the general science journal

Development of Einstein's Unified Field Theory

Roger J Anderton
R.J.Anderton@btinternet.com

Electromagnetic force plus gravitational force is unified field theory: Contrary to popular belief about Einstein not having a Unified Field Theory, he did publish on it. This theory I propose is very simple and merely adds gravitational force to electromagnetic force. Due to problems that Einstein had with his math; what appeared to be a change from Newtonian physics by his relativity theories was in fact math mistakes, and his Unified Field Theory was an attempt to correct those mistakes and return to Newtonian physics.

Einstein published in 1925 on UFT (Unified Field Theory) in an article entitled "Unified Field Theory of Gravitation and Electricity" printed in science journal of the Prussian Academy of Sciences [1]. And he continued to write and publish on his attempts with UFT.

Basically this 1925 article is Einstein's unified field theory despite Einstein having problems with it, and mainstream dismissing it.

When mainstream are saying Einstein did not have unified field theory- what they are really doing is dismissing the unified field theory he

published; what they really should be saying is Einstein published unified field theory but they did not believe in it; probably because the theory is too simple and easy to understand when presented correctly; and they want something more complicated. (Mathematically it was complicated though, because of Einstein's difficulty with math.)

According to Cesar J Trujillo [2]:

"Previously scientists ignored the theory because the mathematics behind the unified field equations were considered too complex .[*] Add to this the difficulty in relating the mathematics of the unified field equations with reality to help identify experiments to support it, and most scientists are of the view Einstein had been unsuccessful in his attempt But not anymore. New evidence has come to light, quite literally, which may well show that Einstein's final great theory was indeed successful, and that its implications to science are only just beginning to be realised.[**]"

[*] – He means complicated
[**] – He means in his book, which I will look at anon.

"Professor Tullio Levi-Civita published a simplified presentation of Einstein's Unified Field Theory which was translated into English. However, Levi-Civita was only a mathematician and could not interpret the results of Einstein's final great theory in a real world-view sense."

That is Trujillo's view. If we go by wikipedia summary on Levi-Civita, then Einstein was using the math developed by Levi-Civita to create general relativity et al:

"In 1900 he and Ricci-Curbastro published *the theory of tensors in Méthodes de calcul*

différentiel absolu et leurs applications **which Albert Einstein used as a resource to master the tensor calculus, a critical tool in Einstein's development of the theory of general relativity. Levi-Civita's series of papers on the problem of a static gravitational field were also discussed in his 1915–1917 correspondence with Einstein. The correspondence was initiated by Levi-Civita, as he found mathematical errors in Einstein's use of tensor calculus to explain theory of relativity. Levi-Civita methodically kept all of Einstein's replies to him, and even though Einstein hadn't kept Levi-Civita's, the entire correspondence could be re-constructed from Levi-Civita's archive. It's evident from these letters that, after numerous letters, the two men had grown to respect each other. In one of the letters, regarding Levi-Civita's new work, Einstein wrote "I admire the elegance of your method of computation; it must be nice to ride through these fields upon the horse of true mathematics while the like of us have to make our way laboriously on foot".” [3]**

The thing to note here – is that it mentions how bad Einstein was at math. So we have this general problem – if we go by Einstein– he fubars us (i.e. messes us up) with his math mistakes. Decent mathematicians like Levi-Civita point out the math mistakes made by Einstein.

Hence there was a need by the mathematicians to revise Einstein’s theorising – see my article “The Mysterious Revision of Einstein’s Theory”. Who these people were that revised Einstein is not explicitly stated in physics texts (as taught physics students), what precisely has been changed from what Einstein was saying is also not explicitly stated. So we have this terrible FUBAR (i.e. mess) that we don’t have a clear explanation of what Einstein’s unaltered theory (theories) is and what the changes were. Hence when the mainstream physics community claims to

be working from Einstein's relativity – that is totally ambiguous.

Einstein said: "since the mathematicians have attacked the relativity theory, I myself no longer understand it any more" [4]

It refers to the time when Minkoswki placed SR (Special Relativity) into setting of 4D spacetime. The generalisation of the geometry then leading to general relativity.

It is preposterous that the mainstream should base itself on a person who is admitting to not understanding the math of his theorising. That is what leads to the mess – he was unable to give a proper math setting for his completed theory.

It then leads to numerous claims by other such as Evans that they were able to complete the math. According to Horst Eckardt:

"Elie Cartan is less well-known than Einstein. He was a French mathematician who exchanged ideas with Einstein concerning many details of General Relativity. Cartan's original insight was that electromagnetism could be derived, via differential geometry, from the geometry of space-time – more or less in parallel with Einstein's insight that gravitation could be derived from space-time geometry. A successful unification, however, was not achieved by Cartan and/or Einstein. The unification was finally achieved in the year 2003 by Myron Evans who, trained as a chemical physicist, brought fresh insight to the problem. Evans held several academic professorships in England and the USA, before he was forced to withdraw because of his unorthodox views, and he now works as a "private researcher" in his homeland of Wales. From there, he conducts the "Alpha Institute for Advanced Study" (AIAS), which presents." [5]

Whereas back to the math of Einstein it is a mess, and various reinterpretations and amendments made to Einstein's theorising by the mainstream, without explicitly stating what Einstein's mistakes are.

This leads to various claims of child protégés able to see Einstein's mistakes, for example – Daily Mail reporting 24th March 2011: Autistic boy,12, with higher IQ than Einstein develops his own theory of relativity [5]

Also there is:

Hannan Binth Hashim – the 14 year old astrophysicist from Kozhikode to prove Albert Einstein wrong? [6]

If the mainstream admitted that there were flaws with Einstein and that they had revised it, then there would be no need for claims such as this.

