JOJ Sciences
ISSN: 2641-8290

Juniper Publishers
key to the Researchers

Research Article
Volume 3 Issue 5- June 2024
DOI: 10.19080/JOJS.2024.03.555622

JOJ scin

The Origin of Gravitation

Zheng Shengming*

Yuquan19(jia) Beijing China

Submission: May 16, 2024 ; **Published:** June 20, 2024

***Corresponding author:** Zheng Shengming , Yuquan19(jia) Beijing China.

Abstract

More than three hundred years ago, Newton thought that the reason for an apple falling was due to gravity; although he discovered gravity on earth, he did not know how to produce gravitation; he said that God was the first driving force. Since then, many people have been exploring the origin of gravitation for more than three centuries, but currently, people have no known origin of gravitation. To determine the origin of gravitation, I performed several experiments and discovered that moving photons generate gravitation. This discovery reveals the origin of gravitation: applying this discovery to other particles has the same effect; at the same time, these discoveries have been applied in the macro world to calculate the acceleration of gravity. This is the first study to provide a more accurate formula than the universal law of gravitation for describing the gravity field of earth. These works indicate that moving elementary particles introduce interaction forces that cause gravitation to occur in the macro world. This shows that these discoveries reveal the essence of the universal law of gravitation from the micro world to the macro world and reveal the origin of gravitation, namely, to tell us where gravitation comes from and to solve the enigmas that the universal law of gravitation cannot solve today.

Since Newton suggested that there was gravitation when he saw an apple fall to earth, he deduced an approximation computation formula by the Kepler third law to describe it. Gravitation only relates to the mass of matter, and the gravitational mass of matter is defined as gravitational mass to express it as the same as the defined electric charge in Coulomb's law without further investigating other factors that cause gravitation. Although many people have investigated gravitation, they have not discovered the origin of gravitation because their thought was confined to defining gravitational mass at that time when the essence of gravitational mass was still unknown. As shown in the following examples-Eötvös experiment, Fischbach analysis, and Einstein General Relativity-these investigations did not present us with a clear origin of gravitation. Moreover, the uncertainty of Newtonian gravitation constants has not yet been resolved. However, in the process of investigating the origin of gravitation, some experiments have shown that moving photons create gravitation. This discovery testifies to the origin of gravitation. In the process of exploring the essence of light, Newton initially agreed with the particle interpretation of light, while Huygens argued for the wave theory. Hence, these two theories were disputed in Newton's time. Initially, people accepted the particle theory, but after Thomas Young's experiment and Augustin Jean Fresnel's experiment, people began to accept the wave theory. Einstein [1] proposed the quanta concept, which was later called photon [2], and even later, De Broglie [3] proposed the wave nature of matter; subsequently, people began using particle–wave duality to explicate all phenomena in the micro world. Thus, there appears to be a paradox: how does one particle have two forms? To solve this enigma, I have performed experiments and discovered that moving photons generate gravitation; this effect leads to the characteristics of wave light [4,5].

Keywords: Motion; Photons; Gravitation; Origin; Electron

The Origin of Gravitation

Moving Photons Generate Gravitation

The experimental devices are indicated in pictures a, b, and c of Figure 1. The process of the experiment is as follows: let the light beam pass through the grating (see picture b of Figure 1) into a pentagon (see picture c of Figure 1). First, the light beam O is separated into 2 parts by a ring, as shown in pictures c and d of Figure 1. Light beam O then becomes two new light beams P and O, as shown in picture e of Figure 1. Along with light moving forward, the five light beams possessing the highest intensity in light beam P with the greatest attractive force obviously attracted light beam O to become a pentagon (see pictures 1-25 of Figure 1). Only the five points of light beam O, which correspond to the five points of light beam P with the highest intensity, are in contact with each other and are gradually linked to each other. Note: at first, light beam P and light beam O do not contact at all. It is impossible for this contact to occur in the light wave theory. This action is not an effect of wave interaction. In contrast, this indicates that moving photons create gravitation. (See Figures 1-25 of Figure 1).

To verify that this phenomenon is caused by gravitation, a second experiment was performed. The experimental device is shown in picture a of Figure 2. Images b and c in Figure 2 show that the other light beams do not move forward and that only light beam O is allowed to move forward; under these conditions, light beam O maintains its circular shape. This phenomenon is shown in Figures 1-25 of Figure 2. This result demonstrated that if there was no other light beam, the light beam O would not accept the foregone gravitation.

In comparison with experiment 1, it appears that light beam O maintains its circular shape in unchanged form when there are no other light beams moving forward. According to the results of this experiment, light beam O does not appear before the phenomenon of gravitation. This phenomenon is confirmed only by the interaction force, indicating that gravitation occurs; thus, we find that moving photons cause gravitation.

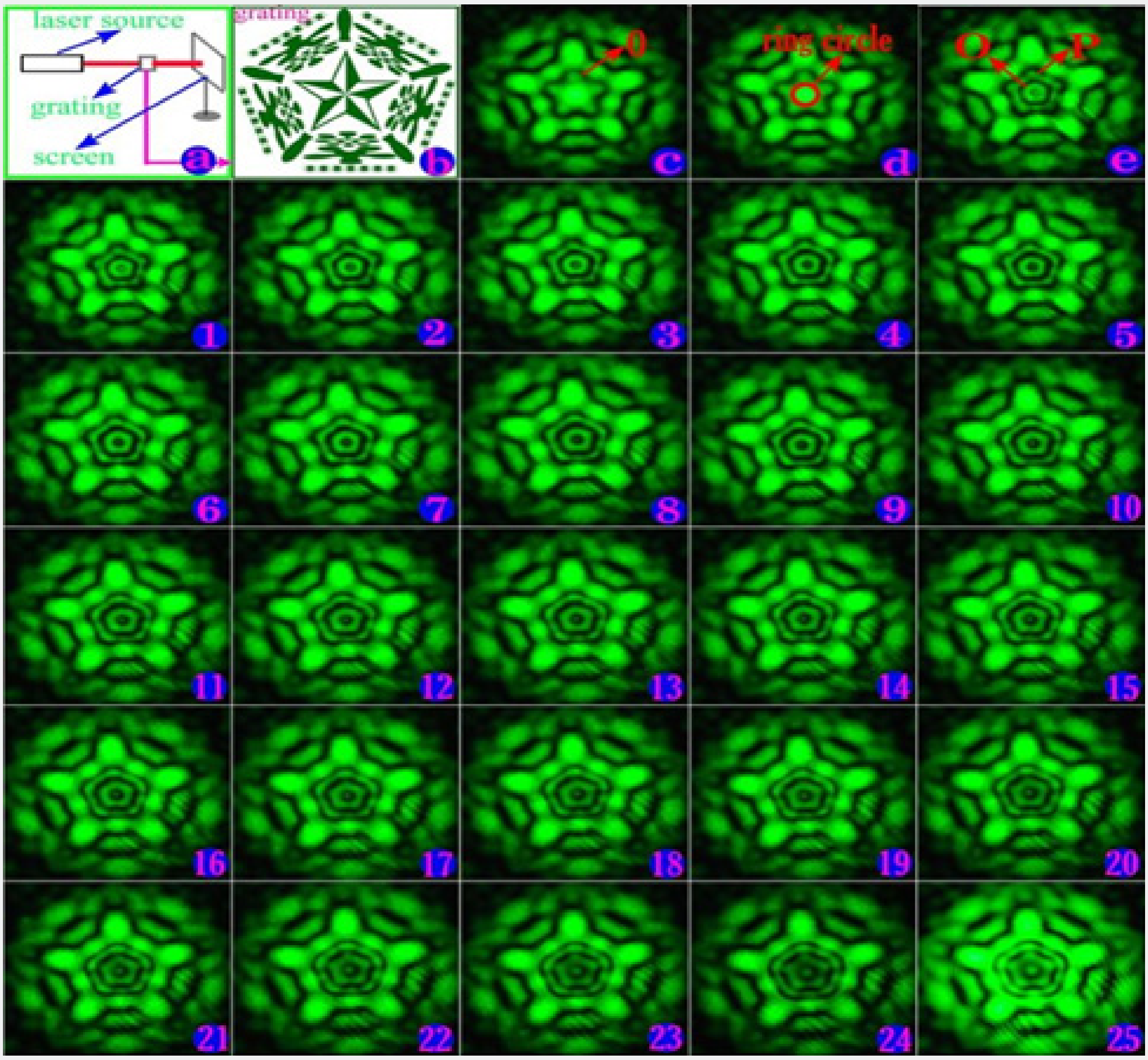

Figure 1: Image a shows the light source. Picture c shows the ring site in light beam O, and pictures 1-25 are photographs indicating that light beam O changes from a circular shape to a pentagon by gravitation as the light beam moves forward.

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

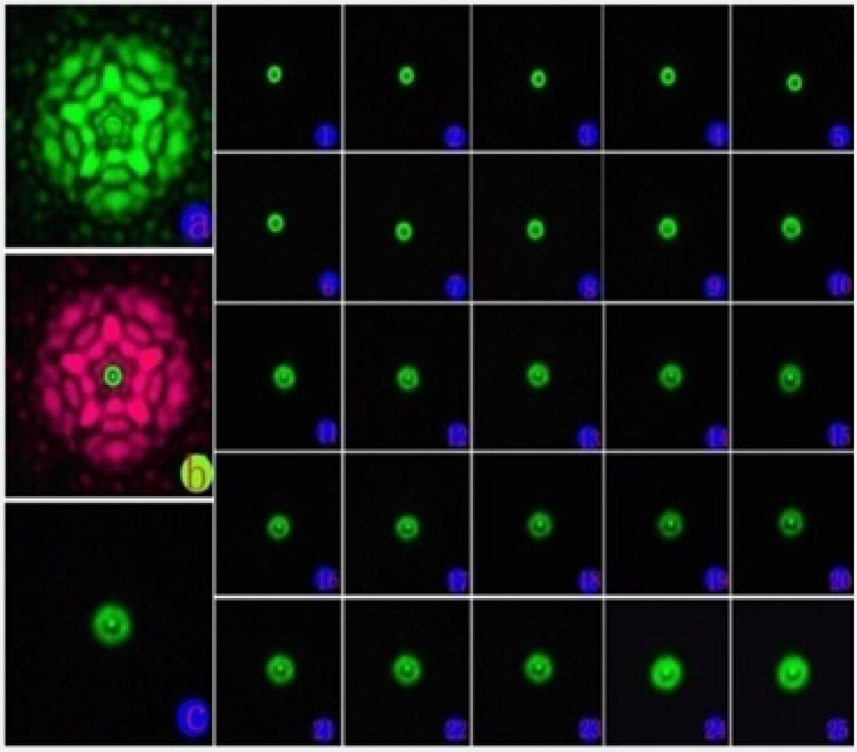

Figure 2: This experiment shows that light beam O does not change its circular shape when there are no other light beams moving forward, indicating that there is no force acting on it.

