

sci.physics: Missing replies Draper requested.

: >>>>>>>> You stupid cretin. The speed of a water wave is independent
: >> of
: >>>> the
: >>>>>>> speed
: >>>>>>> of the boat that created it, but NOT independent of the
: >> speed
: >>>> of
: >>>>>> the
: >>>>>>> river.
: >>>>>>> Wha I said is literally true and still observable today. If
: >> you
: >>>>>> can't
: >>>>>>>
: >>>>>>> deal with it, fuck off, you've no business in a science
: >>>> newsgroup.
: >>>>>>>>
: >>>>>>>> Androcles.
: >>>>>>>>
: >>>>>>>> Consider the Advanced Light Source, a LBL laboratory devoted
: >> to
: >>>>>>>> research using synchrotron radiation.
: >>>>>>>> http://www-als.lbl.gov/als/als_users/bl/bl_layout.html
: >>>>>>>>
: >>>>>>>> *Because the source of the radiation is a train of electron
: >>>> bunches
: >>>>>>>> traveling nearly at c, and
: >>>>>>>> *Because the experiments trigger their experiments based on a
: >>>> time
: >>>>>> of
: >>>>>>>> flight from the electron bunch that can certainly distinguish
: >>>>>>>> between
: >>>>>>>> a
: >>>>>>>> light speed of c and a light speed of $\sim 2c$, and
: >>>>>>>> *Because the beams are distributed nearly completely around
: >> the
: >>>>>>>> azimuth
: >>>>>>>> of the ring, thereby being sensitive to any speed of the
: >> "river"
: >>>>>>>> that
: >>>>>>>> the ring is immersed in, then
: >>>>>>>>>
: >>>>>>>>> one can conclude that light's speed is dependent neither on
: >> the
: >>>>>>>>> speed
: >>>>>>>>> of the source nor on the speed of any medium that permeates
: >> the
: >>>>>>>>> ring.
: >>>>>>>>>>
: >>>>>>>>>> It is simply NOT TRUE that
: >>>>>>>>>>> "Nobody has ever directly measured the speed of light in a
: >>>>> vacuum

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: >>>> Light emitted from an electron traveling at nearly c then travels
: >> at
: >>>> nearly $2c$,
: >>>>
: >>> Wrong to begin with.
: >>>>
: >>>> Light emitting from a point of interaction between an electron and
a
: >>>> stationary field then travels in vacuum (a reasonable presumption
: >> since
: >>>> we have electrons at a large) at an unknown velocity we are
: >> attempting
: >>>> to determine
: >>>>
: >> So the speed of light emitted from a source traveling at v is, or
is
: >> not, $c+v$? In either case, please make the distinction, if any,
between
: >> the case here and the case you fit at
: >> http://www.androcles.pwp.blueyonder.co.uk/actual_data.htm which is
: >> based on a $c+v$ explanation.
:
: This question was unanswered.
:
: >>>>
: >>>>
: >>>>
: >>>> but upon hitting the window, it gets reduced
: >>>>
: >>>> No, no, not reduced. Changed. We don't know what it is to begin
with,
: >>>>
: >>>> that is what we are trying to measure. Of course, if you've
already
: >> made
: >>>> your mind up, I can't help you become a scientist, and you'll be
: >>>> teaching kids how to become schoolteachers that have preconceived
: >> ideas.
: >>>>
: >> OK, so let me ask you a question related to Snell's law. Recall
: >> Snell's
: >> law relates a ratio of (sines of) incident and transmitted light
: >> angles
: >> to the ratio of speeds in the media, which in turn is the ratio of
: >> indices of refraction for that frequency of light.
: >>>>
: > You've hit a problem (well, more than one) right there.
: > 1) the index of refraction is between two media, it is not the
property
: > of one.
:
:

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: That is incorrect. The refraction occurs at the boundary, but the amount of
: refraction is given by the ratios of the indices of refraction of the two
: media at the boundary.

<http://scienceworld.wolfram.com/physics/IndexofRefraction.html>
The index of refraction is defined by

$$n \sim c/v_{\text{phase}} \quad (1)$$

where c is the speed of light and v_{phase} is the phase velocity. It gives the amount of refraction which takes place for light passing from one medium to another.

