The MM Theory - The Theory of Everything

Part (1)

Fundamentals

(V2)

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Summary:

A novel vision of the universe and an answer to the most mysterious question of all time, "what is light?"

Abstract

The nature of matter and universe and their behaviors have been discussed for many years, and based on these discussions, many unanswered questions have been arisen. The current scientific theory holds that light has a dual wave-particle nature, and its speed is limited to a constant, c. There are two contradictory views of behavior of light - and separately, neither of these views thoroughly explains the phenomena of light. In this paper, a new particle called "M Particle" is presented. Based on this theory and an experiment conducted by the author and interpretation of the classical physics results, in this part, a brief explanation for a number of phenomena including light, radio wave, bending of light near stars, redshift and blueshift, electricity, magnetism, photoelectric effect, heat and dark matter are presented. It is also concluded that light is a wave of vibrations of a group of M particles that vibrate harmonically and propagate throughout space. Light waves are longitudinal waves similar to sound waves. In addition, the experimental results indicate that the speed of light, c, is not constant. Thus, the theories of Special and General relativity are denied.

1. Keywords:

Theory of Everything, M particle, MM Theory, Light, Radio waves, Redshift, Bending of light, Electricity, Magnetism, Heat, Dark matter, Universe, Astronomy, Cosmology

2. Introduction:

"M Particle" and the Basic Fundamental of the "MM Theory":

M Particles fill all of the space and universe, including vacuum. The only exceptions are the empty spaces inside atoms and molecules and some regions of space in the universe [Fig. 1]. The empty space in the atom is void of M particles due to continuous nuclear inter-particle impacts and interactions that thrust and push the M particles away from the nucleus. The M particles have mass, angular momentum, shape, and may also possess, gain, or lose linear motion. The particles do not possess magnetic poles or electrical charges. Classical interpretations of magnetic poles and electric charges are abandoned, and there is no friction in-between particles. These particles are continually jiggling, bouncing, turning and twisting about one another. They can move about one another, and they can each have vibrations[1].

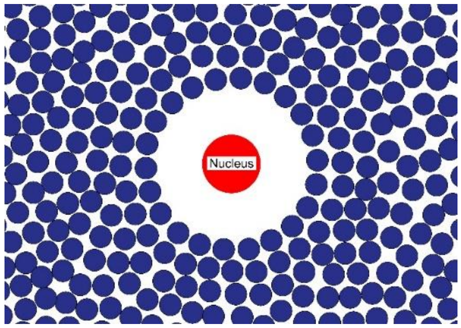

Fig. 1. Diagram depicting an atom, empty space inside the atom, and the surrounding "M particles"

Based on mechanical concepts, they act and react to one another through vibrations and collisions – in a mechanism called "M interactions." These "M interactions" can change the quantity and direction of the M particles' linear momentum and angular momentum. The distance between the particles depends on their level of vibrations and the amount of space pressure of the surrounding region. The pressure in space is caused by the vibrations and interactions of M particles themselves and depends on the spread of the M particles at any point in the universe. As a result of continuous vibrations, all particles within the universe distance themselves from one another. At any location in the universe that the particles can more readily expand to, there the space pressure is less. Consequently, the space pressure is always less at the very edges of the universe, and on the inside it varies according to the universe's expansion. As a whole, the universe operates due to the interactions of these particles.

An example of an "M particle" is an electron, which has angular momentum and also linear motion. The electron doesn't itself travel through a distance but transfers its linear momentum to the other "M particles" in the direction of its linear motion. As the distance between particles is not the same at all points in the universe, particle density (ρ) is defined at any point in the universe as a sum number of M particles within a given unit volume.

$$\rho = \frac{N}{V}$$

[1] In this paper, "vibration" of particles, meaning "inter-particle vibration" of M particles, refers to the multidimensional movement of such particles as a whole from a given point of reference, and thus does not refer to particle's internal body vibrations.

3. Theory:

3.1 Speed of Momentum Transfer ($\overrightarrow{v_p}$):

To investigate the Speed of Momentum Transfer (the speed of transfer of momentum), two conceptual scenarios based on classical physics are considered.

First scenario (1):

In the first scenario, one body, body (a), with speed $\vec{v}$, with linear momentum $\overrightarrow{mv}$, travels a distance (*d)* for a duration of time *(t_1)*, from point (1) to point (2), as shown in [Fig. 2].

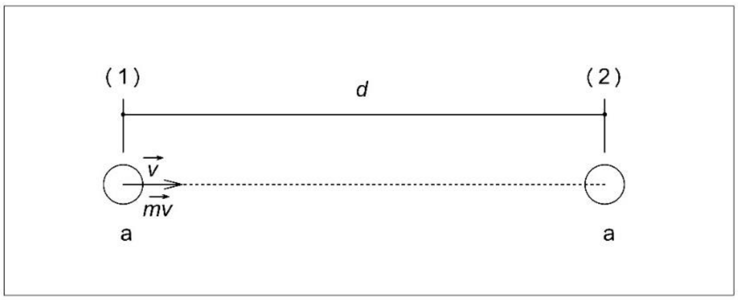

Fig. 2. Diagram of a body from point (1) traveling along path (d) to reach point (2)