Einstein is wrong mathematically and known to be wrong mathematically, so some 'in the know' have revised things, but they don't explicitly admit to revising Einstein and they don't explicitly state what changes they have made; so they work from numerous different revisions of Einstein.

Einstein had the choice of amending Newton or amending Maxwell. Einstein went with sticking with his understanding of Maxwell's theory and amending Newton, by introducing time dilation et al., to form his SR.

Einstein's UFT is just him trying to correct that mistake; if he had stayed with Newton and amended Maxwell then he would have got UFT. See my paper "Maxwell–Tombe's Unified Force Equation". But he did not go that path and so was instead led down the path of more and more complicated math.

Bearing that in mind, let us now look at what Trujillo has to say about UFT. [7]

He gives the Einstein equation (without the cosmological term):

$G_{\mu\nu} - (1/2)\ G\ g_{\mu\nu} = -\ k\ T_{\mu\nu}$ **….** (1)

This is not the usual way that the equation is notated; but it's ok to use it. (Later he gives another equation – an issue I will get to anon.)

This equation represents gravity, and basically just places it into a matrix form called tensors.

$T_{\mu\nu}$ **is the tensor dealing with gravitational field; its energy etc.**

The way that electromagnetism is introduced is to replace $T_{\mu\nu}$ **by**

$T_{\mu\nu} + \tau_{\mu\nu}$ **where** $\tau_{\mu\nu}$ **is the Maxwell tensor.**

So the equation becomes:

$G_{\mu\nu} - (1/2)\ G\ g_{\mu\nu} = -\ k\ (T_{\mu\nu} + \tau_{\mu\nu})$ (2)

The term "tensor" can confuse people but its not really that important, what

$T_{\mu\nu} + \tau_{\mu\nu}$ **really just means dealing with the energy due to gravity added to the energy due to electromagnetism.**

Of course Einstein got confused with the math, but his problems were cause by how he started off with his Special Relativity (SR). Treating that as a mistake and going back to Newtonian physics, the way we can treat it is as the force due to gravity added to force due to electromagnetism giving us the unified force. (See article "Tombe-Maxwell equation). If we wanted to deal within

energy in Newtonian context then its still energy due to gravity added to energy due to electromagnetism; remarkably basically the same as what $T_{\mu\nu}$ + $\tau_{\mu\nu}$ is saying.)

(Several blunders by the unwary can be made. For instance note – equation (1) and (2) – both have the same notation on the left hand side of the equations but different right hand sides, so really they are different math models.)

Einstein went wrong in many places, by starting from his confused mess of Special Relativity (SR) that just sent him off on a bad path. The Unified Field Theory is just very simple indeed. And Einstein's quest for unified field theory was really just to undo the mistakes he made and get back to Newtonian physics.

Anyway, putting this aside and going with Trujillo (who probably thinks this Unified field equation by Einstein is clever) says:

"Einstein had discovered something very important in the real world. It can be summed up in one remarkable sentences as follows: Light is matter and matter is light"

First impression can be that this claim is nonsense, but it's the --

"Recognition that light and gravity behave in the same way"

And if you see my article "Newtonian Light bending" it explains that light falls in same manner as any other object in a (Newtonian) gravitational field.

i.e. light falls at same rate under gravity as matter does. So can treat it as if it was matter also.

Given light has an energy E, then by $E=mc^2$ it has an effective mass m, hence having a mass it is just like matter that has mass.

What can confuse things as it confused Einstein is that he introduces other types of mass such as "rest mass" and then talks of light as having zero rest mass. But treating that as mistakes by Einstein (And his followers) as he made his faulty deviation from Newtonian physics, just going by $E=mc^2$ for light of energy E it has effective mass m hence acts like ordinary matter in that respect.

And as Trujillo says:

"Light is matter and matter is light."

He continues:

"The oscillating electromagnetic field, or light in its most general form, actually behaves, in fact, creates matter including having its own gravitational field as revealed by a peculiar property of light."

The word "matter" is probably not appropriate here. What we really have is light (electromagnetic radiation/waves/particles) as having mass, and an object with mass creates a gravitational field around it.

He says : "creates matter", it is better to say "has mass", but the idea of light creating matter, is connected to Quantum physics with its Heisenberg Uncertainty principle and its creation of particles in near-vacuum et al. With the equation $E=mc^2$ we can think of energy as converting from one form to another. So for say atoms with a mass m, by $E=mc^2$ they might convert to light with energy E and that light still have effective mass m.

i.e. it is mass-energy converting from one form to another.

Anyway, proceeding with Trujillo, he says:

"To put it in a nutshell, the unified field is telling us that light is matter and matter is light."

He links this to three ideas, the first:

(i) Since the gravitational field is the electromagnetic field, traditional Newtonian physics, Relativity and Quantum mechanics can be unified with the laws of electromagnetism making electromagnetism the fundamental scientific law of the universe.

Saying the "gravitational field is the electromagnetic field" is bad use of words. The unified field consists of gravitational field and electromagnetic field added together in the way we have been dealing with things up to now with the $T_{\mu\nu} + \tau_{\mu\nu}$ being the energy of the gravitational field added to energy of electromagnetic field.

The electromagnetic field and gravitational field are interconnected though.

