The EM Particle

The assumption is that there is a particle that has electromagnetic (EM) properties and that this particle is part of EM radiation and gravity. It is a particle that has properties of a wave. This particle has the following characteristics:

The EM Particle

The EM particle is generated by the stars and other similar bodies.
It moves in a straight line.
Its speed is dependent on its environment but has a maximum value.
It may or may not have mass.
It may or may not have a charge.
It can have a frequency from zero to 400,000 GHz (gamma rays)
Its energy is proportional to the particle density (linear density)

The EM Wave

Figure 1 is a picture of one wave using a string of the EM particles.

Figure 1 – One Wave

Each dot is a particle. The first and last red dots are the beginning and end of one wave. The red dot in the middle is the center point of the wave. There are 8 particles in the first half of the wave and 6 in the second half. The average particle density of this wave is 14 particles per wave. The first half has 8 particles indicating a magnitude change from average of +1. The second half has a magnitude change of -1. This is like a sine wave of Amplitude 1. You might consider the +1 as a push and the -1 as a pull. But this model clearly shows that each particle has the same push, but the probabilities are higher for a particle density of +1 and lower for a particle density of -1.

How does the source emit particles at different intervals of time? One could also ask the question: How does the sun emit light that has continuously varying amplitude? I don't know the answer in either case.

EM Wave Speed

In an earlier paper, I suggested that the speed of sound and the speed of light were dependent on the medium it was in. It would be more accurate to say that it depends on its environment. Space, atmosphere, and the earth all have EM characteristics that change the environment for the EM particle. The speed of the particle is often at the speed of 'c'. A variation in EM environment of space can vary the instantaneous speed of the EM particle. This is true for our atmosphere or any other object that the EM particle can penetrate or pass through. The speed may have at a maximum in space, but it could still vary.

Gravity
If we make the frequency of the EM wave equal to zero, then there is a stream of EM particles that move in a straight line spaced at equal intervals of time. This is very much like Le Sages theory of Gravity. But in this case it is not a classic particle used in Newtonian mechanics; it is the proposed EM particle.

So, if the very low frequency wave can pass thorough objects, then this stream of EM particles has the possibility to interact with the object. A simple assumption is that when there is an interaction, the particle causes the object to move and the particle is absorbed. So the object is pushed and the particle density of the stream is decreased. This is classical particle theory of gravity.

The particles that do not interact continue in a straight line through the object. This makes the EM wave look like it continued in the same direction with a loss of amplitude. If the environment in the object has not changed, the speed does not change.

As the low frequency wave passes through more objects there is more pushing; and more reduction until there are no particles left.

Visible Light
It should be obvious that visible light can pass through air, water, and glass but does not pass through walls. When the light does not pass through the object, the wave reflects, refracts or is absorbed.

Transparency
As light passes through an object, two things happen. The new EM environment causes the wave to change speed. This causes the frequency to change and is known as the Doppler Effect. But as it passes through, the EM particles interact with the object and some particles will push the object and some will be absorbed. The amount of push is so small it is not observed. But the loss of EM particles causes a reduction in the particle density or it energy. So the intensity of the visible light is reduced.

Reflection
Reflection occurs when the EM particle stream hits a reasonably smooth surface. In the case of a mirror, most of the EM particles are reflected but some interact and are absorbed. There is an angle of reflection and there is some loss of intensity.

Change of Direction
How can there be a change of direction if the EM Particle moves in a straight line? The change of speed is given as the standard answer. There is a very poor analogy that is used to explain the change of direction. Light is a platoon of soldiers marching towards a muddy puddle. OK, there may be logic here, but if we have an EM particle, maybe we should use it as the model.

Snel's law seems quite accurate when very simple models are used. It clearly states that the change of direction is caused by the change of velocity as the EM particles move from our atmosphere into a glass. And this change of direction happens at the interface of our atmosphere and the glass. I would suggest that the change is electromagnetic in nature since the particle, the atmosphere, and the glass have EM properties. However at this point, I do not have a viable theory for the change of direction. But I am sure it is not marching soldiers!

Color

There are two situations to color. The first is what color frequencies are generated by nature. However, the color we see is based on our retina that has red, green and blue cones. There are many frequencies, but only three detectors. So, if we could generate a series of light frequencies would see each color in the visible spectrum.

But we don't see the light that nature generates nor do we see light as it is propagates. We only see the image of the object after the EM particle has reflected from the object and it propagates to our eye. When that reflected light hits our retina, we see the object as an array of colored dots that form the shape of the object. Our brain tells us that the object is book, because we were told by our parents that those shapes are books.

So, if I see a blue book, how is it that the light reflects blue light from the book and absorbs red and green? Obviously, the surface of the book has this characteristic. The surface of the book must be very smooth for the blue frequency and hence reflect; while the surface of the book is irregular such that the red and green frequencies are scattered or absorbed.

Ambient Light

What is the makeup of ambient light? We turn on a lamp and light is emitted. I look at the light bulb and it looks white. My eyes are telling me that there is a high level of equal parts of red, green and blue light. Maybe instruments would detect more frequencies. Whatever frequencies are there, the result of the reflected light causes my eye to report white color. The ambient light propagates, reflects, and moves toward my eye. I don't see this light. I see is an array of colored dots defining a shape.

Conclusion

Is EM radiation a stream of EM particles with wave properties? I have no idea. But it seems like an interesting possibility.

Bob de Hilster
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