For this case, the linear momentum of the body from the beginning to the end of the path has transferred with speed $\overrightarrow{v_{p1}}$. In fact, in this scenario, the speed of transfer $\overrightarrow{v_{p1}}$ is exactly equal to the speed of the body. The speed of momentum transfer for this scenario can be calculated as:

$$v_{p1} = v = \frac{d}{t_1}$$

Second scenario (2):

In this scenario, it is assumed that a number of rigid bodies are oriented in a line in such a way that there is no space between them, as shown in [Fig. 3]. A rigid body (a) with the same speed $\vec{v}$ as scenario (1) and with linear momentum $\overrightarrow{mv}$ collides with a second rigid body (b). The distance from the body (b) to the body (c) is the same as in scenario (1), *d*. Then, the body (a) comes to a stop while the rigid body (c) begins to move with the same $\overrightarrow{mv}$. The body (c) does not move instantaneously. Body (a), after the collision, loses its linear momentum while the last body, in this case, body (c), gains the same linear momentum. However, in comparison to the previous scenario, at a time after rigid body impact, body (c) will have motion at a location point further on than where the body (a) would be moving unimpeded.

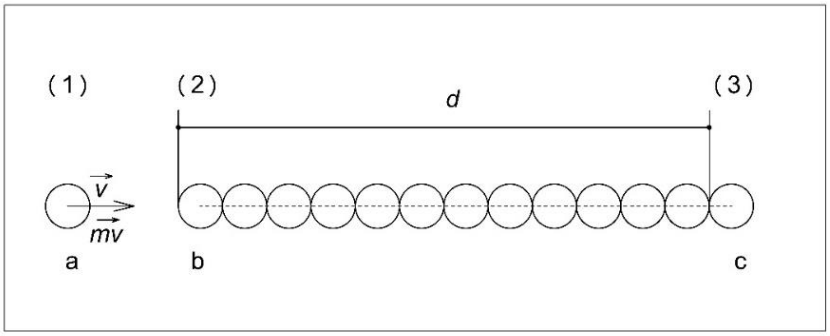

Fig. 3. Diagram of a body colliding at point (2) with rigid bodies

The question of how long it takes for the initial body (a), upon collision, to cause the last body to move is dependent on the rigidity of the colliding bodies. The greater the rigidity of the bodies, the less the time for the final body to move. If all the bodies are 100% rigid, the last body moves instantly. In reality, it is impossible for a body to be fully rigid.

In this second scenario, the time between the collision and when the final body begins to move is designated as *(t_2)*.The times *(t_2)* and *(t_1)* (from scenario (1)) are not equivalent. By comparing the two scenarios described, it comes to the conclusion that we need to define and designate a new term in physics called "Speed of Momentum Transfer ($\overrightarrow{v_p}$)." That is equal to the distance of the linear momentum transferred divided by the time taken.

One can suppose that linear momentum always moves or spreads through media or by media through space at various speeds while its total quantity and direction remain constant at any point in time.

3.2 ***Study of $\overrightarrow{v_p}$, for the condition that the bodies are apart at distances:***

Third scenario (3):

For scenario (3), here it is considered the same scenario as scenario (2) but with the only difference being that the bodies are spaced apart [Fig. 4].

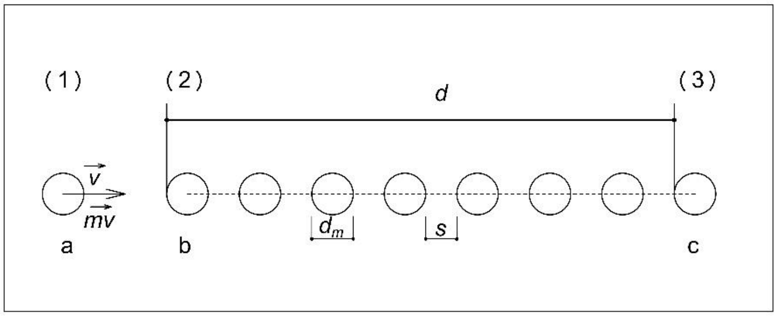

Fig. 4. Diagram depicting of body (a) colliding with (b) and causing collision of subsequent bodies

It is assumed that the diameter of each body is *(d_m)*, the empty space between each two adjacent bodies is *(s)*, the number of bodies is *(n)*, the mean speed of each body that moves the empty distance between bodies is *(v_s)*, and the speed of momentum transfer for within the body itself is *(v_{pi})*. The distance between the first body that collides and the last body that moves is *(d)*. In this case, the length of the path of transfer of the momentum within all bodies is ($n \cdot d_m$) which totals (L). This (L) equals the total of the diameters of all bodies. The length that linear momentum advances in empty space (sum of *(s)* between all bodies) is equal to the total space between all bodies ($S = n \cdot s$). Thus,

$$d = L + S = n \cdot d_m + n \cdot s$$

The total time for the transfer of momentum from the body (b) to the body (c) would be equal to the total time taken for the transfer of momentum within the bodies themselves and the sum of the times taken for each body to collide with the next,