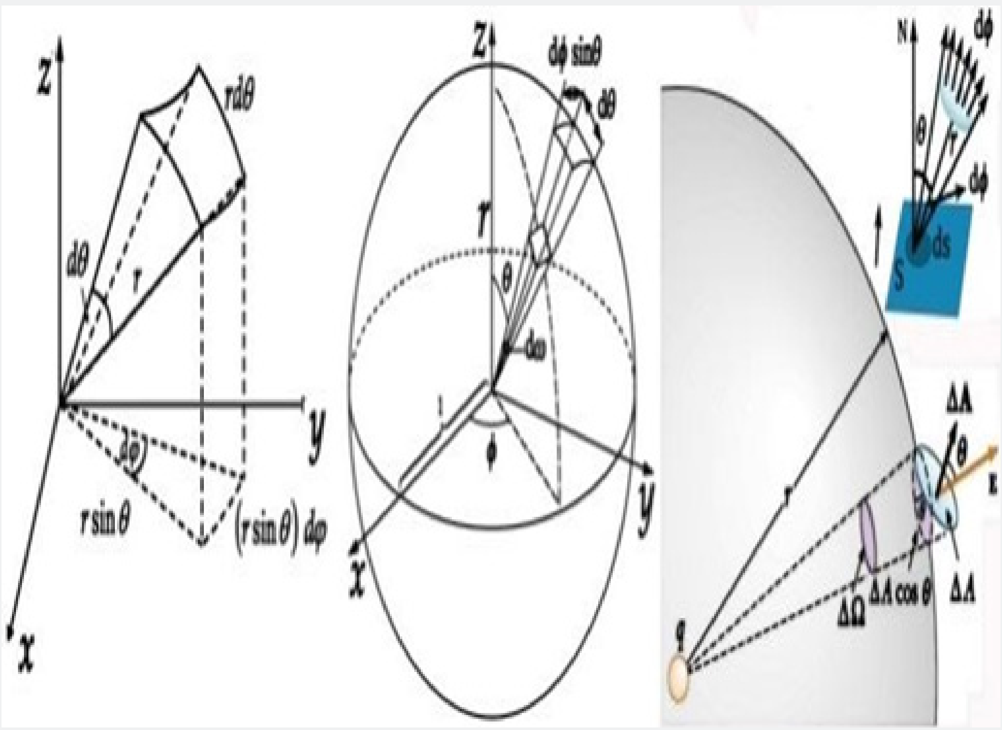

Figure 3: The figure shows the change in the distributed intensity of the force field in space with increasing distance.

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

Quantitative Experiments

Below, we present the results of a quantitative experiment: first, we think that photons possess mass. The above two experiments indicate that there is a force between the light beams. Therefore, it is true that light possesses mass.

The process of the quantitative experiment is described below. First, I think that motion photons produce this gravitation proportional to their mass, and their velocity of motion, which is denoted as M_a, can be calculated via the following formula: $M_a = mvk_m$.

The change in the distributed intensity of this force field in a specific space in a unit area is its value divided by $4\pi r^2$, which indicates that the change in the intensity of the force field in space is inversely proportional to the square of the increase in distance. The results are shown below (Figure 3).

The intensity of this force field decreases with increasing distance r. Then, I write the following formula: $E_a = M_a / 4\pi r^2$, namely, $E_a = mvk_m / 4\pi r^2$. When the distance between two photons is r and m_1, m_2, v_1, v_2 are their mass and velocity, respectively, from the preceding analysis, at photon m_2, the intensity of the force field produced by m_1 is $E_a = m_1 v_1 k_m / 4\pi r^2$. The greater the mass of photon m_2 is, the greater the amount of force received from photon m_1 in space; the faster the velocity of motion of photon m_2 is, the greater the amount of force received from photon m_1 in unit time. In other words, photon m_2 accepting force is proportional to the intensity of the force field in which photon m_1 is produced: E_a, and its mass is m_2, and its velocity is v_2. Write a formula below: $F_a = \frac{m_1, m_2, v_1, v_2}{4\pi r^2} G_a$; this is a scalar form. On the other hand, from the abovementioned experiments, the two light beams are parallel, but the direction of the generated gravitation is perpendicular to the direction of the traveling path.

Considering the characteristics of the medium, ***Θ*** is used to determine $\vec{F}_a = \frac{m_1, m_2 \times \vec{v}_1, x\left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi \vec{r}^3} G_a$, which is a vector form. This formula implies that the two particles attracting or repelling only have to do with their motion direction.

Because there is an interaction force between two light beams, they can yield new light beams between them under special conditions. The changing distance between two light beams will change the number of light beams created between them. This phenomenon cannot be elucidated by wave theory but can be elucidated by the above discovery, as shown in Figure 4. In light beam B of picture c, the first light ray of the inside light beam accepts force from the outside light beam; on the other hand, the first light ray also accepts force from light beam A because the light disperses while moving forward. The distance between the first light ray and the outside light beam increases faster than that between the first light ray and light beam A; thus, the first light ray accepting force from light beam A will undergo a smaller change than that from its outside light beam. In other words, the first light ray, which accepts force from the outside light beam in light beam B, decreases as the light beam moves forward. Thus, part of the internal light beam B will move to light beam A. The motion status of light beam A is similar to that of light beam B; in the end, new light rays will appear between light beams A and B (see Figure 4).

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

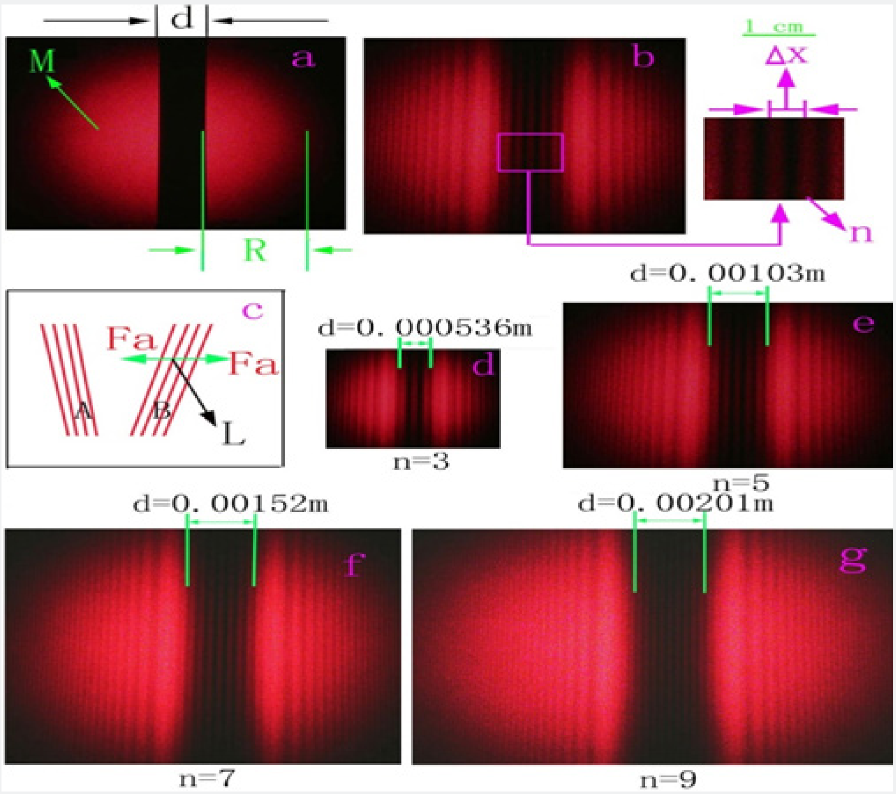

Figure 4: Pictures a, b, and c show the status of the two dispersing light beams A and B. Pictures d, e, f, and g are photographs of the experimental results.

When the status of the new light beam is balanced by the accepted force from its two sides, the magnitude of the force, which every new light beam receives from its two sides, is equal; the directions of the two forces received from the two sides are opposite. At the site of the light beam n in picture b of Figure 4, according to the formula $F_a = \frac{m_1 m_2 v_1 v_2}{4\pi\theta r^2} G_a$, we can obtain:

$$\frac{m^2v^2(n+1)^2}{4\pi d^2}G_a + \frac{m^2v^2(n+1)^2}{4\pi(2d)^2}G_a + \ldots + \frac{m^2v^2(n+1)^2}{(n+3)^2 4\pi d^2}G_a + \int_{\frac{n+3}{2(n+1)}d}^{\frac{n+3}{2(n+1)}d+R} \frac{mMv^2}{4\pi r^2}G_a dr$$

$$= \frac{m^2v^2(n+1)^2}{4\pi d^2}G_a + \frac{m^2v^2(n+1)^2}{4\pi(2d)^2}G_a + \ldots + \frac{m^2v^2(n+1)^2}{(n-1)^2 4\pi d^2}G_a + \int_{\frac{n-1}{2(n+1)}d}^{\frac{n-1}{2(n+1)}d+R} \frac{mMv^2}{4\pi r^2}G_a dr$$

$d = \frac{n-1}{2p}\left(\frac{n+1}{n+3} + \frac{n+3}{n+1}\right)$ where m is the mass of the new light beam created between two light beams and M is the mass in unit distance of two light beams A and B. The experiments 3 and their results are shown in Figure 4 and Table 1. Note that the calculation units are metric. Figure 4 and Table 1 show that n changes as d changes. The changes in their values in this experiment are in extremely good agreement with the calculated outcome according to $d=\frac{n-1}{2p}\left(\frac{n+1}{n+3}+\frac{n+3}{n+1}\right)$, which is deduced from $\vec{F}_a=\frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}_{12}^{\,3}}G_a$. If the photon possesses mass and the above analysis is correct, p will approach a constant value in the experiment. The third experiment confirms this prediction, as shown in Table 1. As a result of this experiment, the validity of the following formulas is confirmed: $\vec{F}_a=\frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}_{12}^{\,3}}G_a$

From the above experiments, we discover the origin of gravitation: motion photons generate gravitation, and several formulas can be used to describe this phenomenon. See below:

$$\vec{M}_a=\frac{m\vec{v}\times\vec{r}}{\vec{r}}k_m,\ \vec{E}_a=\frac{m_1\times\vec{v}_1\times\vec{r}_{12}}{4\pi \vec{r}_{12}^{\,3}},\ \vec{F}_a=\frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}_{12}^{\,3}}G_a.$$

Table 1: Results of experiment 3.

