principally bureaucrats wrote the script; the science publishers with high margins enforced the script; the researchers dutifully followed the script; the public was left out because they did not know there was a script. State sponsored research was a growth enterprise and a politically simple way to extract money for political control of their version of the sciences by ensuring minimal opposition. The word censorship to control what was published was never used, rather it was replaced by "peer review."

There were three different ways the censorship operated: first is intellectually driven by favoring an approach, such as the Copenhagen version of quantum mechanics and its derivatives that bars explicit connections to reality;[1] second is ideological, where at the end of World War II the Presidium thought by staffing party followers into physics programs at universities and major laboratories it would inform them of future weapon advances,[2] and third was to empower the administrative state (academic/government/favored industries) funded through extravaganzas while suppressing any ideas that challenged their authority.[3] These manipulators as a palliative to support the myth of their mastery of the physical sciences supplied the public with the big bang as a quasi-religious creation myth to be worshiped preferably from a hot tub at Big Sur.[4] This was all accomplished with some excellent salesmanship, stretching energy conservation beyond its limit, and with little checking.

A most public example of an affront to establishment science was cold fusion in 1989, which managed to challenge all three lobbies and was immediately labeled a pathological science.[5,6] The cold fusion smear was done so rapidly after

the announcement it was obvious as a political rather than a deliberative decision.

Another area successfully suppressed and more general is the foundation problem of quantum mechanics that has been shunned for a century[7] to protect a particular form of quantum mechanics that has as its basic tenet a limit on the questions one can ask about physical features. Helping to confuse this problem with quantum mechanics and wanting to get in on the gravy train were mathematicians who thought they could adopt quantum mechanics and make it a branch of their discipline using rigor to replace non-conforming experiments. The net result of this political activity is an incoherent mess where the utility of quantum mechanics and physics as a whole has been diminished, making it difficult to either check or challenge even a simple idea like the big bang.

II. Religion in Science

There was a recent accidental challenge to the standard picture of the big bang by data at high z, where z supposedly represents the recessional velocity from bodies very much further away than those used by Hubble that showed an apparent anomalous increase in acceleration. This is not an easy thing to accomplish for something as large as the universe. It came to be called dark energy. Actually, it could be a measure of something very different that slowly builds by changing the properties of these photons created a long time ago. Rather than force a major fix to the original story of the big bang these contracted saviors fixed a few not so free constants in general relativity to save their religion.[8,9]

The quasi-religious veneer that spread over the physical sciences with the ascendancy of the big bang as a sort of New Age creation myth is now beginning to show its age. A recent credible challenge to the big bang's standard candle calibration[10] joined an earlier challenge concerning the changing concept of inflation required to make the visible universe sufficiently large in its allotted 13 billion years existence.[11] Inflation had to be invented for the universe expanding from a point, an ideal start for some mathematicians, but the point turned out to be a slow grower. This is a major crack in the myth of the big bang. A second crack started with the detection of pep fusion of two protons with an electron to produce the deuterium nucleus that has recently been detected on the sun.[12] There is no reason to limit deuterium production to only occur on the sun by the weak process. It should also be a viable process within the earth, as we have both ample hydrogen along with large volumes of an FCC metal useful for supporting cold fusion in γ-Fe and its alloys.[13] The third crack and the most important has to do with the foundation of quantum mechanics and how the photon deals with gravity over long periods of time. It is the last two of these troubles that will reduce the big bang to a footnote by questioning the origin of the measured red shift of far flung shining bodies.

