

Re: The motion of waves

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From: bz (bz+sp_at_ch100-5.chem.lsu.edu)

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Date: Sun, 27 Mar 2005 16:06:46 +0000 (UTC)

"jahn" <susyshow@yahoo.com.au> wrote in
news:3ao023F65gui7U1@individual.net:

>
> "bz" <bz+sp@ch100-5.chem.lsu.edu> wrote in message
> news:Xns962655B0EC4B4WQAHBGMXSZHVspammote@130.39.198.139...
>> "jahn" <susyshow@yahoo.com.au> wrote in news:3anq8aF6c9vi6U1
>> @individual.net:
>>
>>> Is their like... some kind of choreographer to keep all of the
>>> photons in step... or cadence... or whatever you call it?
>>>
>>> Sue...
>>>
>>>
>> If they are generated 'in step', as in a laser, they stay in step. This
>> is called phase coherence.
>
> I don't think lasers exist naturally do they ? Maybe short ones.

That is a good question. It is possible that the 'jets' of energy and matter that are seen coming from collapsing star(s) might be a similar phenomena. You have a lot of ions confined by a magnetic field.

>>
>> If the E field points in the same direction, they are plane polarized.
> How do atoms "point the same way" ?
>>
>> If the EM fields rotate as the photons travel, the photons are
>> circularly polarized.
> Circular... you mean like the shape of an atom?

No [what makes you think atoms are circular?]. I mean that the wave/photon spins about an axis that represents its direction of travel, like a bullet spins around an axis that is parallel to its direction of travel.

Lets look at microwave photons. They can be launched from a 1/2 wave

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dipole. In which case the receiving antenna dipole should be parallel to the transmitting antenna dipole. If it is perpendicular, most of the signal is lost. If the dipole is aligned vertically, the wave is said to be vertically polarized. If the dipole is aligned horizontally, the wave is said to be horizontally polarized because the 'E field' oscillates in the horizontal plane.

An antenna can be constructed with a 'corkscrew shaped antenna'. This will launch a 'circularly polarized' signal. The wave/photons can rotate either clockwise or counterclockwise, depending on how the antenna is constructed.

Light can also be plane polarized or circularly polarized. Some chemicals line up in patterns that filter out plane polarized light in one plane. Polaroid sunglasses use such a material.

Some chemicals allow light that is circularly polarized in one direction to pass and filter out the other orientation. Such filters are used in some liquid crystal displays. If you put on your polaroid sun glasses and look at a liquid crystal display and the image on the display disappears when you turn your head at a certain angle, then your display uses plane polarized filters. On the other hand, if the tilt of your head does NOT make the image go away, your screen uses circular polarization.

>>

>> *photons emitted by a hot surface, like a light bulb are neither
>> coherent nor polarized.*

>

> *Are hot surfaces made of atoms ?*

Depends on how hot the surface is. But as long as it is a 'surface' it is made of atoms.

If you get matter hot enough, the atoms lose electrons and become ions. They are still atoms, just excited ones.

If you get matter even hotter and put it under enough pressure to keep it together, the protons and electrons can combine to form neutrons. THEN you have no atoms, you just have a mass of very hot neutrons.

> *Self deprecation will get you every-where ; -)*

I have yet to be every-where. :}

There is also the implication that we are ALL ignorant and have something worth while to learn from each other.

I am SURE that there are things that YOU know that I do not know.

For example, what you had for breakfast this morning. :)

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bz

please pardon my infinite ignorance, the set-of-things-I-do-not-know is an infinite set.

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