Let ω be the angular frequency and k the wavenumber, then the phase velocity is defined as

$$v_{\text{phase}} = \omega/k$$

The angular frequency is $2\pi f$.

YOU are incorrect, since you do not know what the speed of light is and nor do you know what the frequency is, since you do not have a fucking timing device that works fast enough, you pompous asshole.

: >
: > For example, the fish tank. Light passes from the water to the glass to
: > the air.
: >
: > 2) You seem to be saying that blue light travels faster than red light
: > in a medium.
:
: Actually, the other way around. Blue light generally travels slower than red
: light in a medium.

Oh, I see. The faster bullet bends more at the interface. Gotcha.

: This is how glass prisms work to create spectra and how
: water droplets work to create rainbows.

Oh, I see. Having further to go in the medium, the blue travels slower than the red, does it?

<http://hyperphysics.phy-astr.gsu.edu/hbase/imgmod/roygbv.gif>
<http://www-staff.lboro.ac.uk/~huph/Prism3.gif>

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: It also is responsible for chromatic
: aberration in the eye, which in turn is behind the claim by the makers
of
: Blu-Blocker sunglasses that their product improves clarity of vision.

Oh really.... gotcha. Thank goodness I was never in your fucking class.

:>
:> We have more than one speed of light, and there cannot be just one
:> characteristic permeability and one permittivity for the material in
:> question if you wish to uphold Maxwell's approximations.... err...
:> "laws".
:>
:> I'm not too sure what Maxwell did for us, anyway.
:> Gauss' Law, $\text{curl } \mathbf{B} = d\mathbf{E}/dt$ and Faraday's Law, $\text{curl } \mathbf{E} = -d\mathbf{B}/dt$
:> a) seem to be all we need to describe light in a vacuum and
:> b) assume time is invariant.
:>
:> Amperes' Law.... $\text{curl } \mathbf{B} = \mathbf{J}$. Later modified to
:>
:> $\text{curl } \mathbf{H} = \mathbf{J} + d\mathbf{D}/dt$
:>
:> Ampere's law, modified form
:> The line integral of the magnetic field around a closed curve is
:> proportional to the sum of two terms: first, the algebraic sum of
:> electric currents flowing through that closed curve;
:>
:>
:> There is no closed curve in a vacuum for the electric current to
flow
:> in, so we can forget that.
:>
:> In addition to describing electromagnetism, Maxwell's equations also
:> claim that waves can propagate through the electromagnetic field,
and
:> would always propagate at the same speed — these are
electromagnetic
:> waves; the speed can be found by computing $(\epsilon_0 \mu_0)^{-1/2}$, which
is
:> c , the speed of light in Maxwell's aether, which doesn't exist. So
along
:> come the bright sparks and instead of discarding Maxwell along with
the
:> aether, transfer its properties to nothing.
:> Seems that physics is more about paying homage to the more famous
:> plagiarists than about studying Nature.
:
: I'm not sure what the point of the preceding monologue about Maxwell's
: equations has been. What's your point, exactly?

Missing replies Draper requested.

You fucking thick quartz window and you fucking thick quartz head. Never mind, it went right over the top anyway. Go back to sleep.

:
:>
:> 3) Attenuation. Sunlight doesn't penetrate the depths of the ocean,
:> lamps were take to illuminate the Titanic. Red light penetrates further
:> than blue, we see red sunrises and sunsets. Blue light is scattered,
:> giving us a blue sky.
:> Is the light slowing down in the medium?
:
: What does attenuation due to scattering in a medium have to do with the
: speed of transmission through the medium?

Ahh.... woken up at last, have you? Tell us, smart arse, what does attenuation have to do with the sun setting, the red light being faster than the blue? C'mon, you fucking know everthing, you tell me, I'll have a good laugh.

:>
:> A lemma of this law
:>> says that if you have a window embedded in another medium so that the
:>> light is going from medium A to B and then back to A on the other
:>> side,
:>> then the outgoing speed (in A) and the outgoing angle (in A) is the
:>> same as the incoming speed (in A) and the incoming angle (in A).
But
:>> you don't seem to be saying quite that.
:>
:> Well, have you got a vacuum on both sides of the window, then? If so,
:> what do you need the window for? Throw it away.
:
: As I indicated below, many experiments do exactly that, dispensing with your
: objection that the measurement of flight time is corrupted by the presence
: of a window.

