

Wilczek's Unified Field Theory: Ether Back again

Roger J Anderton

R.J.Anderton@btinternet.com

Another person is being portrayed as a physics genius (there have been numerous); when it comes to his theory it's just the Ether again.

Einstein discarded ether in 1905 and brought it back in 1920s. Mainstream got fixated on discarding it. (As has been dealt with by my earlier articles.) When it comes to making progress in physics theorising, we get numerous people proposing reintroduction of ether.

We get another person proposing reintroduction of ether with Frank Wilczek.

According to J Bonasia of Investor's Business Daily [1]:

"Wilczek's pioneering ideas were confirmed after years of experiments at the Stanford Linear Accelerator Center and elsewhere."

"In 2004, more than 30 years after Wilczek first published his paper, he and colleague David Gross won the Nobel Prize in physics for the discovery of the strong force. David Politzer also shared the award for his related independent efforts."

“Wilczek has applied his considerable smarts toward shaping a unified field theory, the Holy Grail of physics that eluded even Albert Einstein. Since Einstein's time, physicists have built a model that serves as a foundation in the pursuit of a unified field theory. But some pieces of the puzzle are still missing.”

“If achieved, such unification would link all matter, light, space, gravity and electromagnetism into a model of how nature behaves. Scientists could apply this framework to all sorts of findings drawn from particle physics and astronomy.”

“Wilczek's theories are set to become a topic of research for the Large Hadron Collider, a new machine near Geneva that some say is the most sophisticated machine ever built. The LHC will circulate subatomic particles, or hadrons, through a tunnel that measures 17 miles around. When the particles reach 99.999999% the speed of light, they will collide with immense force, letting scientists study their behavior as they scatter.”

“Wilczek has just published a book on this subject titled "The Lightness of Being: Mass, Ether and the Unification of Forces." It outlines his concepts for nonscientists.

The book describes a grid that occupies the universe's empty space, where dark matter could exist.”

“Wilczek says the grid is a structured framework or ether through which energy and matter share an interplay that's constantly changing. He describes the grid as "the primary ingredient" of physical reality boiling with virtual particles. "What we perceive as empty space is in reality a powerful medium whose activity molds the world," he wrote.”

“The book's title refers to his premise that our historic portrayal of the universe as a vast collection of matter has missed the mark.”

“Wilczek contends nature behaves more like undulating waves of light — hence, the lightness of being.”

“"From the equations in the standard model, I've come to appreciate an all-encompassing entity called the grid," he said."We perceive it as nothingness in space, or a vacuum, when in fact it is

a medium that exhibits the same properties everywhere and every when."

This medium --- its just ether --- and he's calling it grid.

Frank Wilczek [2] says: "Quite undeservedly, the ether has acquired a bad name."

Wilczek does not say to who to blame; but who can we blame other than Einstein.

He continues: "There is a myth repeated in many popular presentations and textbooks, that Albert Einstein swept it into the dustbin of history."

It's quite appropriate the word "myth" - most of the popular presentations and textbooks do not say anything other than myths. It is long overdue that they stopped.

He continues: "The real story is more complicated and interesting."

The trouble here is that it is suggestive he is only stating his opinion.

He continues: "I argue here that the truth is more nearly the opposite:"

He uses the word "argue" so it's even more suggestive that he is stating his opinion, and by "argue" it's suggestive that he has his opinion and people can have different opinions to his.

What he argues and is the opposite to mainstream is: "Einstein first purified, and then enthroned, the ether concept."

This being his interpretation and he admits the opposite to the existing interpretation which he claims is a myth, it then presents us with the problem of how can Wilczek interpret Einstein differently to how the mainstream is presenting. And of course the

problem as I have dealt with in previous articles is – Einstein – Einstein allows himself to be interpreted in different ways because Einstein made numerous mistakes and kept changing his mind. Einstein is just a bad thing to build physics upon.

Wilczek continues: “As the 20th century has progressed, its [ether] role in fundamental physics has only expanded. At present, renamed and thinly disguised, it dominates the accepted laws of physics.”

So – Wilczek says the popular presentations and textbooks saying the ether has been discarded are wrong, and that the ether concept is still hidden in modern physics. In other words the popular presentations and textbooks should stop lying because they are severely messing up physics!

Wilczek then goes on to talk about the long history of the ether concept going back to the ancient Greek philosophers.

