

GRAVITATIONAL FORCE OF ATTRACTION IS AN ELECTROSTATIC FORCE

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Abstract

The structure of an electron or positron is likely to be a spherical shell of radius a and charge $-e$ or $+e$, which has intrinsic energy E_n and mass m proportional to e^2 . A neutral body, containing N electrons and N positrons has mass Nm , for energy radiation from the union, without annihilation. For two neutral bodies, Coulomb forces of repulsion and attraction, proportional to the sum of products of the charges, being positive and negative, cancel out everywhere. The Newtonian gravitational forces of attraction, proportional to the sum of square of products of the charges, being all positive, add up.

Keywords: Attraction, Coulomb's Law, Electron, Energy, Force, Mass, Newton's Law, Positron. Repulsion.

1. INTRODUCTION

Since Sir Isaac Newton enunciated the inverse square law of gravity in 1687, the cause of gravitation had defied explanation until Professor Albert Einstein came up with the theory of general relativity in 1915. General relativity theory explained gravitation in the context of curvature of four-dimensional space-time continuum. Curved space, it is believed, pushes objects to follow a path in the universe. The path of least resistance is a straight line in four-dimensional space-time but a curved orbit in three-dimensional space. The idea of time being a fourth dimension of space is an attractive, brilliant and revolutionary theory, but it has stretched the dimensions of imagination by physicists too far and so far without any experimental proof.

Gravity, an all-pervasive force which affects everything in the universe, should have a simple and tenable explanation. The explanation given in this paper is based on Coulomb's law of electrostatic force. Force of gravity, between two charged particles, is explained by considering the electric field lines of force of one particle being affected by the presence of another particle. This affect may be by way of bending whereby the incident field is made to open-out or close-in, such that force of repulsion is slightly reduced and force of attraction similarly increased. The result is gravitational force of attraction in accordance with Newton's law. For two neutral bodies, separated in space, the strong electrostatic forces of repulsion and attraction cancel out exactly everywhere while the weak gravitational forces of attraction remain and add up.

2. FORCE BETWEEN TWO ELECTRIC CHARGES IN SPACE

Force \mathbf{f} between two charges $Q = \pm e$ of mass $m_1 \propto Q^2$ and $K = \pm e$ of mass $m_2 \propto K^2$, in Figure 1, is a combination of Coulomb's forces of repulsion or attraction and Newton's gravitational force of attraction.

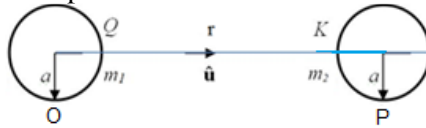


Figure 1: Two electric charges Q and K in the form of spherical shells of radius a separated by a distance r in space

$$\mathbf{f} = \pm \frac{QK}{4\pi\epsilon_0 r^2} \hat{\mathbf{u}} - G \frac{m_1 m_2}{r^2} \hat{\mathbf{u}} = \pm \frac{QK}{4\pi\epsilon_0 r^2} \hat{\mathbf{u}} - \chi \frac{Q^2 K^2}{r^2} \hat{\mathbf{u}} = \pm \frac{e^2}{4\pi\epsilon_0 r^2} \hat{\mathbf{u}} - \chi \frac{e^4}{r^2} \hat{\mathbf{u}} \quad (1)$$

where $\hat{\mathbf{u}}$ is unit vector along force of repulsion, G and χ are constants and $-e$ the electronic charge of mass m .

3. GRAVITATIONAL FORCE OF ATTRACTION BETWEEN TWO BODIES

Equation (1) gives the gravitational force of attraction \mathbf{F}_G between two neutral bodies of masses $M_1 = mN_1$ and $M_2 = mN_2$ with $Q_n = Q = \pm e$ and $K_n = K = \pm e$, and centres of gravity distance Z apart, as the sum:

$$\mathbf{F}_G = -G \frac{M_1 M_2}{Z^2} \hat{\mathbf{u}} = -\frac{\chi}{Z^2} \sum_{n=1}^{N_1} Q_n^2 \sum_{n=1}^{N_2} K_n^2 \hat{\mathbf{u}} = -\frac{\chi}{Z^2} N_1 N_2 Q^2 K^2 \hat{\mathbf{u}} = -\frac{\chi}{Z^2} N_1 N_2 e^4 \quad (2)$$

4. CONCLUSION

Gravity is a pulling force resulting from bending of electrostatic field lines from a charged particle on meeting another charge in space, such that force of repulsion is reduced and force of attraction is increased.