$$t = t_1 + t_2 = \frac{L}{v_{pi}} + \frac{S}{v_s} \qquad (1)$$

and, therefore

$$v_p = \frac{d}{t} = \frac{d}{\left(\dfrac{L}{v_{pi}} + \dfrac{S}{v_s}\right)} \qquad (2)$$

since $L = d - S$

$$v_p = \frac{d}{\left(\frac{d-S}{v_{pi}} + \frac{S}{v_s}\right)}$$

$$v_p = \frac{d}{\left(\frac{(d-S)v_s + Sv_{pi}}{v_{pi}v_s}\right)}$$

$$v_p = \frac{d(v_{pi}v_s)}{dv_s + S(v_{pi} - v_s)} \qquad (3)$$

All terms on the right side of Eq. 3, except *(S)*, are constant, and hence, v_p is only variable via changes in *(S)*. In addition, v_s cannot be greater than v_{pi}, thus ($v_{pi} - v_s$) > 0 and therefore, if *(S)* increases then the speed of moment transfer decreases and vice versa.

4. Light:

Light is a wave of vibrations of a group of M particles that vibrate harmonically and propagate throughout space. The direction of these vibrations is along the path of the travel of light. Light as emission is the propagation of longitudinal waves similar to sound waves as per [Fig. 5].

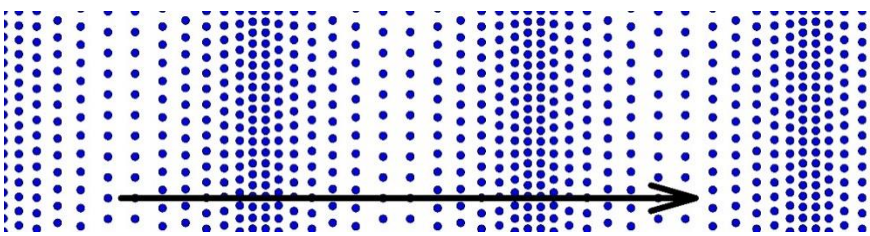

Fig. 5. Light as a longitudinal wave similar to a sound wave

If M particles are envisioned as per the bodies discussed above under "Study of $\overrightarrow{v_p}$ for the condition of bodies apart at distances," then the speed of light is dependent on the spacing of the M particles from one another (i.e. particle density). Thus, the speed of light in the universe varies due to the spacing of the M particles at any point in space. If the distance between M particles increases, the speed of light decreases and vice versa.

The M Particles are located throughout the universe and are generally without any arrangement(s). As these particles gain frequent and abundant vibrations from the universe, they are practically considered in continuous contact with one another. This is so much so that they are virtually transferring their momenta to one another all of the time.

For a better explanation of the propagation of light, one particle, particle (a) from a crest of a wave which has the maximum momentum at time $t = 0$ is considered [Fig. 6]. After a certain time (T), the initial momentum of the particle (a) is transferred to other particles. At any time, the total momenta of particles that gained the initial momentum of the particle (a) is equivalent to the momentum of the initial particle (a). As it is seen from [Fig. 6], the spread of momentum from any particle through other particles in space is spherical[2] while being directed towards the direction of initial momentum, and the total momentum remains conserved at any point in time.

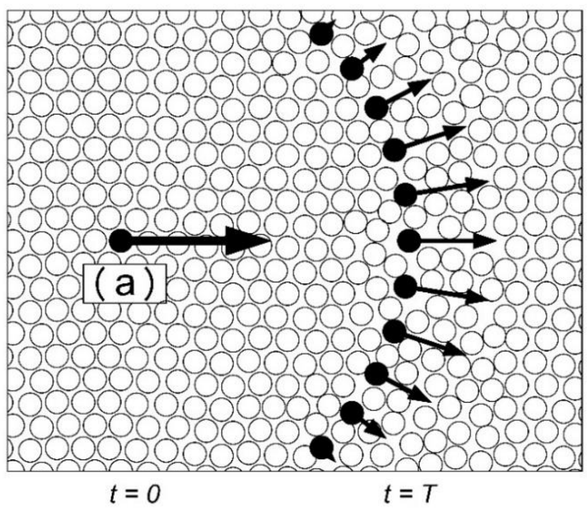

Fig. 6. The transfer of momentum from an initial particle (a) to other particles, demonstrating that momentums at any point in time is spherical in shape (assuming uniform particle density) and remains conserved.

When considering the transfer of light, there is a wave crest, whereby particles similar to (a), forming a group simultaneously transfer their momenta to other particles in the direction of travel of light being considered as in [Fig. 7]. Here, three particles from a group of M particles at a crest are shown. The momentums are transferred spherically particle by particle. Each particle ahead gains a part of the momentums of initial particles. If all particles at the crest are considered, then the momentums sum up together at a location farther away at a wave-front, producing a new crest vibrating a new group of initial particles once more. This is such that the

[2] Assuming particle density are uniform

speed of the advancement of the crest is as per the speed of light.

