



## Causes of the Quadratic Decrease in Gravity

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### Abstract

The article explains why the forces of gravity decrease in direct proportion to the square of the distance from the center of gravity.

### 1. Introduction

Based on Kepler's research <sup>[1],[2]</sup> it was found that between the orbital velocity of the planets (v) and the radius of their orbits (r) there is an inverse quadratic relationship:

$$v \sim \frac{1}{\sqrt{r}} \quad (1)$$

It is likely that this scientific discovery was the basis for Newton's derivation of his well-known equation of universal gravitation <sup>[3]</sup> according to the following scheme:

- When a body moves in a circular orbit, it is always acted upon by two additional, equal to each other and oppositely directed forces. These are centripetal forces and centrifugal forces  $F_c$ . The gravitational forces  $F_g$  act as centripetal forces on the planets. That is, you can write:

$$F_c = F_g \quad (2)$$

- centrifugal forces are determined by the well-known equation:

$$F_c = \frac{m \times v^2}{r} \quad (3)$$

- substituting (1) into (3) and into (2), we get the proportion;

$$F_g \sim \frac{m}{r^2} \quad (4)$$

- to turn proportion (4) into an equation, Newton needed inductive thinking based on astronomical, visual observations - the larger the celestial body, the greater its gravity. Consequently, the mass of the body, around which the first body revolves, is introduced into proportion (4). To complete the calculations, the reduction coefficient is selected with an incomprehensible unit of measurement, which received the name - the gravitational constant -  $G = 6.672 \cdot 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2$

As a result, the scientific world has the equation of world gravity:

$$F_g = G \times \frac{m_1 \times m_2}{r^2} \quad (5)$$

For four centuries the scientific world has used this empirical equation, which was modernized in the 20th century in Einstein's theory of relativity <sup>[4],[5]</sup>.

During this time, the researchers did not ask themselves the question - why do the forces of gravity decrease according to the inversely quadratic law? More logical would be a linear relationship between the removal and the force of gravity. But since Newton's hypothesis about the presence of gravitational forces in all bodies has no scientific and theoretical grounds, it is impossible to answer this question on the basis of this hypothesis.

The theory of vortex gravity not only explains this inverse quadratic relationship, but can also use this pattern as proof of the vortex nature of gravity.

The next chapter contains a summary of the theory of vortex gravity <sup>[6]</sup>.

## 2.Vortex gravity

In the theory of vortex gravity, cosmology and cosmogony, it is proved that gravity, all celestial bodies and elementary particles are created by ethereal vortices (torsion). Fig.1.

The orbital velocities of the ether in each vortex decrease in the direction from the center to the periphery, according to the inverse square law (proof below). In accordance with the Bernoulli principle, the change in orbital velocities causes an inversely proportional change (increase) in the pressure in the ether. The pressure gradient creates forces of vortex gravity and pushes the substance (bodies) to the zones with the lowest pressure, that is, to the center of the torsion. This pattern operates equally in ethereal vortices of any size.

Since all celestial systems rotate in the same plane, the conclusion follows from here - the ethereal vortex has a flat, disc-shaped form and, thereby, creates these flat celestial systems.

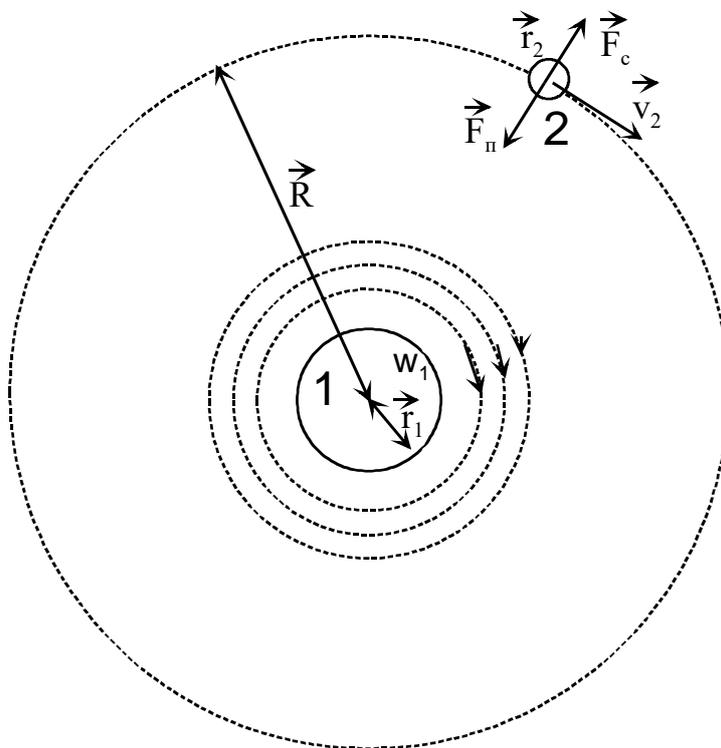


Fig.1. Two-dimensional model of gravitational interaction of two bodies. The forces acting on body 2 are indicated. Fc is the centrifugal force, Fg is the attraction force of body 2 from body 1, v2 is the linear velocity of body 2 along the orbit, R is the radius of the orbit, r1 is the radius of body 1, r2 is the radius of body 2, w1 – angular speed of rotation of the ether on the surface of the body 1.

Based on the Navier-Stokes equation in the theory of vortex gravitation, an equation was obtained to determine the force of vortex gravitation

$$F_{gv} = F_{gn} \cos^3 \beta = 10^{-28} \times m \times \frac{v_e^2}{r} \times \cos^3 \beta \quad (6) \quad \text{where}$$

$\cos^3 \beta = K_g$  – gravity coefficient

$\beta$  - angle of inclination of the orbital plane of the planet to the gravitational plane of the solar, ethereal vortex

$F_{gv}$  - gravity force at an arbitrary point

$F_{gn}$  - gravitational force in the torsion plane

$v_e$  - speed of the ether in orbit  $r$

$r$  - radius of considered ether vortex orbit.

### 3. Conclusion

Why do the orbital velocities of the ether decrease in proportion to the square of the distance from the center of gravity? Based on the theory of vortex gravity, the answer to this question is obvious. A gravitational, ethereal, flat vortex can receive resistance to its rotation only as a result of friction of its lateral surfaces against the motionless world ether. Consequently, the larger the area of each orbit of the ether torsion, the more this orbit receives resistance to its rotation and the less its rotation speed becomes. Since the area of a circle or orbit is directly proportional to the square of its radius ( $S \sim r^2$ ), then the conclusion follows from here - the resistance to rotation and the decrease in the orbital velocity of the ether should be directly proportional to the square of the radius of its orbit. If the orbital velocities of the ether decrease according to the inverse square law, then in accordance with equation (6), the gravitational force also decreases according to the same dependence.

In addition, the inverse-square relationship between the gravitational force and the distance from the center of gravity proves the ethereal-vortex nature of the gravitational forces.

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