



ISSN: 0976-3376

Available Online at <http://www.journalajst.com>

ASIAN JOURNAL OF  
SCIENCE AND TECHNOLOGY

Asian Journal of Science and Technology  
Vol. 08, Issue, 11, pp.6550-6559, November, 2017

## RESEARCH ARTICLE

### RETHINKING OF THE LAW OF GRAVITY

\*Shiyuan Dai

XiShui County old association for science and technical workers in Guizhou Province,  
Xishui P. R. China

#### ARTICLE INFO

##### Article History:

Received 22<sup>nd</sup> August, 2017  
Received in revised form  
27<sup>th</sup> September, 2017  
Accepted 12<sup>th</sup> October, 2017  
Published online 30<sup>th</sup> November, 2017

##### Key words:

Force,  
Movement,  
Steady State Equation,  
Gravity.

#### ABSTRACT

Isaac Newton published the law of gravity more than 300 years ago, it had a profound influence to the world, however, carefully taste the law of gravity, and there are a lot of natural phenomena puzzling, if use the law of universal gravitation, fundamental explanation, the author through a large number of books and literature reading and in-depth study, put forward the ideas about the different gravity, and the revised the size of the gravity and direction, in our view, can explain many of the original law of universal gravitation of natural phenomena to give a satisfactory explanation.

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#### INTRODUCTION

According to the existing theory of physics (Xue-Hua *et al.*, 2012; Zhaoyun Zong *et al.*, 2012; Masson, 2006; Miron B. Rapoport, 2004; Liew, 2004; Svenja Knappe, 2004)<sup>[1-6]</sup>, materials are made by four forces to maintain the structure and movement, the four forces is known as the strong and weak force, electromagnetic force and gravity, gravity between various substances available gravity<sup>[7-8]</sup> formula in to calculate  $F=G\frac{m_1m_2}{R^2}$ . But the fine goods gravitation formula, and some puzzling phenomenon. Take the Cavendish experiment to determine gravity constant, the two balls are they won't due to mutual contact  $R\rightarrow 0$  and  $F\rightarrow\infty$ , so cannot be separated; Solar system's asteroid with around 1 million asteroids, they are not due to the size of the different mass as regular arrangement; If the sun and the planets are due to the gravity of mass attract each other, according to the Newton's third law of "the role of one object to another object at the same time cause another object to this size is equal and opposite reaction, and the two on a straight line"<sup>[9]</sup>, this will directly go to the sun, the planets and the planet will not to aphelion movement after perihelion. Why don't the planets go directly to the sun? Why the fact and theory will produce such contradictions? What produce gravitation is it? Point of this article is: the reason that produce gravity is planetary movement. Movement, movement of objects in the intentional force field (such as atoms, the solar system) steady state equation for the motion state

#### Correction of the law of gravity

##### To modify the theory basis of the law of gravity.

The law of gravity mathematical expression for  $F=G\frac{m_1m_2}{R^2}$ , according to Sir Isaac Newton's<sup>[10]</sup> "Mathematical principle of natural philosophy" the second chapter first proposition 4 theorem 4 inference 6 "if cycle and radius in the direct ratio of 3/2, so, velocity and radius is inversely proportional to the square root of centripetal force varies inversely as the square of the radius, on the other hand also with"<sup>[10]</sup>, according to Kepler's third law<sup>[11]</sup>  $\frac{a^3}{T^2} = k$ , In the formula the semimajor axis  $a$  is the planets orbit the sun, T is the cycle of planetary motion,  $k$  is constant.

\*Corresponding author: Shiyuan Dai,

XiShui County old association for science and technical workers in Guizhou Province, Xishui P. R. China.

The movement of the planets orbit the sun in a precondition of Newton concluded 6, the velocity of the solid planets orbit the sun inversely proportional to the square root of the the distance of the planet from the sun is suitable for the planetary motion, namely

$$\frac{V_1}{V_2} = \frac{\sqrt{R_2}}{\sqrt{R_1}} \tag{1}$$

$$V_v \sqrt{R_v} = V_{mer} \sqrt{R_{mer}} = \dots = V_p \sqrt{R_p} = 3.6 \times 10^5 \text{ km}^{\frac{3}{2}} / \text{s} = V_x \bullet \sqrt{R_x}$$