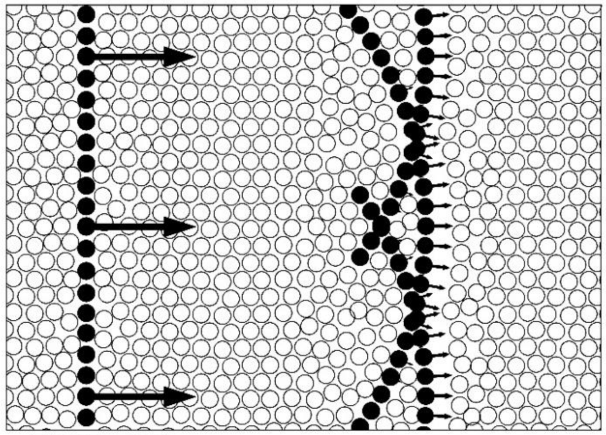

Fig. 7. Demonstrating forming a crest at a wave-front and transferring momentums in space with the direction of momentums, that total momentum remains conserved

“In 1678, Huygens proposed that every point to which a luminous disturbance reaches becomes a source of a spherical wave; the sum of these secondary waves determines the form of the wave at any subsequent time. He assumed that the secondary waves traveled only in the "forward" direction and it is not explained in the theory why this is the case.” [1] [2] [3]

The above statement of "Christiaan Huygens's proposal" is confirmed by the "MM theory." In addition, the MM Theory is able to answer what has not been explained in the Huygens's principle. Per the MM theory, as discussed, the waves travel only in the forward direction because only in this case do the momentums remain conserved per [Fig. 7].

An experiment was designed and conducted to prove the MM theory and the evidence of M particles' existence. The goal was to vibrate the M particles by rapid fluctuations in the orientation of angular momentum of the M particles and to study the speed of light as it propagates. The experiment was designed to compare the speed of light at a state where the particles were at rest and a state when they were vibrating.

5. Experiment:

5.1 Experiment Set Up:

The experimental setup below consisted of a longitudinal electrical magnet [Fig. 8] and a laser beam system. The electrical magnet is designed so that if the electrical current goes through one side of a wire coil, the current on the other side is in the opposite direction. By this, the force generated by the current acting on the M particles inside the electrical magnet is directed to a single direction. If the direction of the current changes, the force acting on the M particles also flips.

Fig. 8. Longitudinal electrical magnet with two parallel rows of a coiled wire

The electrical wire coil of the magnet had 110 turns, and the magnet was 460 mm in length and with 15 mm of spacing in-between two parallel rows across from each other. An electrical switch was connected to the circuit of the wire coil to connect and disconnect the power at any time as needed. In this experiment, two beams were simultaneously generated using a single laser source [Fig. 9].

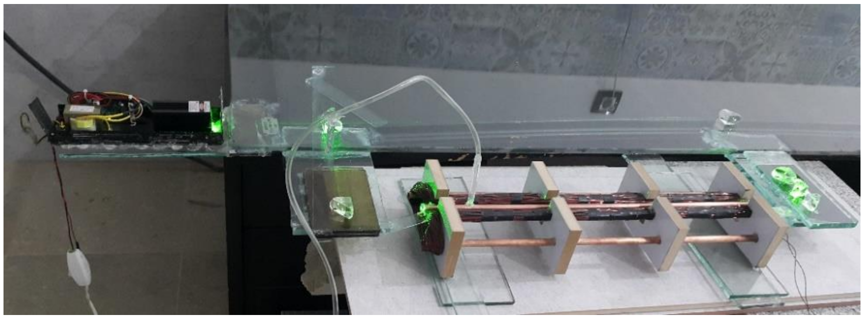

Fig. 9. Experimental apparatus setup with horizontal electrical magnet

One of the beam rays was directed towards a set of two prisms directing the ray into a slit and onto a screen. The other ray was directed by a prism towards a second prism, which then directed the ray into an enclosed tube of a selected material type with glass closures to seal the tube at its ends. The tube pressure was adjusted anywhere from the ambient pressure down to 6- 8 mmHg. The ray emerging from the tube was then directed by a third prism and fourth prism to a second slit with the ray ultimately directed onto the same screen as the first ray, producing an interference pattern [4]. The shift of the fringes of interference on the screen was studied. The support structures of the ray system (the laser source, hollow tube, and the prisms) were set up to be independent of that set up for the electrical magnet and the electrical current system. A solid surface supported the electrical magnet and current system with a damping system below. The damping system and the solid surface were independent of the support structures for the prisms, tube, and laser source so as to avoid the effects of any vibration caused by the electrical magnet unto the tube and the ray system. The resulting interference pattern of the two rays was measured at a distance of 5 meters.

5.2 Method and results:

The first experiment conducted used a copper tube and connected 220 V, AC power with 50 Hz to the circuit. Under all circumstances and all pressure values, it was observed that the fringes of the interference pattern shifted upon connection of the power to the circuit of electrical magnet. And conversely, it was seen that fringes of the interference pattern shifted back to their original pattern upon disconnection. Upon connection to the power source, the fringes of the pattern on the screen were such that it was shifted towards the direction of the ray emerging from the tube. The degree of shift in the pattern was in the order of ½ to ¾ of a fringe. Considering that the wavelength of the laser was 532 nm and the degrees of shift were ½ to ¾ of a fringe, thus the ray emerging from the tube has fallen short by anywhere from 266 nm to 399 nm. Based on this, calculations show that the speed of light in the tube has decreased anywhere from 173 m/s to 260 m/s, and the delay in the time for the light was between 8.8×10^{-16} to 1.3×10^{-15} sec.