III. Mathematical Dilemma of the Big Bang

The point is the origin of the big bang, a common object in Euclid's geometry, yet as a physical object it has never been found. The point of the big bang is a concept that does not survive in quantum mechanics,[14] as all matter and fields have a finite scale. One minor problem of being a point is you don't suffer from Lorentz contractions, not even mentioning the infinite energy it would take to stuff the smallest amount of matter into a point. If points existed then you could cobble together a continuum representing any and all real numbers, but you lose out on dimensions since they simply become indexes that can be arranged in any way. Dimensions turn out to be very important building blocks in assembling matter, and making them irrelevant as the continuum does is not acceptable.[15,16] Astronomers and astrophysicists also had major problems with the big bang; some of their difficulties are found in Eric Lerner's book *The Big Bang Never Happened*.[17]

A. The Building Blocks of Particles and Fields

Particles and fields are living organisms; they are not fixed objects. They continually recreate themselves in a dance from their own self-reference frame to be expressed in the laboratory frame.[14] Their own frame of reference, a self-reference frame that may be three-dimensional, is a flat space where there is only one expressable spatial variable, the radial distance from its source of creation that forces a spherical symmetry on the base structure. Particles are generated from longitudinal fields in the self-reference frame where their inertia is produced along with charge. When these properties are expressed in the laboratory frame with spin, a magnetic moment is generated and then the total accounting of the properties are expressed as mass.

Massless fields are generated by transverse fields and support neither inertia, a mass, nor a charge. These flat self-reference frames for particles and fields are restricted to one free spatial variable with no direct mapping to the laboratory frame where measurements are made, because these spaces are statistically independent of each other and the laboratory frame. What is transferred between the self-reference frames and the laboratory frame are the properties of the particles and fields. Statistical independence in exchange for the information from the self-reference frame forces a net loss of volume extracted from the laboratory frame that allows mass to generate a topological shrinkage defect of spherical symmetry in the laboratory frame. A set of self-consistent field equations for particles and fields in both frames can be easily derived from the conservation of energy and the requirement of statistical independence. One feature that is characterized in the laboratory frame is the property of superposition of fields that is not sourced by a mathematical postulate, but the result of statistical independence between all these fields. A fine example is the non-interacting behavior of the photon fields.

The real driving force that sets the geometry of physics is found in the relativistic conservation of energy for a massive particle and a massless field:

$$E^2 = p^2c^2 + (mc^2)^2 \qquad (1)$$
$$E = \hbar\omega_o$$

The quadratic relationship is made up of two terms: a kinetic energy term with momentum and a self-energy term that contains any potential contributions embedded in the mass term. Because this takes the form of a Pythagorean theorem for properties of a right triangle, it implies the spaces in which the kinetic energy is defined, called the laboratory frame, is orthogonal and independent from the particle's self-reference frame where mass is generated. It is the quad-

ratic equation of energy conservation that produced the realization there was a second independent space where particle properties were created and partially generated. The expression requires a more general version of orthogonality than found in geometry. These hidden spaces are not precluded by tests of Bell's inequalities or his proof.[1]

The starting description of particle properties are defined by a set of differential equations in the self-reference frame, which generate the particle structures that are then completed in the laboratory frame resulting in charge,[18] magnetic moment[14] and mass. The laboratory frame quantum description is also revised with the Schrödinger equation, picking up two new terms to make it compatible with relativity.[19] The most obvious change in the wave equation is now embedded in the revision:

$$\nabla^2\Phi - \frac{1}{v^2}\frac{\partial^2\Phi}{\partial t^2} = \frac{2m}{\hbar^2}\{-i\hbar\frac{\partial\Phi}{\partial t} + V(1 + \frac{V}{2m_oc^2})\Phi\} \qquad (2)$$

field equation ⇆ medium polarization

The second term that is added to the Schrödinger equation $V^2/2mc^2$ plays an even more important role. It supplies the mechanism by which fields can renew themselves, forcing the statistical basis on to quantum mechanics.[14] This occurs because there are two equally weighted solutions to the equation $V + V^2/2mc^2 = 0$. It is not just a simple non-linear term that is useful in describing high intensity interactions.

