

From: Dr. Robert W. Bass [mailto:donquixote@iqmail.net]

Sent: Sunday, October 12, 2008 6:34 PM

To: Lee Smolin (lsmolin@perimeterinstitute.ca)

Subject: Refs. to PUB'D solutions to 3.5 of your "5 Great Problems"!! FW: A simpler way to avoid 2 constants in cosmology, yet eliminate BOTH "dark matter" & "dark energy"

Note: This 10/12/08 letter has been updated 5/25/09 by insertion of URLs or links to online availability

Dear Dr. Smolin,

I agree TOTALLY with every word in the first xxiii + 17 = 30 pages of your *The Trouble with Physics* book.

But the necessity at age 78 of "keeping bread on my table" prevents me from having the time to read further in your important book or to "fight the battle of the referees" involved in submission in a more formal way of my **Documentary Evidence that 3.5 of your "5 Great Problems" have ALREADY been solved, in mathematically rigorous papers by highly-qualified authors long-since published in the "best" journals but overlooked, ignored, and forgotten!**

If you consult the **References explicitly cited in my paper "Was There Really A Big Bang"?**
<http://www.innoventek.com/WasThereReallyABigBang.pdf>

[which has been translated into Italian and reprinted in a popular journal there] you will find mathematically rigorous papers, by "reputable" authors, printed in "reputable" peer-reviewed archival journals, that have NEVER had any flaws in them exposed, but rather have been IGNORED and forgotten.

I am a Rhodes Scholar & an Award-winning Mathematician who was a Prof. of Physics & Astronomy at BYU (1971-81) and if you scan my one-page 2005 resume on my website www.innoventek.com, namely **http://www.innoventek.com/BassOnePageSigProcResumeOctober5_2005.pdf** and the 2008 update,

<http://www.innoventek.com/BassBio2008.pdf>

you'll see that in some portions of Mathematical Systems Theory relevant to engineering I've had an internationally-established reputation since 1960 and the American Control Conference (ACC) held a Special 2-hours session in my honor in 1998 entitled "The Influence of Bob Bass in Mathematical Systems Theory." My background is mentioned only in hopes of warding off any supposition on your part that I might be an uninformed incompetent who can't tell a rigorous proof from a heuristic argument.

Please take just a couple of minutes to go over this **checklist of your "Five Great Problems"** and then proceed farther to the 2,900 words of further details sent to Mannheim et al below.

1. The **"problem of quantum gravity"** is solved once it is realized that one must REPLACE QM/QED by SM/SED (which makes the same verifiable predictions but could be understood by Euclid, Newton & Maxwell without encountering what you refer to as "bizarre"), while at the same time REPLACING SR/GR by the combination of the Lorentz/Larmor/Ives + H.A. Wilson neo-classical interpretation, in which one DERIVES GR from Maxwell's Equations in an equally classical "realist" (i.e. in your terminology, Real World Out There [RWOT]) interpretation.
2. The **problem of the "foundations of QM"** has been solved by the independently-discovered Fenjes/Nelson Stochastic Mechanics (SM) once you IDENTIFY the "background force-field of zero-mean but non-zero-variance" which they assume but fail to identify, as I have done in my 1995-posted DERIVATION of Planck's constant h from Hubble's constant H in my "Zero Point Fluctuations (ZPF) and h from H " paper"

<http://www.innoventek.com/ZPFHFMH3.pdf>

and its resulting "Electrostatic Mach's Principle" paper,

<http://www.innoventek.com/ElectrostaticMachPrinciple021805.pdf>

[both based on a paper that I actually published in an archival journal, cited on my website www.innoventek.com], and once you cure the only flaw in SM (spotted by a former doctoral-student of Nelson at Princeton) that requires one to SIMULTANEOUSLY introduce the Boyer/de La Pena/Cetto Stochastic Electrodynamics (SED), which consists of simply augmenting Maxwell's Equations (written in homogenous form) by a Zero-Mean, Lorentz-invariant, but NON-ZERO-

Variance fluctuating EM force on the right-hand side, consisting of the aggregate of all of the radiation from all of the dipole oscillators in the universe, and which enabled de La Pena & Cetto, in a 1984 preprint published in 1997,

<http://www.innoventek.com/ElectromagneticMachPrinciple021305.pdf>

to come within an order of magnitude [acceptable when dealing with numbers like 10^{80} & 10^{40} !] of my independent but earlier-printed 1995 "h from H" achievement. But a unified SM/SED fit your "realist" (RWOT) criterion.

