# Re: basic question about light

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- *From*: "Sue..." <suzysewnshow@xxxxxxxxxxxx>
- *Date*: 8 Feb 2007 05:49:33 −0800

On Feb 8, 6:49 am, "Aaron" <anod...@xxxxxxxxxxx> wrote:

> Posters here seem to have all sorts of backgrounds, and I'm figuring
> that asking a rather simple question is an OK thing to do. So here
> goes.
>
> (1) I point a laser straight up.

Actually conductors and dielectrics create multiple
paths with constructive and destructive wave interference
in certain regions of space. What you do is alter the
configuration of reflecting and refracting materials.

> (2) I do not see any laser light from sitting next to it, my gave
> directed perpendicular.
> (3) I blow smoke at the laster light
> (4) I see the laster beam.

<< I am trying to understant some of the basics of light here. >>

http://web.mit.edu/8.02t/www/802TEAL3D/visualizations/light/index.htm
http://farside.ph.utexas.edu/teaching.html
http://www.ee.surrey.ac.uk/Personal/D.Jefferies/antennas.html

> The laser uses some gas to generate photons and get them going in the
> same direction.
>
> The smoke reflects some of the photon into different directions than
> they started.
>
> QUESTION #1: What does it mean for a molecule of gas to "reflect the
> laster light" ?

The molecule conducts and refracts and alters the path.

> A molecule is like a giant wall to a photon and it just bounces off it.
> When the ligh changes direction, it still goes at light speed.
> Did the molecule have to give up any energy to allow this?

Photons are pseudo−particles with practically no qualiative use.
They are not accepted as a propagation model and confuse
more than they illuminate.

<<Now, does not the prize to Einstein imply
that the Academy recognised the particle
nature of light? The Nobel Committee says
that Einstein had found that the energy exchange
between matter and ether occurs by atoms emitting
or absorbing a quantum of energy,hv .

As a consequence of the new concept of light quanta
(in modern terminology photons) Einstein proposed the
law that an electron emitted from a substance by
monochromatic light with the frequency has to have
a maximum energy of E=hv−p, where p is the energy needed to
remove the electron from the substance. Robert Andrews
Millikan carried out a series of measurements over a
period of 10 years, finally confirming the validity of this
law in 1916 with great accuracy. Millikan had, however,
found the idea of light quanta to be unfamiliar and strange.

The Nobel Committee avoids committing itself to the
particle concept. Light−quanta or with modern terminology,
photons, were explicitly mentioned in the reports on
which the prize decision rested only in connection with
emission and absorption processes. The Committee says
that the most important application of Einstein's photoelectric
law and also its most convincing confirmation has come from
the use Bohr made of it in his theory of atoms, which explains
a vast amount of spectroscopic data. >>
http://nobelprize.org/physics/articles/ekspong/index.html

> QUESTION #2: I see the light because photons go into my eyes.
>
> I undertand that optic nerves respond to photons.
> So, the photon must hit the optic nerve.

> What happens? Does the photon cease to exist at some point?
> When it does cease to exist, does this amount to energy transfer which
> ultimately results in electrical stimulation of my nerve?

The light waves add constructively at the neuroreceptors.
If the total intensity is sufficient to move an atom to a different
quantum energy level, it will do so and eject a photoelectron.
It is this instant that the absorbed light may be refered to
as a photon.

Sue...

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