In the second experiment conducted, a light polarizer was installed at the forefront of the ray system to polarize the light before entering the same exact setup as the first experiment. The results obtained here were identical to the first experiment. In the third experiment, the electrical magnet was oriented vertically, and the same exact setup as the first experiment was conducted as in [Fig. 10]. Again, the results obtained were identical to the first experiment. In the fourth experiment, an aluminum tube was utilized under similar setups as the previous three experiments. The direction of shift of the fringes was the same as the previous experimental setups. In the fifth experiment, all the previous experiments were conducted using DC current up to 220 V. However, no shifting of the fringes was seen here in the interference patterns.

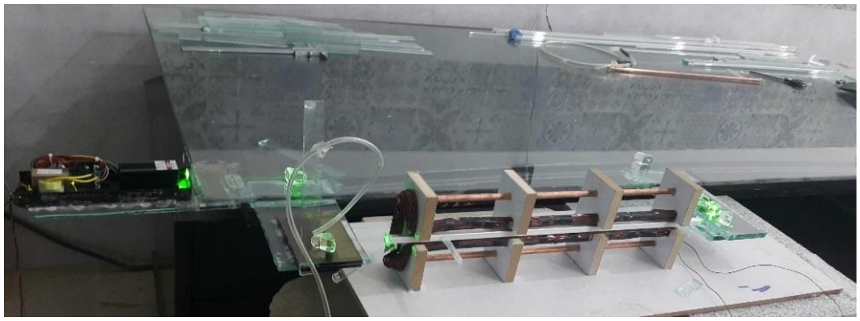

Fig. 10. Experimental apparatus setup with vertical electrical magnet

Heat can have a significant influence on the system and air and consequently, the speed of light. However, in these experiments, the generated heat could not have caused the shifting of the fringes. Under all circumstances, whether at the moment of connection or the moment of disconnection, the shift of the fringes happened instantaneously. If this shift had occurred because of generated heat, it should have happened with a delay. In addition, if the heat causes the shift, the DC current should also have caused the shift as it would have also generated heat.

5.3 Analysis:

Under all circumstances and all pressure values, upon connection of the AC power to the electrical magnet, experiments signify a decrease in the speed of light inside the tube as demonstrated by the shifting of the fringes on the screen. Connection of the AC power to the electrical magnet causes the corresponding rapid fluctuations in the orientation of angular momentum of the M particles. As a result of the consequent vibrations, the distances between the M particles increase. The increase in distances between the M particles results in the increase in (S) and the simultaneous decrease in (L). Experiments showed a decrease in the speed of light, and this reflects that the speed v_{pi}, speed within the M particles, is greater than v_s (Refer to the "Study of $\overrightarrow{v_p}$ for the condition of bodies apart at distances"). In addition, it can be concluded that v_{pi}, the speed of momentum transfer within M particles, is greater than the speed of light. In my opinion, the speed of momentum transfer within particles is extremely high, and thus, the speed of light is almost related to the distance between M particles.

I have to emphasize that v_s denoting the speed of transfer of momentum between particles here under consideration, is distinguished from the speed of the M particles that would be associated with any of their other vibrations.

In the experiments that utilized DC current, the current direction does not change, so the orientation of the M particles also remains constant. Thus, the speed of light also remains constant for the DC setups. In this manner, M particles are simply directed towards a single orientation after DC connection.

6. Radio waves:

Oscillations of an electron or electrons along a path or through a conductor produce radio waves. These radio waves are transverse waves, and are waves of fluctuations in the orientation of angular momentum of M particles throughout space, [Fig. 11]. The frequencies of these waves are with the same frequency as that of the oscillating electron(s). Here in [Fig. 11], the line of oscillation of the source electron(s) is perpendicular to the plane.

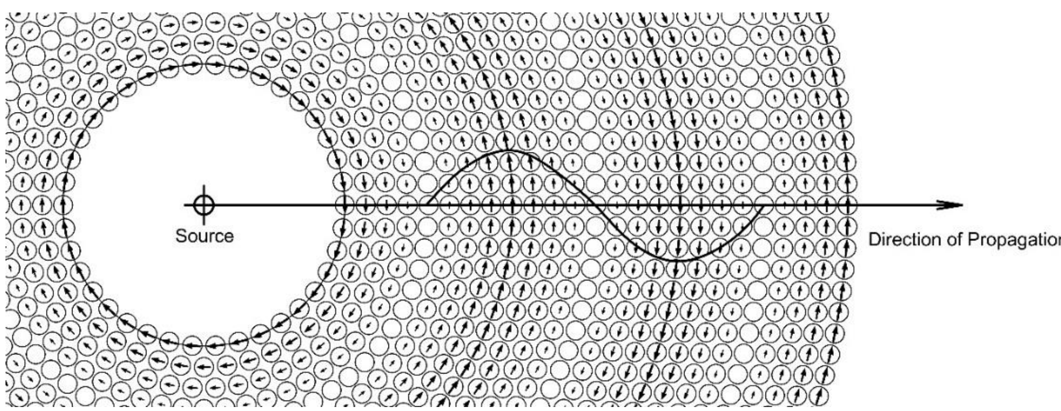

Fig. 11. Model of fluctuating and propagation of radio waves in space

Depending on vertical, horizontal, or any other orientation of electron's oscillation, corresponding converse orientations of the polarized radio waves are produced. If the electrons oscillate vertically, then the polarized radio waves will be horizontal – and vice versa. The greatest intensity of radio waves is observed in the planes most aligned with that which is perpendicular to the oscillation path and passing through its midway point, and in regions which are nearest or closest to the oscillations of the M particles at the source as per [Fig. 11].