Table the Result of Experiment				
the experimental d	d=0.00053mm	d=0.00103mm	d=0.00152mm	d=0.00201mm
the experimental n	n=3	n=5	n=7	n=9
the calculating P	p=4088.5	p=4045.307	p=4046.052	p=4046.434

Applying in the micro world

This Approach can be Applied to the Interaction between Photons.

One famous phenomenon in which the diffractive center changes from dark to bright has always been used to verify the wave theory of light. This seems to prove the existence of light waves. The following experiment shows that the change in the center of the light beam from dark to bright is not an effect of periodic waves but is the result of gravitational interactions. As shown in Figure 5, when a light source is created, it emits two light beams, as shown in Figure 5a. They do not contact each other in their movement process, while there is a 1.5 mm distance between them. Their tracks of movement are shown in picture b of Figure 5. This experiment indicates that when both light beams O and P move forward, the center of light beam O is a dark project on the screen, as shown in picture c of Figure 5; when only light beam O moves forward, the center of light beam O is a bright project on the screen. In this changing process, the radius of light beam O is 3.5 mm, and there is a 1.5 mm distance between light beam O and light beam P. This shows that the change in light beam O has nothing to do with the interaction of the contact force because, regardless of whether light beam P exists, the center of light beam O is far from the edge of light beam P and is not in contact; when light beam P is removed, this action does not act on light beam O. If the change in the center of the light beam from dark to bright is the result of periodicity of the wave, the change in the center of light beam O would be the same as the light beam traveling at an equal distance in these two states. However, in this experiment, the center of light beam O is bright when light beam P does not exist, and the center of light beam O is dark when light beam P exists. The light passed an equal distance in these two states. This finding unequivocally indicates that the change in the center of light beam O from dark to bright is not due to the periodicity of the wave but rather to gravitation, which the photons of movement created.

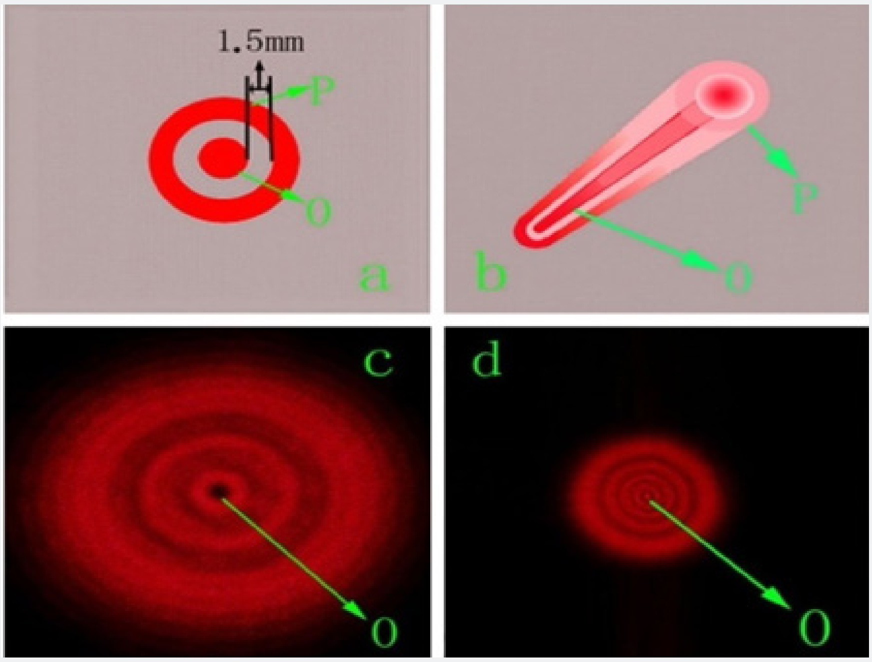

Figure 5: Picture a is the cross-section of two light beams O and P. Picture b is the status of the movement track of light beams O and P. Picture c is the photograph of the screen when light beams O and P are all moving forward, and picture d is the photograph of the screen when only light beam O moves forward.

This experiment indicates that the change in the center of light beam O diffraction from dark to bright is not a periodic wave change but rather the effect of the interaction of gravitation and the resulting movement photons. To confirm that the interference fringe of light is a result of the interaction of gravitation and the resulting movement photons, experiment 5 was designed. Three light beams, A, O, and C, are created. Their interaction also indicates that the wave phenomenon in light is produced by force. The details are described below in experiment 5.

The interaction results are shown in Figure 6. When the outer part of light beam A is removed, interference fringes appear in light beam C, and the remaining light beam A moves to light beam C. This also indicates that the interference fringes of light, which exhibit wave characteristics, are produced by the movement photons.

Figure 6a shows that light beam O attracted light beam A and light beam C at the same time. Moreover, in light beam A, the inside part of the light beam also accepts force from the outside light beam; when the outer parts of light beam A are removed, the inside light beam accepting force from the outside light beam will be lost, and the amount of force from light beam A that light beam O accepts will decrease. However, the accepted force from light beam C does not change. Thus, light beam O and the left light beam A will move toward light beam C. Meanwhile, the accepted force of light beam C from light beam A will also decrease. This will lead to a change in the original balance of the force in the three light beams A, O, and C; the original distribution of light beam C will change at this changing force status for a new balance, and in the end, light beam C will exhibit interference fringe-like wave characteristics. These two experiments unequivocally prove that the wave characteristic of light is caused by the photons of movement generating force, and it is indicated that the light is a particle, namely, the essence of light is a particle; on the other hand, because photons of movement create force, a changed light beam will lead to a wave phenomenon when it moves forward at the same time. This is the reason why light seems to have wave-particle duality.

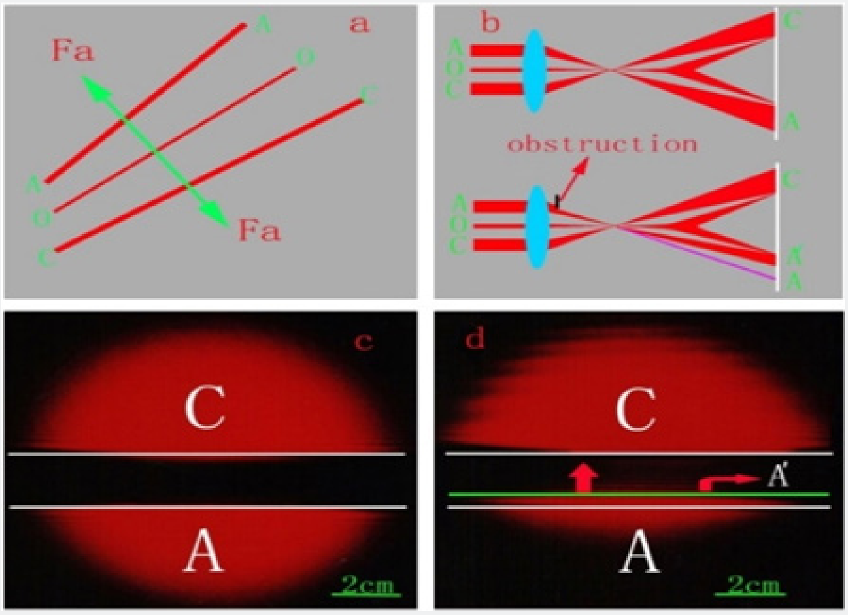

Figure 6: Picture a is the status of force in the three light beams A, O, and C; Picture b shows the motion state of light beams A, O, and C; Picture c is the photograph of light beams A and C when they are first projected on the screen; Picture d is the motion state when the outer part of light beam A has been removed. In picture d, the white line is the original site of light beam A when the outside light beam has not been removed. The green line is the site of light beam A when its outside part of the light beam has been removed, and the red arrow is the direction of the light beam A accepting force. The purple line in picture b is the movement track of light beam A when its outer light beam has not been removed.

Further analysis of the above two experiments reveals that the periodic wave changes with two changing conditions: first, it changes with forward movement; second, when two waves contact each other, they change due to the interaction of two waves. However, in the experiment, light beam O and light beam P did not contact each other in terms of their travel displacements, and the travel distances were equal. According to wave theory, the change in the center of light beam O will be the same, regardless of whether it is dark or bright. However, in fact, in this experiment, the change in the center of light beam O is not the same even when the distance traveled is equal. If light beam P exists, the center of light beam O is dark; if light beam P does not exist, the center of light beam O is bright. This phenomenon cannot be elucidated by wave theory but can be elucidated by the above discovery. If light beam P does not exist, light beam O, which is subjected to gravitational conditions from the outside, will be lost; consequently, the centric light rays in light beam O will not move toward the outside. In this condition, it is bright. If light beam P exists, light beam O accepts outside gravitation from light beam P, so the centric light beam moves to the outside; under these conditions, the beam is dark. In other words, the change in the light beam P affects the interaction gravitation in light beam O. Because the photons of movement attract the force, varying the light beam will change the distribution of gravitation in space.

A Method of Describing Interference and Diffraction

We now know that the light wave phenomenon is produced by force, which photons of movement create. Based on this discovery, I developed a new method for obtaining images of multi pinhole diffraction patterns and their interference fringes. According to the above conclusion, the photons of movement create force. Below, I do experiment 6 to apply this discovery. Figure 7a shows that when the light beam passes through pinholes A and B, the beams close as they disperse while moving forward. At their coinciding region C, part of light beam A and part of light beam B can become a streak line such as L, which is confirmed by the experiments in picture b of Figure 7. This becomes interference fringes between two pinholes; the image z in Figure 7 confirms this conclusion. When two streaks intersect, the intensity of their intersected spot is greater than that of its surrounding region; hence, the force at the spot of intersection is greater than that at its outer region. This attracts the surrounding light rays to the center and becomes a circular dot at the intersection point, as shown in picture c of Figure 7.

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

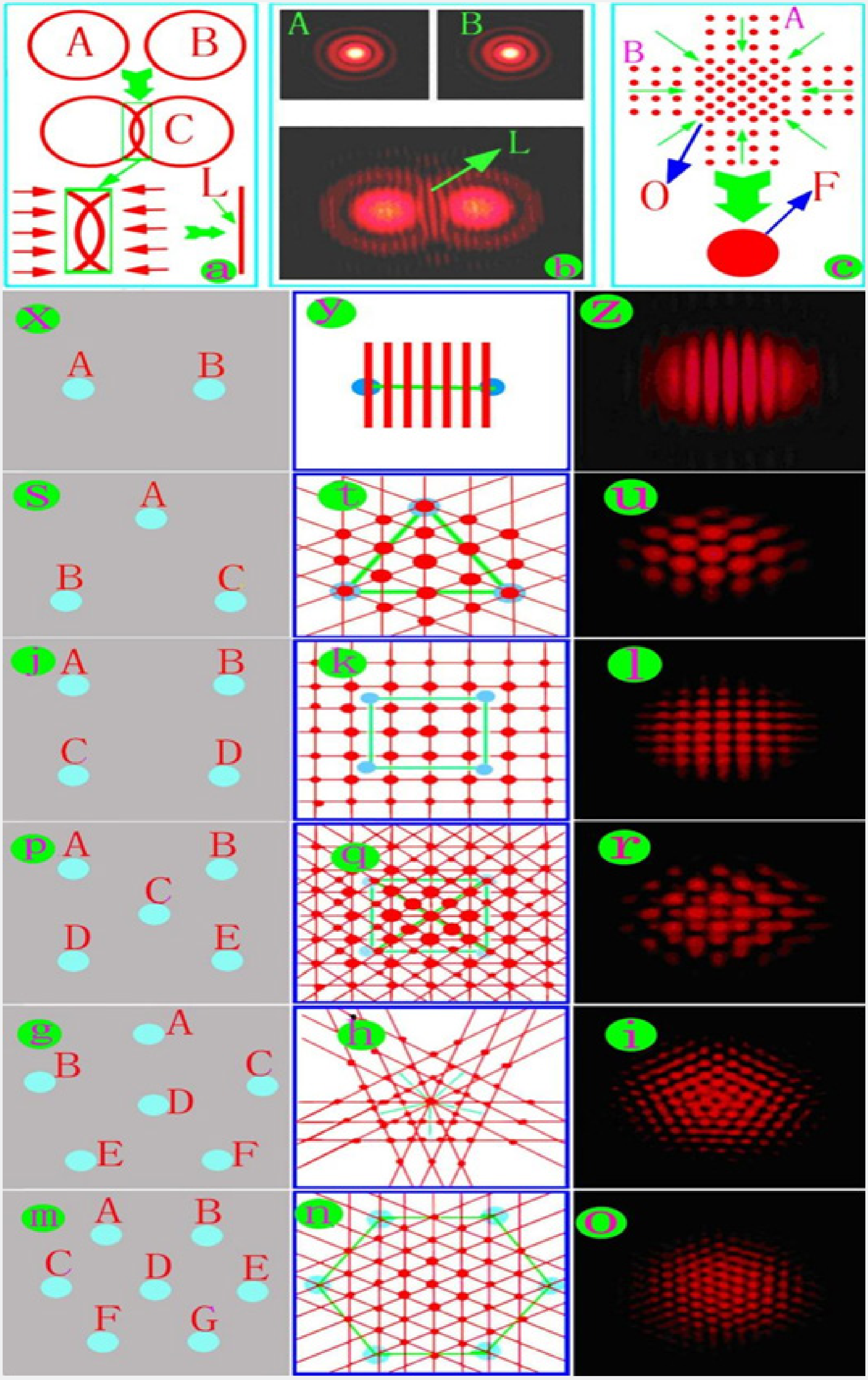

Figure 7: a, b, and c are the pictures that indicate the method; x, s, g, m, j, and p are pinhole lattices; y, t, k, q, h, and n are drawn pictures according to the conclusions of discovery; and z, u, l, r, i, and o are photographs in which the light beam passes through the pinhole lattice projected on the screen.

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

The above meaning can be simply described as follows: First, the interference fringe between two pinholes is perpendicular to the line that links two pinholes. Second, the intersection of two streaks becomes a dot. According to this, I infer that when the light beam passes through three, four, five, or six pinholes, the image on which light projects on the screen can be drawn below. Given the perpendicular line for the line that links the nearest two pinholes, the point of intersection of this vertical line on the right is the image on the screen. Two facts confirm this view. First, the intersected dot of the two streaks is in the original source of these two streaks. Second, the number of dots in the line is equal to the number of streaks between two pinholes. In Figure 7, the pictures x, s, g, m, j, and p are the pictures of pinholes, and z, u, l, r, i, and o are photographs of light going through the pinholes projected on the screen. Pictures y, t, k, q, h, and n are drawn according to the above method. These pictures are in extremely good agreement with photographs z, u, l, r, i, and o, in which light passes through the pinholes on the screen in the experiment. This experiment indicates that diffraction patterns and interference fringes projected on the screen can be drawn according to the new discovery that the movement photon creates gravitation.

The Meaning of Wavelength in Optics

From the above experiments, we know that light waves do not actually exist. Now, we will discuss the meaning of the wavelength in the light wave theory. Figure 4 shows that $\Delta x = d_1/(n-1)$ can be compared to $\Delta x = D\lambda/d_2$ obtain $d_1 \text{x} d_2 = D\lambda \text{x} (n-1)$, where $D = v \text{x} t$. In the end, we can obtain the following formula: $\lambda \text{x} \text{v} = d_1 \text{x} d_2/(n-1)t$. On the one hand, because $d = \frac{n-1}{2p}\left(\frac{n+1}{n+3} + \frac{n+3}{n+1}\right)$, in the specific numerical value of d_1, n is specified. This means that these n, t, d_1, d_2 can all be controlled by man. Namely: $\lambda v = k_\lambda =$ constant. Here, $k_\lambda = \lambda v = 139$.

When Applied to Other Particles of the Micro World

The Estimate Constant of Gravitation

The estimate constant of gravitation produced by the above formula in the spectrum is applied to the interaction between photons and other particles. The motion photon has velocity and mass . If we apply the above discovery to analyze other motion particles, we can obtain a simple and clear method to solve this problem in the microscale world. For example, this method can be applied to calculate the wavelength and intensity of spectral lines. In the plasma, the velocity of the moving photon is v, the mass of the photon is m_p, the atomic velocity is V, the mass of the nucleus is m, and the distance from the photon to the nucleus is when the temperature is T. According to the rule of vector addition, the velocity of the photon revolving around the nucleus is $\sqrt{v^2 - V^2}$ when the nucleus attracts a photon around the atom rotation motion. According to the following formula,

$\vec{F}_a = \frac{m_1 m_2 \text{x} \vec{v}_1 \text{x} \left(\vec{v}_2 \text{x} \vec{r}_{12}\right)}{4\pi\theta \vec{r}_{12}^{\,3}} G_a$ can be obtained:

$$F_a = m m_p V^2 G_a / 4\pi\theta r^2 = \left(v^2 - V^2\right) m_p / r$$

In other words, $mV^2\left(G_a/r + 1/m\right) = v^2$. In plasma, the probability of an ion with a velocity of V is $f(v) = 4\pi V^2 \left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mV^2}{2k_B T}}$. The intensity of light emitted from an atom is I when the temperature is T. According to W. F. Meggers, the intensity is not only approximately proportional to the relative energy and the corresponding probability when the atomic velocity is V but also proportional to the density of electrons in the plasma. Namely, $I = f(v)dk$ simplifies it and compares $mV^2\left(G_a/r + 1/m\right) = v^2$ considering $G_a/r \gg 1/m$.

We can obtain

$$\left(a + \ln r + \ln\left(\frac{v^2}{m}\right) + \frac{3}{2}\ln\left(\frac{m}{T}\right) - \ln I\right)\frac{2k_B T G_a}{r} = v^2.$$

where m, T, I, r, v are the atomic weight, absolute temperature, intensity of the spectral line, radius of the atom, and velocity of the photon emitted from the

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

element, respectively. a is a constant value. For convenience of calculation, I use the following formula: $v\lambda = k_\lambda$. Thus, we can obtain the following formula:

$$\left(a + \ln r + \ln\left(\frac{1}{m\lambda^2}\right) + \frac{3}{2}\ln\left(\frac{m}{T}\right) - \ln I\right)\frac{T}{r}k_s = \frac{1}{\lambda^2}$$

Where $k_S = \frac{2k_B G_a}{k_\lambda^2}$, k_B is the Boltzmann constant. Table 2 and Table 3 show the results of the verification of all the elements. Table 3 shows the verification results for the Balmer series of hydrogen. For the data in the tables, see [6-8].

Table 2.

The result of appication formula: $\left(a + \ln r + \ln\left(\frac{1}{m\lambda^2}\right) + \frac{3}{2}\ln\frac{m}{T} - \ln I\right)\frac{T}{r}k_s = \frac{1}{\lambda^2}$								
Z	element	m	r(pm)	λ (nm)	I	T	a	K
1	H	1	68	383.583	5	2169	16.072	0.023
2	He	4	140	587.562	500	4450	16.072	0.023
3	Li	6.941	152	610.3	320	3510	16.072	0.023
4	Be	9.012	113	508.775	80	2700	16.072	0.023
5	B *	10.81	88	412.193	285	4200	16.072	0.023
6	C	12.011	77	477.175	200	2370	16.072	0.023
7	N	14	70	575.25	700	2000	16.072	0.023
8	O	16	66	395.461	100	2570	16.072	0.023
9	F	19	64	696.635	4000	2230	16.072	0.023
10	Ne	20.179	160	585.248	500	4000	16.072	0.023
11	Na	22.98	186	616.075	240	2800	16.072	0.023
12	Mg	24.305	160	517.268	220	4220	16.072	0.023
13	Al	26.98	143.1	555.706	180	3050	16.072	0.023
14	Si	28.085	117	479.23	80	2900	16.072	0.023
15	P	30.97	110	547.767	180	2300	16.072	0.023
16	S	32.06	104	499.35	285	2900	16.072	0.023
17	C1	35.45	99	462.394	40	2310	16.072	0.023
18	Ar	39.948	190	394.75	7	5150	16.072	0.023
19	K	39.09	227.2	583.189	17	3030	16.072	0.023
20	Ca	40.08	197.3	559.849	25	2980	16.072	0.023
21	Sc	44.956	160.6	495.406	170	4150	16.072	0.023
22	Ti	47,9	144.8	625.87	380	2590	16.072	0.023
23	V	50.94	132.1	609.022	1300	3400	16.072	0.023
24	Cr	51.996	124.9	534.832	380	3080	16.072	0.023
25	Mn	54.938	124	602.18	290	2250	16.072	0.023
26	Fe	55.847	124	492.05	500	3900	16.072	0.023
27	Co	58.933	125.3	521271	50	2300	16.072	0.023
28	Ni	58.7	124.6	508.052	100	2650	16.072	0.023
29	Cu	63.546	127.8	578.213	1500	3700	16.072	0.023
30	Zn	65.38	133.2	481053	400	4150	16.072	0.023

