

sci.physics: Re: Download a new book on quantum mechanics and relativity.

# Re: Download a new book on quantum mechanics and relativity.

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**From:** Eugene Stefanovich (*eugenev\_at\_synopsys.com*)

**Date:** 10/07/04

Date: Thu, 07 Oct 2004 00:27:16 -0700

RP wrote:

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> *Eugene Stefanovich wrote:*

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>> *RP wrote:*

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>>> *Eugene Stefanovich wrote:*

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>>>> *RP wrote:*

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>>>>> [...]

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>>>>>> *Let's boil it down to one simple question.*

>>>>>> *Given two test charges initially at rest wrt each other:*

>>>>>> *When charge A is accelerated wrt charge B, will A experience the*

>>>>>> *change in force due to B*

>>>>>> *1) instantaneously?*

>>>>>> *or*

>>>>>> *2) after a time  $r/c$ ?*

>>>>>>

>>>>>> *Richard Perry*

>>>>>>

>>>> *You probably wanted to ask:*

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>>> *Yes, but interestingly the question that I asked also begs an answer :)*

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>>>> *> When charge A is accelerated wrt charge B, will B experience the change*

>>>> *> in force due to A*

>>>> *> 1) instantaneously?*

>>>> *> or*

>>>> *> 2) after a time  $r/c$ ?*

>>>>

>>>> *My answer is that B will feel the change of force instantaneously.*

>>>> *Then, after time  $r/c$  there will be another kick on B due to*

>>>> *photons (or electromagnetic wave, if you will) generated by*

>>>> *the acceleration of A. See subsection 12.3.3 in the book.*

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>>> *The only problem that I have with this view, is that relativistically*

>>> *speaking, we can set B in the near field of the em wave (photon), by*

>>> *simply changing frames of reference. IOW, If A and B (arranged along*

>>> *a line that is also our line of sight of A and B) are initially*

>>> *moving away from us at near  $c$ , then the frequency of the radiated*

>>> *photon, though in the visible region wrt A, will be red shifted to*

>>> *arbitrarily low values, approaching zero frequency at  $c$ . Since*

>>> *lorentz contraction places A and B closer together wrt us than they*

>>> *are wrt each other, then wrt them there may be several wavelengths*

>>> *simultaneously suspended in space–time between them, whilst wrt us*

>>> *only some minuscule fraction of one wavelength is suspended between*

>>> *them. IOW, photons are exactly the same as the change in*

>>> *electromagnetic force experienced by B. They are thus constrained to*

>>> *propagate at the same speed as the electromagnetic force, that is,*

>>> *since they are one in the same process.*

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>> *I can hardly understand what you are saying. In my approach photons*

>> *and instantaneous Coulomb (and magnetic) force are completely*

>> *independent.*

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> *And your approach is exactly what I'm addressing here, more*

> *specifically, I was laying out the contradiction between your view and*

> *special relativistic causality. IOW, your view trashes, not modifies,*

> *but utterly trashes the lorentz transform. If you haven't seen the*

> *contradiction, as also repeated in numerous ways by Bilge, then you*

> *probably won't ever see it.*

I understand very well how my theory is different from SR. I modify Lorentz transforms slightly, i.e., make them dependent on interactions,

and this completely "trashes", as you say, the beautiful Minkowski spacetime picture. That's right.

- > *You simply cannot maintain a limiting speed*
- > *of  $c$  for photons while maintaining instantaneous propagation of forces*
- > *from within that theoretical framework.*

This is not possible in Einstein's SR framework, but it is possible in my theory.