In the formula the  $V_1, V_2$  is the velocity of two different planet around the sun,  $R_1, R_2$ , respectively with  $V_1, V_2$  velocity to run the distance of the planet from the sun. I according to the French astronomer Karmi•Weng's works and former head of Shanghai observatory Hang Li the translation "popular astronomy" provided by the distance of the planet from the sun and the planets velocity data calculated, the results support the Newton of this conclusion<sup>[11]</sup> [see Table 1 and Table 2]. for example,  $\frac{V_{mer}}{V_v} = 1.36$ ,

$$\frac{\sqrt{R_v}}{\sqrt{R_{mer}}} = 1.36, \frac{V_{mer}}{V_v} = \frac{\sqrt{R_v}}{\sqrt{R_{mer}}} \text{ , they transform into } V_v \sqrt{R_v} = V_{mer} \sqrt{R_{mer}} \quad V_v \sqrt{R_v} = 3.6 \times 10^5 \text{ km}^{\frac{3}{2}} / \text{s} \quad V_{mer} \sqrt{R_{mer}} = 3.6 \times 10^5 \text{ km}^{\frac{3}{2}} / \text{s} \text{ and so on:}$$

$$V_v \sqrt{R_v} = V_{mer} \sqrt{R_{mer}} = \dots = V_p \sqrt{R_p} = 3.6 \times 10^5 \text{ km}^{\frac{3}{2}} / \text{s} = V_x \bullet \sqrt{R_x}$$

Let  $3.6 \times 10^5 \text{ km}^{\frac{3}{2}} / \text{s} = k$ , We get

$$V_x \bullet \sqrt{R_x} = k \tag{2}$$

(Note: the adoption of real-time velocity and real-time calculation is not distance, the result is approximately equal). The  $V_{mer}$  of the formula is Mercury's velocity,  $\sqrt{R_{mer}}$  is the square root of Mercury to the distance from the sun, . . . Running velocity,  $\sqrt{R_p}$  is Pluto is the square root of Pluto to the distance from the sun, and  $V_x, \sqrt{R_x}$  represents the nine planets in the velocity and distance to the sun's root of any planet. The (2) both sides square:  $V^2 \cdot R = k^2$

Let  $k^2 = \beta$ , We get

$$V^2 \cdot R = \beta \tag{3}$$

By (3) available:  $R = \frac{\beta}{V^2}$ , plug in gravitation formula  $F = G \frac{m_1 m_2}{R^2}$ , we get:

$$F = G \frac{m_1 m_2}{(\frac{\beta}{V^2})^2} = G \frac{m_1 m_2 V^4}{\beta^2} \tag{4}$$

Here  $G$  is a constant,  $\beta$  is also a constant, replace  $\frac{G}{\beta^2}$  with the  $H_1$ , we get:

$$F = H_1 m_1 m_2 V^4 \tag{5}$$

show that this type of gravity and planetary motion velocity of four direct ratio, the faster the velocity, the greater the gravity. In other words, the change of the rate of movement of the planets is gravity. The relations between the two star's gravity and the distance between them is how? But they still are inverse square relationship, distance relationship is the relationship between representation and force, essence is the motion of the object, the size of the force and planetary motion velocity of four direct ratio, the faster the velocity, the greater the gravity and the shorter the distance between two objects. Because the earth's gravity is caused by the earth's rotation, so, the earth also exists for all objects on the earth gravity, which can well explain gravitational phenomena such as the apple doesn't fall.

**The understanding of gravity**

Produce gravitation is what reason? According to the existing universal gravitation formula  $F = G \frac{m_1 m_2}{R^2}$ , distance  $R$  does not produce gravitation, mass  $m$  can only produce gravitation mass. In the solar system mass of Jupiter is the largest, between it and the sun's gravity is biggest, the distance from the sun should be recently, but it's not. The mass of each planet, velocity and distance

as shown in the table below. It can be seen from the table above, the movement in each planet in the solar system is in line with the faster, the greater the gravity, the closer the distance rule. And the quality of the size and the distance of the planet from the sun no rules to follow.

Table 1.

	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune
Distance to the sun $\times 10^6$	58	108	150	228	777	1430	2880	4500
Mass kg	$3.3 \times 10^{23}$	$4.8 \times 10^{24}$	$5.9 \times 10^{24}$	$6.4 \times 10^{23}$	$1.9 \times 10^{27}$	$5.7 \times 10^{26}$	$8.6 \times 10^{25}$	$1.0 \times 10^{26}$
Velocity km/s	47.9	35	29.8	24.1	13.1	9.6	6.8	5.4

According to  $F=H_1m_1m_2V^4$ , the motion of the object gravitation, the quality and speed of the two objects with the size of the gravity of the direct ratio four times. Generally speaking, the dominant motion force.