There are various sites on the Internet dealing with the "Electric Universe" idea, one says:

"The Electric Universe takes a simplifying leap by unifying the nuclear forces, magnetism and gravity as manifestations of a near instantaneous electrostatic force. Instead of being "spooked" by the concept of action-at-a-distance, like most physicists this century, the Electric Universe accepts it as an observational fact. Anyone who has tried to force two like poles of magnets

together has demonstrated action-at-a-distance. "Electromagnetic" radiation is then simply the result of an oscillating electrostatic force."[8]

To certain extent they might be thinking of things in the unified field way and be meaning unified field when they say electromagnetic field. Or some might be making an overemphasis on electromagnetism in neglect of gravity.

But it's saying things badly as Trujillo does when he says the "gravitational field is the electromagnetic field". (When really he should mean unified field is gravitational field plus electromagnetic field) that leads to all of this confusion when using words.

Trujillo next idea is:

(ii) To return Newtonian physics to Quantum mechanics: The ideas of determinism would still apply to all of physics including quantum world no matter how difficult it is to observe on the smallest scale.

Einstein was opposed to the Quantum physics based on probability, he still wanted determinism, and that is what he is referring to; a return to determinism of classical physics. When he says "return Newtonian physics to Quantum mechanics" I think he is being obscure, or at least using his words badly again. The situation is really a return to Newtonian physics and an adjustment of existing Quantum mechanics to bring it back more in line with Newtonian physics. i.e. to create a Quantum –Newtonian type theory.

Trujillo third idea is:

(iii) And it may be possible to determine whether the universe came about as a

> result of some preordained plan (as if God exists) or just a random event. As Einstein once said 'I want to know how God created this world…. I want to know His thoughts; the rest are details.'

As far as I am concerned – when people decide to interpret the workings of the universe as God that is really a subjective interpretation on their part. With the return to determinism that would make it easier to believe in the type of God in absolute control of the universe.

Trujillo says:

"In other words, Einstein wanted to see the complete picture of the universe and so determine if God really does exist or not."

Einstein was very mystical; going off thinking these semi-religious type of thoughts I think is a bit of a diversion, when really he should ideally have been correcting his mistakes.

In general terms – Einstein did present a UFT, even though he had problems with sorting out its math.

However, as Trujillo points out:

"There is a general consensus among the scientists that Einstein failed in his dream of unifying gravity and electromagnetism."

Physicists had in general ignored Einstein's UFT and gone off in a different direction.

The mainstream accepted SR, and then created QM and then attempted to build on that.

SR was not the completed theory of Einstein, the completed theory (or the best that Einstein was able to give as his completed theory based on his math problems) was his attempt at UFT, and the

mainstream ignored that. So the mainstream was only working from an incomplete Einstein theory (or theories), and they set about amending that in the way that suited them.

As Trujillo puts it:

"In the meantime, physicists are relying on quantum electrodynamics (QED) for creating a theory of everything."

That would be superstring theory etc

Trujillo points out Einstein studied Maxwell, Faraday etc., and then Einstein wondered and imagined what it would be like to travel on the crest of a light wave

Essen has criticised this "though experiment" approach to physics, accuses Einstein lots of mistakes with them. [9]

Einstein was bad at math; very bad at math; so there was no point wondering these things (about riding on a light wave et al) when he just then went ahead and messed up the math.

Trujillo then gets onto praising SR; he believes in "it" contrary to me that looks upon it as mainly a collection of mistakes that need correcting.

Trujillo says:

"After many years of careful research and thought on the problem of high-speed physics, Einstein worked out a brilliant and revolutionary new theory to explain what happens when travelling at nearly the speed of light."

Really it was just speculation on Einstein's part. If we take Einstein's starting point of his thought experiment of him riding on a light wave, he then just imagines what he would observe and

builds a theory based on that. There are of course problems with what really were the steps that Einstein took, what were the revisions made to him etc; but taking as initial starting point the thought experiment of travelling on a wave; then Einstein decides to imagine something happens at this high-speed contrary to what is observed at low-speeds. So he speculates something different happens to observed and does not really give justification for what he does that. And then he starts setting up procedures for altering clock and ruler measurements to agree with his imagination.

The way it is often presented is that as consequence of lightspeed in vacuum being constant then there is time dilation and length contraction. But when we really look at Einstein we find him setting lightspeed in vacuum as constant and then altering clocks and rulers to conform to that. – Anyway, issues I take up in more detail elsewhere.

Trujillo then says:

"Dr Hendrik Anton Lorentz, the scientist who almost worked out the laws of Special Relativity."

He's saying that, because he is dismissing Lorentz's theory. As all good students are taught and led to believe – Einstein is a genius so therefore they should believe Einstein's theory. But what we have is that Lorentz had a theory as well as Einstein having a theory. Lorentz's theory is then dismissed by this mental block as almost being SR.

Trujillo continues:

"It [SR] was revolutionary because it broke the traditional concepts of time, length and mass for a moving object."

In other words we at our low-speed observations have our traditional ways of dealing with mass et al and then Einstein just makes wild guess something else happens for high speed; he is not building on observations!! For long time – deceived me as that was way to go, and has deceived many others as they build theorising on such things as ignoring observations. It does not help that now – his speculations are said to be observed when they are not; instead measurements are altered to fit what he speculates.

Anyway, those are the some of the mistakes of Einstein's SR. The equation $E=mc^2$ is not so bad, but it's usually thought of in the context of SR.

As Trujillo describes $E=mc^2$ as the completing of SR:

"Later that same year [1905], Einstein completed his Special Theory of Relativity by publishing another scientific paper discussing the total energy of an object (whether it is the sun or any other object).