Correcting the Schrödinger equation naturally unites electromagnetic theory with quantum mechanics and allows the prompt polarization interaction between a field and matter to be computed. The polarization effect is essential to understand for two reasons: first energy is reversibly transferred between the field and matter and affects the detected photon's frequency, and second this transfer is the precursor to drive any possible transition. The question is what is the magnitude of the effect for a photon traveling long distances through space. Fortunately, the answer is rather simple: the expanding wave front of the photon taken over a wavelength depth on the wave front that is expanding with a volume $4\pi\lambda r^2$ where the electric field intensity for the expanding shell is expressed from the self-reference frame solution of the photon field[14]:

$$|\mathbf{E}(r)| = u^*(r)u(r) \sim \frac{1}{r^2} \qquad (3)$$

The product of the electric field that will polarize the medium in the ever expanding shell volume produces a constant $1/r^2 \times 4\pi\lambda r^2$ = constant that will remain small and possibly not even be detectable because of the thinness of the dielectric medium. So the principal classical optical effect for a photon traveling over a long distance through space will not be a dielectric attenuation, but will be absorption by gases and dust. The problem with tying absorption to distance is that photon fluxes from earlier eras would have seen a different distribution of matter in regions of star formation from which distances were estimated by supernovae events.[10]

IV. Gravitational Red Shift

Interpreting the red shift of light sources from tens to millions of light years distance is not a trivial matter because there is no way to do a laboratory experiment to confirm the assumptions used in setting the distance scale. Those few photons that have survived a trip of a billion or more light years carry with them a measure of the matter they have encompassed. The commonly held interpretation is that the Doppler effect determines the bulk of the red shift and that requires the universe to be expanding, a very energy intensive process on a very large scale. The original relationship of this expansion in the past has been constrained to a linear Hubble law relating expansion velocity to distance. This is a model from classical physics applied in the third decade of the 20th century and does not take into account either the quantum or relativistic properties of the photon on a large scale.

Gravity is totally unlike the other forces: electromagnetic, weak and strong—all of which are derived from particle and field structures that overlap, generating a contact interaction. Gravity is a second order interaction where the shape of the laboratory frame is altered due to a concentration of mass. Mass affects the motion of a photon or a neutrino locally by curving its path in the laboratory frame. However, that is not the only way a massless field will be affected by gravity. The second process was realized by Einstein that even a massless field has to do work to escape the pull of gravity so a photon could not be used as a perpetual motion machine freely avoiding paying the energy necessary to overcome the gravitational potential.[20] Gravity being a second order effect enters the quantum mechanical energy conservation equation in a simple way for massless fields.

Gravitational potential, $V_g(r)$, needs to be included in the energy conservation relation for massless particles by adding a term to Planck's radiation expression where $\hbar\omega_o$ is the energy of the photon at creation.

$$E = \hbar\omega_o \rightarrow \hbar\omega(r) - V_g(r) \quad \text{and} \quad \omega_o > \omega \qquad (4)$$

What gives the photon the ability to use both slits in Young's diffraction experiment is its structure defined in its own self-reference frame solution that limits the description of its motion to only one free spatial variable r. This is not a one-dimensional solution, as we simply have no access to the angular variables in the field's own frame of reference so that the three-dimensional solution is a spherical propagating shell for a wave front. The solution, $u(r, \tau)$, for the photon in the self-reference frame is an expanding wave front shell from which its electric field can be set (Equation 3):

$$u(r, \tau) = \frac{e^{i\{\kappa - \omega\tau\}}}{r} \qquad (5)$$

This solution has its origin at the location of the photon's field creation and produces an expanding spherical shell. This ever expanding shell if not absorbed by dust will encompass an increasing amount of matter. Even though the average gravitational potential at any point in space may be near zero, the photon with its ever expanding spherical shell is continually working against an increasing amount of matter contained within this boundary. This growing mass generates the gravitational potential that is continually reducing the frequency of the photon. The frequency reduction only becomes evident over very large scales. If we assume the density of matter over these large scales takes on

an average value of ρ, we can estimate the frequency dependence of the photon that is dependent on the mass contained within its spherical wave front.