7. Comparison between light waves and radio waves:

Any interactions between M particles involve both linear momentum and angular momentum of the particles. For light, transmission is the result of collisions of M particles one after another. There is a minor change in the direction of angular momentum of the M particles in the case of light; in fact, most of the change would be in their linear momentums.

One of the most striking differences between radio waves and light waves is that generally, the radio waves can penetrate through walls and other solid entities while the light waves can-not. Radio waves are transverse waves which render them to more readily transmit through solid bodies. In more detail, a radio wave is, in fact, the fluctuating of the orientation of the angular momentum of M particles, and it acts on the particles perpendicularly along the direction of the wave's advance. This enables the wave to transmit through and beyond objects. The radio waves are more readily able to pass through than the case of light waves, which transmit via longitudinal action. In the case of light waves, the spread of linear momentum transmission is significantly impacted by the certain object's constituents, the atoms and molecules, which are in the direction of travel. This prevents the light wave from easily passing through those certain objects.

8. Bending of light near stars:

Bending the light from the source as it travels towards the observer after passing nearby massive stars, incorrectly termed "Gravitational lensing" [5] [6] is, in fact, due to variances in the M particle densities around the stars. Vibrations of M particles closer to a star are greater than those farther away. As a result, the density of the particles around a star varies in such a way that as the distance from the star increases, then so does the M particle density.

As described, light is a wave of vibrations of a group of M particles. The speed of momentum transfer through M particles depends on the spacing in-between them. If momentum is transferred through a path of higher density M particles, its speed of transfer is higher than where it is transferred through a path with lower density.

For investigating the bending of light near a star, two nearby layers (layer (1) and layer (2)) of a group of M particles at a wave-front transferring light are considered as per [Fig. 12]. It is assumed that particle (a) from layer (1) and particle (b) from layer (2) have simultaneous emanating vibrational waves (momentums). Layer (1) is farther from the star than layer (2). As previously discussed, the speed of momentum transfer to the particles ahead along each of the layers depends on the distances between the particles. As such, particle (c) gains part of momentum from particle (a) earlier as compared to particle (d), which in turns gains its part of momentum from particle (b). Subsequently, particles (c) and (d) continue to transfer their linear momentums spherically to the particles ahead. As the gained momentum of particle (c) as compared to (d) is earlier in time, the combined momentums will be at particle (e), which is further away from particle (c) as compared to particle (d). So the final result of the total momentum transferred by the two layers is a vibration (linear momentum) along the path at (e) as shown in [Fig. 12].

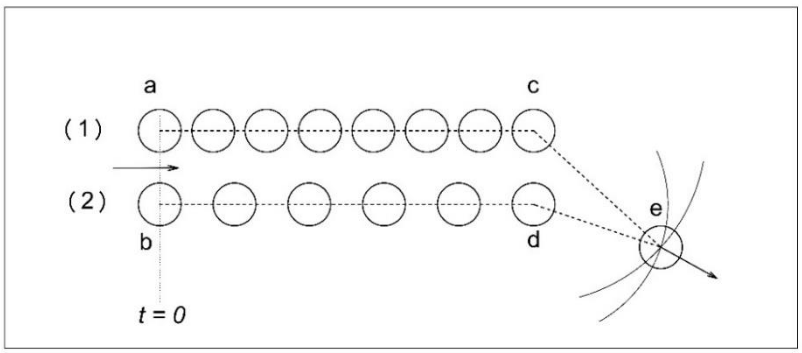

Fig. 12. Layer (1) and Layer (2) of M particles around a star

Therefore, light bends around the star. As shown in [Fig. 13], as light approaches, it bends about the star.

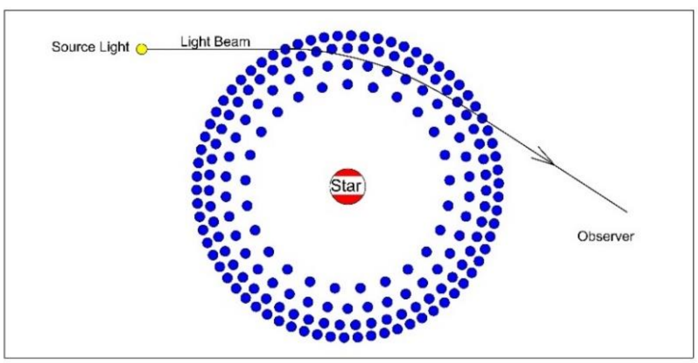

Fig. 13. Bending of light near star

The intensity of light decreases as it travels near a star. The reason is that some of the momentums propagate in various directions without coming together to produce any crest. In all cases, the sum of all momentums, including those observed and those that are not, are conserved.