As you guessed below, you mean. I think you are making it up. I think you are bullshitting. I think you are a schoolteacher that has never been near a storage ring in his life.

:>
:>> For the sake of argument, let's
:>> suppose we have a situation where A is vacuum and B is quartz.
:>

: > Then the light enters the quartz at whatever speed it has, travels
: > through the quartz
: > with the characteristic speed of light in quartz, and leaves with
the
: > characteristic speed of light in quartz. There is nothing else to
change
: > it (actually, there is).
: > The last thing the light encountered was an electron attached to the
: > last molecule of the quartz.
: > But anyway, that's for materials research, we are concerned with the
: > speed of light in vacuum.
:
: OK, let me see if I have this right.
:
: If light (and for easy look-up of numbers, let's use visible light)
passes
: from quartz ($n = 1.5$) to vacuum ($n = 1$), there would be no refraction
at the
: boundary at all, because the speed of the light in the quartz as it
: approaches the boundary is identical to the speed of the light in the
vacuum
: as it departs from the boundary. Snell's law would not work in this
case.

That right, it wouldn't. But you've never tested it. So do a Michelson,
say "We know what will happen", try it and find that it doesn't. Of
course, you'd need to be honest like Michelson as well. You don't have
that kind of honesty. You are the kind of guy that who will say "They
take the windows out for some experiments".
because you appearing to be right is more important to you than
spreading dis-information, right?

: On the other hand, if light passes from quartz ($n = 1.5$) to air ($n =$
: 1.0003), there would be substantial refraction because the speed of
light in
: the quartz is substantially lower than the speed of light in air, in
: accordance with Snell's Law.
:
: And so if I attenuate the air so that it steadily becomes more and
more
: vacuum-like (n decreasing from 1.0003 to $1.000000000\dots$) at some
point,
: refraction suddenly snaps off because the speeds in the two media
become
: identical.
:
: Is that what your model says?

Suddenly snaps off? What hat did you pull a step function from?

If not, then what DOES your model say about
: these two cases?

Well, let's see... how many metres is it from the window to the next air molecule, be it oxygen, nitrogen, carbon dioxide, methane, or some other trace element, and which one has the refractive index 1.003 as you gradually attenuate the air?

Oh, and what was the temperature of that molecule?

: >>>> to something
: >>>> less than c , and then when it emerges from the window it stays at
: >> the
: >>>> speed it had in the window?
: >>>>
: >>> No, no, it gets changed again, this time to its characteristic
: >> velocity
: >>> in air.
: >>> Otherwise there was no point in having a window, was there?
: >>>
: >> Unless, of course, there is more vacuum on the other side of the
: >> window. The detectors are not necessarily in air.
: >
: > Then take the window out or put the detector inside the storage
ring.
: > It won't do much good, though, the proximity of the metal will
affect
: > the EM field, as we know from inexpensive metal detectors that
people
: > are using to dig up 1600 to 2000-year-old Roman coins all over
Britain.
: > Then you've still got the problem of proving the light comes from
the
: > electron and not the point of interaction.
:
: Don't you have the same problem of proving that the light comes from
the
: star and not the point of interaction?

No.

See

: http://www.androc1es.pwp.blueyonder.co.uk/actual_data.htm
: What's different about your orbiting star case and this orbiting
electron
: case?

I don't think anyone is claiming that sunlight/starlight is caused by the sun passing through an external magnetic field, but if that is your claim I'll discuss it with y.... hmmm... no I won't. There are limits to which I will not go beyond, although you seem to be able to make up any kind of preposterous crap to try to win a debate.