The gravitation potential is computed using the photon's mass equivalence $\hbar\omega = mc^2$:

$$V_g(r) = -\frac{4\pi G\rho\hbar\omega(r)r^2}{3c^2} \tag{6}$$

To get the total frequency shift the following expression reduces to a first order differential equation that can be solved where $\alpha = 4\pi G\rho/3c^2$.

$$d\omega(r) = \frac{d\omega}{dr}dr = dV_g(r) = -\alpha\{2r\omega + r^2\frac{d\omega}{dr}\}dr \tag{7}$$

$$\frac{d\omega}{dr} + \frac{2\alpha r}{1-\alpha r^2}\ \omega = 0 \tag{8}$$

$$\omega(r) = \omega_o\{1-\alpha r^2\} \tag{9}$$

This can be solved for the red shift parameter $z(r)=(\omega_o/\omega(r))-1$.

$$z(r) = \frac{\alpha r^2}{1-\alpha r^2} \tag{10}$$

The mass density dependent for gravitational red shift found in relation for $z(r)$ can be compared to the standard argument for the mass dependence to $z_h(r)$ from Hubble's law based on a mass receding.

$$v = H_o r$$
$$\gamma = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} \tag{11}$$
$$z_h(r) = \gamma - 1$$

The important term is the mean density ρ and at what distance does this gravitational red shift become sufficiently large to be measured. What is nice about this relation for $z(r)$ is that if there is no ever expanding universe it gives a measure of the mean density of matter averaged over a very large volume that can be used to determine the mean density in a few principal directions. The initial quadratic relationship of the gravitational red shift implies the distance scales may have been over estimated when made to conform to a linear fit. In the range of high $z(r)$ a wall is run into as energy is drained out of the long lived photons. (See Figure 1.)

Linear curve fitting over narrow ranges can often be misleading and has been confirmed in the variations of the Hubble constant from different data sets. Two very different approaches, at least for small $z(r)$, yield similar results and that actually should be expected because they are both quadratic expressions. As the value of $z \to 1$, then the difference between an accelerating massive particle and a propagating massless field begins to show.

V. Cosmic Microwave Background

Another victim of the big bang model was the cosmic microwave background that was supposed to be the electromagnetic relic of the big bang. This brings into question the real origin of cosmic microwave background. The first question to ask is whether this microwave energy reservoir is only the lower limit of the gravitational red shifted radiation. The limiting action occurs when the highly red shifted ancient photons interact with molecular matter and their rotational states in the region ~200 Ghz, halting their progress by sharply reducing the mean free path between scattering events. It is an interesting black body spectrum that is pumped by ancient photons that have been gravitational red shifted. Olber's paradox of the night sky not being bright is just that astronomers picked the wrong frequency band because the sky is bright at the 2.75° K black body of the cosmic microwave background.

VI. Deuterium Production

The other main pillar supporting the big bang and the expanding universe depended on the lack of a nuclear pathway to produce deuterium except by condensing it from the high energy soup that followed the big bang. There actually is at least one active pathway known as the pep weak fusion process, where an electron and proton convert to a neutron and then combine with a second proton to form deuterium with a neutrino emitted. It is a reaction that runs on the sun and it has been detected at the Borexino facility.[12] On the sun the deuterium that is produced is also consumed in fusion. The facility to produce deuterium is also available on the earth where the deuterium would not be immediately consumed in a second fusion process. The weak process is much less probable by a factor ~10^{-8}; that it is why it is not a major contributor to the sun's solar output. However, on the earth over geological time if deuterium is produced it would be expected to collect and build its concentration because there are few places other than volcanoes or rifts where it would be consumed in a D-D fusion process producing He^4.[21]

