Dear Reader

The proliferation of gauges, free parameters, counterterms in modern physics has given it the appearance of the federal tax code with its many rules and exceptions but in the end providing us with no real understanding. We postulate here that the reason we are in this quagmire is that the *covariance* of Dirac's original (circa 1928) equation was not *general* enough so that in the meantime we had to add all this extra baggage to do what we could to correct for that mistake.

Thus we require a *generally covariant* generalization of the Dirac equation, that being our new **pde** (**P**artial **D**ifferential **E**quation).

1) The APS letter introduces this new **pde**.
2) The March Paper shows why that new **pde** fixes the above problem.
3) The book starts with a postulate of a 2D coordinate point (object) and thereby then derives the 2D(object)+2D(observer)= 4Degrees of freedom **pde**. This procedure is analogous to adding the observer to obtain the collapse of the wavefunction in the Copenhagen interpretation of quantum mechanics. Thus **physics is the process of observing 2D** with our new 4D pde the result. Most of the rest of the book gives solutions to that new **pde** for $r>r_H$, $r=r_H$ and $r<r_H$ to get a very large amount of physics with some going beyond the standard model. The precision of the old QED is also maintained.

Hopefully the reader will learn from these three documents how that simple math mistake has stopped the progress of theoretical physics dead in its tracks, and how this new **pde** provides the remedy.

Please help make this new **pde** and its applications available to others so that theoretical physics can move forward again.

Summary of Chapter 1

"Physics Implications of *A* New First Order PDE" available on Amazon.com

Ideally for continuous smooth r(t) in Z=r+it we have infinitesimal $\frac{d}{dt}$ slope changes. In ***actuality*** numerically we have small point displacements each of possibly constant distance $ds \approx \Delta s$ and constant angle $d\theta \approx \Delta\theta$

Thus $\delta ds=0$ and $\delta d\theta=0$ in $(s_o+ds)e^{i(\theta_o+d\theta)}=Z\equiv$ point● which is the postulate of a single stationary **point**!!

Define $ds^2\equiv|dZ|^2=dr^2+c^2dt^2\equiv dr^2+dt^2$. Extrema $\delta ds=0$ and (proportionality) *constant* c=1 gives special relativity! Note higher order derivatives might not be zero such as ε in $Ze^{i\delta d\theta}=Z(1+i\delta d\theta+..i^M d^M(\delta d\theta)/M!+..)\equiv Z(1+i\delta d\theta+\delta\varepsilon)=Z$. Also $\delta d\theta=\sin\theta_o\delta dr_f/s_o+\cos\theta_o\delta dt_f/s_o$ trigonometry gives us $\delta d\theta=K\delta(dr+dt)=0$ and so we add two *more* degrees of freedom (2D) using dr+dt=dr'-ε/2+dt'+ε/2. So $dr\equiv dr'-\varepsilon/2$, $dt\equiv dt'+\varepsilon/2$ allowing us to define metric element $\kappa_{rr}\equiv(dr'/dr)^2$ for example. We thereby end up deriving general relativity and our new (2D+2D=) 4D PDE = $\Sigma_\mu(\sqrt{\kappa_{\mu\mu}}\gamma^\mu\partial\psi/\partial x_\mu)=\omega\psi$. The two observable successive Mth derivative scale reference frames gives the new pde two observable components thereby giving Standard Model Dirac doublet physics. Doing a radial coordinate transformation of the charge distribution of our new pde particle to the coordinate system comoving with the next higher Mth scale reference frame motion gives an added force on the particle: gravity.

See http://davidmaker.com for details $\kappa_{00}=1-2e2/rm_ec^2$ gives QM spectroscopic results

Note all we assumed was **a dot** i.e., a point● at Z, and nothing else. It takes just a moment to understand a dot. Recall numerical first derivative results then gave special relativity and higher derivatives imply GR and the new pde.

In contrast `string theory` starts with the more *complex* string shape requiring many associated postulates: e.g., Polyakov string action combining Nambu, area minimalization with an added g factor, General Relativity (GR) component in action, Calabi Yau manifolds, supersymmetry algebras, E8XE8 gauge, usual quantum mechanics (QM) stuff, 11 Kaluza Klein Dimensions, open and closed strings, winding factors for each dimension, etc.,.

It has been said that it takes two lifetimes to understand all these string inputs.

So what do you get out of these two lifetimes of assumptions? (vs the 1 second needed to understand our point postulate)

Essentially you get nothing. In that regard strings get you GR but you put that in in the first place!

You get a whole lot of gauges, way more than the Standard Model requires. Also you *do not* get the left handed Dirac doublet core of the Standard Model.

You can prove anything this way thereby proving nothing

So a **point** postulate vectors in on the correct physics: the simplest (Occam's Razor) approach gives the most accurate results! There is the ring of truth to this. Postulating a more *complex* shape leads nowhere.