

Christian relativity

The Urth list — 25 messages, 10 voices, 07 Apr 2006

<https://urth.darkrealm.vip/thread/urth/4562>

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nastler — 07 Apr 2006, 13:33

Quote suggesting one reason a Christian author might wish to write a universe without relativity. The time scales in the Sun series are extended, but the principle holds. The "news" cannot have spread through the universe without bypassing physics as we know it.

Thus in SS we would just have to accept that relativity is patchy in order to understand the story; just as we have to accept a form of Lamarkian evolution.

"Suppose that, at the moment of Christ's death, the news of it had started traveling at the maximum possible speed around the universe outwards from the earth. How far would the terrible tidings have traveled by now? Following the theory of special relativity, the answer is that the news could not, under any circumstances whatever, have reached more than one-fiftieth of the way across one galaxy — not one- thousandth of the way to our nearest neighboring galaxy in the 100-million-galaxy-strong universe. The universe at large couldn't possibly be anything other than indifferent to Christ, his birth, his passion, and his death. Even such momentous news as the origin of life on Earth could have traveled only across our little local cluster of galaxies. Yet so ancient was that event on our earthly time-scale that, if you span its age with your open arms, the whole of human history, the whole of human culture, would fall in the dust from your fingertip at a single stroke of a nail file."

Dawkins

Iorwerth Thomas — 07 Apr 2006, 13:49 · in reply to nastler

Of course, assuming physics 'as we know it' to be true is a bit of a risk; relativity being patchy is probably at least as likely as not.

From: nastler <nastler at yahoo.dk>
Reply-To: The Urth Mailing List <urth at lists.urth.net>
To: URTH <urth-urth.net at lists.urth.net>
Subject: (urth) Christian relativity
Date: Fri, 7 Apr 2006 15:33:28 +0200 (CEST)

Quote suggesting one reason a Christian author might wish to write a universe without relativity. The time scales in the Sun series are extended, but the principle holds. The "news" cannot have spread through the universe without bypassing physics as we know it.

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Dawkins

Stanislaus — 07 Apr 2006, 17:32 · in reply to nastler

Hello nastler,

Friday, April 7, 2006, 3:33:28 PM, you wrote:
Quote suggesting one reason a Christian author might wish to write a universe without relativity. The time scales in the Sun series are extended, but the principle holds. The "news" cannot have spread through the universe without bypassing physics as we know it.

Check Einstein-Podolsky-Rosen theory and experiments. It has been conclusively proven that news can spread instantaneously, perhaps even backward in time - but only for the internal purposes of the universe. You cannot transmit information faster than light. Universe can.

Best regards,
Stanislaus <mailto:sbocian@poczta.fm>

Poznaj Stefana! Zmien komunikator! >>> <http://link.interia.pl/f1924>

tom at bitterman.net — 07 Apr 2006, 17:49 · in reply to Stanislaus

Quoting Stanislaus <sbocian@poczta.fm>:

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a) Details. Cites.

b) This is God we're talking about here. You know - omniscient, omnipotent, omnipresent, creation-ex-nihilo, rising-from-the-dead God. Is anybody really worried that he couldn't get information out faster than light if He wanted to?

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Best regards,
Stanislaus <mailto:sbocian@poczta.fm>

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enamel

Dan'l Danehy-Oakes — 07 Apr 2006, 18:21 · in reply to nastler

On 4/7/06, nastler <nastler@yahoo.dk> wrote:
"Suppose that, at the moment of Christ's death, the news of it had started traveling at the maximum possible speed around the universe outwards from the earth. How far would the terrible tidings have traveled by now? Following the theory of special relativity, the answer is that the news could not, under any circumstances whatever, have reached more than one-fiftieth of the way across one galaxy — not one-thousandth of the way to our nearest neighboring galaxy in the 100-million-galaxy-strong universe. The universe at large couldn't possibly be anything other than indifferent to Christ, his birth, his passion, and his death. Even such momentous news as the origin of life on Earth could have traveled only across our little local cluster of galaxies. Yet so ancient was that event on our earthly time-scale that, if you span its age with your open arms, the whole of human history, the whole of human culture, would fall in the dust from your fingertip at a single stroke of a nail file."