:>
:> Nobody has ever directly measured the speed of light in a vacuum
:> from a moving source. Nobody. Ever.
:>
:> The nearest anyone ever came to it is Henri Wilson and myself, but
that
:> only crudely demonstrates the principle.
:>
:>>
:>>>
:>>> I guess its a shame, but you'll have to tell those cretins that
:>> designed
:>>> the ring
:>>> it was a total waste of time with those windows in place. We need
to
:>>
:>>> make the measurement in the vacuum, especially for short
distances.
:>>> Of course it may be difficult evacuating the entire building after
:>>> everyone has set up
:>>> their instrumentation, but too bad.
:>>> If the experiment is worth doing, its worth doing properly.
:>>
:>> Actually, if you study the documentation carefully, you'll note
that
:>> the vacuum pipe often extends to, and includes the instrumentation.
:>> So-called Roman pots are an example of a technique used to put
:>> instrumentation directly in the beamline in vacuo. Indeed, for many
:>> experiments and beamlines, a window would be a disaster, as it
would
:>> cause diffraction, ejected electrons from the window, etc.
:>
:>
:> So prove the electrons are the source of the light.
:> I say it is the point of interaction between the stationary field
and
:> the electron.
:
: And is this an instantaneous interaction in your view?

I have no idea. How long does it take for an electron to pass (at
"nearly the speed of light" as you claim) through the steering magnet's
field?

If not not, is the
: point of interaction stationary or moving?

I don't think anyone is sliding the steering magnets up and down the
length of the tube, do you?

Why am I wasting my time on a fucking useless imbecile anyway ?
Androcles.

If it is the point of
: interaction between the stationary field and the electron that
radiates the
: photon, why isn't the radiation emitted isotropically?
:
:>
:>>>
:>>>
:>>>> Does this apply to sound too?
:>>>
:>>> Hmm... Well, you may be too young to remember those old phonograph
:>>> records,
:>>> but I used to play them at 78 rpm with a real needle that operated
a
:>>> diaphragm at the end of a horn (1920s technology, it belonged to
my
:>>> grandmother). The groove of the record is a somewhat hilly
terrain,
:>> and
:>>> it vibrates the needle as the needle follows the hills and valleys
in
:>>
:>>> the groove. So you can think of the hills as the analogue to the
:>>> electrons rotating in the storage ring as the record rotates.
:>>> The speed (rpm) of the record doesn't change the speed of the
sound
:>> in
:>>> air, only the frequency.
:>>>
:>>> I must say I'm pleased you are starting to think and ask
intelligent
:>>> questions instead of trying to demonstrate how clever you think
you
:>> are.
:>>> There may be hope for you yet.
:>>
:>> I think it's time I asked you a lot of questions about your model
:>> rather than to try to teach you someone else's.
:>
:> Go ahead, ask away.
:>
:>>
:>>>>
:>>>> Suppose I have two planes, traveling at
:>>>> 200 m/s through still air, plane A behind plane B. Someone blows
an
:>>>> airhorn in plane A. The sound proceeds to the front of plane A at

: >> 343
: >>>> m/s with respect to the plane, or 543 m/s with respect to the
: >> ground.
: >>>>
: >>>> Ok, that would be the speed of the sound inside the plane.
: >>>>
: >>>> When it emerges from the front of plane A, it slows to 343 m/s
with
: >>>> respect to the ground and travels toward plane B.
: >>>>
: >>>> Yes, that is correct. It is also quite correct for light, as well,
: >>>> except the numbers are higher.
: >>>>
: >>>> When it hits plane B,
: >>>> the sound does which of the following:
: >>>> a) stays at 343 m/s with respect to the ground, or 143 m/s
through
: >> the
: >>>> air in the plane.
: >>>> b) speeds up to 543 m/s with respect to the ground, or 343 m/s
with
: >>>> respect to the air in plane B
: >>>> c) something else?
: >>>>
: >>>>
: >>>> b) is the correct answer, son.
: >>>>
: >> Ah, then, I'm not a complete idiot. That would have been my guess
as
: >> well.
: >>
: > Actually, I was discussing Einstein's thought experiment with Randy
Poe,
: > and Daryl McCullough introduced a very nice model that would be
: > excellent for
: > your students, akin to your two aircraft. I added the ladder. It
goes
: > like this:
: >
: > Sam and Joe are walking along the street in still air carrying a 32
ft
: > long ladder between them, Joe leading.
: > A mosquito flies from Sam to Joe and back again.
: > Sam and Joe are walking at 3 fps, and the mosquito flies at 5 fps.
: > So, as Sam sees it, the mosquito takes 16 seconds to reach Joe,
flying
: > at
: > $5-3 = 2$ fps, and 4 seconds to return, flying along the ladder at $5+$
 $3 =$
: > 8 fps
: >