"What Einstein had discovered in his second paper is the concept of the apparent total energy E of an object of mass m and momentum p, which he calculated to be $E = \text{sqrt}\ ((pc)^2 + (mc^2)^2)$"

Sorting out a decent use of $E=mc^2$ can be problematic. But anyway from Einstein's SR perspective it led to him thinking mass changed with speed along with time and length.

Trujillo tells us about momentum being zero i.e. $p = 0$ then the total energy of a non-moving object is given by $E=mc^2$, and that gives us the enormous energy such as in Atom bombs.

Trujillo then wants to deal with why acceptance of Einstein's achievement did not come very quickly. He says:

"Recognition for Einstein's scientific masterpiece was slow to come, mainly because he held no professorship or other reputable position of scientific standing. Einstein was just a patent inspector at the patent office in Berne, Switzerland. But eventually, as more and more scientists came to understand and appreciate what he had achieved for the scientific community, he was offered a place as an assistant professor at the University of Zurich, Switzerland, in 1909. Later, he would become full professor at University of Prague in 1911. And by 1913, he had accepted a directorship at the Institute, Germany, freeing himself of his teaching responsibilities."

Anyway, New World Encyclopedia tells us that acceptance of SR mainly came about due to Planck:

Planck was among the few who immediately recognized the significance of the special theory of relativity. Thanks to his influence, this theory was soon widely accepted in Germany. Planck also contributed considerably to extend the special theory of relativity. [10]

Einstein after SR turned his attention to gravity.

Trujillo says:

Einstein noticed in his Special Theory of Relativity how the mass of an object increases with speed. Since mass increases with speed, what would happen to the gravitational field? Surely it must increase as well according to the classical law of universal gravitation as proposed by Newton. But he must have wondered to himself, 'what is the gravitational field?'

Yes, if an object has mass then it has a gravitational field; and if its mass were to increase then its gravitational field would

increase. (Just there are problems with SR – do not forget.)

The 4 dimensional worldview was introduced by Dr Hermann Minkowski (1864 – 1909) as Trujillo who credits him as laying the math foundation to the theory of gravity and Relativity.

Trujillo interprets this change to relativity as:

"Einstein soon realised he was departing from his familiar childhood skill of visualisation and creating simple thought experiments."

In other words – Einstein was not that skilled with math, and so when tying his 'thought experiments' to math, he was getting out of his depth.

Trujillo says:

" At first, Einstein's geometric approach to General Relativity did not rest well with him."

Meaning Einstein did not like the math.

Trujillo:

"But he [Einstein] eventually accepted the math behind his General Theory of Relativity. As American physicist Dr Jeremy Bernstein said "… Einstein was still allergic to pure math, …"

In other words 'allergic' meaning not likes the math.

Trujillo:

"… and for several years he [Einstein] was not particularly enthusiastic about Minkowski's 'four dimensional worldview.'"

In other words Einstein was struggling with the math.

Trujillo:

"It was only when he found the final formulation of his theory of gravitation, a sweeping generalisation of Minkowski's work, that he fully appreciated its formal power."

Now with the way SR deals with spacetime is to treat it as flat, and when there is acceleration then curves this spacetime. And gravity causes acceleration, so it taken by Trujillo that:

"Acceleration = curvature = gravity"

Not 100 per cent precise, but good enough for now. It might have been better to say something like – gravity causes acceleration and that gets represented in GR as spacetime curvature; but never mind.

As Trujillo points out –the greater the strength of the gravitational field then the more curvature of spacetime.

Next he says: "Energy density affects gravity – forget the math idea of spacetime world bending."

Which is not very clear at first and another example of badly worded.

Anyway, he proceeds to explain:

"…a far less abstract description would be to say that wherever there is bending of the four dimensional spacetime world, there is in fact a high-density of an invisible mass-energy permeating the Einstein universe created (or acquired) by the intrinsic accelerating motion of all matter in the universe."

In GR – energy-density distorts spacetime and that represents gravity and the greater the

energy-density then the greater the gravity and greater the spacetime distortion.

Trujillo says: "We call this the physicists' interpretation of the Theory of General Relativity."

I was not aware that it was given a special name.

Anyway he proceeds:

"Hence this math bending of the four dimensional spacetime world representing our universe is actually describing the density of a mysterious invisible mass-energy permeating the entire universe, which somehow controls the strength of the gravitational field."

So "it" is some sort of substance, almost an aether. Eddington treated GR as an aether theory. (See "Aether quantum theory according to Eddington".)

But the tendency in teaching physics students is to deny aether.

So Trujillo is trying to reinvent it.

Lots of people have said there was a need for an aether, and Einstein himself after discarding it in SR then brought it back.

When it comes to teaching Einstein's physics, many teach Einstein when his opinion was to discard aether, and omit the update.

With all of this there has to be a clear distinction between the matter and the field though.

Anyway, Trujillo points out this mass-energy density creates the gravitational field, and points out it's not a new idea. It's just part of standard GR as far as I am aware.

Trujillo: "Density of mass-energy affects the speed and direction taken by matter, including light.

"But it isn't just the gravitational field which is controlled by the density of this mysterious mass-energy permeating the universe. The speed and direction (or path) taken by the accelerating motion of all matter is affected by the density of the mysterious mass-energy as well.

"Travelling through different densities will affect your path.