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

31	Ga	69.72	122.1	639.656	2000	3040	16.072	0.023
32	Ge	72.59	122.5	422.656	70	3620	16.072	0.023
33	As *	74.92	90	384.26	340	4200	16.072	0.023
34	Se	78.96	117	474.22	300	3420	16.072	0.023
35	Br	79.904	114.2	612.214	2400	3250	16.072	0.023
36	Kr	83.8	200	556.22	500	4810	16.072	0.023
37	Rb	85.468	247.5	607.075	75	3540	16.072	0.023
38	Sr	87.62	215	679.105	1800	4750	16.072	0.023
39	Y	88.906	181	554.45	120	3300	16.072	0.023
40	Zr	9122	160	481.563	700	5550	16.072	0.023
41	Nb	92.906	142.9	555.135	85	2410	16.072	0.023
42	Mo	95.94	136.2	523.82	460	3470	16.072	0.023
43	Tc	99	135.8	485.359	2000	6200	16.072	0.023
44	Ru	101.07	132.5	528.408	130	2620	16.072	0.023
45	Rh	102.9	134.5	456.9	130	3630	16.072	0.023
46	Pd	106.4	137.6	516.38	160	2950	16.072	0.023
47	Ag	107.87	144.4	546.55	1000	4000	16.072	0.023
48	Cd	112.4	148.9	479.99	300	4200	16.072	0.023
49	In	114.82	81	396.235	250	3160	16.072	0.023
50	Sn	118.69	140.5	563.171	500	3050	16.072	0.023
51	Sb	121.75	145	403.355	200	5470	16.072	0.023
52	Te	127.6	143.2	508.3	8	2200	16.072	0.023
53	I	126.905	133.3	523.457	1000	3950	16.072	0.023
54	Xe	131.3	220	582.389	300	4150	16.072	0.023
55	Cs	132.905	265.4	698.349	980	4430	16.072	0.023
56	Ba	137.33	217.3	553.548	1000	5600	16.072	0.023
57	La	138.905	187.7	515.869	290	4500	16.072	0.023
58	Ce	140.12	181.5	569.699	300	3500	16.072	0.023
59	Pr	140.908	182.8	473.669	250	5100	16.072	0.023
60	Nd	144.24	182.1	495.478	290	4700	16.072	0.023
61	Pm	147	181	652.045	1000	3300	16.072	0.023
62	Sm	150.4	180.2	551.609	230	3500	16.072	0.023
63	Eu	151.96	204.2	578.369	180	3500	16.072	0.023
64	Gd	157.25	180.2	535.038	300	3900	16.072	0.023
65	Tb	158.929	178.2	478.678	180	4550	16.072	0.023
66	Dy	162.5	177.3	507.068	95	3600	16.072	0.023
67	Ho	164.93	176.6	597.352	90	2500	16.072	0.023
68	Er	167.26	175.7	587.235	140	2750	16.072	0.023
69	Tm	168.934	174.6	530.712	650	4500	16.072	0.023
70	Yb	173.04	194	527.704	150	3880	16.072	0.023
71	Lu	174.96	173.4	494.234	180	4050	16.072	0.023
72	Hf	178.49	156.4	555.212	230	2950	16.072	0.023
73	Ta	180.948	143	420.588	300	5100	16.072	0.023

74	W	183.85	137	384.622	730	7150	16.072	0.023
75	Re	186.207	137	451.664	260	4070	16.072	0.023
76	Os	190.2	134	455.041	540	4470	16.072	0.023
77	Ir	192.22	135.7	501.498	30	2350	16.072	0.023
78	Pt	195.09	138	505.948	30	2350	16.072	0.023
79	Au	196.97	144.2	392.769	100	4950	16.072	0.023
80	Hg	200.59	160	390.637	60	5200	16.072	0.023
81	Tl*	204.37	130	388.715	10	3400	16.072	0.023
82	Pb	207.2	175	600.186	2000	4480	16.072	0.023
83	Bi	208.98	152	472.25	600	4800	16.072	0.023
84	P o	209	167	449.321	800	6370	16.072	0.023
88	Ra	226.025	220	482.591	100	4950	16.072	0.023
89	Ac	227.028	187.8	417.998	100	5700	16.072	0.023
90	Th	232.038	179.8	523.116	110	3400	16.072	0.023
91	Pa	231036	160.6	637.925	3000	3950	16.072	0.023
92	U	238.029	138.5	415.397	880	6200	16.072	0.023
93	Np	237.048	131	504.466	300	3050	16.072	0.023
94	Pu	244	153	706.89	10000	5500	16.072	0.023

Table 3.

The result of apply formula: $\left(a+\ln r+\ln\left(\frac{1}{m\lambda^2}\right)+\frac{3}{2}\ln\frac{m}{T}-\ln I\right)\frac{T}{r}k_s=\frac{1}{\lambda^2}$							
element	**m**	**r(pm)**	**λ(nm)**	**I**	**T**	**a**	**K**
H	1	104	656.285	180	2169	16.072	0.023003
H	1	68	486.133	80	2169	16.072	0.023003
H	1	66	434.047	30	2169	16.072	0.023003
H	1	66	410.774	15	2169	16.072	0.023003
H	1	68	397.007	8	2169	16.072	0.023003
H	1	68	388.905	6	2169	16.072	0.023003
H	1	68	383.583	5	2169	16.072	0.023003

From the above verified results, we can obtain the following formula:

$\left(a+\ln r+\ln\left(\frac{1}{m\lambda^2}\right)+\frac{3}{2}\ln\left(\frac{m}{T}\right)-\ln I\right)\frac{T}{r}k_s=\frac{1}{\lambda^2}$ is in extreme agreement with the experimental results. From this, we have proven that G_a is a constant. Boltzmann constant:

At kb= 1.3806503 × 10-23 m2 kgs-2 K-1, kλ=139 m2s-1, and ks=0.023 m-1K-1, we can obtain Ga=1.61×1025Nkg-2s2.

Deduce the Universal Law of Gravitation

Here we can deduce the Universal law of gravitation by above discovery [16-18]. In the earth: between two matters: their attractive force is $\overrightarrow{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \overrightarrow{r_{12}}\right)}{4\pi\theta \vec{r}^3} G_a$. We know that the gravitational mass in the universal law of gravitation is the capacity of one matter to attract earth, which can be shown by its weight on earth, so the attractive force between two matter can be deduced by its weight on earth, as shown below:

Because the weight of first matter on earth is $M_1 = F_1 = \frac{m_1 v_1 m_e v_e}{4\pi\theta r_e^2} G_a = m_1 v_1 k$, the weight of second matter on earth is $M_2 = F_2 = \frac{m_2 v_2 m_e v_e}{4\pi\theta r_e^2} G_a = m_2 v_2 k$.

Thus, the attractive force between two matters is as follows:

$F_{12} = \frac{m_1 v_1 m_2 v_2}{4\pi\theta r^2} G_a = \frac{M_1 M_2}{4\pi r^2 k^2} G_a$ and M_1, M_2 are the weights of two matters, and k, G_a are two constants. In the end, we can obtain $F_{12} = \frac{M_1 M_2}{r^2} G$, which is the universal law of gravitation.

The Gravitational Constant

The gravitational constant causes the existence of the Newtonian gravitation constant: $F_{ab} = \frac{m_a v_a m_b v_b}{4\pi\theta r^2} G_a$

$$F_a = M_a = \frac{m_a v_a m_e v_e}{4\pi\theta r_e^2} G_a, \quad F_b = M_b = \frac{m_b v_b m_e v_e}{4\pi\theta r_e^2} G_a; \quad F_{ab} = \frac{M_a M_b}{r^2} G;$$

So: $G = \frac{F_{ab} r^2}{M_a M_b} = \frac{16\pi^2\theta^2 m_a v_a m_b v_b r_e^4 G_a r^2}{4\pi\theta m_a v_a m_b v_b m_e^2 v_e^2 G_a^2 r^2} = \frac{4\pi\theta r_e^4}{m_e^2 v_e^2 G_a}$. Namely, $G = \frac{4\pi\theta r_e^4}{m_e^2 v_e^2 G_a}$, m_e, v_e, r_e are the mass of all the particles in the earth, the velocity of the moving particles in the earth, and the distance between the measurement spot and the center of the earth, respectively. They are all specific values under specific conditions, namely, they are all constant. Thus, $G = \frac{4\pi\theta r_e^4}{m_e^2 v_e^2 G_a} = \text{constant}$ the Newtonian Gravitation Constant exists in this study.

The Uncertainties of the Gravitational Constant

The uncertainties of the gravitational constant are revealed according to $G = \frac{4\pi\theta r_e^4}{m_e^2 v_e^2 G_a}$, m_e, v_e, r_e the mass of all the particles in the Earth, the speed of motion of all the particles in the Earth, and the distance between the measurement spot and the center of the Earth. In general, the mass, the velocity of all particles in the Earth, and the radius of the Earth are approximately constant, so the value of G will be constant. In fact, the mass, radius, and velocity change with changing time and measurement location, so the value of G also changes as these parameters change; thus, the Newtonian gravitational constant is uncertain [9].

Applied in the interaction between electrons:

A formula describing the thermoelectric phenomenon. In the thermoelectric phenomenon, the temperature at one of the two joint points is variable, and the other is invariable. This produces thermoelectricity. In this process, all factors are invariable except temperature. According to the above, I define the mass of an electron as m, and the velocity of the electron on the side of varying temperature is v_1. Among the two metals in the A metal, the electron velocity is v_2. In the other metals of B, the electron velocity is v_3. r_0 is the nearest distance between two electrons, and its value is equal to the diameter of the atom. r is the length of the metal conductor.

In the two joints of different metals: $\sum F_a = \int_{r_0}^{r} \frac{mv_1 mv_2}{r^2} G_a dr - \int_{r_0}^{r} \frac{mv_1 mv_3}{r^2} G_a dr$

Considering that $\frac{1}{r_0} \gg \frac{1}{r}$ can obtain $\sum F_a = mv_1 \left(\frac{mv_2 - mv_3}{r_0} \right) G_a$, we define $\sum F_a = V$ can be $mv_1 \left(\frac{mv_2 - mv_3}{r_0} \right) G_a = V$, which shows that one electron on the variable temperature side produces a voltage. Therefore, all free-moving electrons on the varying temperature side produce a voltage below $nmv_1 \left(\frac{mv_2 - mv_3}{r_0} \right) G_a = nV = U$.

The formula for the produced thermoelectric voltage can be deduced as follows:

$$\left(nmv_1^2\right)^{\frac{1}{2}} (nm)^{\frac{1}{2}} \left(\frac{mv_2 - mv_3}{r_0} \right) G_a = nV = U$$

$$\left(nmv_1^2\right)(nm) \left(\frac{mv_2 - mv_3}{r_0} \right)^2 G_a^{\ 2} = U \times \mathrm{U}$$

$$\left(nmv_1^2\right)\left(nm \frac{q}{p}\right) \left(\frac{mv_2 - mv_3}{r_0} \right)^2 G_a^{\ 2} = U \times \mathrm{U}$$

$$\left(nmv_1^2\right)\left(\frac{m}{q}\right) \left(\frac{mv_2 - mv_3}{r_0} \right)^2 G_a^{\ 2} = \frac{U}{nq} \times \mathrm{U},$$

Consider $Q = W = \frac{1}{2}mv^2 = mc_{el}\Delta^\circ C = m\gamma T^\circ C$

$$\left(nm\gamma T^\circ C\right)\left(\frac{m}{q}\right) \left(\frac{mv_2 - mv_3}{r_0} \right)^2 G_a^2 = \frac{U}{nq} \times \mathrm{U} = \mathrm{UR} = \frac{l}{s}\rho_0 U\left(1 + a^\circ C\right)$$

$T^\circ C\left[\frac{nm^4\gamma\left(v_2 - v_3\right)^2 s}{q\rho_0 r_0^2 l} G_a^2 \right] = U\left(1 + a^\circ C\right)$ where $n, m, \gamma, q, \rho_0, G_a, r_0, s, l$ are the number of free-moving electrons on the variable temperature side, the mass of the electron, the heat capacity of the electron, the electron charge, the rate of the specific resistance, the constant of gravitation, the diameter of the atom, the area of the cross section of the conductor, and the length of the conductor, respectively. v_2, v_3 are the two velocities of free movement electrons in the two metals, respectively, and their values can be calculated by the following formula: $Q = W = \frac{1}{2}mv^2 = mc_{el}\Delta^\circ C = m\gamma T^\circ C$. Because the temperature of one contact point varies, another is invariable. Therefore, only m, and v_1 vary. For two metals, m, and v_2, v_3 are invariable; thus, $n, m, \gamma, q, \rho_0, G_a, r_0, s, l, m, v_2, v_3$ are all constant,

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

and $k = \frac{nm^4\gamma(v_2 - v_3)^2 s}{q\rho_0 r_0^2 l} G_a^2$ is defined as follows: $T^\circ Ck = (1 + a^\circ C)U$.

Here, we can verify the right of the above formula: $\vec{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times (\vec{v}_2 \times \vec{r}_{12})}{4\pi\theta \vec{r}_{12}^{\,3}} G_a$ and $T^\circ Ck = (1 + a^\circ C)U$. For verification of the above formula, see the verification of Type S Thermocouples (Pt + 10% Rh) vs Pt[10] in Table 4.

Table 4.

$T^\circ Ck = (1 + a^\circ C)U$ unit: emf in Millivolts					
T	°C	T °C	U	a	k
373	100	37300	0.646	1.703x10^-3	2.02695x10^-5
473	200	94600	1.441	1.653x10^-3	2.02695x10^-5
573	300	171900	2.323	1.665x10^-3	2.02655x10^-5
673	400	269200	3.259	1.685x10^-3	2.02655x10^-5
773	500	386500	4.233	1.701x10^-3	2.02655x10^-5
873	600	523800	5.239	1.710x10^-3	2.02655x10^-5
973	700	681100	6.275	1.714x10^-3	2.02695x10^-5
1073	800	858400	7.345	1.711x10^-3	2.02695x10^-5
1173	900	1055700	8.449	1.703x10^-3	2.02695x10^-5
1273	1000	1273000	9.587	1.691x10^-3	2.02655x10^-5
1373	1100	1510300	10.757	1.678x10^-3	2.02655x10^-5
1473	1200	1767600	11.951	1.664x10^-3	2.02655x10^-5
1573	1300	2044900	13.159	1.653x10^-3	2.02655x10^-5
1673	1400	2342200	14.373	1.645x10^-3	2.02655x10^-5
1773	1500	2659500	15.582	1.639x10^-3	2.02615x10^-5
1873	1600	2996800	16.777	1.637x10^-3	2.02615x10^-5
1973	1700	3354100	17.947	1.639x10^-3	2.02615x10^-5

In this verification, we obtain the constant $k = 2.026 \times 10^{-5}$ and $\alpha = 1.7 \times 10^{-3}$. The temperature coefficient of the Type S thermocouple is $\alpha = 1.7 \times 10^{-3}$. Here, the formulas $\vec{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times (\vec{v}_2 \times \vec{r}_{12})}{4\pi\theta \vec{r}_{12}^{\,3}} G_a$ and $T^\circ Ck = (1 + a^\circ C)U$ are in agreement with the experimental results and clearly verify the validity of the formulas $\vec{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times (\vec{v}_2 \times \vec{r}_{12})}{4\pi\theta \vec{r}_{12}^{\,3}} G_a$ and $T^\circ Ck = (1 + a^\circ C)U$.

Applied in the Interaction between Atoms and Molecules

We now know that motion particles produce attraction or repulsion forces; from this, two motion atoms also produce attraction or repulsion forces between them; thus, the force of attraction or repulsion between two atoms or molecules will lead to chemical reactions, namely, the mechanism of chemical reactions is the mechanism of their attraction and repulsion forces, which are created by their motion. Below is a result of this interaction to prove the Maxwell distribution formula.

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

In particular, for a gas, is set up such that an atom moves from v_0 to v_t by attraction or repulsion, and the displacement is $r-r_0$ in this process; therefore, $f_s=\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2$ according to the following formula: $f_a=\frac{m_1m_2v_1v_2}{r^2}G_a$

Thus, $\int_r^\infty \frac{m_1m_2v_1v_2}{r^2}G_a dr.s=\int_{r_0}^r dr\int_r^\infty \frac{m_1m_2v_1v_2}{r^2}G_a dr$

$$\int_r^\infty \frac{m_1m_2v_1v_2}{r^2}G_a dr.s=\int_{r_0}^r dr\int_r^\infty \frac{m_1m_2v_1v_2}{r^2}G_a dr=\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2 \ ;$$

because $k_s=\frac{2k_BG_a}{k_\lambda^2}$; $k_B=\frac{R}{N_A}$, $G_a=\frac{k_\lambda^2K_s}{2R}.N_A$ can be obtained.

Considering $v_1=v_2=v$ under specific conditions, the following equations can be obtained:

$$\int_{r_0}^r dr\int_r^\infty \frac{m_2\sqrt{m_1v^2}.\sqrt{m_1v^2}}{r^2}G_a dr=\int_{r_0}^r dr\int_r^\infty \frac{m_2\sqrt{m_1v^2}.\sqrt{m_1v^2}}{r^2}\frac{K_\lambda^2k_s}{2R}N_A dr;$$

$$\int_{r_0}^r dr\int_r^\infty \frac{m_2\sqrt{N_Am_1v^2}.\sqrt{N_Am_1v^2}}{r^2}\frac{K_\lambda^2k_s}{2R}dr=\int_{r_0}^r dr\int_r^\infty \frac{\sqrt{3K_BT}.\sqrt{3K_BT}}{r^2}\frac{K_\lambda^2k_sm_2}{2R}dr;$$

$$\int_{r_0}^r dr\int_r^\infty \frac{\sqrt{3K_BT}.\sqrt{3K_BT}}{r^2}\frac{K_\lambda^2k_sm_2}{2R}dr=\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2 \ ;$$

$$3K_BT\ln\left(\frac{r}{r_0}\right).\frac{m_2k_sk_\lambda^2}{2R}=\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2 \ ;$$

$$\frac{r}{r_0}=e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}\frac{2R}{K_\lambda^2k_sm_2}}=\left(e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}\right)^{\frac{2R}{K_\lambda^2k_sm_2}} \ ;$$

Because $m_2;K_s;R;K_\lambda$ are all constant values, $\sqrt[\frac{2R}{K_\lambda^2k_sm_2}]{\frac{r}{r_0}}=e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}$ can obtain $\frac{r'}{r_0'}=e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}$;

Namely: $r=r_0e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}$; $r^3=r_0^3e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}$; $\frac{4}{3}\pi r^3=\frac{4}{3}\pi r_0^3e^{\frac{\frac{1}{2}mv_t^2-\frac{1}{2}mv_0^2}{3K_BT}}$.

This formula can be written as follows: $\left(\frac{2n}{3}\right)^{\frac{3}{2}}\pi^{\frac{3}{2}}r^3=\left(\frac{2n}{3}\right)^{\frac{3}{2}}\pi^{\frac{3}{2}}r_0^3e^{\frac{mv_t^2-mv_0^2}{2K_BT}}$; $r=v_0t=v_0$ (in unit time: t=1) is defined as follows:

$$m_d=\frac{m}{\left(\frac{2\pi}{3}\right)^{\frac{3}{2}}\pi^{\frac{3}{2}}r_0^3}=\frac{m}{\left(\frac{2\pi}{3}\right)^{\frac{3}{2}}\pi^{\frac{3}{2}}r_0^3}e^{-\frac{mv_t^2-mv_0^2}{2k_BT}}=m\left(\frac{1}{\left(\frac{2\pi}{3}\right)^{\frac{3}{2}}\pi^{\frac{3}{2}}r_0^3}\right)e^{-\frac{mv_t^2-mv_0^2}{2k_BT}}=m\left(\frac{3m}{2\pi mv^2}\right)^{\frac{3}{2}}e^{-\frac{mv_t^2-mv_0^2}{2k_BT}}=m\left(\frac{m}{2\pi k_BT}\right)^{\frac{3}{2}}e^{-\frac{mv_t^2-mv_0^2}{2k_BT}};$$

Namely $m_d = m\left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mv_t^2 - mv_0^2}{2k_B T}}$ Since $m_d = m.p$ eventually: $p = f(v) = \left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mv_t^2 - mv_0^2}{2k_B T}}$ Namely, $f(v) = \left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mv_t^2 - mv_0^2}{2k_B T}}$. This is the probability of one atom in one direction with velocity v. Therefore, in the whole space, the probability with velocity v is $f(v) = 4\pi v^2\left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mv_t^2 - mv_0^2}{2k_B T}}$, which is the Maxwell distribution law of velocity . When $v_0 = 0,\quad f(v) = 4\pi v^2\left(\frac{m}{2\pi k_B T}\right)^{\frac{3}{2}} e^{-\frac{mv_t^2 - mv_0^2}{2k_B T}}$.

To show the universality of the above discovery and formula, we describe the gravity field of the Earth, as shown in Figure 8:

Figure 8(a) and (b) show that at site A on the surface of the earth, matter A, which is an accepted attractive force of the earth, is attracted to all the particles of diameter AA' of the earth; additionally, the components parallel to the Earth's diameter AA', which is the attractive force of the particles elsewhere, act. According to the new formula $\vec{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}_{12}^{\,3}} G_a$ [17-18], the calculated value of this attractive force is as follows:

$$F_e = \int_0^{2\pi} d\varphi \int_0^{\frac{\pi}{2}} \cos\theta d\theta \int_0^{m_e} dm \int_0^{v_e} dv \int_{r_0 \to 0}^{2R} \frac{m_s v_s}{4\pi\varepsilon r^2} G_a dr$$

where $m_e, v_e, R, r_0, m_s, v_s$ are the gross mass in diameter, the highest velocity of the particle in the earth, the radius of the earth, the distance between the nearest particle and matter A, the gross mass of all the particles in the matter, and the velocity of the particle in the matter, respectively; thus, the above calculated result is as follows:

$$Fe = \frac{m_e v_e m_s v_s}{8\pi\varepsilon R} 2\pi G_a - \lim_{r_0 \to 0} \frac{m_e v_e m_s v_s}{4\pi\varepsilon r_0} 2\pi G_a = \frac{m_e v_e m_s v_s}{8\pi\varepsilon} 2\pi G_a \left(\frac{1}{R} - \lim_{r_0 \to 0} \frac{1}{r_0}\right);$$

On the other hand, matter A is attracted by particles in the atmosphere and other celestial bodies, such as the moon. This size is as follows:

$$F_o = \int_0^m dm \int_0^v dm \int_{r_0 \to 0}^{\infty} \frac{m_s v_s}{4\pi\varepsilon r^2} dr = 0 - \lim_{r_0 \to 0} \frac{m_e v_e m_s v_s}{4\pi\varepsilon r_0} 2\pi G_a;$$

In the end, the accepted resultant force of matter A is as follows: $F_c = F_e - F_o = \frac{m_e v_e m_s v_s}{8\pi\varepsilon R} 2\pi G_a$ Namely, $F_c = \frac{m_e v_e m_s v_s}{8\pi\varepsilon R} 2\pi G_a$

Because of the Earth's rotation, the matter on the surface of the earth has a centrifugal force, and its centrifugal force is as follows:

$$r_e = R\cos\theta, \quad F_a = m\frac{v^2}{r_e} = m\frac{(2\pi R\cos\theta)^2}{T_e^2 (R\cos\theta)} = \frac{4\pi^2 Rm\cos\theta}{T_e^2}; \quad F_{ax} = F_a \cos\theta = \frac{4\pi^2 Rm\cos\theta}{T_e^2}$$

Te is the rotation period of the earth. Thus, the resultant force is $F_r = F_c - F_{ax} = \frac{m_e v_e m_s v_s}{8\pi\varepsilon R} 2\pi G_a - \frac{4\pi^2 Rm\cos\theta}{T_e^2}$

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

$$F_r = \frac{m_e v_e m_s v_s}{8\pi\varepsilon R} 2\pi G_a - \frac{4\pi^2 Rm\cos\theta}{T_e^2}$$

In the end, we can obtain the following formula, which describes the acceleration of gravity:

$$g = \frac{F_r}{m} = \frac{m_e v_e}{4 \in Rk_i} G_a - \frac{4\pi^2 R\cos^2\theta}{T_e^2 k_i} = \frac{\sqrt{m_e^2 v_e^2}}{4 \in Rk_i} G_a - \frac{4\pi^2 R\cos^2\theta}{T_e^2 k_i} = \frac{\sqrt{m_e}\sqrt{kT}}{4 \in Rk_i} G_a - \frac{4\pi^2 R\cos^2\theta}{T_e^2 k_i}$$

$$g = \frac{\sqrt{m_e}\sqrt{kT}}{4 \in Rk_i} G_a - \frac{4\pi^2 R\cos^2\theta}{T_e^2 k_i} = \frac{\sqrt{2R\sigma}\sqrt{kT}}{4 \in Rk_i} G_a - \frac{4\pi R\cos^2\theta}{T_e^2 k_i}$$

(Please note: $m_e = 2R\sigma$, σ is the mass in unit length. On Earth, the weight of matter is proportional to the product of its internal mass and the velocity of the particles. Namely, $m = m_s v_s k_i$, the particles in the earth's core possess the highest velocity; thus, T is the temperature of the earth's core). Considering that $\sigma, G_a, \in, k, \pi, T_e, k_i, T$ are all constant, $a = \frac{\sqrt{kT2\sigma}}{4 \in k_i} G_a$; is defined as $b = \frac{4\pi}{T_e^2 k_i}$. The formula for the gravitational acceleration can be written as follows:

$$g = \frac{\sqrt{R}}{R} \frac{\sqrt{kT2\sigma}}{4 \in Rk_i} G_a - \frac{4\pi R\cos^2\theta}{T_e^2 k_i} = \frac{a}{\sqrt{R}} - R\cos^2\theta b$$

$g = \frac{a}{\sqrt{R}} - R\cos^2\theta b$ where $a = 24789.4975$. $b = 5.54433027 \text{x} 10^{-19}$.

On the other hand, at present, we can obtain gravitational acceleration via geodesy. By comparing the gravitational acceleration determined by geodesy and the data calculated by the above formula, $g = \frac{a}{\sqrt{R}} - R\cos^2\theta b$, we can see that the formula strongly agrees with the results of geodesy. See Tables 5 and 7.

According to the universal law of gravitation $F = \frac{m_1 m_2}{r^2} G$ and considering the centrifugal force of the earth, $g = \frac{MG}{r^2} - R\cos^2 b_1 = \frac{a_1}{R^2} - R\cos^2 b_1$ can be obtained, namely, $g = \frac{a_1}{R^2} - R\cos^2 b_1$, with the following formula:

$MG = a_1 = 3.9843912 \text{x} 10^{14}$ $b_1 = \frac{4\pi^2}{(24 \text{x} 3600)^2} = 5.283136145^{-9}$. By applying the formula $g = \frac{a_1}{R^2} - R\cos^2 b_1$ to calculate the acceleration of gravity at any location on Earth, the calculated results show that Newton's universal law of gravitation does not agree with the measured data (Table 6). We can also obtain precise gravitational acceleration data by measuring the actual gravitational acceleration. By further comparing the measured results from the world and the calculated results of the above formulas, we also see that the calculated results are in extreme agreement with the measured results. See Table 7. For more clarity, see Figure 9.

Table 5.

latitude	radius(m)	The Data of geodes v(m/s^2)	$g=\frac{a}{\sqrt{R}}-R\cos^2\theta b$
0	6378137	9.7803189	9.78033
1	6378131	9.7803346	9.78034
2	6378111	9.7803517	9.78089
3	6378079	9.7804626	9.78047
4	6378034	9.7805700	9.78058
5	6377976	9.7807110	9.78072
6	6377905	9.7806530	9.78069
7	6377822	9.7810857	9.78110
8	6377726	9.7813189	S.78133
9	6377618	9.7815824	9.78159
10	6377497	9.7818759	9.73189
11	637736	9.7822198	9.78221
12	6377220	9.7825511	9.78257
13	6377063	9.7829320	9.78295
14	6376895	9.7833413	9.78336
15	6376716	9.7837784	9.78380
15	6376525	9.7842428	9.78426
17	6376323	9.7847339	9.78475
18	6376110	9.7852511	9.78527
19	6375887	9.7857939	9.78582
20	6375654	9.7863615	9.78639
21	6375411	9.7869533	9.78698
22	6375158	9.7875685	9.78760
23	6374895	9.7882065	9.78824
24	6374624	9.7888665	9.78890
25	6374344	9.7895475	9.78958
25	6374055	9.7902490	9.79029
27	6373759	9.7909698	9.79101
28	6373455	9.7917093	9.79175
29	6373143	9.7924665	9.79250
30	6372824	9.7932405	9.79328
31	6372499	9.7940305	9.79407
32	6372168	9.7948352	9.79488
33	6371831	9.7956540	9.79570
34	6371489	9.7964856	9.79653
35	6371141	9.7973293	9.79737
36	6370789	9.7981838	9.79823
37	6370433	9.7990482	9.79910
38	6370074	9.7999214	9.79997
39	6369711	9.8008023	9.80085

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

40	6369345	9.8016900	9.80174
41	6368977	9.8025833	9.80263
42	6368607	9.8034812	9.80353
43	6368235	9.8043824	9.80443
44	6367863	9.8052861	9.80534
45	6367490	9.8061909	9.80625
46	6367116	9.8070959	9.80715
47	6366743	9.8079999	9.80805
48	6366371	9.8089919	9.80895
49	6366001	9.8098903	9.80985
50	6365632	9.8106952	9.81074
51	6365265	9.8115843	9.81163
52	6364900	9.8124671	9.81251
53	6364539	9.8133423	9.81339
54	6364181	9.8142089	9.81426
55	6363827	9.8151511	9.81511
56	6363478	9.8159122	9.81596
57	6363133	9.8167468	9.81679
58	6362794	9.8175686	9.81761
59	6362460	9.8183766	9.81842
60	6362132	9.8191699	9.81921
61	6361811	9.8199475	9.81999
62	6361496	9.8207063	9.82075
63	6361189	9.8214516	9.82149
64	6360890	9.8221763	9.82221
65	6360598	9.8228816	9.82291
66	6360315	9.8235667	9.82360
66	6360315	9.8235667	9.82360
67	6360040	9.8242306	9.82426
68	6359755	9.8248726	9.82490
69	6359519	9.8254918	9.82552
70	6359272	9.8260876	9.82611
71	6369036	9.8266591	9.82668
72	6358810	9.8272058	9.82723
73	6358594	9.8277268	9.82775
74	6358390	9.8282215	9.82824
75	6358196	9.8286894	9.82871
76	6358014	9.8291299	9.82915
77	6357843	9.8295424	9.82956
78	6357684	9.8299265	9.82994
79	6357537	9.8302816	9.83030
80	6357402	9.8306070	9.83062
81	6357280	9.8309031	9.83092