3. The **problem of the "standard model,"** including its having too many free constants, can be reconsidered once the preceding & following achievements are accepted.
4. Your **problem of "the free constants"** is half-way solved along the lines of my "h from H" theorem and other peer-reviewed, archivally-published results cited in the following letter to Mannheim, because my "corrected" version of Einstein's desired "completion" of GR via Mach's Principle shows that a type of Dicke Coupling Constant (with the corrected sign [which Dicke mistook]) determines the Eddington-Robertson Parameter of Post-Newtonian Parameterized (PPN) gravitational physics, which via a D'Alembert/Laplace Equation determines the reciprocal of the Newton-Cavendish parameter G, including its variations in both space & time, and that, together with the H. A. Wilson derivation of GR from Maxwell's Equations gives additional necessary relations between the fundamental constants of classical Newton/Maxwell/Planck physics. I don't have any conjecture as to what is the answer to Einstein's query as to "whether or not God had any choice" in assigning the basic constants, but I wouldn't be surprised if someone following up on the overlooked references I cite in my "Was There Really a Big Bang?" essay could derive a fairly small number of nonlinear equations relating what Rees calls "Just Six Numbers" which, when solved numerically, leaves only one or two (or even NO!) free parameters left. But fixed financial obligations & burdens (together with my inadequate Annuity Pensions totaling only \$27K/yr) leave me unable to pursue it myself right now.
5. Your final **problem re explanation of "dark matter and dark energy"** I submit has been completely solved as you will see if you can take a few more minutes to read my 2,900 word letter to Mannheim below.

Sincerely,

Bob Bass

From: Dr. Robert W. Bass [mailto:donquixote@radix.net]

Sent: Thursday, May 24, 2007 1:01 AM

To: Philip D. Mannheim (philip.mannheim@uconn.edu)

Cc: Subir Sarkar (s.sarkar@physics.ox.ac.uk); Keith Horne (kdh1@st-and.ac.uk); Tom Shanks (tom.shanks@durham.ac.uk); Marcus Chown (Mchown@compuserve.com); Peter E. Hodgson (p.hodgson1@physics.ox.ac.uk); Brian D. Josephson (bdj10@cam.ac.uk); FRANCIS J. KELLY (Kellyfjp@msn.com); Sir Arthur C. Clarke (blenheim@arthurclarke.org); Sir Martin Rees (mjr@ast.cam.ac.uk); Sir Roger Penrose (rouse@maths.ox.ac.uk); Steven Weinberg (weinberg@physics.utexas.edu); Jonathan Bagger (bagger@jhu.edu); Lou Witten (witten@physics.uc.edu); Edward Witten (witten@ias.edu); Richard C. Henry (rch@pha.jhu.edu)

Subject: A much simpler way to avoid two constants in cosmology, yet eliminate BOTH "dark matter" & "dark energy"

Dear Dr. Mannheim,

I am writing because of the article about your work (with comments on it by Profs. Sarkar, Horne, & Shanks) that was published in the 28 April issue of *New Scientist*.

I am hoping that you are sufficiently open-minded to spend about 10 minutes looking over the following.

I was a Rhodes Scholar at Oxford U and a Prof. of Physics & Astronomy at BYU, 1971-81.

In my youth & middle age I "believed" all of the stuff that I had been taught in my youth, but at age nearly 77 I have come to perceive that physics took two drastically "wrong turns," in 1905 and again in 1925.

If you consult the **References cited in my attached paper "Was There Really A Big Bang"?** [which has been translated into Italian and reprinted in a popular journal there] you will find mathematically rigorous papers, by "reputable" authors, printed in "reputable" peer-reviewed archival journals, that have NEVER had any flaws in them exposed, but rather have been IGNORED and forgotten.