"The best analogy we can give for this is by looking at the behaviour of an aircraft travelling through the air (a form of mass-energy). For example, we all know how an aircraft can travel in a straight line and at a roughly constant speed because the density of the air remains constant throughout. But should the aircraft enter a pocket of denser air, the aircraft will suddenly change its speed and direction because the lighter air density acts as a kind of barrier to the aircraft's natural movement. The same is true of any matter travelling through the mysterious mass-energy of the universe

"Density of mass-energy affects the speed and direction taken by matter, including light."

I think he is not really being all that clear - the substances such as atoms, ions et al have a mass-energy density and this creates the gravitational field. The deflection of an object can be due to strength of gravitational field (and fields) and due to density of mass-energy that the object travels through. He seems to being mixing the mass-energy and the field(s) as one.

According to Trujillo- light can change its direction and speed in the mysterious mass-energy of the universe, and he says this is because:

"… it [light] too has energy and according to the famous equation E = mc^2, it has some mass as well. And because it has mass, it can be deviated slightly by the mass-energy (depending on its density)."

So he is saying that light has mass and that enables it to interact with the gravitational field. This is contrary to some representations of Einstein's relativity - where it tries to treat light as having no mass, but because gravity distorts spacetime; when light goes into that distorted spacetime it follows the path of that distortion. Anyway, Einstein's relativity is messed up on the issue of mass and gets itself confused over different types of mass: rest mass, relativistic mass etc.

Trujillo says: "..the path taken by light actually bends more significantly in a high mass-energy density substance than in a low mass-energy density substance."

"Not only that, but the speed of light in a region of high mass-energy density slows down."

So he is going with variable lightspeed. When light travels through different regions of mass-energy density, different strength of fields etc then its speed changes. I have dealt with this in several articles. Einstein's relativity gets confused on this issue. Some people try to treat GR as having lightspeed constant same as in SR, and others accepts lightspeed varies in GR.

Next he goes on to say: "Another extraordinary implication of the Theory of General Relativity is the way the familiar matter we see around us should not be seen as solid objects in the traditional sense. If we could observe the very

structure of say an electron, it is possibly composed of some invisible, mysterious high – density mass-energy possibly being recycled into a very tight 'vibrating' ring by what scientists call its own gravitational field. Hence an electron could be nothing more than a highly dense mass-energy travelling around in a loop while the whole ring itself is rotating in various other axes so as to give this object of the appearance of a solid sphere."

Actually the idea that matter is not really solid in traditional sense goes back to Boscovich. (See article "Pythagoras tradition of atoms".)

According to Trujillo: "Einstein was still perplexed about two important aspects of his theory on gravity which he needed to understand before he could give a definitive answer.

"Firstly, Einstein did not know what this mysterious mass-energy of the universe actually represents in reality. It seems to permeate all things, and yet it somehow controls everything from the gravitational field to time, distance, direction, mass and speed. But how, and why?"

I don't see why he is perplexed. The substance in any region has a mass-energy density; that's all it means.

Trujillo: "And secondly, how does this mysterious mass-energy create the gravitational field in the first place? In other words, what causes mass-energy to be 'attracted' to other mass-energy?"

On that issue – one just has to accept that is the mathematical description. In fact according to Boscovich's theory the attraction can reverse and become repulsion under certain circumstances.

Trujillo: "Unfortunately, his brilliant new math theory of gravity was not quite complete. As

Einstein soon discovered, his equations could not relate to reality well enough to give him the answers he was looking for."

What Einstein had was really difficulty with doing the math.

Trujillo: "Not so for the scientists. They feel the theory is complete. All they needed to do is find further evidence to support it. For example, as we speak, scientists are searching for gravity waves, a phenomenon predicted by Einstein's General theory of Relativity. If the waves can be found in the universe, it would give scientists greater confidence in Einstein's great new theory of gravity."

These are very odd claims. Some scientists accept Einstein's unified field theory as far as I can see. Scientists like Frank Tipler – I think accept some or all of it. But not "all" scientists accept it. Then the search for gravity waves that's supposed to be a consequence of GR not Einstein's UFT, so if its detected then its supposed to be supporting that not Einstein's UFT.

Trujillo: ".. scientists believe the answer will lie entirely within the math framework of Einstein's General theory of Relativity. In other words, Einstein's original interpretation for gravitation in terms of math curvature of spacetime is the only truly accepted way of interpreting and understanding the phenomenon."

And that's contrary to my way, because I say Newtonian physics still works; things can be viewed by the Newtonian paradigm. If scientists are acting in the way he proposes then they have closed their minds to looking at "it" in other ways.

Trujillo: "Einstein didn't choose to stick with his General theory of Relativity for the answer. He knew very well the limitations of his theory and how the equations could not relate to reality."

In other words – Einstein's next step after GR was to try to form UFT.

According to Trujillo: "What pushed Einstein to improve on his theory was a particular property of light which perplexed Einstein so much."

Trujillo then recaps about the photoelectric effect.

Light shinning on a metal surface can cause it to eject electrons.

Trujillo: "But it isn't just these tiny electrically – charged particles we call electrons which move in the presence of light. Light can also somehow affect uncharged matter."

And this is demonstrated in William Crookes device – the radiometer.

According to Trujillo – Einstein then wondered about how did light move uncharged matter.

Trujillo: "At first, Einstein proposed in his photoelectric experiment that electromagnetic radiation really consists of bundles of concentrated electromagnetic energy called photons and that the energy (depending on its density) is somehow responsible for the observed effect of charged or uncharged matter moving in the presence of radiation (or light).

But Trujillo says Einstein was not satisfied.

