

Astrophysics based on the Laws of Electromagnetism

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Abstract

The study displays that a gravitational singularity generates enormous amount of synchronized, low frequency photons. Electric dipoles in atoms create resonance with these photons and they are then re-emitted to dipoles in other atoms. The mutual flow of synchronized low frequency photons between dipoles creates mutual force of attraction, i.e. gravity. The study also displays that these photons consist of a positive elementary charge loosely coupled to a negative elementary charge. The photon propagates with the speed of light and simultaneously the charges rotate with a rotational speed equal to the photon's frequency. This implies that many components of our galaxy can be described by the laws of electromagnetism. These laws describe electromagnetic fields and forces created by configuration of charges (dipoles and photons), their position, motion and acceleration. The study describes a model, based on the laws of electromagnetism, where the big bang, dark energy, dark matter, expanding space, black hole, gravitational lensing and redshift is explained.

1. Introduction

Many phenomena in the universe and in our galaxy cannot be explained without a proper understanding of gravity, representing mass, and the photon, representing energy.

Novel measurement technique described in [1] has enabled unbundling of the photon and gravity. The photon consists of a positive (elementary) charge loosely coupled to a negative (elementary) charge and is described in [2]. The photon has no mass and hence, the two charges propagate in the radial direction with the speed of light. One charge rotates clockwise and the other charge rotates counter clockwise and where the two charges propagate in a double helix in the radial direction. The rotational speed is equal to the photon's frequency ν and proportional to the photon's energy. The two rotating (accelerated) charges generate electromagnetic fields according to Maxwell's equations, i.e. plane TEM (transverse electromagnetic) waves with frequency ν and this explains the photon-wave duality.

The universe contains a gravitational singularity, called the GravitySource, which generates enormous amount of low frequency photons with frequencies 69.9 Hz and 91.9 Hz, called gravity photons, described in [3]. The atom's smallest entity is a positive (elementary) charge firmly coupled to a negative (elementary) charge and where the two form an electric dipole, called MQ (mass quantum). The MQ creates

resonance with gravity photons resulting in that gravity photons induce electromagnetic fields. Hence, the MQ contains electric fields, electric dipole moments, magnetic fields and magnetic dipole moments, each resulting in forces relative to other MQs in the atom. These forces comprise the atom's gluon, strong force, weak force and the electromagnetic force. Configurations of MQs result in quarks and the neutron. An extra positive elementary charge added to a neutron results in a proton. An additional negative elementary charge added to an MQ results in an electron. Hence, the atom consists of elementary charges configured into MQs (dipoles) and MQs configured into electron, quarks, neutron and proton.

The MQ creates resonance with a gravity photon and the gravity photon is then re-emitted and can then create resonance with another MQ within the atom or within another atom. Flows of synchronized gravity photons in opposite directions between two MQs create mutual force of attraction, i.e. gravity [3] and which is perceived as gravitational mass. Flows of synchronized gravity photons between MQs and the GravitySource also create mutual force of attraction and which is perceived as inertial mass, [3].

In summary the universe and our galaxy may consist of only two elementary charges, a positive and a negative elementary charge. These charges form two elementary

particles; the photon and the MQ. The photon consists of loosely coupled charges. The photon is the energy carrier and its energy is equal to the photon frequency. Configurations of MQs (dipoles) constitute matter and gravity photons operating on configurations of MQs create forces which are perceived as gravitational mass and inertial mass. This implies that a substantial part of the universe and the components of our galaxy can be described by the laws of electromagnetism which describe the electromagnetic fields and forces created by configurations of charge, their position, motion and acceleration. These laws are described in [4] and [5].

Aim of the study. The aim of the study is to describe important phenomena, observed in our galaxy, based on the laws of electromagnetism.

2. Big bang or no bang

Measurements made by [3] reveal that gravity between an object (matter) on earth and the GravitySource is many magnitudes larger than gravity between the same object and the sun. Consequently, it is reasonable to assume that the GravitySource encompasses the majority of matter within the universe, i.e. the majority of all MQs in the universe are located within the GravitySource. The GravitySource emits enormous amounts of gravity photons, i.e. positive and negative charge. It is proposed that these charges sometimes combine into a positive charge firmly coupled to a negative charge, i.e. an MQ (dipole). MQs can then configure into atoms, planets, stars and galaxies. It results in everlasting creation of new matter outside the GravitySource, e.g. in our galaxy.

Sometime in the past almost all charge (matter) may have been located within the GravitySource. The GravitySource emitted gravity photons in all directions into space, in the same way as today. This resulted in a universe of gravity photons which expanded with the speed of light. Some gravity photons and their charges converted into MQs, atoms, planets, stars and galaxies. Hence, the creation of the universe and our galaxy may have been a slow, continuous and everlasting process.

3. Dark energy

Dark energy is known as a hypothetical form of energy that permeates all of space and accounts for approximately 75% of the total mass-energy in the universe.

It is proposed that dark energy and the cosmological constant is equal to gravity photons emitted by the GravitySource. It implies that the total amount of elementary charge within the universe, including the GravitySource, is constant. However, gravity photons are continuously emitted by the GravitySource, resulting in that the amount of gravity photons or dark energy within the universe (i.e. outside the GravitySource) increases

approximately linearly with time. Gravity photons and dark energy propagates in all directions with the speed of light, implying that dark energy expands continuously with the speed of light. Dark energy is sometimes converted into matter as described in section 3 or dark matter as described in section 4.

4. Dark matter

Dark matter is believed to account for a large part of the total mass or matter in the universe.

It is proposed that gravity photon charges can combine into MQs (dipoles), as described in section 2. These MQs can then configure into e.g. neutrino, quark, atom, planet or star. This process is slow, resulting in that there is a surplus of solitary MQs and small configurations of MQs in space. It is proposed that dark matter encompasses these solitary MQs and small configurations of EQs.

5. Expanding space

The metric expansion of space is the increase of the distances between two distant parts of the universe with time.

All MQs (in dark matter or atoms) in the universe are exposed to gravitational force between the MQ and the GravitySource. All MQs in the universe are also exposed to gravitational force between the MQs. These gravitational forces decrease with the square of the distance.

This implies that the metric distances within a galaxy are primarily influenced by gravity between MQs (i.e. planets and stars) and can consequently result in expansion, zero expansion or contraction of the galaxy, depending on positions and speeds of involved planets and stars.

The metric distances between galaxies are primarily influenced by gravity between MQs and the GravitySource, i.e. between individual galaxies and the GravitySource. Gravity makes every galaxy rotate around the GravitySource. The rotational speed determines if a galaxy is "galaxy stationary" relative to the GravitySource or if it spirals inwards or outwards. Consequently, the distance from our galaxy to most galaxies increases with time. This is perceived as an expanding space relative to our galaxy. However, many galaxies may spiral inwards, i.e. contract. Hence, contracting space can, from our galaxy, be perceived as expanding space.

The universal periphery expands with the speed of gravity photons, i.e. with the speed of light. Gravity photons continuously convert into MQs, atoms, planets and galaxies within this periphery. Consequently, the peripheral universe expands with the speed of light relative to the GravitySource.

6. Black hole

A black hole is defined as a region in spacetime from which gravity prevents anything, including light, from escaping. The theory of general relativity predicts that a sufficient compact mass will deform spacetime to form a black hole.

A black hole comprises high density of MQs (matter) creating large gravity and which results in that MQs or matter in the black hole vicinity is absorbed by the black hole.

A light photon or a radio frequency photon consists of a gravity photon and where the light frequency or energy (or radio frequency) is super positioned on the gravity photon, as described in [2]. The rotating (accelerated) charges of a light or radio frequency photon generate electromagnetic fields (i.e. a plane TEM wave), [2]. These fields create force on gravity photons propagating from/to the black hole. According to [5] this creates back reaction force on the light photon which makes the light photon lose energy. Gravity photon density close to the black hole is enormous, resulting in that the above force and back reaction force are large. Thus, the photon loses all of its super positioned energy and is converted into a gravity photon (with frequency 69.9 Hz or 91.9 Hz). Therefore, the only type of photons that can propagate from a black hole and its vicinity is gravity photons.

The conclusion is that the black hole receives and re-emits vast amount of gravity photons and which prevents photons with higher frequency (e.g. light) and MQs (i.e. matter) from escaping.

7. Gravitational lensing

A gravitational lens refers to a distribution of matter (such as a galaxy or a massive object) between a distant source and an observer, that is capable of bending (lensing) the light from the source as it travels towards the observer.

The light photon consists of a gravity photon (with frequency 69.9 Hz or 91.9 Hz) with light energy super positioned on the gravity photon. According to [3] there is a mutual force of attraction between synchronized gravity photons. The low frequency content (69.9 Hz or 91.9 Hz) of the light photon creates mutual force of attraction with gravity photons propagating from the galaxy or the massive object. The galaxy or the massive object comprises large gravity and high density gravity photons, resulting in a significant force of attraction on the light photon. Therefore, the trajectory of light photons bends towards the galaxy or the massive object, causing lensing. This process and the underlying theory are described in [3].

Gravity photon density is extremely high close to a black hole, resulting in photons (e.g. light photons) bending (lensing) into the black hole.

8. Red shift

In astrophysics, gravitational redshift is the process by which electromagnetic energy originating from a source that is in a gravitational field is reduced in frequency, or redshifted, when observed in a region of a weaker gravitational field.

Gravity from an object can be described by the gravitational gradient. A light photon travelling towards the object experiences increasing gravity or positive gradient. The mutual force of attraction, see [3], between the light photon travelling towards the object and gravity photons travelling from the object increases the energy of the light photon, resulting in increased light photon frequency and blueshift.

A light photon travelling from the object experiences decreasing gravity or negative gradient. The mutual force of attraction between the light photon travelling from the object and gravity photons travelling from the object decreases the energy of the light photon, resulting in decreased light photon frequency and redshift.

A light photon travelling from a black hole will gradually lose energy, causing redshift, and finally lose all of its super positioned energy. The light photon is turned into a gravity photon (with frequency 69.9 Hz or 91.9 Hz), and this gravity photon contributes to gravity.

9. Discussion, energy

Sections 6, 7 and 8 describe the photon as a carrier of energy and where the photon can gain or lose super positioned energy. The mechanism is as follows. All photons originate from the GravitySource which generates gravity photons with frequency 69.9 Hz or 91.9 Hz. A source exposes the gravity photon to energy, where the energy is characterized by its frequency ν . This energy (frequency ν) is super positioned on the gravity photon, resulting in a photon with frequencies ν and 69.9 Hz or ν and 91.9 Hz. This photon is now the carrier of its absorbed and super positioned energy with frequency ν . This energy is stored within the photon as "rotational" energy of its two charges. Each of the two charges rotates with the frequency ν and 69.9 Hz or ν and 91.9 Hz.

The photon's rotating (accelerated) charges generate electromagnetic fields (a plane TEM wave) according to Maxwell's equations. These fields interact with other charges and their fields wherein the photon's energy is transferred to the other charges. These charges can be e.g. charges within a gravity photon or electrons or the positive charge of ions. This energy transfer can be partial, causing a decrease in frequency ν , e.g. redshift. 100 % energy transfer changes the photon frequency to 69.9 Hz or 91.9 Hz, i.e. the photon is converted into the original gravity photon.

It is proposed that energy transfer within the universe and our galaxy is primarily accomplished by photons and this

energy transfer is made according to the laws of electromagnetism.

10. Discussion, matter

Gravity photons travelling in opposite directions exert a force on each other, i.e. mutual force of attraction, [3].

A positive (elementary) charge firmly linked to a negative (elementary) charge constitutes a dipole and which is called MQ (mass quantum). The MQ creates resonance with gravity photons and it re-emits the gravity photons. The flow of gravity photons travelling in opposite directions between two MQs exerts a force on each MQ, i.e. a mutual force of attraction. This force is called gravity and is perceived as mass or matter. Hence, one dipole is a mass quantum, MQ. Consequently, an object's mass m (e.g. a planet) is equal to the sum of its dipoles or MQs, $m = \gamma \sum \text{MQ}$, where γ is a constant.

The dipole's or MQ's energy is determined by its stored electromagnetic energy. This energy consists of the dipole's coulomb fields and induced electromagnetic fields created by absorbed and re-emitted gravity photons. These gravity photons originate from the GravitySource. Hence, an object's energy E is the sum of its MQ's energy, $E = \zeta \sum \text{MQ}$, where ζ is a constant. Einstein's mass-energy equivalence then relates to the MQ; $E = mc^2 = \zeta \sum \text{MQ}$. Gravity photon density (amplitude) decreases linearly with the distance from the GravitySource, [3]. This results in that the MQ's induced fields decrease linearly with the MQ's distance from the GravitySource. Hence, the perceived mass and stored energy in one MQ as well as the constants γ and ζ decrease with distance from the GravitySource.

This implies that mass $m = \gamma \sum \text{MQ}$ and energy $E = mc^2 = \zeta \sum \text{MQ}$ in a galaxy depends on the galaxy's distance from the GravitySource. It can be expected that mass m and energy E influence the formation and behavior of a galaxy. Consequently, our galaxy is unique compared to all galaxies having a different distance to the GravitySource.

11. Conclusions

Today's elementary particle physics focuses on the atom and disregards external influence. State of the art science assumes that gravity and atomic forces are generated by the atom itself. This results in a scientific cul-de-sac and acronyms like graviton, gluon and strong force. This doubtful approach then avalanches into other scientific disciplines, e.g. astronomy and astrophysics. Therefore it has become almost impossible to theoretically explain many phenomena and components of our galaxy.

It is proposed that the universe and our galaxy consist of only positive and negative elementary charge. These two charges form only two elementary particles; the photon and the MQ (dipole). The positive and negative elementary

charges are the universal charge quantum. The photon is the universal energy quantum and the carrier of energy. The MQ is the universal mass quantum.

The laws of electromagnetism describe the electromagnetic fields and forces that are created by configurations of charges, their position, motion and acceleration.

Consequently, these laws describe the gravity photon generated by the GravitySource. They also describe the interaction between the gravity photon and the atom's MQ and elementary charges and the induced electromagnetic fields and forces. These laws describe the forces between the atom's MQs and they describe why MQs and elementary charges configure into electron, quarks, neutron proton and atoms. These laws describe why atoms form molecules, crystalline matter, planets, stars and galaxies.

The interaction and transfer of energy between objects (e.g. planets, stars, black holes) in our galaxy is primarily accomplished by photons. All photons originate from the GravitySource. Gravity between objects in our galaxy or between objects and the GravitySource is the result of gravity photons operating on MQs according to the laws of electromagnetism. Radio and microwave photons, light photons and gamma radiation photons are carriers of respective energy. The energy is super positioned on gravity photons according to the laws of electromagnetism. Phenomena like black hole, gravitational lensing and redshift is the consequence of photons (e.g. light photons) interacting with gravity photons according to the laws of electromagnetism.

It is proposed that the universe and our galaxy can to large extent be explained and described by the laws of electromagnetism and configurations of charge quanta (elementary charges), energy quanta (photons) and mass quanta (dipoles/MQs).

References

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