But on the basis of what's in those papers, I venture to predict that "Post-Modern Physics Will be Neo-Classical Physics" and that future generations will know that "reality is NOT weird" and that all of the Equations of the first half of the 20th Century which have provably predictive value can be retained, but with drastically revised physical interpretations, which could be perfectly understood by Aristotle, Euclid, Newton and Maxwell (and eliminate the puzzles about not only "Dark Energy" & "Dark Matter" but also Arp's "Anomalous Redshifts" and many other puzzles cited below).

The first thing you need to know is that Einstein (with whom I was privileged to have a private 15-minute conversation at the IAS in the Spring of 1950) truly "fudged" when he used a verbal hand-waving argument to bring one clock into juxtaposition with another one, arbitrarily slowly. This was done more carefully, with total mathematical rigor, by Ives, who derived an enormously complicated system of equations (that were published in *Proc.Roy.Soc.*) that can be dealt with in two separate ways that both yield the Lorentz Equations (but with no paradoxes and none of the confusion introduced by Minkowski with his logically incoherent [see far below, after my sig-file logo] concept of "spacetime"). On the one hand, you can use Harvard philosopher of science Percy Bridgeman's concept of "operationalism" and define every term in Ives's equations in terms of operations leading to physical measurements, in which case the equations simplify to the Lorentz Transformations (but within a Euclidean space and in absolute Newtonian Time), or, on the other hand, you can go to the trouble to let the speed of the one clock being moved into juxtaposition with the other one become arbitrarily slow, and go to the limit with complete mathematical rigor, during which the complicated equations then yield the familiar Lorentz Transformation as their limit.

If you ignore the religiously or philosophically motivated essays in the book "The Einstein Myth and the Ives Papers," also available from Amazon.com under the title of "The Ives Papers," edited by Turner & Hazelett, and just study Ives' papers, you may agree with me that the Minkowski "spacetime" muddle was an over-interpretation of a mathematical short-cut and that we should go to the Fitzgerald-Lorentz/Larmor/Ives interpretation of Special Relativity (SR) that would have been acceptable to Euclid & Newton.

Moving on to General Relativity (GR), are you familiar with the Milne-McCrea Theorem, in which they derived the Friedman-LeMaitre Equations of the GR-expanding universe from Newtonian gravitational theory?

The next first thing you need to do is to study the 1921 paper by H.A. Wilson, who DERIVED the field equations of GR (and so, as a limiting case, Newtonian gravity) as a corollary of Maxwell's Equations, "improved" as follows. Stop assuming that electric permittivity & magnetic permeability in empty space are constants, but allow each to be modified by a factor $(1 + \epsilon)$, where the TINY positive factor $\epsilon \ll 1$, is defined by $\epsilon = r_{BH}/r$ where r is the distance to the center of mass of the nearest ponderable mass of matter, and where r_{BH} is the Black Hole radius of said mass. Thus you avoid the nonsense of "warped spacetime" and get an interpretation of GR that would have been acceptable to Euclid, Newton & Maxwell.

However, even within its own terms, GR needs to be "perfected."

Einstein was right that GR is "incomplete" without the incorporation of Mach's Principle, and in a paper (of more than 150 pages of typed mathematics that I submitted to the Gravity Research Foundation in 1975, and have recently recovered from their archives and placed on my website www.innoventek.com) I have showed how to do it, and validated my proposal by showing that the results "best fit" the 25 then known measurements of the Eddington-Robertson parameter, and thereby make an important correction to the Brans-Dicke proposal re Mach's Principle in the sense that Dicke got the wrong sign on his Coupling Constant.

To make a long story short, the Newton-Cavendish parameter G is NOT really a universal constant, but is the reciprocal of a scalar field ϕ which spreads out from matter the way that the electrostatic potential spreads out from charges. In other words, the D'Alembertian of ϕ (which in steady-state becomes the Laplacian) is proportional to the density of mass. This version was published in two papers that I cite, one by a pair of authors who preceded me, and the other by a pair of authors who cited my preprint.

This "corrected" version of Mach's Principle is displeasing to Clifford Will, whose "religion" requires that the Eddington-Robertson parameter γ should exactly equal unity (as in classical GR) or at worst not

exceed unity, and in the mid '70s he got *Nature* to reject my evidence to the contrary. Recently he admitted to me verbally that he would still "not allow" the publication of my papers, and so when I searched on the Internet and found out that the "latest" values of gamma exceed unity, I had to laugh.