Eventually he gets to say: “It was Michael Faraday, a self-taught and mathematically naïve experimenter, who revived the idea that space was filled with a medium having physical effects in itself.”

As dealt with other articles – the theory that Faraday was working from was Boscovich’s theory.

Wilczek: “To summarize Faraday’s results, James Clerk Maxwell adapted and developed the mathematics used to describe fluids and elastic solids. “

This then formed electromagnetic theory of Maxwell, which Einstein was of course working from.

Wilczek: “The first sentence of Einstein’s original paper on special relativity refers to an ‘asymmetry in the formulation of

electrodynamics, which does not appear to inhere in the phenomena.”

I have dealt with in previous papers – Einstein messed up with his SR (special relativity).

Anyway, Wilczek interpretation of what Einstein did was: “His [Einstein] paper’s achievement was to highlight and interpret the hidden asymmetry of Maxwell’s equations, not to change them.”

i.e. Wilczek’s version is – Einstein does not change Maxwell’s theory by his SR.

Now, as Wilczek next points out – Maxwell’s theory has ether, and so if Einstein does not change Maxwell’s theory then his SR should still keep ether, and this is his interpretation and he says:

“The Faraday-Maxwell concept of electric and magnetic fields, as media or ethers filling all space, was retained.”

i.e. Wilczek is saying Einstein’s SR retains the ether concept of Maxwell’s theory.

What Wilczek omits is that Einstein’s philosophic beliefs at that time circa 1905 were positivistic, and from that type of philosophic belief – although Maxwell’s theory has ether and Einstein is working from Maxwell’s theory, Einstein then for philosophic reasons discards the ether.

Later Einstein changes his philosophy and reinstates the ether. But circa 1905 he discards ether for philosophic reasons, and the philosophy inspires the QM (quantum mechanics) revolution. Despite Einstein discarding the philosophy behind rejecting ether, the mainstream still retains that philosophy.

Now Wilczek who is presumably not of that philosophic belief decides to interpret SR as retaining the ether contrary to the philosophy of the mainstream that interprets SR as discarding ether.

Anyway, proceeding with Wilczek: "What had to be sacrificed was only the false intuition that motion at a constant velocity would necessarily modify the equations of an ether."

So from Wilczek's philosophic beliefs- the ether was not discarded by SR instead there were two types of ether:

1. ether that was modified by constant velocity
2. ether that was not modified by constant velocity

And his belief is that ether 1 was discarded in favour of ether 2.

Arguing over different types of ether, I will not enter into for this article.

Wilczek: "Indeed, the argument can be turned around. One of the most basic results of special relativity, that the speed of light is a limiting velocity for the propagation of any physical influence, makes the field concept almost inevitable."

What he is referring to is the idea of constancy of lightspeed in SR; the idea that lightspeed is then a limiting velocity is arguable. Far as I am concerned - many mistakes have been made in SR. Really - Newtonian physics still holds. In the usual form of Newtonian physics - universal time holds, but once one makes stipulation of lightspeed (in vacuum, free of influences et al) constant by adjusting time and spatial measurements then time is no longer universal. (Math modelling allows us to set lightspeed as universal or time as universal.)

Anyway, proceeding with Wilczek's interpretation: " Thus in 1917, following Einstein's revelations, the electromagnetic field remained essentially in the form bequeathed by Maxwell, satisfying his 'ethereal' equations. Moreover spacetime itself had become a dynamical medium - an ether."

So Wilczek's interpretation of SR leads onto his interpretation of GR as having spacetime as ether. Indeed Eddington and Einstein looked upon spacetime as ether.

The distortions of spacetime is non-Euclidean geometry.

The issue of GR really being Newtonian physics I have dealt with.[3] The usual form of Newtonian physics is based within Euclidean geometry but we can do Newtonian physics within non-Euclidean geometry and that corresponds to GR once the mistakes in standard GR are corrected.

References:

[1] Wilczek Stands Tall In Atom Field, BY J. BONASIA,
INVESTOR'S BUSINESS DAILY
<http://replay.waybackmachine.org/20081023203015/http://www.investors.com/editorial/IBDArticles.asp?artsec=21&issue=20081022>

[2] The Persistence of Ether, Frank Wilczek, Physics Today Jan 1999

[3] Newtonian Physics is General Relativity is Unified Field Theory (Barring Mistakes That Need Correcting) Roger J Anderton
http://www.worldsci.org/pdf/abstracts/abstracts_5250.pdf

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