:> According to Einstein, we are to assume the speed of the mosquito is
:> independent of the speed of Sam (fair enough) and also we are to
assume
:> that the time for the mosquito to make the round trip (20 seconds)
when
:> divided by 2 is equal to the time it took to reach Joe, 16 seconds.
:>
:> Here is Einstein's equation:
:>
:> $\frac{1}{2}[\tau(0,0,0,t)+\tau(0,0,0,t+x'/(c-v)+x'/(c+v))] =$
 $\tau(x',0,0,t+x'/(c-v))$
:>
:> You can read about it at
:> <http://www.fourmilab.ch/etexts/einstein/specrel/www/>
:> (Section 3)
:>
:> Putting in the mosquito numbers,
:>
:> $\frac{1}{2}[\tau(0,0,0,t)+\tau(0,0,0,t+32/(5-3)+32/(5+3))] =$
 $\tau(32,0,0,t+32/(5-3))$
:> $\frac{1}{2}[\tau(0,0,0,t)+\tau(0,0,0,t+20)] = \tau(32,0,0,t+16)$
:>
:> Obviously (0,0,0,t) is pretty meaningless, and we can drop the "t +
"
:> since we really don't care if Sam and Joe are walking in the
mid-morning
:> or late afternoon.
:>
:> So,
:> $\frac{1}{2} * \tau(0,0,0,20) = \tau(32,0,0,16)$.
:>
:> There's some differentiation by Einstein to make himself look
important,
:> but he eventually arrives at
:>
:> $\tau = (t-vx/c^2) / \sqrt{1 - v^2/c^2}$
:> $\xi = (x-vt) / \sqrt{1 - v^2/c^2}$
:> $\eta = y$
:> $\zeta = z$.
:>
:> That is what you get when you treat time as if it were a vector.
:>
:> We can forget y and z, the mosquito didn't fly up into a tree or
into
:> the ditch at the side.
:>
:> Now we need to know x.
:> He gives that earlier in the form $x' = x-vt$, and we can solve for x.
:>
:> Now, the length of the ladder is $x - vt$, or 32, because
:>

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:> "If we place $x'=x-vt$, it is clear that a point at rest in the system
k
:> must have a system of values x', y, z , independent of time. "
:>
:> $\xi = 32 / \sqrt{1 - 3^2 / 5^2}$
:>
:> = 40.
:>
:> We are standing at the roadside watching Sam and Joe carry a 40 ft
:> ladder that they think is 32 ft, because the speed of mosquitoes is
5
:> fps in all inertial frames of reference. It must be right, its only
:> algebra after all is said and done.
:>
:> That is the kind of crap you are about to teach to your students,
and in
:> 5- 7 years they'll be back on Usenet proclaiming they know all about
:> relativity; poor old Androcles (if he isn't dead by then) will be
:> trying desperately to knock some fucking sense into them and get
them to
:> unlearn all the garbage you've crammed into them to pass an
examination.
:> And so the lies propagate, and Androcles is just a stupid old fool
that
:> doesn't understand relativity. The same old fool that YOU think you
are
:> going to teach the basics to.
:> This old fool knows a huckster when he sees one, and he knows
(x,y,z,t)
:> is NOT a vector.
:> But okay, you carry on feeding crap to the kids and I'll still do
my
:> best to try to straighten them out and make thinkers of them. I may
:> succeed with one or two...
:
: As I said, at the moment I'm not interested in trying to teach you
someone
: else's model. At the moment, I'm trying to understand whether your
model
: makes any sense.
:
:>
:> And you whine about feeling demoralized? How the fuck do you think I
:> feel?
:> I've told you before: If you feel demoralized, I can only advise you
:> this way.
:> "If you can't take the heat, stay out of the kitchen" – Harry Truman
:>
:> Androcles.
:
: I also said I was feeling better. As you can tell, I'm not