Anyway, when Newtonian Gravity is corrected, by the version of GR that I advocate, then there is an extra term in the Virial Equation which contradicts the standard theories of Galactic rotation curves.

Moreover, I have an unpublished paper [which I'll send if you are interested] that shows that if one models a galaxy as a sphere intersected equatorially by an exceedingly thin ellipsoid (arbitrarily close to a flat disk) then the Newtonian Rotation Curve of the mass contained in this "disk-bisected-sphere" model contains FOUR adjustable parameters and can be made to fit ANY published rotation curve, so I have never believed in Dark Matter (though the expert at Princeton rejected my paper because he didn't like my going to the limit of the "disk" even though there are published papers showing that one gets arbitrarily closely to the same result if the thin, flat, circularly symmetric ellipsoid is taken to be sufficiently thin).

Anyway, in the "perfected" version of GR which incorporates Mach's Principle "correctly," the "constant" G actually changes not only in time but in location as one approaches a large mass. Moreover, as one approaches the Schwarzschild Radius of a very large mass there is a thin boundary layer outside of it in which G both tends to become arbitrarily large and changes sign! So although very compact objects (like neutron stars) can exist, a true Black Hole is physically impossible! [Gravity is not an intrinsic property of mass, nor a fundamental force.] Moreover there can be arbitrarily large gravitational Redshifts in the outer layers of ordinary stars, thereby explaining Arp's unjustly ignored "anomalies."

But why do I reject "Dark Energy"?

I have an even better case for that. You have to understand that Bohr was rejecting Aristotle's Law of the Excluded Middle (the basis of all mathematics and all rational thought) when he made the *ad hoc* postulate of quantization of angular momentum.

Moreover, the unnecessary idea of "photons" and waves consisting of particles is a mistaken inference from the fact that solution of partial differential equations with boundary conditions leads to geometrical features (like the nodes on a drumhead) that can be counted, and correspond to countable eigenvalues. The authors whom I cite have shown that everything which Planck and Einstein cited in favor of muddled thinking about quanta can be better explained by viewing waves as waves and particles as particles, and the QM waves are just time-varying probability distributions as in Born's interpretation.

One needs to reject the Copenhagen Interpretation of Quantum Mechanics (QM) and Quantum Electrodynamics (QED) and replace them by the Fenjes-Nelson Stochastic Mechanics (SM) and the Boyer/de La Pena/Cetto Stochastic Electrodynamics (SED), both of which could be understood by Newton & Maxwell if they had known about the Stochastic Calculus.

I claim, seriously, that Newton could have derived the Bohr model of the Hydrogen atom, and also Schrodinger's Equation from his armchair, SIMULTANEOUSLY with the correct value of Planck's constant h to go into it, if he had known just:

[1] Coulomb's Law, and

[2] the mean charged-particle number-density density of the visible universe at the present epoch of cosmological time.

In fact, I have to my own satisfaction PROVED the preceding proposition, in my attached "h from H" paper, where I have showed that one may predict h from Hubble's constant H (or vice versa). (I posted this on the Internet in January 1995, BEFORE the alleged "acceleration" of the expansion of the universe had been announced.)

If my theory of the origin of the "background field" assumed by, but not explained by Fenjes and independently by Princeton Prof. of Mathematics Edward Nelson (who has written two books on SM) is taken into account, then the alleged "acceleration" of the expansion of the universe disappears, and so does the requirement of "dark energy."

However, there IS a fatal flaw in SM unless one simultaneously includes SED in an attempt to derive the Hydrogen Atom model of Bohr, but with a neo-classical interpretation.

For more details, skip below my sig-file logo and read my 2,900 word letter to a former NSF project director.

Hoping that you will take the time to consider the following with an open mind,
Bob Bass

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Dr. Robert W. Bass, *M.A. Oxon* [Rhodes Scholar]
Prof. of Physics & Astronomy, BYU (1971-81, retired)
Adjunct. Prof. of Systems Engineering, F.I.T.
Registered Patent Agent 29,130
WEBSITE www.innoventek.com
45960 Indian Way (#612)
Lexington Park, MD 20653
RES: (301) 866-9657; FAX: (301) 866-9674
donquixote@radix.net
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From: Dr. Robert W. Bass [mailto:donquixote@radix.net]
Sent: Thursday, May 17, 2007 4:30 PM
To: John Hartnett (john@physics.uwa.edu.au)
Subject: Evidence that "reality is not weird" and that "Post-Modern Physics will be Neo-Classical Physics!"