Lattice driven cold fusion has some very simple require-

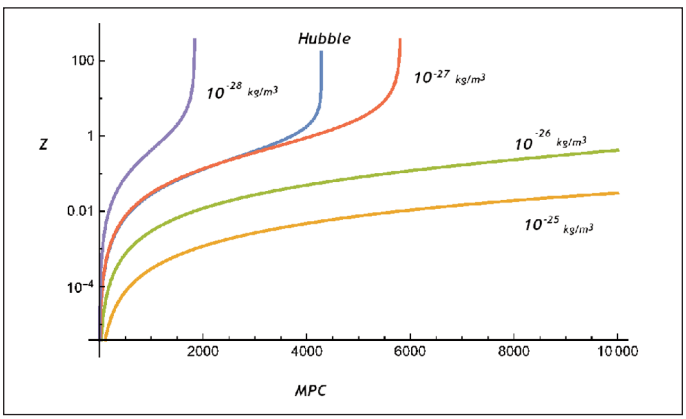

Figure 1. The trace labeled Hubble was computed using Equation 11 with H_o = 70 km/secMPC where 1 MPC = 3.262 x 10^6 light years = 3.086 x 10^{22} meters for an expanding universe. All the other graphs were computed from Equation 10 for photon propagation. What is interesting is the Hubble result almost falls on the line at lower z values for a mean density of 10^{-27} kg/m^3. The graphs represent difference between massless fields against the acceleration of a massive particle's proposed behavior. The dark energy was a result of the split between the density based response at 10^{-27} kg/m^3 versus the Hubble computed response and shows the data was fitted to the wrong model. The net result is that there is no dark energy.

ments and the principal one is a very symmetric structural cavity that can support two closely held ions to be fused. In the metal crystal systems such a cavity is found in the octahedral interstitial site of the FCC lattice with the proper lattice parameter to accept the ions.[13] Pure iron at normal pressure converts to γFe when heated to above 912°C. The second requirement would be a supply of hydrogen, and the third requirement would be an actively damaged structure, which undergoes spontaneous metallurgical recovery. All this is necessary to get a pair of hydrogen ions onto the same interstitial site with an acceptable lattice parameter for a short period of time. This form of cold fusion is much less probable than cold fusion with deuterium in a nickel or palladium lattice, however, there are vast quantities of hot iron within the earth to serve as a substrate. In fact, the rocky planets with their iron cores turn out to be rich in deuterium as a fraction of their hydrogen content as compared to the gas giant planets.

The rocky planets with their iron-nickel cores are enriched in deuterium. The earth has the minimum deuterium fraction, but it also has active plate motion, rifting and volcanoes operating, unlike Mars and Venus. It is our speculation that the earth's vulcanism is supported by a two stage breeder reactor which generates deuterium at the mantle-asthenosphere boundary and that deuterium is transported and feeds cold fusion reactions to maintain the hot column flow of magma to the earth's surface. There are other chemical markers in volcanic areas that indicate there are active low energy nuclear processes.[21] More importantly, normal processes that are ongoing with plate motion (fracturing of rock) drive more cold transmutation processes[22]—none of which require the quenching of matter from the proposed big bang. There are also complex transmutation processes that are ongoing in plasma and liquid flows that will also contribute to altering the isotope distributions previously modeled from only high energy processes. (See Table 1.)

VII. Censored

The censoring process that has been applied by the physics establishment to publications unfortunately covered over a poor understanding of relativity by limiting research into the foundation of quantum mechanics. What they missed was that quantum mechanics when done properly not only explained dynamics but also generated all the particles and fields with their attendant properties. This only gets rectified when relativity is properly included in quantum mechanics.

In addition to failing to properly treat the photon's interactions with mass, a variety of experimental nuclear processes were ignored because they inconveniently exposed an incompetence in nuclear theory. The more troubling aspect of this look at physics shows the establishment version of physics is not a self-correcting organism, as there are too many selfish lobbies that control published information to allow such a correction process to occur. This ensures that teachers will be a century behind what is actually known except in a few pockets of free inquiry. The relativity arguments we made could have been made in the 1920s so our acknowledgement is to those working on cold fusion and Albert Einstein, who made writing this note so easy.

"Everything that is really great and inspiring is created by the individuals who can labor in freedom." —Albert Einstein

Table 1. Values taken from the planetary and deuterium web wikis.

Location	D/H ratio x10^6	Comments
Venus	20,000	iron-nickel core
Earth	156	active volcanoes
Mars	900	iron-nickel core
Comets	200-450	
Jupiter	14	low density core
Saturn	55	low density core
Neptune	114	densest gas planet
Uranus	55	low density core
Space	15 to 23	quiescent gases

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