Trujillo: "..how could light/photon, a purely electromagnetic phenomenon, affect uncharged objects when it is known, according to the

classical law of electromagnetism, that it should affect only charged objects?"

But light has momentum!! And that is what the uncharged matter responds to.

Trujillo: "….clearly the current classical laws of electromagnetism is not complete. Maxwell had not gone far enough to explain a particular property of light which allows it to move uncharged matter."

So in Trujillo's view presumably he thinks Maxwell's theory does not account for light having momentum.

Trujillo: "Similarly, Einstein's General theory of Relativity was not complete as well, because it can only explain uncharged objects in an accelerated frame."

The thought experiments of Einstein for GR usually deal with uncharged objects experiencing acceleration; it should not take much though to consider the object as having charge.

Trujillo just gets long- winded: "Somehow Einstein had to combine the laws of electromagnetism with the General theory of Relativity so he can show how light can affect uncharged matter.

"This is the reason why Einstein decided to solve the mystery posed by the photon and the gravitational field by developing his own quantum/classical theory or the mother-of-all scientific theories as some scientists would call it - known as the unified field theory.

"Einstein's unified field theory, also known as the Einstein - Maxwell theory, was first published in a Prussian scientific journal in 1925. The 6 -page paper relates the field equations of gravitation of the General theory of

Relativity with the field equations of electromagnetism.

"The theory is said to be no more than extension of Einstein's General theory of Relativity to take into account the motion of the electric charge and the presence of the electromagnetic field, as well as the usual accelerating motion of uncharged matter."

According to Trujillo – scientists have been unsuccessful in finding a suitable interpretation of the math of Einstein's UFT.

Going back to the equation for Einstein's UFT.

Earlier he gave it as:

$$G_{\mu\nu} - (1/2)\ G\ g_{\mu\nu} = -\ k\ (T_{\mu\nu} + \tau_{\mu\nu}) \quad (2)$$

This time around he gives:

$$G_{uv} = k\ (T_{uv} + \tau_{uv}) \quad (3)$$

$u,v = 0,1,2,3$

He has played around with the notation changed a negative sign for a positive etc.

Messing around with notation is a typical thing – relativists do, but it is much the same equation in its essentials.

Trujillo then explains what the notation means.

According to Trujillo: "G_{uv} = tensor representing 10 field equations of gravitation for 4d spacetime, called gravitational field tensor or Einstein tensor."

I think this is bad use of words. Really in the equation it's being used to represent the unified field.

Truillo : "τ_{uv} is 6 field equations of electromagnetism for the 4d spacetime world called electromagnetic tensor or Maxwell tensor

"T_{uv} =tensor mass or energy content of space, called external energy-momentum tensor

"k = const which includes gravitational constant."

It is as I explained merely adding electromagnetic field to gravitational field.

As Trujillo explains it: ".. if we compared the unified field equations of the unified field theory with the gravitational field equations of the General theory of Relativity, we notice Einstein added only one extra term.

"The General theory of Relativity equation being merely:

$$G_{uv} = k\, T_{uv} \quad (4)$$

where u,v =0,1,2,3."

i.e. without the electromagnetic field term.

In this equation G_{uv} is being used for gravity.

G_{uv} is really being used for different things.

Anyway, as Trujillo explains it: "Notice how Einstein added the electromagnetic field tensor τ_{uv} to complete his unified field equations.

"Adding the extra term does nothing to change the official interpretation of the unified field equations. In other words, physicists would still use the ever important concept of density in the same way as for the gravitational field equations."

The GR equation is thus considering only the mass-energy of gravity, while the UFT includes mass-energy of electromagnetism.

As Trujillo explains it: ".. this extraction term known as the electromagnetic field tensor τ_{uv} does nothing more than add extra mass (or energy) to the universe, which in turn increases the overall density of the already pervasive mass-energy existent through out the universe from other sources represented by T_{uv} . So as this density in the universe increases, so does the strength of the gravitational field as represented by G_{uv} ."

Trujillo's look at the math starts: ".. with the unified field equations now looking like

$y = k(x + z)$

"We can see the electromagnetic and gravitational fields are math linked. For if z is the electromagnetic field component of the equation, then any changes to the electromagnetic field to help it increase its own mass-energy density (e.g. such as increasing the electric charge used to generate the field) will result in an increase in the strength of the gravitational field as represented by y. This is all the unified field equations are telling us.

"The point we are trying to make here is that the formulation of the unified field equations in the unified field theory was designed to do nothing more than confirm in Einstein's own mind based on

certain thought experiments he had made over many years and his persistent tackling of the problem of light that the electromagnetic field had to affect the gravitational field (and possibly vice versa).”

In other words things being set up in the way that Einstein wanted to deal with how he looked at physical reality from his thought experiments. His thought experiments are flawed, as noted earlier by my reference to Essen. So what is going on here is setting up a physical theory to be looked at through Einstein’s peculiar thinking.

Trujillo: “… what natural phenomena exists in the real world to support this alleged linking of the two fields?”

He seems to be getting long-winded again and says:

“Apparently (Einstein) was perplexed about a peculiar yet intrinsic property of light, known as the ‘particle-like’ effect.

“It is a natural effect where uncharged objects are somehow able to move when light hits it (or if the objects emit light, they recoil in the opposite direction).”

But that’s light with its momentum again!

He chooses to think however:

“Is light masquerading another phenomena?”

Just trying to make things overly complicated for no good reason as far as I am concerned.