## The movement and force

### Relationship of force and movement

According to the existing theory, is responsible for changes in the motion state. So, the change of movement can produce force? We can cite an example to illustrate this problem. We were standing in the same place outside the wall to wall at the same place of the basketball, throw it out of great strength, ball movement velocity, rebound force big ball feeling, throw it out of hours, ball movement velocity is slow, the rebound force small ball feel. Why would rebound the ball? People's explanation is that the wall has a force on basketball, basketball bounced back. So, the reaction between the wall from where come of? People would say to the ball, while the left hand ball, already without applying force application object, why the function of the ball will produce force? The force ball where it came from? No continues. To this phenomenon, we can use Newton's second law and Newton's third law to illustrate. Basketball after touching the wall, the wall stand, the power of the basketball according to Newton's third law, wall reaction force on the ball, the ball bounced back.

After the ball out of the hands, no more hand force, moving the ball has force, on the wall to wall force is produced by the movement of the ball velocity slow, mathematical expressions for the Newton's second law, force can make the change rate of movement of the object, in turn, the velocity of change also can produce. Force is ball movement. Or the motion of the object (a) focus on. Again, such as, objects do not produce force of uniform linear motion, but as the same velocity of uniform circular motion generates a centripetal force, this force is how to produce? Should be changes in the velocity of the object. Except as stated in the front of the planetary motion is the gravitational force, the Coriolis' force to inertial force and is also a movement of the object, so they are not virtual force. Moving object (with) the force, uniform motion in a straight line (has) objects from his force is a constant force, its direction and movement in the same direction, and stored in the moving object, any restrict its object movement (to) it will be felt force, this force is uniform motion object variable motion. After the left hand rule can be used to describe the force created by the movement, which is perpendicular to the force created by the movement.

The earth moves around the sun will generate force, for example, we open the left palm, thumb and four fingers and in a vertical plane, if four pointed to the direction of motion of the earth (the earth in its movement in the direction of the force), the gravity is the thumb points to the direction of the (sun), why only in the equatorial plane movement on the earth? We can assume that there is a force on the earth, it can't be out of the equatorial plane of the equatorial plane and vertical force, each planet produces only the force of interaction, make they can only approximate vertical, and this force is produced by the earth and planets revolve around the sun. The force created by the different movement can be gravity, can also be a repulsive force, also can be other force. For example, for different galaxies, due to the difference of movement, can make a difference in force, the force can not only make galaxies attract each other, may also make them repel each other, attract each other, may occur galaxies or ultra galaxy mergers and annihilation. Mutually exclusive, galaxies or ultra galaxy to leave each other, that is what we call the expansion of the universe. Due to the diversity of force, in the world and all levels of particle, objects, both will not shrink by only gravity into a bit, also won't apart by only repulsion, forces work together, create our wonderful world.

### The latest observations on the movement force confirmed

Chinese "journal of science and technology" on April 23, 2015 to "gravitational constant change period is 5.9 years" reports, "according to physicists organization network, California institute of retired scientist John Anderson and collaborators in a recent issue of the journal European physics letters  $G$  value and one called 'every time ( $LOD$ )' paper, the scientists have noted that the  $G$  value oscillation period of 5.9 years almost perfect match with the earth's rotation rate, and the earth's rotation rate is determined by the  $LOD$  measurements. They claim that does not know what causes the link "between  $G$  and  $LOD$ , illustrates the force and movement.

Gravitational waves found. Recent news reports, American scientists observed two star level black holes rotate each other, faster and faster, to detect gravitational waves, finally merged into the new black hole. This example shows that in spite of black hole enough big, the velocity, the gravitational force is not big, thus has less emission of gravitational waves, it is not easy to be observed, only the quick can result in the strong gravity, black holes emit strong gravitational waves, which were observed. The faster the motion, the larger the gravity. In the 360 website baidu encyclopedia "gravitational waves" have the following pictures

for gravitational waves (see below), the figure shows that when two black holes from orbiting each other, growing faster and faster when its gravitational waves, when two black holes merge, the gravitational waves tend to disappear.

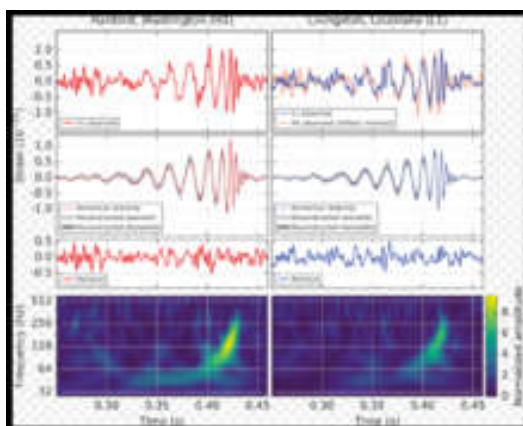


Figure 1.