Dear Dr. Hartnett,

The following contains a more detailed [and, I hope that you may find persuasive] argument that while the principal Equations of modern physics that have turned out to be useful can be retained, the **PHYSICAL INTERPRETATION** needs to undergo a drastic revision.

The letter below is only 2,900 words long and can be read aloud in about 9 minutes (and can be read silently in about 4 or 5 minutes), so I hope that you can take the time to give me your "take" on my position.

Thanks in advance,

Bob Bass

From: Dr. Robert W. Bass [mailto:donquixote@radix.net]
Sent: Thursday, May 10, 2007 12:03 AM
To: Benjamin M. Mann (benjamin.mann@darpa.mil)
Subject: Do you know any Program Officers in fundamental physics at NSF?

Ben,

Doug told me that you used to work at the NSF.

Do you know any Program Officers at NSF who are open-minded and might be willing to take a look at whether or not the **INTERPRETATION** of the useful equations of theoretical physics took **two very bad wrong turns** in the early 20th century, which can be documented by facts & calculations contained in papers by qualified authors that have appeared in peer-reviewed archival journals and have **NEVER** been refuted, but simply **IGNORED**.

This was brought home to me sharply today when I seem to have been rejected for a job that, by objective criteria, I feel well-qualified for, apparently because I dared to question the opinions of certain "Authorities" whose words are regarded as sacrosanct.

Decisive Analytics Corp. has two interesting jobs that I could easily perform, and would enjoy doing, but the people running these projects recently got their Ph.D.'s under "Authorities" and possibly have been brain-washed & indoctrinated into believing all kinds of things which could be exposed as unfortunate errors if scientists would live up to their announced credo of being willing to change their minds in the face of new evidence and/or better arguments. At any rate, one of them told me I was "over-qualified" which may be a polite way of saying "insufficiently deferential to established authorities."

I myself had been brainwashed in my youth into accepting the validity of all of the internal inconsistencies and logical incoherencies of post-1905 physics, but in the last quarter of my life I have stumbled upon the undeniable evidence, sitting gathering dust in archival libraries but ignored by the elite physicists, that

much of "modern" physics is just a consensus mythology which needs replacement in order to allow further progress.

Physicists themselves are starting to wonder if they have not somehow gone down a series of blind alleys, because there has not been any genuine "progress" in basic physics in many decades. Three recent books (the first by a Nobel Laureate physicist) point this out:

[1] "A Different Universe: Reinventing Physics from the Bottom Down," by Robert B. Laughlin;

[2] "The Trouble With Physics: The Rise of String Theory, the Fall of a Science, and What Comes Next," by Lee Smolin;

[3] "Not Even WRONG: The Failure of String Theory And the Search for Unity in Physical Science," by Peter Woit.

I cannot yet afford to retire, but if I can ever earn a 3rd Pension to supplement the two modest ones that I already have [from BYU and from BAE SYSTEMS], then I will retire, and use the remainder of my life to write a book entitled "Reality is NOT Weird! Why Post-Modern Physics Will Be Neo-Classical Physics."

I will focus on rehearsing the arguments and evidences of IGNORED papers which mean that nearly all of the mathematical EQUATIONS of Special Relativity (SR) & General Relativity (GR) and Quantum Mechanics (QM) & Quantum Electrodynamics (QED) which have well-established predictive value can be retained, but with wholly different "interpretations" and a different perspective that would have been perfectly understandable by Euclid, Newton, Laplace, and Maxwell, but would dispense with all of the alleged "paradoxes" and counter-intuitive "interpretations" that muddle almost everyone's thinking today.

Particularly pernicious have been the Minkowskian muddle of "melded spacetime" and the Copenhagen Interpretation of QM/QED.

One must start by accepting that the concept of "time" is more fundamental than logic itself, and cannot be further analyzed by rational thought.