9. Redshift and blueshift:

The phenomena commonly known as redshift and blueshift are not solely due to the velocity of a source relative to an observer. It is commonly believed that the shifting of the wavelength of light from faraway objects like stars is only due to the speed of those objects relative to the observer [7]. However, "MM Theory" explains that this shift in the wavelengths can also, in reality, be affected by the variations in the density of the M particles among other factors. As light travels from the emitting source to an observer, it passes through media of different densities. Thus, its speed, wavelength, and direction are affected according to the space pressure, distance from nearby stars, and variations in the densities of M particles. The phenomena of redshift and blueshift are thus explained due to many contributing factors as light travels through space.

With the passing of light through space, it travels nearby many massive bodies. As a result, the wavelength of light can be affected multiple times as it travels and so can its direction. Consequently, what is seen as redshift or blueshift or the direction of the incoming light, does not define the distance of a star or a certain position of an object being away from the observer as is commonly believed.

10. Electricity

The phenomenon of electricity is the result of the motion of M particles through a conductor or between two objects having imbalanced M particles around their atoms and molecules. For the case of current electricity, those M particles that have linear momentum, namely electrons, transfer their linear momentum one by one to the next through a conductor [Fig.14]. The transfer of linear momentum occurs as a result of the interaction of M particles at the surface and in-between the atoms and molecules. Any object with a greater propensity to do this is a better conductor.

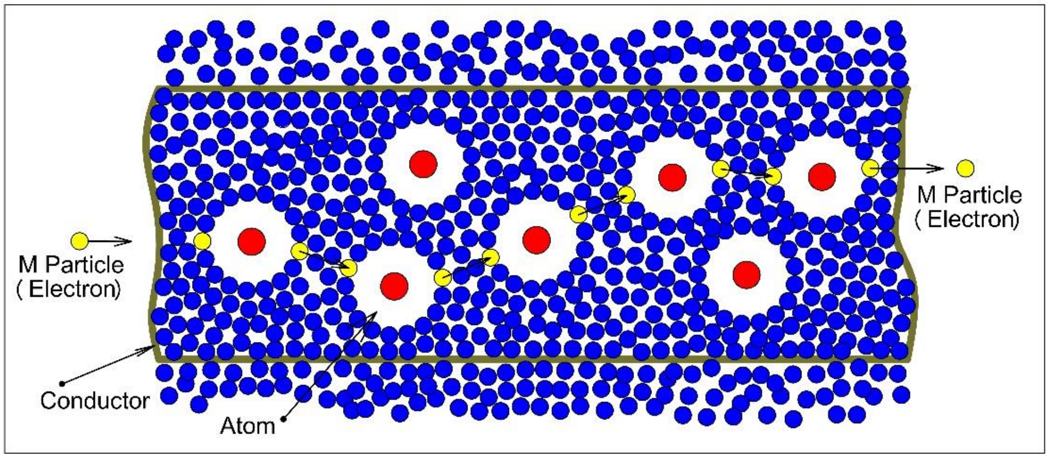

Fig. 14. Electrical current flow through a conductor

Under normal circumstances, M particles on the surface of atoms and molecules between two objects or between two points within an object are balanced. Static electricity is the result of the state of imbalance of M particles.

11. Magnetism

In space, generally, the direction of angular momentum of M particles as a whole are in equilibrium, or in balance. However, if the angular momentum of M particles are oriented towards a single direction, then the phenomenon of magnetism is observed.

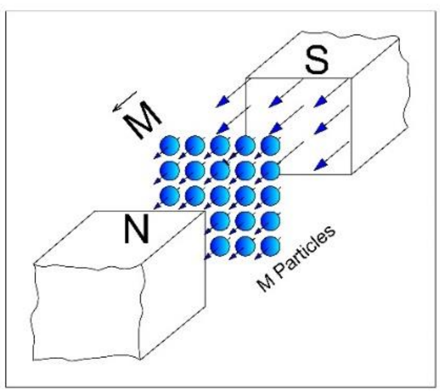

Fig. 15. The M Domain Direction as denoted by ($\overrightarrow{M}$)

The whole domain of M particles are directed towards a single direction, denoted here as "M Domain Direction" (MDD), or ($\overrightarrow{M}$). The direction of ($\overrightarrow{M}$), defines from S to N of the magnets, as shown as per [Fig. 15].

12. Photoelectric effect

In regards to the photoelectric effect [8] [9] [10] [11] [12] [13] the emitted wave causes an influx of M particles onto the surface of atoms and molecules, which causes other M particles to be ejected. If the light wave influx is sufficient beyond a certain threshold, then this will cause the emission of one or more “M particles” to become electrons.

13. Heat and Thermal radiation

Heat can be explained as a result of two contributing factors. Considering, for instance, for a solid object being hammered or a gaseous fluid undergoing rapid compression, the first factor is the moving back and forth of the atoms or molecules with respect to one another. For the second factor, for example, if the object is heated or being hammered, it also affects the arrangement of the M particles around atoms and molecules. The outer shapes of the atoms and molecules change rapidly, causing surface vibrations, while the M particles stay along the surface [Fig. 16]. These two factors always affect one another.