And he says: “To other scientists, this is nothing unusual. As the scientists would say, ‘Just accept the concept of a photon [a packet of electromagnetic energy] and with a little mass

from the E =mc^2 equation and the particle-like effect of light can be explained."

So as far as those scientists are concerned he is trying to make a mystery where there isn't one.

Trujillo: "In essence, scientists think there is nothing more to learn about light. So whatever Einstein was doing for the last 35 years of his life to understand light was a waste of time."

He then goes off into a long-winded talk about what he thinks is a mystery:

"Not so for Einstein. Einstein understood there had to be something else creating this 'particle-like' effect.

"Well, let's face it. How does light, a purely electromagnetic phenomenon affect matter? Surely it must affect only charge matter according to the laws of electromagnetism as we know them.

"Why can light move uncharged matter?

"There is nothing in the university textbooks on physics to tell us how a purely electromagnetic field we call light can move an uncharged object (assuming it is truly uncharged)."

I think this claim is suspect! The physics texts do deal with light's momentum.

He continues: "So what is going on?

"Does light possess a gravitational field?

"At first Einstein thought it had something to do with the way light comes in packets of energy, which he called photons. And that somehow this photon can act like an ordinary piece of matter.

"But why?

"For the scientists this wasn't important. Instead they accepted this new exotic particle (the first of many to come with the advent of quantum theory and later particle physics) and thought this was the end of theoretical research into light. However Einstein decided to simplify the situation further by saying the photon is just another form of matter.

"You might think there is nothing radical about this idea. But remember, what does matter possess? A gravitational field, doesn't it?

"If light is ordinary matter, would it not possess a gravitational field of its own as well?

"Would this explain why light moves uncharged matter?

"Here is the first radical decision Einstein had to make. Why leave the gravitational field out of light itself if light is, in fact, behaving in every respect like any other matter, including having its own gravitational field?

"Such a radical decision would have helped Einstein to explain how light can bend in a gravitational field. It is because light must create its own gravitational field to interact with the gravitational field of other matter. Just like the gravitational field of a stone interacting with the gravitational field of the Earth as the stone is thrown through the air."

He got there in the end with the idea that light has a gravitational field; and I agree it does. Given light has energy, it therefore has effective mass by $E=mc^2$ and having mass it has a gravitational field.

Trujillo: "Infeld supports the view that light has a gravitational field

Dr Lepolod Infeld (1898–1968) was a former assistant of Einstein in the 1930s (Bernstein 1991 p 55), so working on UFT.

Trujillo: "In 1930, Infeld wrote provocatively about his understanding of unified field theory as follows: 'The gravitational field is influenced not only by the moving [accelerated] gravitational masses but also by the electromagnetic field. Thus the sources of a gravitational field lie in moving [accelerated] masses, in moving [accelerated] charges and in the electromagnetic field.'"

I'm ok with that. But Infeld is quoted as going on to say:

'A pure gravitational field can exist without an electromagnetic field. But a pure electromagnetic field cannot exist without a gravitational field.'

I find difficulty with that claim. Given an object with mass m and charge q, then if q is zero then electromagnetic field is zero. If q is non-zero then there is an electromagnetic field, but he's saying an object with q non-zero must also have a mass non-zero so therefore there is a gravitational field associated with the electromagnetic field. That seems reasonable to math model like that. But I would also consider scenarios such as where mass m tended to zero for an object of charge q non-zero, and would allow m as zero as an approximation.

Anyway, Trujillo also cites the McGraw-Hill Encylopedia of Science and Technology which states:

'..the electromagnetic field contains energy and is thus the source of some of the curvature of the space.'

And GR treats gravity as curvature of spacetime, this means there is a gravitational field associated with an electromagnetic field. (As Trujillo notes.)

Far as I am concerned – we are allowed to carry on using Newtonian gravitational physics if we like, so would then be electromagnetic field associated with gravitational field in a Newtonian context.

Trujillo thinks that light having a gravitational field of its own would not surprise Einstein.

Trujillo claims:

"he [Einstein] always thought that light was just another form of ordinary matter, albeit invisible."

According to Nigel Calder in his book, 'Einstein's Universe – the layman's guide':

' When Einstein figured out that light had mass – according to the formula $E=mc^2$ – it was inevitable that light should be influenced by gravity as surely as any overweight human being or a stone flung in the air.'

Trujillo concludes from this:

"Therefore, light should behave in all the same ways as matter does, including having a gravitational field of its own."

I'm okay with that.

Article "The Connection between Gravity and Electricity", published in English Mechanics on 8 May 1936, W D Verschoyle says:

'..Einstein deduced mathematically that light should be deflected in a strong gravitational

field, and careful observation during the total eclipse of 1919 showed this definition to be a fact.. Since gravity affects some forms of radiation, some form of powerful radiation will certainly be found to affect gravity.'

Basically wherever there is mass then there is a gravitational field, and if we are math modelling radiation with mass then it has a gravitational field. If that mass is small then to approximation can if we want to treat as negligible in our math model etc etc

Trujillo interprets Verschoyle's quote as telling us:

"radiation is a time-variable electromagnetic field and to say radiation affects gravity must imply there is something in radiation to affect it. Unfortunately, what is in the radiation to affect gravity is not mentioned in the article. But the author does feel confident that radiation should be able to influence gravity."

The missing thing in the radiation is of course mass.

Next Trujillo gets onto the Philadelphia experiment; the story that the US Navy attempted to make a ship invisible in World War II and got covered up.