I'm referring to Aristotle's Law of the Excluded Middle: "a proposition A, and its negation not-A, cannot BOTH be true in the same way at the same place and the same time."

If you deny this law of Aristotle, then you can readily prove that $2 + 2 = 3$. Hence Aristotle's Law is the basis of all mathematics and of all rational thought and indeed of all science.

Notice that we cannot omit the qualification regarding "time," because there is a counter-example provided by the proposition A = "Einstein is learned," which is TRUE when Einstein is 60 but is FALSE when Einstein is 6.

But this implies that "time" is such a fundamental concept that it PRECEDES the possibility of rational thought!

I agree that Einstein (with whom I enjoyed a 15-minute private conversation in the Spring of 1950, courtesy of the late Frank Aydelotte) deserves to be named "the Man of the Century," NOT because of the equation $E = m.c^2$ (which had appeared in the work of Poincare and others) but because he was demonstrably the first person to suggest in writing, in 1905, that it could be falsified IF FALSE by measurements involving the newly discovered phenomenon of radioactivity (thus ushering in the nuclear age).

But, lamentably, Einstein "fudged" in part of his derivation of the equations of SR, involving moving one clock to another arbitrarily slowly, in order to synchronize them. Einstein went to the limit by verbal hand-waving. However, if you will study Ives's papers in *Proc. Roy.Soc.* etc. you will find that if this is done with mathematical rigor, you end up with the Lorentz transformation in Euclidean space and with absolute Newtonian time (in the Lorentz/Larmor/Ives interpretation of SR) and the paradoxes disappear.

Sadly, Minkowski was so impressed by a mathematical short-cut involving "imaginary" numbers [which can be interpreted with nothing mystical by generalizing the concept of algebra with real numbers to algebra with 2-by-2 anti-symmetric matrices] that he started the logically incoherent idea of a non-understandably melded "spacetime."

This has led to the even more pernicious concept of "warped" spacetime, and multi-dimensional differential geometers have had a field day with GR ever since.

I agree with Nobel Laureate physicist Steven Weinberg, in his awesomely-thoroughly-researched book on "Gravitation & Cosmology," that the geometric aspects should not govern progress, but that the physical interpretations and correlation with measurements should be the final arbiter.

But though I have sincerely extravagant admiration for the evidently immense amount of work which went into Weinberg's monumental book, it must be pointed out that he neglected to mention the FOUR most important papers on the subject!

Firstly, Weinberg failed to note that Einstein's celebrity and near-deification came about as a result of his publication in 1916 of a formula for the anomalous precession of the perihelion of Mercury, measured shortly after WW1 by Eddington *et al*, but he fails to note that a high-school teacher, Paul Gerber, had published the same formula, in the IDENTICAL notation, 18 years earlier!! When Einstein was asked about this he replied that he hadn't known about Gerber's work, but stated huffily that even if he HAD known of Gerber's paper he would have had no obligation to mention it, because it contained an alleged mistake!

Secondly, Weinberg fails to point out that the famed Friedman-LeMaitre GR formulae for the expansion of the universe (published by LeMaitre in 1927, two years before Hubble published his observational evidence for the hitherto unprecedented concept of expansion) have been derived, in the Milne-McCrea Theorem, by strictly Newtonian mechanics alone!

Thirdly, Weinberg fails to point out that in 1921 H.A. Wilson demonstrated that the famed equations of GR (but absent any "spacetime" connotations) can be derived in Euclidean Space and in absolute Newtonian Time, merely by assuming that the "constants" of electric permittivity & magnetic permeability in empty space are modified to a TINY (almost immeasurably small) degree by the proximity of ponderous masses (which would imply extraordinarily small local fluctuations in the speed of light), as a result of which one recovers the exact equations of GR from Maxwell's equations of the EM field, with no need to mention "warped" spacetime!! To get past referees anesthetized by the Minkowski interpretation, Hal Puthoff has pursued this theory under the guise of a "pedagogical" device that will make it easier for students to understand how spacetime can be "warped."

The merit of Wilson's interpretation of GR is that it could be falsified by measurements IF it were false: just measure the TINY variations in the speed of light entailed by Wilson's theory.

