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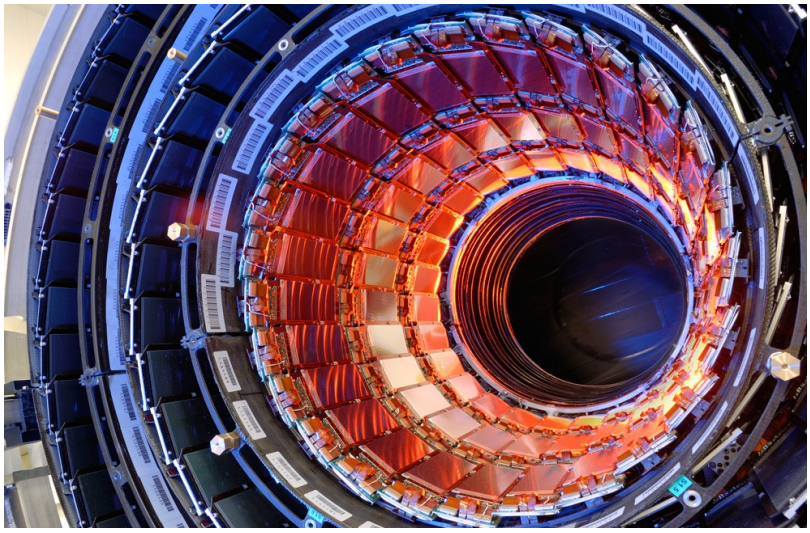
PARTICLE PHYSICISTS ADMIT IT:
the standard model is dead



by Miles Mathis

It's been about a decade since I began announcing the death of mainstream physics. Now, we begin to see the mainstream physicists admitting it themselves, in public and in print. I send you to the *Guardian* newspaper, London, one of Europe's top newspapers. There we find a physics blog hosted by the *Guardian* called "Life and Physics, Jon Butterworth". Butterworth is a professor at University College London, but more importantly he is a member of the High Energy Physics Group at the Large Hadron Collider. In his post from October 11, 2011, he asks in his title, "Perturbation Theory: **are we covering up new physics?**" The subtitle is: "*A timely award of the J. J. Sakurai Prize acknowledges how hard it can be sometimes to pin down what the Standard Model really thinks.*" Like this subtitle, the body of the post betrays a man with borderline schizophrenia. Notice that Butterworth calls the Sakurai Prize award "timely" at the same time he is questioning the entire direction of physics. This is no accident or poor word choice, since he does precisely the same thing throughout the entire post. He cannot come out and say that the Sakurai Prize and its recipients are frauds, but he suggests it several times, in low and backhanded tones.

He begins by admitting that the central question for him is: Does the Standard Model of particle physics work at Large Hadron Collider energies or not? He can't just come out and say "it does **not**", but he implies it. He tells us,

In general we can't solve the Standard Model exactly. We use approximations.

Then he sidesteps into a discussion of perturbation theory. Unfortunately, this discussion betrays him as well, because it quickly becomes clear, even to a first time reader, that he is hedging. He admits that they don't use approximations, they use computer models and gaming models to push the numbers

from experiment into line. But that is the definition not of "solving inexactly" but of "fudging." If the standard model were "approximately correct," that would mean it was correct to within some tiny fraction. But if you study the math and the way the numbers are pushed into line, you find that this isn't the case. Yes, each fudge in a set of perturbation pushes may be small, but the change to the final number is not small. Or, the change to the number may be small, just because they are dealing with very small numbers to start with; but the change in the number relative to the particle they are measuring is huge. It may be thousands of times larger than the particle they are measuring. Again, that isn't an "approximation", it is a gigantic fudge.

Then he admits the biggest pushes come when the strong force is involved. In other words, he is all but admitting that quantum chromodynamics QCD doesn't work at LHC. Readers of my papers would have expected this, because I have shown that the strong force is the weakest part of quantum theory. In my paper on the weak force, I said outright that even electroweak theory was rigorous compared to strong theory, before I went on to show that electroweak theory was wrong top to bottom. And in my papers on strong theory, I showed that there is no strong force. I showed how the math was rigged from the first equation to match data.

Butterworth admits,

Aspects of how quarks and gluons are distributed inside the protons we collide can't be calculated from first principles. Neither can the way the quarks and gluons turn in to new hadrons in the end. We have some constraints from our theory, we have basic stuff like the conservation of energy and momentum, and we have a lot of data from other places. But we can't use perturbation theory. The coupling number gets near to one, and 1 x 1 x 1 x ... = 1. This means no matter how many particles you include in your calculation, you don't converge on a solid answer. In the end we have to make educated guesses, or models. And these are always adjustable.

That is pretty clear, I would say. Not only does QCD not work, but it isn't pushable in the "normal" ways. The old method of cheating, perturbation theory, doesn't work. So Butterworth introduces us to Monte Carlo theory, which is just an old random sampling trick from von Neumann in the 1940's. Butterworth wants to glide from there into praise of the Sakurai Prize winners, since they use these tricks to prop up Butterworth's current work, and indeed the work of all particle physicists. In other words, without this new trick, Butterworth and the LHC people have nothing much to go on. They *need* the Sakurai Prize winners, and can't really be seen attacking them. If Butterworth chews up Monte Carlo theory, for instance, he just shoots himself in the foot, because then the LHC experiments are just done in a theoretical vacuum.

So what does Butterworth do? Rather than step up to the plate, he passes the buck. He gives us a link to his friend and colleague at LHC, Lily Asquith. In her *Guardian* blog from almost a year ago, she says,

Again, we are talking here of the Monte Carlo simulations that are provided to us experimentalists so that we can check what we observe against what the theorists "predict". I should digress a moment - what the theorists predict is in fact no longer a prediction. They make a prediction and then they "tune" it, so that it fits our data...

As experimentalists, we are terribly upset about this. Despite the fact that every single one of use has a PhD in particle physics, and thus was, at some point in the not-too-distant past, completely in awe of the fact that these guys can even imagine such a thing as QCD, now that we have The Best Machine In The World Ever working and taking data, we are completely disgusted that they have not perfected their understanding of theories that are so ridiculously complex....

Wow. Doesn't give you much confidence in the new cheat, does it?

Butterworth tries half-heartedly to paper over this cheat. Although he admits that "she [Lily] and commenters worried that we might be adjusting these models in such a way that we actually covered up exciting new physics," he tells us this worry can be addressed. It is addressed by having

calculations of what you know, done with perturbation theory, linked up to models of what you don't know very well. I think of this rather gruesomely as a skeleton of hard predictions inside and squidgy body of best guesses. The body can change shape. You can push in its stomach quite painlessly, but you really know about it if you break a bone.... Anyway, marrying the squidgy models to the rigid perturbation theory is mostly done using Monte Carlo event generators.

And, then, as Asquith put it, *tuning it to fit the data*. Not only that, but reread closely Butterworth's last paragraph. Reading backwards, we find that the "skeleton of hard predictions" is provided by perturbation theory. But didn't he just tell us that perturbation theory didn't work here? How can Monte Carlo methods marry "squidgy models" to something that doesn't work? Remember that Butterworth has admitted in this very post that in QCD

we can't use perturbation theory. The coupling number gets near to one, and 1 x 1 x 1 x ... = 1. This means no matter how many particles you include in your calculation, you don't converge on a solid answer.

Well, Monte Carlo is a random sampling method. If it "doesn't matter how many particles you include," random sampling can't help you. It is also worth pointing out that Monte Carlo methods are all methods of desperation. As Wikipedia puts it,

When Monte Carlo simulations have been applied in space exploration and oil exploration, their predictions of failures, cost overruns and schedule overruns are routinely better than human intuition or alternative "soft" methods.

Hah. Better than intuition, you say? That's hard science for you. Come on! Every mathematician knows that "tools" like Monte Carlo are used only when you've got nothing else to go on and you are flying by the seat of your pants. Wikipedia says they are used "to model phenomena with significant uncertainty in inputs," and a good physical theory shouldn't be so uncertain, should it? When physicists begin using Monte Carlo methods you *know* they are desperate. At Wikipedia, they show how to use Monte Carlo to estimate the value of pi. But we don't use Monte Carlo to estimate pi because we have math that works better. QCD ought to be able to calculate what will happen at LHC, in the same way we calculate pi, with straight equations. The only reason we would use Monte Carlo to estimate pi is if we had equations that didn't work. And this means QCD doesn't work. Why not admit it? Simply by using Monte Carlo, they ARE admitting it, but it would be much cleaner to just say it outloud: QCD is worthless, both as theory and as mechanics.

By not admitting it, Butterworth and all these people ARE covering up exciting new physics: MINE. I have shown how to replace QCD with a mechanical theory and relatively simple math. My equations are not in final or perfect form, but they would require far less tweaking than anything the mainstream has ever come up with. And because they are mechanical, any repairs that are required can be done at the ground floor.

Instead, Butterworth is trying to sell us on the Sakurai Prize winners Bryan Webber, Guido Altarelli and

Torbjorn Sjostrand, who won

for key ideas leading to the detailed confirmation of the Standard Model of particle physics, enabling high energy experiments to extract precise information about Quantum Chromodynamics, electroweak interactions and possible new physics.

Unfortunately, we now know that is false. They have not enabled anyone to "extract precise information" from anything. They have not extracted precise information, they have piled one fudge (Monte Carlo) on top of another fudge (perturbation), and married that to a squidgy.

Butterworth crows that unlike string theory, which "isn't even wrong," the new generators of post-Monte Carlo theory at least "describe data". But that isn't true. Neither string theory nor QCD describe data, since physics doesn't describe data to start with. Physics is supposed to match data or predict data, and the new generators do that only with massive fudges and "tunes". Nothing in mainstream physics, in any theory, resembles in any way the old physics or mechanics, where solid equations describing real particles or interactions were written to create a coherent universe.

Instead, all the top prizes in physics now go to the new sort of equation finessing and computer fudging, including the Nobel Prize. Physicists don't get prizes for doing actual physics anymore, they get prizes for hiding the fact that mainstream physics is dead. Over the past century, physics has devolved from a semi-rigorous discipline into an ever-growing pile of mathematical cheats. Feynman himself tried to warn us of this, telling us that his own cheat, renormalization, was no better than "hocus-pocus". But renormalization is a fairly esoteric and subtle cheat compared to Monte Carlo. By bringing Monte Carlo into QCD and particle physics and the LHC, Butterworth and all the rest are simply signaling behind their backs that they know the jig is up. They may be able to fool the editors at American Physical Society, but they can't fool anyone on the outside. Like Lily Asquith, anyone with a PhD in math or physics—no, anyone with a basic understanding of math or physics—can see the writing on the wall.