particularly
: intimidated by the heat in your kitchen, or the coal in your cellar,
or
: whatever.
:
:>
:>
:>>>
:>>> In the case of two spacecraft, however, things are a little
:>> different.
:>>> Being in a vacuum, we can't make a direct analogy with sound,
there
:>> is
:>>> no air and hence the energy of the sound never gets to B. What
we'll
:>> do
:>>> is build an enormous bubble around A to contain air, and put B
inside
:>>
:>>> the bubble. Now we have sound from A to B travelling away from A
at
:>> 343
:>>> m/s. If B pulls ahead, B will experience a drop in frequency and
if B
:>>
:>>> drops back, an increase in frequency.
:>>>
:>>> This analogy is the Galilean relativity model.
:>>>
:>>> Remember that the time for sound to go from A to B is the time for
:>> sound
:>>> to go from B to A.
:>>>
:>>> The SR model has the bubble centred on B, so that the speed of
sound
:>> is
:>>> constant with respect to B instead of A.
:>>>
:>>> With the bubble centred on B, we would not have the time for sound
to
:>> go
:>>> from A to B equal to the time for sound to go from B to A.
:>>>
:>>> Androcles.
:>>>
:>>>
:>>>
:>>>
:>>>
:>>>
:>>>
:>>>
:>>>
:>>>

:>>>
:>>>
:>>>
:>>>> PD
:>>>>
:>>>>>
:>>>>>
:>>>>> The index of
:>>>>>> refraction of quartz is 1.5. This would slow the time of
transit
:>>>>>> through that 1 cm space from 33 ps to 50 ps, a difference of 17
:>> ps
:>>>> ---
:>>>>>> much, much smaller than the 50 ns resolution required to
discern
:>> c
:>>>>>> from
:>>>>>> 2c.
:>>>>>>
:>>>>>>> You might as well measure the speed of traffic after passing
it
:>>>>>>> though a
:>>>>>>> toll booth.
:>>>>>>>
:>>>>>>> And that's entirely reasonable and experimentally accountable.
:>> If
:>>>> you
:>>>>>>> tell me it takes you two hours to get from Philadelphia to New
:>> York
:>>>>>>> City, even if you spent 2 minutes in each of five toll booths
:>> along
:>>>>>
:>>>>>>> the
:>>>>>>> way (or not), I would be able to discern whether your average
:>> speed
:>>>>> on
:>>>>>>> the highway was 40 mph or 80 mph. The toll booths would not
have
:>> a
:>>>>>>> large enough effect to alter the conclusion. Moreover, I can
:>>>>> correct
:>>>>>>> for them.
:>>>>>>>
:>>>>>>> Who's interested in averages?
:>>>>>>> You are claiming the speed of light is invariant. I'm saying
:>> you've
:>>>>>>> never measured the speed of light, in a vacuum, from a moving
:>> source,
:>>>>>>>
:>>>>>>> and neither has anyone else.
:>>>>>>> You think you can browbeat me like I was some kid in your

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:>>>> schoolroom,
:>>>>> you fucking monster? Think again.
:>>>>>
:>>>>>
:>>>>> "But I want this to be a fruitful exchange between the two of
us,
:>> so
:>>>>> let's agree on some ground rules. We'll go things one little
step
:>> at
:>>>>> a time. When we get to a point of conflict, we'll identify what
:>> the
:>>>>> error is on either side, and the party in error MUST acknowledge
:>> the
:>>>>> error and remove the erroneous statement from further
:>> discussion."–
:>>>> PD,
:>>>>> the lying dishonest bastard.
:>>>>>
:>>>>>
:>>>>>>> Even an ordinary metal detector show the effect proximity will
:>>>> have
:>>>>>>> on
:>>>>>>> EM radiation.
:>>>>>>>
:>>>>>>>
:>>>>>>> Nobody has ever directly measured the speed of light in a
:>> vacuum
:>>>> from
:>>>>>>> a moving source. Nobody. Ever.
:>>>>>>>
:>>>>>>> Androcles.
:>>>>>>>
:>>>>>
:>>>>>
:>>
:>
:>
:
: