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A Theory on the Attractive Force between Like Positive Masses

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Abstract

Between electric charges and magnetic poles, there are attractive forces and repulsive forces. However, there is no repulsive force between positive masses. Although no mathematical theory proves this hypothesis, the theory of decreasing energy over time has provided some explanation regarding electromagnetic and gravitational fields. There are two different equations for electromagnetic spectrum energy and mass energy. An equation for electromagnetic spectrum energy includes a variable relating to time as frequency ($E = h\nu$). However, according to relativity theory ($E = mc^2$), mass energy is decided by only mass quantity. There is no variable relating to time for mass energy. According to the differences in these equations, the base for electromagnetic spectrum energy is 0 and the base for positive mass energy is ∞. Therefore, two electric charges and magnetic poles show a position change over time as they approach 0. Because a united point with like electric charges and magnetic poles is further from base 0, a repulsive force occurs between them. Because the united point with opposite electric charges and magnetic poles is closer to base 0, an attractive force occurs between them. On the other hand, two positive masses show a position change over time as they approach ∞. Therefore, an attractive force occurs between two positive masses. According to this theory, an attractive force will occur between two negative masses and a repulsive force will occur between a positive and a negative mass.

Keywords: *Gravitation, Repulsive force, Attractive force, Negative mass, Energy base.*

Abbreviations

E	=	*quantity of energy*
$E(t)$	=	*quantity of energy at time(t)*
$E(0)$	=	*quantity of energy at time zero*
$E(t)_m$	=	*quantity of mass energy at time(t)*
$E(t)_v$	=	*quantity of electromagnetic spectrum energy at time(t)*
$Stress(t)$	=	*quantity of stress at time(t)*
t	=	*time*
c	=	*speed of light*
h	=	*Planck's constant*
v	=	*frequency*
m, m_1, and m_2	=	*positive masses*
$-m$, $-m_1$, and $-m_2$	=	*negative masses*
Q_1 and Q_2	=	*positive electric charges*
$-Q_1$ and $-Q_2$	=	*negative electric charges*
δ and k	=	*fixed numbers*

I. Introduction

Between electric charges and magnetic poles, there are attractive and repulsive forces, but there is no repulsive force between positive masses. Although, there is no mathematical theory to prove this hypothesis, there are two different equations for electromagnetic spectrum energy and mass energy. In this report, the bases for these two types of energy are examined using the equation for decreasing energy. The relationship of their bases to attractive or repulsive force is mathematically explained.

II. Methods

Energy ignored by Newton and Einstein was reported [1]. The outline is below.

Hypothesis

The quantity of all stress is in direct proportion to the quantity of energy at time (t). Stress is the changed degree of energy per time.

$$Stress(t) = \frac{dE(t)}{dt} = kE(t) \quad . \tag{1}$$

Calculations

From Equation (1)

$$E(t) = E(0)(e^k)^t \tag{2}$$

If k is less than 0,

$$e^k = 1 - \delta \qquad (0 < \delta << 1). \tag{3}$$

From Equations (2) and (3)

$$E(t) = E(0)(1-\delta)^t \tag{4}$$

Each Energy Base

The equation of electromagnetic spectrum energy is

$$E = h\nu \tag{5}$$

From relative theory, the equation for mass energy is

$$E = mc^2 \tag{6}$$

In Equation (5), frequency is a variable related to time. Therefore, Equation (4) is adapted to Equation (5).

From Equations (4) and (5), the base for electromagnetic spectrum energy is 0 when time is ∞.

$$\lim_{t\to\infty} E(t)_\nu = \lim_{t\to\infty} h\nu(1-\delta)^t = 0 \tag{7}$$

In Equation (6), mass (m) is a variable not related to time. Therefore, mass energy must be considered from the perspective of a decreasing energy universe over time. Equation (6) is converted by Equation (4).

From Equations (4) and (6), the base for positive mass energy is ∞ when time is ∞.

$$\lim_{t\to\infty} E(t)_m = \lim_{t\to\infty} \frac{mc^2}{E(t)} = \lim_{t\to\infty} \frac{mc^2}{E(0)(1-\delta)^t} = \infty \tag{8}$$

From Equation (8), the base for negative mass is −∞.

$$\lim_{t\to\infty} E(t)_m = \lim_{t\to\infty} \frac{-mc^2}{E(0)(1-\delta)^t} = -\infty \tag{9}$$

In all the Figures, the vertical axis is the quantity of energy and the horizontal axis is length in space. In Figure 1, energy quantities for two positive electric charges are shown as points (Q_1 and Q_2) on the solid-line curves. If Q_1 and Q_2 unite, a quantity of energy is shown as a point (Q_1+Q_2) on the dotted-line curve. The united point (Q_1+Q_2) is compared with the two separate points (Q_1 and Q_2). The united point (Q_1+Q_2) is further from base 0 in Equation (7), and it is more unstable than the two separate points (Q_1 and Q_2). Therefore, a repulsive force occurs between the two positive electric charges (Q_1 and Q_2), as represented by the arrows in the graph.

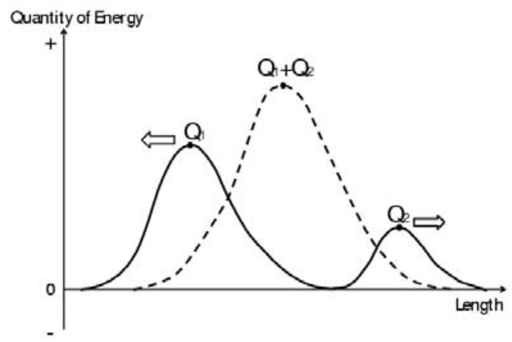

Figure 1. Relation of a united positive electric charge (Q_1+Q_2)

Two negative electric charges are shown in Figure 2. A repulsive force occurs between two negative electric charges ($-Q_1$ and $-Q_2$). In Figure 3, for each quantity of energy, positive and negative electric charges are shown as points (Q_1 and $-Q_2$) on the solid-line curves. If Q_1 and $-Q_2$ unite, a quantity of energy is shown as a point ($Q_1+(-Q_2)$) on the dotted-line curve. The united point ($Q_1+(-Q_2)$) is compared with the two separate points (Q_1 and $-Q_2$). The united point ($Q_1+(-Q_2)$ is closer to base 0 in Equation (7), and it is more stable than the two separate points (Q_1 and $-Q_2$). Therefore, an attractive force occurs between the two different types of electric charges (Q_1 and $-Q_2$), as represented by the arrows in the graph. In Figure 4, a quantity of energy for two positive masses is shown as points (m_1 and m_2) on the solid-line curves. If m_1 and m_2 unite, a quantity of energy is shown as point (m_1+m_2) on the dotted-line curve. The united point (m_1+m_2) is compared with the two separate points (m_1 and m_2). The united point (m_1+m_2) is closer to base ∞ of Equation (8), and it is more stable than the two separate points (m_1 and m_2). Therefore, an attractive force occurs between the two positive masses (m_1 and m_2), as represented by the arrows in the graph. In Figure 5, each quantity of energy for two negative masses is shown as points ($-m_1$ and $-m_2$) on the solid-line curves. From Equation (9), the base of negative mass energy is $-\infty$. Therefore, an attractive force occurs between the two.

In Figure 6, each quantity of energy for a positive and a negative mass is shown as points (m_1 and $-m_2$) on the solid-line curves. If m_1 and

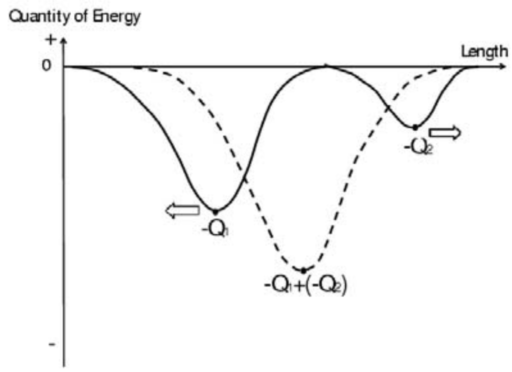

Figure 2. Relation of a united negative electric charge ($-Q_1+(-Q_2)$) to two separate negative electric charges ($-Q_1$ and $-Q_2$)

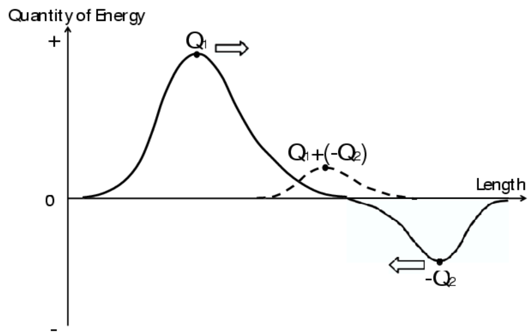

Figure 3. Relation of a united electric charge ($Q_1+(-Q_2)$) to two separate positive and negative electric charges (Q_1 and $-Q_2$)

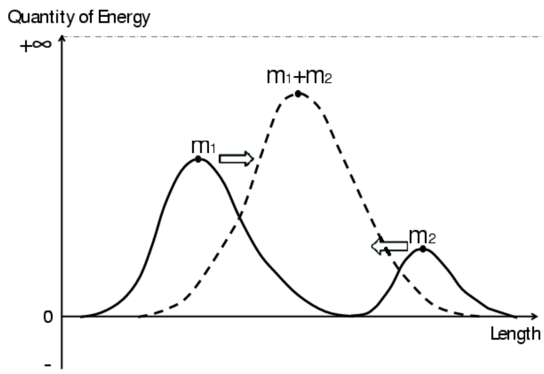

Figure 4. Relation of a united positive mass (m_1+m_2) to two separate positive masses (m_1 and m_2)

$-m_2$ unite, a quantity of energy is shown as a point $(m_1+(-m_2))$ on the dotted-line curve. A united point $(m_1+(-m_2))$ is compared with the two separate points (m_1 and $-m_2$). The united point $(m_1+(-m_2))$ is further from both base ∞ in Equation (8) and $-\infty$ in Equation (9), and it is more unstable than the two separate points (m_1 and $-m_2$). Therefore, a repulsive force occurs between positive and negative masses (m_1 and $-m_2$), as represented by the arrows in the graph. In Figures 1, 2, and 3, the direction of the forces become the same when electric charges are exchanged with magnetic poles.

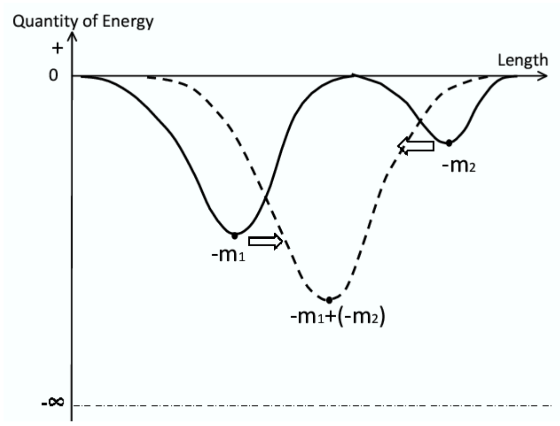

Figure 5. Relation of a united negative mass $(-m_1+(-m_2))$ to two separate negative masses ($-m_1$ and $-m_2$)

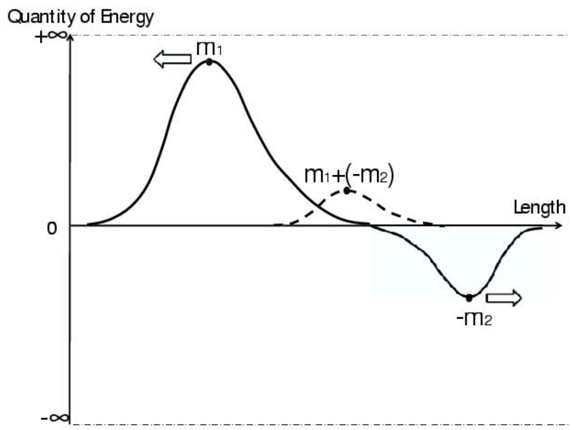

Figure 6. Relation of a united mass $(m_1+(-m_2))$ to two separate positive and negative masses (m_1 and $-m_2$)

III. Results

The base for electromagnetic spectrum energy is 0. The bases for positive and negative mass energies are ∞ and $-\infty$, respectively. An attractive force occurs between the negative masses, and a repulsive force occurs between a positive and a negative mass.

IV. Discussions

Between different types of electric charges and magnetic poles, there is a repulsive force; however, the force between like positive masses is attractive rather than repulsive. Although there is no mathematical theory to prove this hypothesis, the equation for decreasing energy over time has provided some explanation regarding electromagnetic and gravitational fields [1]. According to the equation, the big bang, dark matter, and dark energy are not required. The distance to the turning point between ghost dark matter and ghost dark energy is calculated by this equation, and the base for electromagnetic energy and mass energy are calculated by it. The attractive and repulsive force between masses and electromagnetic energy is explained by the differences in each energy base. Bondi reported the possibility of negative mass [2], and a repulsive force between two negative masses was reported by Landis [3]. According to Landis' report between positive and negative masses, an attractive force occurs for a negative mass and a repulsive force occurs for a positive mass.

Force between positive masses will be repulsive when it is observed in a universe of negative mass. However, in our universe, the force is attractive. Further, our universe may be made of negative mass. In a universe of negative mass, negative mass will be observed as positive and positive mass will be observed as negative. These forces have never been observed because negative mass is a theoretical construct. Landis' conclusions are opposite to those drawn from my theory. I propose that an attractive force occurs between like negative masses and a repulsive force occurs between a positive and a negative mass.

So, why is gravity an attractive rather than a repulsive force? Gravity is the force between like positive masses. This is mathematically explained by the differences between the base for electromagnetic energy and mass energy.

V. Conclusions

The difference between the base for positive mass energy and electromagnetic energy explains why gravity is an attractive rather than a repulsive force. According to Landis, for the energy base for positive mass, each direction of force to the negative mass equal. However, the respective energy bases for positive and negative masses are ∞ and $-\infty$. Therefore, an attractive force occurs between negative masses and a repulsive force occurs between a positive and a negative mass.

Acknowledgments

None.

References

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