While I am aware that philosophers of science have pointed out loopholes in Popper's "falsifiability" criterion for a proposition to be classified as a "scientific" proposition or not, it remains an excellent idea providing a "bright line" demarcation between "pure mathematics" and "theoretical physics" that should never be completely neglected (as String Theorists have been accused of doing).

Fourthly, and most importantly of all, Weinberg failed to mention the papers of Dehnon & Obregon (1971) and Smalley & Eby (1976 [which referred to my own *Nature*-rejected papers of 1975 that I recently recovered from the Gravity Research Foundation's archives and posted on my website www.innoventek.com]) on the possibility that Dicke had got the wrong sign on the Dicke Coupling Constant and that a "correct" interpretation of Mach's Principle [without which, Einstein himself admitted, GR was "incomplete"] must require that the Eddington-Robertson Parameter should be expected to be greater than unity, as many measurements (which Authorities in the field, like Clifford Will, would like to see recognized as observational "errors") do attest! [For literature references and further evidence see my 2005 paper "Was there really a Big Bang" on my website; this paper has been translated into Italian and published in a popular magazine there, but seemingly no one in the USA wants to read it.]

Einstein need not have "searched in vain" for the Unified Field Theory, because if he had not ignored Wilson's 1921 work, he would have known that GR (and hence Newtonian Gravity) is a mere Corollary of Maxwell's theory of Electromagnetism!

This is why the attempt to develop a theory of gravity consistent with QM is foredoomed to failure, because QM needs to be understood correctly before it can be seen that the alleged inconsistency is just a myth!

Schroedinger has said that if he had known that his wave equation would have anything to do with this "damned quantum jumping" [the allegation that a particle disappears on one side of a potential barrier and magically reappears on the other side, after mystically "tunneling" through, without ever having attained the energy to surmount the barrier as in classical dynamics] then he would never have published his famous equation, which has led to the logical incoherencies of particles versus "wavicles" which can behave as either, allegedly depending upon how they are observed.

The objective truth is so simple that a child who has had high-school physics can understand Bohr's error which led to the Copenhagen Interpretation and the popular notion that (on top of the weirdness alleged from SR/GR) has led the public to believe that QM/QED prove that "reality is weird."

But journal Editors "anesthetized by the Copenhagen Interpretation" (to quote from Editors Peter Hodgson and Luis de la Pena of the posthumous book of Thomas Brody on "The Philosophy Behind Physics") had prevented the publication of Brody's papers that, if understood, would have prevented the logical incoherencies of "quantum entanglement" to have gained their current popularity. Indeed, Brody writes about "the irrelevance of Bell's Inequalities," which he illustrates, with both classical and modern examples, involve a "category mistake," like trying to measure the "mean lifetime of an electric bulb at different voltages using the same bulb"!

To make a long story short, Bohr made a grievous error when he derived the Rydberg formula from his model of the hydrogen atom, leading to QM. Bohr simply IGNORED the influence, on an electron orbiting a proton, of all of the electrostatic forces from all of the charged particles in the visible universe. True enough, it is reasonable to assume that these forces have a zero MEAN VALUE, but they don't necessarily have a zero VARIANCE (as understood in statistics).

And I have satisfied myself that I have quantitatively explained the arbitrarily postulated but UNEXPLAINED "background force field" which enabled Fenyes and Nelson, independently, to derive the Bohr atom and Schrodinger's equation of QM from Newtonian mechanics plus Coulomb's concept of electrostatic force, in their proposal to replace the logically incoherent QM by a non-weird Stochastic Mechanics (SM).

When I estimated the variance of all of the electrostatic forces coming from the 10^{80} protons & electrons elsewhere, at a point in a local Earthbound laboratory where Planck's constant h is being measured [e.g. by the Josephson Junction and Josephson's formula] I quantitatively PREDICTED, and posted on the Internet in 1995, the correct value of h (from Hubble's constant H) in my "h from H" paper that was rejected even by the *Journal* of the Society for Scientific Exploration which is supposedly open to dissenting views! [The SSE referee did not raise a single objection to my mathematics or my physical arguments, but complained about certain STYLISTIC imperfections of the paper, as if Form is more important than Content, and as if Appearance trumps Truth!] The interested reader can find my 1995 "h from H" paper on my website, and a more recent corollary of it which I term an "Electrostatic Mach's Principle" (in deference to the earlier-preprint-circulated, but not known to me, paper by de la Pena & Cetto on an "Electromagnetic Mach Principle."