Trujillo quotes Dr J Mason Valentine on the physics involved in the alleged experiment:

'… in practice, it [the so-called United States Navy project on invisibility allegedly conducted in 1943] concerns electric and magnetic fields as follows: An electric field created in a coil induces a magnetic field at right angles to the first; each of these fields represent one plane

of space. But since there are three planes of space, there must be a third field, perhaps a gravitational one. By hooking up electromagnetic generators so as to produce a magnetic pulse, it must be possible to produce this third field… Jessup told me that he thought that the US Navy had inadvertently stumbled on this.'

According to Trujillo:

"..pulsing a magnetic field is equivalent to saying this is a time-varying electromagnetic field (i.e. radiation). So if the statement from Dr Infeld is to remain true, then this pulsing electromagnetic field must have a gravitational field (again assuming the statement refers to oscillating electromagnetic fields). "

In the alleged experiment - gravity was used to bend light around the ship and make it invisible.

Trujillo then points out:

"Science Express website (the online version of the journal Science) on 25 May 2006, it is claimed researches have the math equations to prove invisibility can occur and are developing a cloaking material using metamaterials to achieve this very aim.

Dr Wilbert B Smith unpublished paper "Suggestions on Gravity Control through field manipulation"

'…the electric field induced by the motional magnetic field could and probably does have very much the same properties as gravity, and in fact might be the same thing.'

Trujillo: "Motional just means time-varying.

"Whether the electric field is in fact the gravitational field is still debatable,…"

A large part of the issue is about defining terms correctly. We already have terms "electromagnetic field" and "gravitational field" their combination into one field should be called "unified electromagnetic-gravitational field" or something very similar.

Trujillo: "A motional magnetic field is an electromagnetic field. Therefore the motional magnetic field must produce a gravitational field of its own if the statement from Infeld is to remain true (assuming the field is time-varying)."

Ok

Trujillo then talks about Dr Vaclav Hlavaty

Earlier we noted Infeld telling us - 'A pure gravitational field can exist without an electromagnetic field. But a pure electromagnetic field cannot exist without a gravitational field.'

Hlavaty seems to contradict this and says - "There are electromagnetic fields that do not generate gravitation. In particular, the electromagnetic field of a plane wave in the electromagnetic theory of light does not generate gravitation."

I think words are not being used precisely enough. What we are dealing with is math models. And we can create a math model where can treat mass as negligible to good approximation; so in this model are dealing gravity is zero even when there might be a non-zero electromagnetic field. We can create lots of models like this, but in the general case - electromagnetic field and gravitational field are interconnected.

Trujillo then goes onto an interesting idea about temperature, but again it's about getting the math modelling correct.

Conclusions

In this article, I have dealt with the basic starting point that Einstein has for his UFT; with his math, his difficulty of interpretation etc.

Since our modern physics is supposedly based upon Einstein, it is very peculiar that most in the mainstream choose to ignore Einstein's attempt at a completed theory, and choose just to modify and adjust the incomplete pieces of his completed theory (namely SR and GR). But the hints as to why they should do that are with the stories of gravity manipulation that get covered up by elite physicists in top secret projects, and which these elites don't want the (general) riffraff in the physics community to know about. And something that is really trivial that: electromagnetic force plus gravitational is unified field theory has to be hidden under layers of obscurification.

Obscurification – a deliberate attempt to make something obscure so can be hidden in plain sight. No better starting point for such an act is there – than starting with an obscure patent clerk who muddles through his math and physics; making numerous mistakes and keeps changing his mind.

References

[1] Unified Field Theory of Gravitation and Electricity
Albert Einstein, translation by A. Unzicker and T. Case, Session Report of the Prussian Academy of Sciences, pp. 414–419, July 25th, 1925
http://www.alexander-unzicker.de/rep0.pdf

[2] Albert Einstein's Unified Field Theory: A New Interpretation, Trujillo, Cesar J,
http://www.sunrisepage.com/uft.htm

[3] http://en.wikipedia.org/wiki/Tullio_Levi-Civita#cite_note-1
2011-04-17

[4] BULLETIN (New Series) OF THE AMERICAN MATHEMATICAL SOCIETY Volume 46, Number 1, January 2009, Pages 125–129, S 0273-0979(08)01237-8
Article electronically published on September 15, 2008
ABOUT THE COVER: A HIDDEN PRAISE OF MATHEMATICS
ALICIA DICKENSTEIN credits to: A. Pais: *Subtle Is the Lord: The Science and the Life of Albert Einstein*, Oxford University
Press, 1983. MR690419 (84j:01072)

[5] Einstein, Cartan and Evans – Start of a New Age in Physics?
Horst Eckardt, Munich, Germany, Laurence G. Felker,
Reno, Nevada, USA original German article to be published online at:
http://www.borderlands.de/inet.jrnl.php3]

[5]
http://www.dailymail.co.uk/news/article-1369595/Jacob-Barnett-12-higher-IQ-Einstein-develops-theory-relativity.html#ixzz1JmRZQLoI

[6]
http://www.indiasummary.com/2009/09/14/hannan-

binth-hashim-the-14-year-old-astrophysicist-from-kozhikode-to-prove-albert-einstein-wrong/

[7] Trujillo, ibid; same source for Trujillo, but he has made several updates since his first article. I am working from his old version.

[8] http://www.holoscience.com/synopsis.php?page=11

[9] http://www.ekkehard-friebe.de/Essen-L.htm

[10] http://www.newworldencyclopedia.org/entry/Max_Planck

UFT = Unified Field Theory
GR = General Relativity
SR = Special Relativity
QM = Quantum Mechanics

c.RJanderton2011-04-22