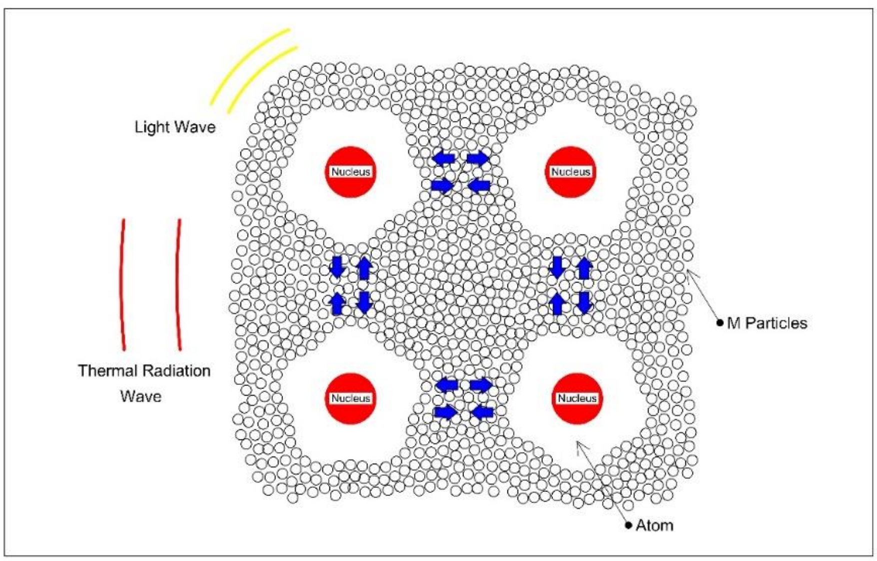

Fig. 16. Light wave and thermal radiation wave from atoms and molecules via M particles

Any object that has a temperature greater than absolute zero emits waves. As an object is heated, thermal radiation and at the same time surface vibrations of atoms and molecules are manifested. In the beginning, the frequency of these waves are less. As the temperature increases, at first thermal radiation is observed. However, then, as the frequency of the surface vibrations of atoms and molecules increase to reach into the visible light spectrum, red light will next be observed. After the temperature is continued to be increased, increasing the frequency of vibrations of the surface of atoms and molecules, then the emission of yellow light will at one point be observed, and so will the other colors on in the spectrum of light. Light is a result of the vibrations of the surface level of atoms and molecules, while a thermal radiation wave is the result of the moving back and forth of the atoms or molecules with respect to one another. After producing these waves, they are transferred by and through M particles.

(Derived from the conceptual model shown in [Figure 16], it can be concluded that surface vibrations of these atoms and molecules are such that they can only produce longitudinal waves as light waves in the M particles in the surrounding space. As the light produced from the surface of atoms and molecules propagates spherically throughout space, thus light waves are longitudinal waves and cannot be transverse waves.

14. Dark matter

The unseen matter in the universe, termed "dark matter" is generally regarded as the answer to the many questions and mysteries that have arisen in modern physics. Dark matter can, in fact, be described by M particles' properties like their mass and behaviors.

15. Prediction:

The MM theory predicts that there are places in the universe where light travels slower or even faster than the supposed maximum speed limit, c. It is proposed that this fact will be experimentally observed in the future. The MM theory predicts that it is possible to arrange an experiment to decrease the distance between M particles here on earth and to conduct an experiment to increase the speed of light to faster than c.

16. Conclusion:

In this part, a new particle called "M Particle" was presented and its properties and behavior were described. A new term in physics, called "Speed of Momentum Transfer" was also introduced and defined. It came to conclusion that light is a wave of vibrations of a group of M particles that vibrate harmonically and propagate throughout space. The propagation and behavior of light is in a waveform manner. It was also shown that radio waves and light waves differ in their manner of transmission. While radio waves are transverse waves through M particles, light waves are longitudinal ones.

Astronomical phenomena, including bending of light, redshift, and blueshift, were elaborated on. The variances in the M particle densities around the stars account for the bending of light as it passes near stars or other large mass bodies. It came to reasoning that as light travels, its speed, wavelength, and direction are affected by the space pressure, distance from nearby stars, and densities of M particles.

This paper also explained static electricity as an imbalance in the M particles of objects or points within an object. Current electricity was explained as the result of the transfer of linear momentum of M particles through interactions with one another, from surface to surface of atoms and molecules. Magnetism was briefed as the directing of M particles' angular momentums in a single orientation in space. MM theory was also able to explain the photoelectric effect as an influx of particles that displaced other M particles from the surface of atoms and molecules. It is also concluded that heat is the vibrations of atoms and molecules with respect to each other in any object with temperature above absolute zero and thermal radiation is the wave of these vibrations conveyed by M particles.

In addition, the results of an experiment presented here showed that the speed of light decreases by rapid fluctuations in the orientation of angular momentum of the M particles. As a result, the speed of light, c, is not constant. Therefore, the theories of Special and General relativity are denied. [14] [15]

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