

Re: What is frequency??

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- *From:* "PD" <TheDraperFamily@xxxxxxxxxx>
 - *Date:* 26 May 2006 15:17:14 -0700
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Sue... wrote:

PD wrote:

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Now, please refer to what I said earlier. In *every single instance* of a transverse wave propagated along a medium like a string, the velocity of the propagation is related to two things: the elastic modulus (stiffness) of the medium and the inertia of the

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medium.
Both of
those
quantities
are
independently
measurable.
This is how
we know
this rule
applies to
all
transverse
waves
propagated
along a
medium.
For
example,
for a guitar
string, we
can measure
the elastic
modulus of
the material
of the string
in an
experiment
that has
nothing to
do with
waves, and
we can
measure the
inertia of
the material
of the
string, and
we can
use that to
predict
the velocity
of the wave
in the guitar
string and
then
compare
that with a
direct
measurement
of that wave

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speed —
and
it works. In
fact, we can
go the other
way and by
measuring
the
velocity of
the wave
speed, we
can predict
either the
elastic
modulus
of the string
material or
the inertia
of the string
material,
and then
compare
that with
the
independent
measurements
of either of
those —
and it
works. I
repeat —
this doesn't
work only
for guitar
strings; it
works for
every single
case of a
transverse
wave
supported
by a
medium.

Now, here's
the rub.
When you
try to do
that with a
presumed
medium in

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otherwise
empty space
and try to
figure out
what values
for elastic
modulus or
inertia
would be
appropriate
from a
propagation
speed of c
this
necessarily
implies
either a
value of
stiffness or
a value of
inertia that
is obviously
ridiculous.

An electromagnetic medium
always has an opposite
charge
moving in the opposite
direction in response to
incident light
so these kinds of mechanical
continuum arguments don't
apply.

Really? Where is the charge moving in the
region between here and the
sun?

Most of them are orbiting hydrogen nuclei.
<http://www-ssg.sr.unh.edu/ism/what1.html>

The density of hydrogen nuclei in the ISM is about 1 per cubic cm. So
how does light get from one atom to another that's 100,000,000 atomic
diameters away?

The same way wiggling a charged comb

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makes a pith ball wiggle.

Precisely, and no medium is required for that.

<< The sun atom shakes; my eye electron shakes
eight minutes later, because of a direct interaction across. >>
<http://nobelprize.org/physics/laureates/1965/feynman-lecture.html>

The charges at either end of the path are of course
always there or you have no path.

Coulomb force and electron
mass nicely accounts
for the speed of light just as
mass and tension of
a musical instrument string.

<<Nice pseudo-dense babbling.>>
Harumph!

Please show where the coulomb force and
the electron mass appear in an
equation for the speed of light in a manner
analogous to the equivalent
terms for the case of a musical string.

Because Coulomb force and string tension have an inverse
relation
to distance, It doesn't get much closer than what you see in
the
NIST equation. It might be helpful if you look at some
expressions
for permittivity and imagine how the equation would change
if you
substitute a spring for the Coulomb coupling.

Don't make me squint to try to see it.
Do it. Show it.

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I can't learn to ride a bicycle for you. Compare some equations for oscillating systems using inductors and capacitor with those for weights and springs 'till you can see how one differs from another but they both predict frequency.

Oscillation \neq traveling wave. You're losing track. You're also evading. I asked you to demonstrate something and you defer. You know the musical "Music Man"? The one where the charlatan promises to teach children how to play music, but all he can offer is "the Think Method"? "Just think the music, and it will come out!"

Your links below do not make it obvious — perhaps you could be more specific.

The below doesn't help.
If there's something in there you see, show it.

Again... I can't do better than NIST at explaining alpha. Goggle on 'fine structure constant' and 'speed of light' till you find something you can read.

Alpha is not a speed. Nor is it an elastic modulus, nor is it an inertia of the medium.

What other sort of herring would you like to pick up and wave vigorously?

PD

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