Now here is how to understand why QM/QED need to be replaced by SM/SED (the latter of which I leave to de la Pena & Cetto's elaboration in their massive volume "The Quantum Dice").

I claim that if he had known Coulomb's Law, and the mean density of charged particles in the universe, and the Stochastic Calculus (as well as his own deterministic Calculus), then from his armchair Newton could have derived not only Schrodinger's Equation but the correct value of Planck's constant to go into it!

When an electron orbits an atom, the fluctuating electrostatic forces from the 10^{80} particles in the far-flung stars & galaxies do have an AVERAGE value here of zero, but the statistical VARIANCE of these forces is NOT zero. The result is that the electron, instead of moving in a smooth circular or elliptical orbit like a planet around the sun, is actually moving in a sharply "jittering" motion (Schrodinger's *zitterbewegung*) which if averaged over MANY orbits would be a smooth path but at any one time has to be described only in terms of a probability distribution (i.e. Max Born's interpretation of what is "waving" in wave mechanics). And I have proved the plausibility of the Fenjes-Nelson SM by PREDICTING the correct value of Planck's constant h from accepted values of the mean **number**-density of charged particles in the universe, in my Electrostatic Mach's Principle.

Wait a minute, the reader may object. If you are going to rely on Coulomb's forces you need to consider Maxwellian EM theory, under which the radial (centripetal) acceleration of the charged electron will cause it to emit EM radiation, and lose kinetic energy, and gradually spiral into the nuclear proton! You will end up, arbitrarily & irrationally, having to postulate "quantization of angular momentum" as did Bohr, in order to "save the appearances!"

In fact, a former student of Nelson had indeed noted this fatal flaw in Nelson's two books on SM, as further discussed in the literature by David Wick, Mark Davidson *et al.* Now enter de la Pena, Cetto, and the

late Julian Schwinger's student Boyer, together with those whom Sir Arthur C. Clarke has lauded as "the SHaRP gang" (Sakharov, Haisch, Alfonso Rueda, Puthoff) and who have considered the possibility of replacement of QED by SED, based upon use of the Stochastic Calculus to provide a neo-classical interpretation of Maxwellian EM. As originally calculated by Boyer, and improved by others to be found on Haisch's website, the accelerating electron DOES radiate and lose energy, BUT at the same time it also absorbs energy from some of the background EM fields emanating from all of the charged dipole oscillators in the universe, and these gains & losses turn out to be exactly equal PRECISELY in the lowest-energy Bohr orbit!!!

In fact this background EM field can be shown to explain the otherwise inexplicable Zero Point Fluctuations (ZPF) under which particles in a rigid crystal continue to tremble even at absolute zero degrees Kelvin, and therefore explains the mysterious Casimir Effect which in principle will allow "tapping the Zero Point Energy (ZPE) for FREE ENERGY." Indeed, the late Richard Feynman not only famously said that anyone who claims to "understand" QM/QED cannot possibly have really understood what the equations of QM/QED are saying, because "nobody" can understand "how it can be like that," but also noted that there is enough ZPE energy in a vacuum-volume the size of your cupped hands to "boil all the oceans on earth!" if anyone could figure out an economical way to tap it. (See my article on the long-sought ZPE-Tap [ZPET] on my website for references to Puthoff, Valone, *et al.*)

The bottom line is that one needs BOTH the Bass Electrostatic Mach's Principle, AND the de la Pena/Cetto Electromagnetic Mach Principle, in order to advocate SM/SED as a logically coherent replacement for the absurdities of QM/QED.

Once people are willing to learn the Stochastic Calculus, and replace QM/QED by SM/.SED, they will return to Laplacean Determinism, AKA the "billiard-ball universe," running-down with clockwork regularity, EXCEPT in the case of animate matter, which anyone who experiences Free Will knows first hand is NOT a delusion (despite the belief of great scientists like Einstein that Free Will does not exist). Einstein was WRONG about Free Will, but he was RIGHT that reality is not intrinsically random at the microscopic level, or, to quote his precise words: "God does NOT play dice!"

Sincerely,

Bob