Dawkins

Richard Dawkins is a brilliant, brilliant biologist and writer about biology, but when it comes to religion his head is so far up his ass it's sticking out his mouth. He simply does not understand what he criticizes, any more than seven-day creationists understand the overwhelming evidence for the "neo-Darwinian synthesis" (but feel free to analyze and criticize it). As "brights" go, he's pretty dim.

--Dan'l

I do not fear Satan half so much as I fear those who fear him.

-- St Teresa of Avila

<http://www.livejournal.com/users/sturgeonslawyer>

Adrian Robert — 07 Apr 2006, 18:23 · in reply to tom at bitterman.net

On Apr 7, 2006, at 1:49 PM, tom at bitterman.net wrote:

Quoting Stanislaus <sbocian at poczta.fm>:

Hello nastler,

Friday, April 7, 2006, 3:33:28 PM, you wrote:

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You cannot transmit information faster than light. Universe can.

a) Details. Cites.

A good book I read explaining this and related areas is Quantum Reality, by Nick Herbert. It's a few years old, maybe there's something better now, but it will get the job done.. The ideas of the EPR experiment and Bell's Theorem are nonetheless a bit too fuzzy in my mind at the moment to try providing details here.

(BTW, I hadn't thought of Bell's in connection with Christian or other religious ideas, but that's pretty cool..)

Adrian

Andy Robertson — 07 Apr 2006, 19:39 · in reply to Stanislaus

S

Quote suggesting one reason a Christian author might wish to write a universe without relativity. The time scales in the Sun series are extended, but the principle holds. The "news" cannot have spread through the universe without bypassing physics as we know it.

The Ship (in UOTNS) does travel FTL and does go back and forth in time (the two things being the same). News including divine messages and divine messengers do take this route. Whatever the real universe ordains, in the universe of the Sun books FTL is a routine "galactic" technology

Jeff Wilson — 08 Apr 2006, 06:38 · in reply to Andy Robertson

Andy Robertson wrote:

S

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You have just begged the question.

Jeff Wilson - jwilson at io.com
< <http://www.io.com/~jwilson> >

Jeff Wilson — 08 Apr 2006, 06:45 · in reply to lorwerth Thomas

lorwerth Thomas wrote:

Of course, assuming physics 'as we know it' to be true is a bit of a risk; relativity being patchy is probably at least as likely as not.

That is just not supported by the vast bodies of reproduced results. Relativity's predictions are spot on accounting for observed effects above the quantum level. It could use some reconciliation with quantum dynamics, but at the scales above that only the ability of average people to comprehend relativity is patchy.

Jeff Wilson - jwilson at io.com
< <http://www.io.com/~jwilson> >

Jeff Wilson — 08 Apr 2006, 06:55 · in reply to Stanislaus

Stanislaus wrote:

Hello nastler,

Friday, April 7, 2006, 3:33:28 PM, you wrote:

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Check Einstein-Podolsky-Rosen theory and experiments. It has been conclusively proven that news can spread instantaneously, perhaps even backward in time - but only for the internal purposes of the universe.

You cannot transmit information faster than light. Universe can.

There's no meaningful distinction between "you" and a subset of "universe" in current physical thought.

There's also no need to restrict news of the Christian Gospel to post-crucifixion time in religious thought; Christ not only shares in the eternal quality of Gd, but was personally present at the Creation and it was only His mortal incarnation for the benefit of the earth that began in Bethlehem. The Scriptures is silent on whether there are any extraterrestrial sinners in need of salvation; if their existence can be reconciled, so can other appearances of Christ, and they would no more violate relativity than the Hubble expansion does.

Chris — 11 Apr 2006, 19:46 · in reply to tom at bitterman.net

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a) Details. Cites.

As much as I appreciate an eye for detail, this isn't a physics lists. In any event I believe he was not referring to any one particular paper on the subject - there is a great deal of talk about EPR and its implications out there. You can start with http://en.wikipedia.org/wiki/Bell's_inequality

The gist I think of what he was talking about in the paragraph above is that there are things that seem to be instantaneous interactions at a distance, but that these do not transfer information in any formal sense and thus can be considered not to violate relativity. Maybe.

b) This is God we're talking about here. You know - omniscient, omnipotent, omnipresent, creation-ex-nihilo, rising-from-the-dead God. Is anybody really worried that he couldn't get information out faster than light if He wanted to?

Deists, I would suppose.

don doggett — 11 Apr 2006, 20:22 · in reply to Chris

--- Chris <rasputin_ at hotmail.com> wrote:

As much as I appreciate an eye for detail, this isn't a physics lists.

Hear, hear. I'm all for the fun "not" being sucked out of the room. :)

Dan'l Danehy-Oakes — 11 Apr 2006, 20:32 · in reply to don doggett

On the other hand, I appreciate the physics neepery. Perhaps it can be marked with a different Subject: so people who don't want to read it can skip it without missing the rest of the discussion?

On 4/11/06, don doggett <kingwukong at yahoo.com> wrote:

--- Chris <rasputin_ at hotmail.com> wrote:

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Hear, hear. I'm all for the fun "not" being sucked out of the room. :)

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<http://mail.yahoo.com>

don doggett — 11 Apr 2006, 22:20 · in reply to Dan'l Danehy-Oakes

--- Dan'l Danehy-Oakes <danldo at gmail.com> wrote:
On the other hand, I appreciate the physics neepery.
Perhaps
it can be marked with a different Subject: so people
who don't
want to read it can skip it without missing the rest
of the
discussion?

I doubt that's necessary. Information like that just looks like big blocks of code to me anyway and my brain just glides across it until something sticks. Sometimes that something happens to be the delete button. Other times I actually learn something. (dear god no). I just think physics citations are hardly a requirement for a valid literary argument. They're more like cookies. Made of tofu. And Carob. A treat.

Iorwerth Thomas — 14 Apr 2006, 20:33 · in reply to Jeff Wilson

That is just not supported by the vast bodies of reproduced results. Relativity's predictions are spot on accounting for observed effects above the quantum level. It could use some reconciliation with quantum dynamics, but at the scales above that only the ability of average people to comprehend relativity is patchy.

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Oh, I know :). I specialise in quantum field theory. I think that I didn't quite say what I wanted to say there. This might be more close to the intent (or perhaps not).

The metaphysic that's generally taken to be implied by relativity at present isn't necessarily the one that should be taken to apply in the future (though one can't actually say what that would be), since metaphysics is generally empirically underdetermined. For example, based on the Stanford Encyclopaedia of Philosophy entry on the subject (don't have time to dig up the link at the moment; sorry) there's a form of Presentism (the idea that Now exists, to butcher the idea slightly) that's compatible with it despite it being usually taken that Eternalism (Now doesn't exist) is 'proved' by SR.

I could also mutter 'underdetermination of theory by experimental data', but there might be a general outcry of 'anti-science reletavist' and I'd have my liscence to practise physics revoked! :D

There's also no need to restrict news of the Christian Gospel to post-crucifixion time in religious thought; Christ not only shares in the eternal quality of Gd, but was personally present at the Creation and it was only His mortal incarnation for the benefit of the earth that began in Bethlehem. The Scriptures is silent on whether there are any extraterrestrial sinners in need of salvation; if their existence can be reconciled, so can other appearances of Christ, and they would no more violate relativity than the Hubble expansion does.

Quite. I'm also intrigued by the idea that Dawkins is not only an authority on biology and theology (he isn't on the latter, though himself and many who read him seem to think so) but on theoretical physics. Not that he says anything obviously incorrect in the quoted passage...

Chris — 14 Apr 2006, 21:11 · in reply to lorwerth Thomas

To say that metaphysics is "generally empirically underdetermined" bothers me a little bit, although it may - I am not sure - be perfectly true. It seems to imply that one arrives at metaphysical conclusions by means of empirical investigation, but the metaphysical premises are always there, as it were, ahead of time. I may be grossly mistaken but when I see modern attempts to work out a metaphysics compatible with modern science, it seems to me that mostly what is going on is that they're showing a given set of metaphysical premises aren't mutually compatible and then making some suggestions as to which ones should be thrown out. But the empirical investigation itself gets started on the basis of some metaphysical standpoint or other.

Oh, I know :). I specialise in quantum field theory. I think that I didn't quite say what I wanted to say there. This might be more close to the intent (or perhaps not).

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Dan'l Danehy-Oakes — 14 Apr 2006, 22:07 · in reply to Chris

On 4/14/06, Chris <rasputin_ at hotmail.com> wrote:

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Well, I don't want to be speaking for anyone else but how I read "empirically underdetermined" is "there is not sufficient empirical data available to determine the correctness of one set of metaphysics as over against another;" or, more broadly, "many different metaphysical systems can be said to fit the empirical evidence we have to date."

...[T]he empirical investigation itself gets started on the basis of some metaphysical standpoint or other.

Well, to the extent that epistemology is a branch of metaphysics, certainly; empiricism is after all fundamentally an epistemological approach to things.

At any rate: the whole sentence --

The metaphysic that's generally taken to be implied by relativity at present isn't necessarily the one that should be taken to apply in the future (though one can't actually say what that would be), since metaphysics is generally empirically underdetermined.

unpacks in my brain (note again: Not speaking for Iorwerth, just riffing out my own interpretation) something like:

Metaphysics has been significantly influenced by the advent of modern physics, and especially relativity. (Most philosophers don't seem to have really gotten their brains wrapped around quantum theory yet; sadly, some philosophers seem to have a vague idea that Heisenberg's principle boils down to "the experimenter influences the outcome of the experiment," or somesuch.) But because we haven't yet fully worked out the empirical implications of relativity (and especially because we haven't yet reconciled relativity with quantum theory), any metaphysics based on relativity is necessarily premature -- which isn't to say that it may not turn out to be correct for a relativistic Universe; but if it is, we can't say yet that it is.

Something like that, anyway.

--Dan'I

I do not fear Satan half so much as I fear those who fear him.
-- St Teresa of Avila
<http://www.livejournal.com/users/sturgeonslawyer>

Iorwerth Thomas — 25 Apr 2006, 09:10 · in reply to Dan'I Danehy-Oakes

More or less what I intended to say; thanks! I'm largely riffing off Pierre Duheim, who seemed to have some fairly sensible things to say on the subject.

I'll also note (in order to muddy the waters a little) that in some formulations of QFT (that of Peskin and Schroder's 'Introduction to Quantum Field Theory', for example), the causality of special relativity is technically violated, as particles can exhibit space-like propagation, but operationally preserved, as observables are defined as commutators between different field operators which vanish for spacelike propagators (i.e. particles propagate faster than light, but you can't measure them, so it doesn't matter). There probably exist other formalisms that don't exhibit this slightly unsatisfactory way of dealing with the problem.

Also, I think that in GR, the universe has a preferred frame of reference, but I could be wrong.

From: "Dan'I Danehy-Oakes" <danldo at gmail.com>
On 4/14/06, Chris <rasputin_ at hotmail.com> wrote:

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bothers

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Something like that, anyway.

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<http://www.livejournal.com/users/sturgeonslawyer>

Dan'I Danehy-Oakes — 25 Apr 2006, 15:41 · in reply to Iorwerth Thomas

On 4/25/06, Iorwerth Thomas <iorweththomas at hotmail.com> wrote:
More or less what I intended to say; thanks!

Thank you! I'm not a scientist, or a philosopher, but an autodidact who reads and writes on both subjects and keeps hoping to get paid for it. So it's good to find out that when I set out to

translate a scientist's philosophical statement I got it (more or less) right.

H'mmm. Is there a formulation of QFT in which relativistic causality is not violated -- or at least rendered irrelevant? I somehow had the impression this was one of the big barriers to making quantum gravity theories work. --at any rate, it seems the the experiments which (seem to) confirm the Bell hypothesis throw relativistic causality into a very cocked hat.

I'm pretty sure that the whole point of relativity is not to have a preferred frame of reference. But, ZPF theory may mess that up pretty good (if it ever amounts to anything).

--Dan'l

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<http://www.livejournal.com/users/sturgeonslawyer>

Iorwerth Thomas — 26 Apr 2006, 10:51 · in reply to Dan'l Danehy-Oakes

From: "Dan'l Danehy-Oakes" <danldo at gmail.com>

H'mmm. Is there a formulation of QFT in which relativistic causality is not violated -- or at least rendered irrelevant? I somehow had the impression this was one of the big barriers to making quantum gravity theories work. --at any rate, it seems the the experiments which (seem to) confirm the Bell hypothesis throw relativistic causality into a very cocked hat.

Well, Bell's inequality is a property (as far as I know; I'm a computational field theorist turned condensed matter theorist who needs to bone up on his foundations) of non-relativistic QM as opposed to full QFT, which is compatible with special relativity, at least at an operational level.

General relativity is the hard case, partly because the maths is quite horrid, but mostly because of the conceptual problems (to do with time - canonical quantum gravity has none - and how the wavefunction of the universe is defined, measured or if it even exists). The degree to which Bell's inequalities affect relativistic causality is somewhat up in the air, because you can't transmit information faster than light, which makes it comparable to the apparant violation of relativity in QFT (at least, to me; again, others who know more may disagree).

I'm pretty sure that the whole point of relativity is not to have a preferred frame of reference. But, ZPF theory may mess that up pretty good (if it ever amounts to anything).

Well, yes... But in the case of the universe you get a Machian 'background of fixed stars' effect (I think); I'm not sure Lee Smolin is happy with that but he's a bit of a purist in this regard.

ZPF theory?

Dan'l Danehy-Oakes — 26 Apr 2006, 17:59 · in reply to Iorwerth Thomas

On 4/26/06, Iorwerth Thomas <iorweththomas at hotmail.com> wrote:

Well, Bell's inequality is a property (as far as I know; I'm a computational field theorist turned condensed matter theorist who needs to bone up on his foundations)

Heh. Back in my days at Berkeley, one of their Nobel winners in Physics insisted on sitting on all doctoral defenses. He would inevitably ask "What is the definition of force?" and similar questions -- if you couldn't come up with $F=MA$, you were hosed. Some of the candidates, who hadn't touched "that stuff" in ten years or more, had to cram before their oral

General relativity is the hard case, partly because the maths is quite horrid, but mostly because of the conceptual problems (to do with time - canonical quantum gravity has none

Okay I didn't know that there was a canonical version of quantum gravity yet... I clearly need to catch up on my science mags. (There's a huge pile by the bed...)

The degree to which Bell's inequalities affect relativistic causality is somewhat up in the air, because you can't transmit information faster than light,

Ummm ... I have this idea that you can, by exploiting exclusion.

Consider three points, A, B, and C. B is between A and C, but one light-microsecond closer to A. B emits photon-pairs towards both A and C, at regular intervals.

At C, you set up a device to detect photons coming from B as waves.

At A, I measure every other (odd-numbered) photon as a particle. If I'm understanding exclusion and the inequality correctly, this means that you can't measure these photons as waves, so your wave-measuring doodad misses every odd-numbered photon, which gives us a kind of synchronization. Then I measure the even-numbered photons as waves for 1 and as particles for 0. You will only be able to detect the ones paired to the ones I measure as waves. So no matter how far A and C are from each other, the information I encode in this way will reach you in one microsecond.

True? False? I'm not sure -- I don't have the maths to understand why I'm wrong, if I am.

I'm pretty sure that the whole point of relativity is _not_ to have a preferred frame of reference. But, ZPF theory may mess that up pretty good (if it ever amounts to anything).

Well, yes... But in the case of the universe you get a Machian 'background of fixed stars' effect (I think); I'm not sure Lee Smolin is happy with that but he's a bit of a purist in this regard.

Mmmm. I see the point while not conceding it -- if I move an inch, my position relative to the farthest actual star _has_ changed, even if the change is below any conceivable threshold of measurement. I don't think this creates an actual preferred frame of reference, but a difference of scales in which certain effects become smaller than quanta and effectively disappear.

ZPF theory?

Zero point field theory, which (aside from offering a nifty source of hypothetical free energy, at least in science fiction) seems to propose an actual reason why inertial mass is related to gravitational mass.

--Dan'l

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-- St Teresa of Avila

<http://www.livejournal.com/users/sturgeonslawyer>

Jeff Wilson — 27 Apr 2006, 02:59 · in reply to Dan'l Danehy-Oakes

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True? False? I'm not sure -- I don't have the maths to understand why I'm wrong, if I am.

I don't think this will work, as you're essentially doing a slightly-rearranged double-slit experiment. Empirically, one slit has to be slightly closer to the source on the same scale as your A, B, and C above, if for no other reason than measurement error in construction of the apparatus. Yet the outcome still depends on the presence of that second slit. Likewise, the ultimate resolution of state will depend on what happens at A and C, not solely A as you have it above.

Jeff Wilson - jwilson at io.com
< <http://www.io.com/~jwilson> >

Iorwerth Thomas — 27 Apr 2006, 09:12 · in reply to Dan'l Danehy-Oakes

From: "Dan'l Danehy-Oakes" <danldo at gmail.com>
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Ouch...

Okay I didn't know that there was a canonical version of quantum gravity yet... I clearly need to catch up on my science mags. (There's a huge pile by the bed...)

Canonical quantum gravity is just the term for what Stephen Hawking does (i.e. take GR and second quantise it); it isn't hugely successful...

The degree to which Bell's inequalities affect relativistic causality is somewhat up in the air, because you can't transmit information faster than light,

Ummm ... I have this idea that you can, by exploiting exclusion.

Consider three points, A, B, and C. B is between A and C, but one light-microsecond closer to A. B emits photon-pairs towards both A and C, at regular intervals.

At C, you set up a device to detect photons coming from B as waves.

At A, I measure every other (odd-numbered) photon as a particle. If I'm understanding exclusion and the inequality correctly, this means that you can't measure these photons as waves, so your wave-measuring doodad misses every odd-numbered photon, which gives us a kind of synchronization. Then I measure the even-numbered photons as waves for 1 and as particles for 0. You will only be able to detect the ones paired to the ones I measure as waves. So no matter how far A and C are from each other, the information I encode in this way will reach you in one microsecond.

True? False? I'm not sure -- I don't have the maths to understand why I'm wrong, if I am.

I'll have to think about that... I suspect that it may be an ill posed problem :) (that is, there's a catch, but I'm buggered if I know what it is).

I'm pretty sure that the whole point of relativity is not to have a preferred frame of reference. But, ZPF theory may mess that up pretty good (if it ever amounts to anything).

Well, yes... But in the case of the universe you get a Machian 'background of fixed stars' effect (I think); I'm not sure Lee Smolin is happy with that but he's a bit of a purist in this regard.

Mmmm. I see the point while not conceding it -- if I move an inch, my position relative to the farthest actual star has changed, even if the change is below any conceivable threshold of measurement. I don't think this creates an actual preferred frame of reference, but a difference of scales in which certain effects become smaller than quanta and effectively disappear.

I think it's a little more fundamental than that (and my reference to Mach may be slightly misleading). Maybe it's a property of the particular space-time metric cosmologists use?

ZPF theory?

Zero point field theory, which (aside from offering a nifty source of hypothetical free energy, at least in science fiction) seems to propose an actual reason why inertial mass is related to gravitational mass.

Ah yes, I think I've heard of that (vaguely), though I don't know much about it; most of my particle physicist watching at the moment consists of observing the general kerfuffle as string theory dies a messy death for the third time...

Stanislaus — 01 May 2006, 02:16 · in reply to Dan'l Danehy-Oakes

Hello Dan'l,

Wednesday, April 26, 2006, 7:59:59 PM, you wrote:

On 4/26/06, Iorwerth Thomas <iorweththomas at hotmail.com> wrote:

Well, Bell's inequality is a property (as far as I know; I'm a computational field theorist turned condensed matter theorist who needs to bone up on his foundations)

I'm a lawyer, so my explanation can be a bit flawed.

The degree to which Bell's inequalities affect relativistic causality is somewhat up in the air, because you can't transmit information faster than light,

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True? False? I'm not sure -- I don't have the maths to understand why I'm wrong, if I am.

Some variation of Einstein-Podolsky-Rosen conception? You can measure any photon as wave. The problem is, if an entangled photon has been measured before, it will change - statistically - the results of the measuring of the second photon. But the problem is that you will know what the results should be when you get the results of the first measurement.

So you can transmit information quicker than light - but you cannot decode it.

Best regards,
Stanislaus <mailto:sbocian@poczta.fm>

Poznaj Stefana! Zmien komunikator! >>> <http://link.interia.pl/f1924>

Dan'l Danehy-Oakes — 01 May 2006, 06:30 · in reply to Stanislaus

Stanislaus,

Thank you. I knew there had to be a problem with this somewhere. This is a good clear explanation.

Not bad for an attorney whose first language isn't English. I wish I had Polish half as good as your English! 8*)

--Dan'l

I do not fear Satan half so much as I fear those who fear him.
-- St Teresa of Avila
<http://www.livejournal.com/users/sturgeonslawyer>