Figure 1. Two LIGO observatory detected the same gravitational waves. For the curve of the observations above, the following are compared and theory after fitting results. (By paper [12] from LIGO)

### Case of movement produce force

There are many examples for Case of movement produce force. Now we show just a few examples:

On June 20, 2013, the Chinese astronaut Yaping Wang made a gyro experiments in space, under the condition of weightlessness she took out two gyro, one is a spinning, a revolving, they are floating in the air at the same time, the astronaut's hand touch attack without rotating gyro, gyro produced reverse and translation, and touch attack rotating gyro, the gyro makes translation, do not produce reversal. The experiment shows that spinning gyroscope produced on the surface of the perpendicular to the rotating force, the force played a directional role, the gyroscope does not produce back.

Encyclopedia of China" in the introduction of Coriolis' force are also introduced to: "free fall of heavy objects fall to the ground from very high to occur the deviation of east; Long-range rocket orbit when it upward movement by west, east bias level flight, head west line to bias, to towards the east when it drops ", according to the movement's point of view, this is not imaginary, it is a real force produced by an object moves. A circular motion object will produce force, atoms will generate atomic magnetic moment, also can produce electron spin spin magnetic moment, so the motion, force and vertical direction is a common phenomenon.

### The state of the material

Rutherford's "Nuclear structure model" that is electronic motion around the nucleus. According to electromagnetic theory, the electron moving around the nucleus will continuously outward radiation of electromagnetic wave, the electron orbit radius will also constantly narrowing until the electron to the nucleus, but in fact most of the atoms in nature is very stable. Why electrons orbiting the nucleus when motion will not fall into the nucleus by the electromagnetic radiation? Quantum mechanics is made from steady state to settle this problem. I think the electron around the nucleus will generate force, the force point to the direction of the nucleus, and direction of motion of the electrons in the direction of the vertical force, namely the force created by the electronic movement and electronic movement direction in the direction of the Angle  $\alpha = \frac{\pi}{2}$ , the electronic work for moving around the nucleus

$$A = F s \cos \alpha = F s \cos \frac{\pi}{2} = 0 \quad (6)$$

In the formula the  $A$  is the electronic movement of the work done, and  $F$  is the force created by the electronic movement and  $s$  is the distance between electrons move. This type of atomic nuclei and electrons between the forces of the electronic movement does not work, so the electron motion is neither increase energy, also do not lose energy, because this movement does not produce energy change, so this kind of movement is not radiating electromagnetic wave, also won't fall into the nucleus, and long-term movement along A certain path. In the same way, when the planets revolve around the sun will fall into the sun. Due to the same laws of nature, to the movement of the movement of the solar system, the Milky Way...From tiny electronic movement, the movement of the nuclear,..., is all have certain motion state, unless the system is to absorb or release the energy generated force to change the status, this movement will continue. Because of structure strength, make the energy of each system has the status of discrete values. Structure force is the force system is in a stationary state shows. The so-called stationary state, is the system in a certain structure, material stably in a series of discrete values have certain energy state. It includes atomic and molecular states, material at all levels, and so on, of course including stationary state in quantum mechanics. The hydrogen atoms in the system,

according to classical theory, nuclear extranuclear electron orbiting the centripetal force is provided by the library ability between electron and the nucleus, namely  $\frac{1}{4\pi\epsilon_0} \frac{e^2}{R^2} = \frac{m_e V^2}{R}$  after the change, we get

$$V^2 \cdot R = \frac{e^2}{4\pi\epsilon_0 m_e} \quad (7)$$

In the formula the  $V$  is the electron movement velocity,  $R$  is the distance between electrons to the nucleus,  $m_e$  is the mass of the electron,  $e$  is the electronic power,  $\epsilon_0$  is the vacuum dielectric constant. Because  $\frac{e^2}{4\pi\epsilon_0}$  is a constant, the velocity  $V_n = \frac{\alpha c}{n}$  of the electrons in the hydrogen atom, the ratio of it to  $c$  the velocity of light  $\frac{V_n}{c} = \frac{\alpha c/n}{c} = \frac{\alpha}{n} = \frac{1}{137n}$ , In the formula the  $\alpha$  is the fine-structure constant,  $n$  is the principal quantum number,  $n = 1, 2, 3, \dots$ ,  $V_n \ll c$ , Much faster than the velocity of light, when the particles small i.e.  $m_e \approx m_0$ , for the theory of relativity,  $\frac{e^2}{4\pi\epsilon_0 m_e}$  can be considered as a constant, with  $\kappa_2$  said, namely

$$V^2 \cdot R = \kappa_2 \quad (8)$$

In the formula, the  $m_0$  is the rest mass. This is a hydrogen atom movement of the steady state conditions.

For multi-electron atoms system, each nuclear electrons orbiting the centripetal force is provided by the library ability between

electron and nucleus, namely  $\frac{ze^2}{4\pi\epsilon_0 R^2} = \frac{m_e V^2}{R}$ :

$$V = \sqrt{\frac{ze^2}{4\pi\epsilon_0 m_e R_n}} = \sqrt{\frac{ze^2 \cdot e^2}{(4\pi\epsilon_0)^2 \hbar^2}} = \sqrt{z} \cdot \frac{e^2}{4\pi\epsilon_0 \hbar} = \sqrt{z} \cdot \alpha c \quad (V_n = \frac{\sqrt{z} \cdot \alpha c}{n}) \quad (9)$$

In the formula the  $z$  for nuclear charge number. With the heaviest artificial nuclide  $z = 113$  meter,

$$V_n = \frac{\sqrt{z} \cdot \alpha c}{n} = \frac{10.63 \times \frac{1}{137} c}{n} = 0.0776c/n, n=1,2,3, \dots, \text{ We usually can't relativity correction, namely } m_e = m_0 \text{ so available:}$$

$$V^2 \cdot R = \frac{ze^2}{4\pi\epsilon_0 m_0} = \kappa_2^l \quad (10)$$

In the formula the  $l$  represents different electronics. This is the atom of each electron movement in the steady state conditions. In the solar system, according to (3),  $V^2 \cdot R = \beta$  is the steady state condition of all the planets revolve around the sun. From this we can see that whether the solar system or atomic system, movement is in a stationary state has the same conditions, suppose in the heart of movement in the field or particle in a steady state condition is  $V^2 \cdot R = \beta$ , then

$$V^2 \cdot R = \beta_m^l \quad (11)$$

This is the material or particle in the intentional force field steady state equations of motion. In the formula  $m$  represents the different systems, such as the solar system, such as atomic system,  $l$  represents the different states of particles in the same system, such as in the same atoms in the system of electrons in different orbital. Motion produce forces, forces can make objects produce movement. The so-called state, is the material of certain energy state and the motion state, our universe is the combination of various states.

We agreed: in this article, mercury, Venus, earth, Mars, Jupiter, Saturn, Uranus, Pluto and Neptune's velocity with in turn use  $V_{mer}$ ,  $V_v$ ,  $V_e$ ,  $V_{mar}$ ,  $V_j$ ,  $V_s$ ,  $V_u$ ,  $V_p$  and  $V_n$  to say; Completely similar, its mass in turn with the  $M_{mer}$ ,  $M_v$ ,  $M_e$ ,  $M_{mar}$ ,  $M_j$ ,  $M_s$ ,  $M_u$ ,  $M_p$  and  $M_n$  to say. It is also totally similar to their radius, etc.

## Note 2:

Maybe some people think that French astronomer Karmi•Vladimirweng's works, the former head of Shanghai observatory Hang Li to translation "Popular astronomy" provided by the distance of the planet from the sun and the planets in the velocity data is derived from the Gravity=Centripetal force, gravity and gravitation in the planetary motion is not equal to the centripetal force, the feasibility of data exists question.

**Table 1.**

	Distance from the sun $R$ ( $10^4$ km)	$\sqrt{R}$ ( $10^2$ km)	Velocity of the planet $V$ (km/s)
Mercury	5800	76.15773106	47.9
Venus	10800	103.9230485	35
Earth	15000	122.4744871	29.8
Mars	22800	150.9966887	24.1
Jupiter	77700	278.7471973	13.1
Saturn	143000	378.153408	9.6
Uranus	288000	536.6563146	6.8
Neptune	450000	670.8203932	5.4
Pluto	590000	768.1145748	4.7

Note 1: The data from the "Popular astronomy"<sup>[11]</sup> on page 216 and page 216

**Table 2.**

$\frac{V_{mer}}{V_v} = \frac{47.9}{35}$	$\frac{\sqrt{R_v}}{\sqrt{R_{mer}}} = \frac{103.9230485}{76.15773106}$	$\frac{V_{mer}}{V_v}$
=1.368571429,	=1.364576487,	$\approx \frac{\sqrt{R_v}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_e} = \frac{47.9}{29.8}$	$\frac{\sqrt{R_e}}{\sqrt{R_{mer}}} = \frac{122.4744871}{76.15773106}$	$\frac{V_{mer}}{V_e}$
=1.60738255,	=1.60816802,	$\approx \frac{\sqrt{R_e}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_{ma}} = \frac{47.9}{24.1}$	$\frac{\sqrt{R_{ma}}}{\sqrt{R_{mer}}} = \frac{150.9966887}{76.15773106}$	$\frac{V_{mer}}{V_{ma}}$
=1.987551867,	=1.982683657,	$\approx \frac{\sqrt{R_{ma}}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_j} = \frac{47.9}{13.1}$	$\frac{\sqrt{R_j}}{\sqrt{R_{mer}}} = \frac{278.7471973}{76.15773106}$	$\frac{V_{mer}}{V_j}$
=3.65648855,	=3.660130015,	$\approx \frac{\sqrt{R_j}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_s} = \frac{47.9}{9.6}$	$\frac{\sqrt{R_s}}{\sqrt{R_{mer}}} = \frac{378.153408}{76.15773106}$	$\frac{V_{mer}}{V_s}$
=4.989583333,	=4.965397508,	$\approx \frac{\sqrt{R_s}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_u} = \frac{47.9}{6.8}$	$\frac{\sqrt{R_u}}{\sqrt{R_{mer}}} = \frac{536.6563146}{76.15773106}$	$\frac{V_{mer}}{V_u} = 7.044117647,$
=7.046642634,	$\approx \frac{\sqrt{R_u}}{\sqrt{R_{mer}}}$	
$\frac{V_{mer}}{V_n} = \frac{47.9}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_{mer}}} = \frac{670.8203932}{76.15773106}$	$\frac{V_{mer}}{V_n}$
=8.87037037,	=8.80803292,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_{mer}}}$
$\frac{V_{mer}}{V_p} = \frac{47.9}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_{mer}}} = \frac{768.1145748}{76.15773106}$	$\frac{V_{mer}}{V_p}$
=10.19148936,	=10.08583848,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_{mer}}}$
$\frac{V_v}{V_e} = \frac{35}{29.8}$	$\frac{\sqrt{R_e}}{\sqrt{R_v}} = \frac{122.4744871}{103.9230485}$	$\frac{V_v}{V_e}$
=1.174496644	=1.178511301,	$\approx \frac{\sqrt{R_e}}{\sqrt{R_v}}$

Continue .....

$\frac{V_v}{V_m} = \frac{35}{24.1}$	$\frac{\sqrt{R_m}}{\sqrt{R_v}} = \frac{150.9966887}{103.9230485}$	$\frac{V_v}{V_m}$
=1.452282158,	=1.452966314,	$\approx \frac{\sqrt{R_m}}{\sqrt{R_v}}$
$\frac{V_v}{V_l} = \frac{35}{13.1}$	$\frac{\sqrt{R_l}}{\sqrt{R_v}} = \frac{278.7471973}{103.9230485}$	$\frac{V_v}{V_l}$
=2.671755725,	=2.682246155,	$\approx \frac{\sqrt{R_l}}{\sqrt{R_v}}$
$\frac{V_v}{V_s} = \frac{35}{9.6}$	$\frac{\sqrt{R_s}}{\sqrt{R_v}} = \frac{378.153408}{103.9230485}$	$\frac{V_v}{V_s}$
=3.645833333,	=3.638782863,	$\approx \frac{\sqrt{R_s}}{\sqrt{R_v}}$
$\frac{V_v}{V_o} = \frac{35}{6.8}$	$\frac{\sqrt{R_o}}{\sqrt{R_v}} = \frac{536.6563146}{103.9230485}$	$\frac{V_v}{V_o}$
=5.147058824	=5.163977793,	$\approx \frac{\sqrt{R_o}}{\sqrt{R_v}}$
$\frac{V_v}{V_n} = \frac{35}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_v}} = \frac{670.8203932}{103.9230485}$	$\frac{V_v}{V_n}$
=6.481481481	=6.45497224,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_v}}$
$\frac{V_v}{V_p} = \frac{35}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_v}} = \frac{768.1145748}{103.9230485}$	$\frac{V_v}{V_p}$
=7.446808511,	=7.391185939,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_v}}$
$\frac{V_e}{V_m} = \frac{29.8}{24.1}$	$\frac{\sqrt{R_m}}{\sqrt{R_e}} = \frac{150.9966887}{122.4744871}$	$\frac{V_e}{V_m}$
=1.236514523,	=1.232882801,	$\approx \frac{\sqrt{R_m}}{\sqrt{R_e}}$
$\frac{V_e}{V_l} = \frac{29.8}{13.1}$	$\frac{\sqrt{R_l}}{\sqrt{R_e}} = \frac{278.7471973}{122.4744871}$	$\frac{V_e}{V_l}$
=2.27480916,	=2.275961336,	$\approx \frac{\sqrt{R_l}}{\sqrt{R_e}}$
$\frac{V_e}{V_s} = \frac{29.8}{9.6}$	$\frac{\sqrt{R_s}}{\sqrt{R_e}} = \frac{378.153408}{122.4744871}$	$\frac{V_e}{V_s}$
=3.104166667,	=3.087609648,	$\approx \frac{\sqrt{R_s}}{\sqrt{R_e}}$
$\frac{V_e}{V_o} = \frac{29.8}{6.8}$	$\frac{\sqrt{R_o}}{\sqrt{R_e}} = \frac{536.6563146}{122.4744871}$	$\frac{V_e}{V_o}$
=4.382352941,	=4.381780461,	$\approx \frac{\sqrt{R_o}}{\sqrt{R_e}}$
$\frac{V_e}{V_n} = \frac{29.8}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_e}} = \frac{670.8203932}{122.4744871}$	$\frac{V_e}{V_n}$
=5.518518519,	=5.477225576,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_e}}$
$\frac{V_e}{V_p} = \frac{29.8}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_e}} = \frac{768.1145748}{122.4744871}$	$\frac{V_e}{V_p}$
=6.340425532,	=6.271629243,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_e}}$

Continue .....

$\frac{V_{ms}}{V_j} = \frac{24.1}{13.1}$	$\frac{\sqrt{R_j}}{\sqrt{R_{ms}}} = \frac{278.7471973}{150.9966887}$	$\frac{V_{ms}}{V_j}$
=1.839694656,	=1.846048411,	$\approx \frac{\sqrt{R_j}}{\sqrt{R_{ms}}}$
$\frac{V_{ms}}{V_s} = \frac{24.1}{9.6}$	$\frac{\sqrt{R_s}}{\sqrt{R_{ms}}} = \frac{378.153408}{150.9966887}$	$\frac{V_{ms}}{V_s}$
=2.510416667,	=2.504382124,	$\approx \frac{\sqrt{R_s}}{\sqrt{R_{ms}}}$
$\frac{V_{ms}}{V_u} = \frac{24.1}{6.8}$	$\frac{\sqrt{R_u}}{\sqrt{R_{ms}}} = \frac{536.6563146}{150.9966887}$	$\frac{V_{ms}}{V_u}$
=3.544117647,	=3.554093267,	$\approx \frac{\sqrt{R_u}}{\sqrt{R_{ms}}}$
$\frac{V_{ms}}{V_n} = \frac{24.1}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_{ms}}} = \frac{670.8203932}{150.9966887}$	$\frac{V_{ms}}{V_n}$
=4.462962963,	=4.442616583,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_{ms}}}$
$\frac{V_{ms}}{V_o} = \frac{24.1}{4.7}$	$\frac{\sqrt{R_o}}{\sqrt{R_{ms}}} = \frac{768.1145748}{150.9966887}$	$\frac{V_{ms}}{V_o}$
=5.127659574,	=5.086963041,	$\approx \frac{\sqrt{R_o}}{\sqrt{R_{ms}}}$
$\frac{V_j}{V_s} = \frac{13.1}{9.6}$	$\frac{\sqrt{R_s}}{\sqrt{R_j}} = \frac{378.153408}{278.7471973}$	$\frac{V_j}{V_s}$
=1.364583333,	=1.356617794,	$\approx \frac{\sqrt{R_s}}{\sqrt{R_j}}$
$\frac{V_j}{V_u} = \frac{13.1}{6.8}$	$\frac{\sqrt{R_u}}{\sqrt{R_j}} = \frac{536.6563146}{278.7471973}$	$\frac{V_j}{V_u}$
=1.926470588,	=1.925243804,	$\approx \frac{\sqrt{R_u}}{\sqrt{R_j}}$
$\frac{V_j}{V_n} = \frac{13.1}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_j}} = \frac{670.8203932}{278.7471973}$	$\frac{V_j}{V_n}$
=2.425925926,	=2.406554755,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_j}}$
$\frac{V_j}{V_o} = \frac{13.1}{4.7}$	$\frac{\sqrt{R_o}}{\sqrt{R_j}} = \frac{768.1145748}{278.7471973}$	$\frac{V_j}{V_o}$
=2.787234043,	=2.755595688,	$\approx \frac{\sqrt{R_o}}{\sqrt{R_j}}$
$\frac{V_s}{V_u} = \frac{9.6}{6.8}$	$\frac{\sqrt{R_u}}{\sqrt{R_s}} = \frac{536.6563146}{378.153408}$	$\frac{V_s}{V_u}$
=1.411764706,	=1.419149,	$\approx \frac{\sqrt{R_u}}{\sqrt{R_s}}$
$\frac{V_s}{V_n} = \frac{9.6}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_s}} = \frac{670.8203932}{378.153408}$	$\frac{V_s}{V_n}$
=1.777777778,	=1.773937188,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_s}}$

Continue .....



$\frac{V_u}{V_p} = \frac{9.6}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_u}} = \frac{768.1145748}{378.153408}$	$\frac{V_u}{V_p}$
=2.042553191,	=2.031224785,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_u}}$
$\frac{V_u}{V_n} = \frac{6.8}{5.4}$	$\frac{\sqrt{R_n}}{\sqrt{R_u}} = \frac{670.8203932}{536.6563146}$	$\frac{V_u}{V_n}$
=1.259259259,	=1.25,	$\approx \frac{\sqrt{R_n}}{\sqrt{R_u}}$
$\frac{V_u}{V_p} = \frac{6.8}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_u}} = \frac{768.1145748}{536.6563146}$	$\frac{V_u}{V_p}$
=1.446808511,	=1.431297003,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_u}}$
$\frac{V_n}{V_p} = \frac{5.4}{4.7}$	$\frac{\sqrt{R_p}}{\sqrt{R_n}} = \frac{768.1145748}{760.8203932}$	$\frac{V_n}{V_p}$
=1.14893617,	=1.145037603,	$\approx \frac{\sqrt{R_p}}{\sqrt{R_n}}$
$\sqrt{R_{mer}} = 47.9 \times 76.15773106 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_u \cdot \sqrt{R_u} = 35 \times 103.9230485 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_e \cdot \sqrt{R_e} = 29.8 \times 122.4744871 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_{mer} \cdot \sqrt{R_{mer}} = 24.1 \times 150.9966884 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_j \cdot \sqrt{R_j} = 13.1 \times 278.7471973 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_s \cdot \sqrt{R_s} = 9.6 \times 378.153408 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_u \cdot \sqrt{R_u} = 6.8 \times 536.6563146 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_n \cdot \sqrt{R_n} = 5.4 \times 670.8203932 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		
$V_p \cdot \sqrt{R_p} = 4.7 \times 768.1145748 \times 10^2 \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$		

Namely  $V_X \sqrt{R_X} \approx 3.6 \times 10^5 \text{ (km}^{\frac{3}{2}}/\text{s)}$

**Table 3.**

Name of the planet	Velocity $V$ ( $\times 10^3 \text{ m} \cdot \text{s}^{-1}$ )	Distance To the sun $R$ ( $\times 10^9 \text{ m}$ )	$V^2 \cdot R$ ( $\times 10^{15} \text{ m}^3 \cdot \text{s}^{-2}$ )
Mercury	47.9	58	133075.78
Venus	35	108	132300
Earth	29.8	150	133206
Mars	24.1	228	132424.68
Jupiter	13.1	777	133340.97
Saturn	9.6	1430	131788.8
Uranus	6.8	2800	13317120
Neptune	5.4	4500	131220
Pluto	4.7	5900	130331

Namely  $V^2 \cdot R \approx 1.3 \times 10^{11} \text{ km}^3 \cdot \text{s}^{-2}$

I think, data in that table has been used for hundreds of years in the world without change, should be reliable, can be used as the basis for calculating. And some people think that  $V^2 \cdot R = \beta$  can be determined according to the gravity=centripetal force. And

in this article  $\frac{V_1}{V_2} = \frac{\sqrt{R_1}}{R_2}$  is based on Isaac Newton's "Mathematical principle of natural philosophy" the second chapter first proposition 4 theorem 4 inference 6 "if cycle and radius in the direct ratio of 3/2, so, velocity and radius is inversely proportional to the square root of centripetal force varies inversely as the square of the radius, on the other hand also with" change, and has nothing to do with whether gravity is equal to the centripetal force.

## Conclusion

In this paper, the gravity of the size of the calculation, and Isaac Newton published more than 300 years ago the calculation formula of very different, we determine the direction of gravity with the left hand rule, and Isaac Newton's gravity direction, of course, is very different, but through the full text of the reader will find, a lot of natural phenomena in the universe with the traditional Newton's law of universal gravitation cannot explain, but in our point of view is very good to explain these phenomena, this article published on active academic thinking, explain the laws of nature are not so good.

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