- > *As I explained, these are*
- > *necessarily one in the same effects, and not only in the lorentz*
- > *context, but the same conclusion follows from the Galilean viewpoint as*
- > *well. They are different aspects, nothing more. The photon is the "en*
- > *mass" holographic interaction of surrounding particles. Every particle*
- > *is involved in every interaction. Geometry keeps it straight, and not*
- > *only provides for the absorption of waves in packets, but for the*
- > *ability to focus an image, which the photon is, i.e. just the focusing*
- > *of the radiated energy by a en mass cooperative interaction between*
- > *particles via field superposition. A photon is just a fluctuation in the*
- > *field gradient, that field being just the superposition of all discrete*
- > *fields. Fields and charges are inseparable, they are one in the same.*

We disagree here. In my approach there are no fields, their fluctuations, etc. Everything is very simple: there are only real observable particles (electrons, photons, protons, etc.) and instantaneous interactions between them

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- >>> *There is however another view that will salvage your equations, and*
- >>> *mine, that rests in the fact that hypothetical closed systems are an*
- >>> *idealized version of reality, and as you know, idealizations commonly*
- >>> *lead to contradictions. Nature requires those omitted details for*
- >>> *this very reason, i.e. that without them nature would be*
- >>> *contradictory. In this universe the reality is that there simply are*
- >>> *no closed systems other than the universe itself. "Two particles*
- >>> *interacting" is the grossest sort of oversimplification. Every*
- >>> *particle in the universe is interacting with every other particle.*
- >>> *Thus, even though the Coulomb force may be experienced*
- >>> *instantaneously between two particles, there are an infinite number,*
- >>> *minus two of course:), that are also experiencing the fields of*
- >>> *those particles, and are thus accelerating partly as a function of*
- >>> *those two discrete fields. The result is "screening" of the charges,*
- >>> *in wavelike fashion. IOW, though the forces between the two particles*
- >>> *are experienced instantly, other particles are also accelerating, and*
- >>> *the resultant superposition of fields of all of those particles*
- >>> *effectively screens the far field from experiencing any changes for a*
- >>> *time  $r/c$ .*
- >>

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>> *This sounds very much like Feynman–Wheeler action–at–a–distance  
>> electrodynamics. I could make a smarter comment if I understood what you  
>> are saying. In my view, the Coulomb forces decrease rather rapidly  
>> with the distance, and if you take a couple of particles in a far corner  
>> of the universe, you shouldn't worry about the "screening" coming  
>> from the rest of it.*

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> *Maybe, maybe not. OTOH, until we can crack the entire code, we can  
> start with this possibility:  
> Quantum vacuum charge, Dirac sea, Higgs field, space charge, dark  
> matter, however you want to qualify it, space contains much more than  
> visible matter.*

I am not sure about that. All things you mentioned are highly hypothetical, there are no compelling evidence for introducing these things into theory. Theory would be better off without such complications.

> *Free charges cannot be bottled in glass, they will flow  
> right through it, and through you, and every piece of visible matter.  
> That doesn't mean that they aren't everywhere around you. Massive  
> currents of free charges are flowing around the Earth as we speak.  
> Either way, the permittivity of free space is more than a number.*

What are these "free charges"? Are they real particles? I am not sure what you are talking about?

>

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>>> *These premises cannot be reconciled however with quantum theory as  
>>> quantum theory stands now. OTOH, there must certainly be hidden  
>>> variables linking the two descriptions, or as Einstein put it, the  
>>> quantum theory, being statistical, must be a subset of the classical  
>>> field theory, in the same way that Maxwell's gas laws are a subset of  
>>> Newton's mechanics.*

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>>

>>

>> *I disagree. I think Einstein was wrong here. We have a better chance  
>> to express classical mechanics as a subset of quantum mechanics  
>> (see, e.g. 7.3.3 – 7.3.5 in my book), then otherwise.*

>

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> *Then we will never agree until you change your stance, because mine is  
> solid. There are many logical arguments to be framed, and that I and  
> others have framed, that reduce quantum ontology to fancies and  
> fairytales. The lack of mechanism spells a big fat zero, period. Cause  
> and effect cannot be dispelled from any reasoning mind. "No mechanism"*

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> equals "no anything", and that applies on every level, all the way down.

We may disagree on interpretation of quantum probabilities, but do you agree, at least, that QM is a sound computational approach unsurpassed in its accuracy and predictive power?

Eugene

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> *Richard Perry*

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