How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

82	6357170	9.8311688	9.83118
83	6357073	9.8314041	9.83141
84	6356988	9.8316086	9.83162
85	6356916	9.8317820	9.83179
86	6356857	9.8319242	9.83193
87	6356811	9.8320350	9.83204
88	6356790	9.8321143	9.83212
89	6356759	9.8321618	9.83217
89.1	6356755	9.8321624	9.83217
90	6356752	9.8321777	9.83219

Table 6.

latitude	radius(m)	The Data of geodes y(m/s^2)	$g=\frac{a}{R^2}-R\cos^2\theta b_1$
0	6378137	9.7803189	9.76062
1	6378131	9.7803346	9.76065
2	6378111	9.7803817	9.76074
3	6378079	9.7804626	9.76089
4	6378034	9.7805700	9.76110
5	6377976	9.7807110	9.76137
6	6377905	9.7808830	9.76171
7	6377822	9.7810857	9.77621
8	6377726	9.7813189	8.76254
9	6377618	9.7815824	9.76304
10	6377497	9.7818759	9.76361
11	6377365	9.7822198	9.76423
12	6377220	9.7825511	9.76490
13	6377063	9.7829320	9.76563
14	6376895	9.7833413	9.76642
15	6376716	9.7837784	9.76725
16	6376525	9.7842428	9.76814
17	6376323	9.7847339	9.76909
18	6376110	9.7852511	9.77008
19	6375887	9.7857939	9.77112
20	6375654	9.7863615	9.77296
21	6375411	9.7869533	9.77334
22	6375158	9.7875685	9.77452
23	6374895	9.7882065	9.77575
24	6374624	9.7888665	9.77701
25	6374344	9.7895475	9.77832
26	6374055	9.7902490	9.77966
27	6373759	9.7909698	9.78105

28	6373455	97917093	9.78246
29	6373143	9.7924665	9.78392
30	6372824	9.7932405	9.78541
31	6372499	9.7940305	9.78692
32	6372168	9.7948352	9.78847
33	6371831	9.7956540	9.79004
34	6371489	9.7964856	9.79163
35	6371141	9.7973293	9.79326
36	6370789	9.7981838	9.79490
37	6370433	9.7990482	9.79656
38	6370074	9.7999214	9.79823
39	6369711	9.8008023	9.79993
40	6369345	9.8016900	9.80163
41	6368977	9.8025833	9.80335
42	6368607	9.8034812	9.80507
43	6368235	9.8043824	9.80681
44	6367863	9.8052861	9.80854
45	6367490	9.8061909	9.81028
46	6367116	9.8070959	9.81202
47	6366743	9.8079999	9.81376
48	6366371	9.8089919	9.81550
49	6366001	9.8098903	9.81722
50	6365632	9.8106952	9.81894
51	6365265	9.8115843	9.82065
52	6364900	9.8124671	9.82235
53	6364539	9.8133423	9.82387
54	6364181	9.8142089	9.82571
55	6363827	9.8151511	9.82736
56	6363478	9.8159122	9.82898
57	6363133	9.8167468	9.83059
58	6362794	9.8175686	9.83217
59	6362460	9.8183766	9.83373
60	6362132	9.8191699	9.83526
61	6361811	9.8199475	9.83675
62	6361496	9.8207083	9.83822
63	6361189	9.8214516	9.83965
64	6360690	9.8221763	9.841.05
65	6360598	98228816	9.84241
66	6360315	9.8235667	9.84373
67	6360040	9.8242306	9.84501
68	6359755	9.8248726	9.84630
69	6359519	9.8254918	9.84744

70	6359272	9.8260876	9.84586
71	6359036	9.8266591	9.84969
72	6358810	9.8272058	9.85074
73	6358594	9.8277268	9.85175
74	6358390	9.8282215	9.85270
75	6358196	9.8286894	9.85361
76	6358014	9.8291299	9.85445
77	6357843	9.8295424	9.85525
78	6357684	9.8299265	9.85599
79	6357537	9.8302816	9.85667
80	6357402	9.8306070	9.85730
81	6357280	9.8309031	9.85787
82	6357170	9.8311688	9.85838
83	6357073	9.8314041	9.85884
84	6356988	9.8316086	9.85923
85	6356916	9.8317820	9.85957
86	6356857	9.8319242	9.85984
87	6356811	9.8320350	9.86005
88	6356790	9.8321143	9.86017
89	6356759	9.8321618	9.86030
89.1	6356755	9.8321624	9.86031
90	6356752	9.8321777	9.86033

Table 7: [12] Applying the formula $g=\frac{a\sqrt{\sigma}}{\sqrt{R}}-R\cos^2\theta b,$ which is obtained by $\vec{F}_a=\frac{m_1m_2x\vec{v_1}x\left(\vec{v_2}x\vec{r_{12}}\right)}{4\pi\theta\vec{r_{12}^3}}G_a,$ and obtaining the constants via geodesy to calculate the gravitational acceleration.

Location	latitude	radius(m)	measurement Data(m/s2)	$g=\frac{a}{\sqrt{R}}-R\cos^2\theta b$
Amsterdam	52.37	6364766	9.8129	9.812839
Ankara	39.93	6369372	9.8024	9.801672
Athens	37.98	6370081	9.800	9.799951
Auckland	36.84	6370491	9.799	9.798955
Bangkok	13.73	6376942	9.783	9.783245
Bucharest	44.44	6367699	9.8054	9.805732
Brussels	50.85	6365319	9.8114	9.811499
Buenos Aires	34.60	6371281	9.797	9.797035
Cape Town	33.91	6371520	9.796	9.796454
Chicago	41.88	6368651	9.803	9.803422
Copenhagen	55.67	6363593	9.8159	9.815678
Dussel dortf	51.23	6365179	9.8129	9.811838
Frankfurt	50.11	6365591	9.8102	9.810842
Havana	23.11	6374866	9.788	9.788307

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

Helsinki	60.16	6362080	9.819	9.819335
Hong Kong	22.39	6375056	9.785	9.787843
Vienna	48.21	6366293	9.8099	9.809141
Jakarta	6.2000	6377890	9.781	9.780930
LaPaz	16.5000	6376425	9.7844	9.784050
Kolkata	22.572	6375009	9.785	9.787959
Nicosia	35.1850	6371076	9.7979	9.797532
Kuwait City	29.378	6373023	9.792	9.792796
Lisbon	38.716	6369814	9.8009	9.800599
London	51.509	6365079	9.812	9.812082
Los Angeles	34.052	6371471	9.796	9.796573
Seoul	37.532	6370242	9.799	9.799559
Montreal	45.508	6367300	9.8069	9.806701
Manila	14.602	6376789	9.784	9.783618
Melbourne	37.840	6370131	9.800	9.799828
Montevideo	34.901	6371176	9.7964	9.797289
Montreal	45.508	6367300	9.809	9.806701
New York City	40.711	6369083	9.802	9.802373
Prague	50.073	6365604	9.8114	9.810809
Oslo	59.911	6362161	9.819	9.819139
Ottawa	45.424	6367331	9.806	9.806624
Paris	48.864	6366051	9.809	9.809727
Perth	31.952	6372184	9.794	9.794838
Rio de Janeiro	22.908	6374920	9.788	9.788176
Rome	41.902	6368643	9.803	9.803442
Rabat	34.013	6371484	9.7964	9.796541
Singapore	1.2900	6378126	9.7814	9.780352
Skopje	41.997	6368608	9.804	9.803515
Stockholm	59 334	6362350	9.818	9.818683
Sydney	33.867	6371534	9.797	9.796418
Guatemala	15.783	6376567	9.784	9.784158
Tokyo	35.652	6370912	9.798	9.797931
Toronto	43.653	6367992	9.805	9.805022
Vancouver	49.246	6365910	9.809	9.810069
Washington, D.C	38.907	6369745	9.801	9.800767
Wellington	41.286	6368871	9.803	9.802889
Zurich	47.366	6366607	9.807	9.808380

Table 8: [12] Applying the formula $g = \frac{a_1}{R^2} - R\cos^2\theta b_1$ obtained by the Newtonian universal law of gravitation to calculate the acceleration of gravity at any location.

Location	latitude	radius(m)	measurement Data(m/s²)	$g = \frac{a_1}{R^2} - R\cos^2\theta b_1$
Amsterdam	5237	6364766	9.8129	9.822979
Ankara	39.93	6369372	9.8024	9.837065
Athens	37.98	6370081	9.800	9.798199
Auckland	36.84	6370491	9.799	9.796287
Bang Kok	13.73	6376942	9.783	9.766198
Bucharest	44.44	6367699	9.8054	9.823165
Brussels	50.85	6365319	98114	9.820401
Buenos Aires	34.60	6371281	9.797	9.792603
Cape Town	33.91	6371520	9.796	9.791489
Chicago	41.88	6368651	9.803	9.804866
Copenhagen	55.67	6363593	9.8159	9.828448
Dussel dortf	51.23	6365179	9.8129	9.801169
Frankfurt	50.11	6365591	9.8102	9.819133
Havana	23.11	6374866	9.788	9.804373
Helsinki	60.16	6362080	9.819	9.829997
Hong Kong	22.39	6375056	9.785	9.774995
Vienna	48.21	6366293	9.8099	9.803365
Jakarta	6.2000	6377890	9.781	9761776
LaPaz	16.5000	6376425	9.7844	9762215
Kolkata	22.572	6375009	9.785	9775216
Nicosia	35.1850	6371076	9.7979	9.760921
Kuwait City	29378	6373023	9.792	9.784478
Lisbon	38.716	6369814	9.8009	9.799444
London	51.509	6365079	9.812	9.821521
Los Angeles	34.052	6371471	9.796	9.791717
Seoul	37.532	6370242	9.799	9.802344
Montreal	45.508	6367300	9.8069	9.824845
Manila	14.602	6376789	9.784	9.766912
Melbourne	37.840	6370131	9.800	9.797965
Montevideo	34.901	6371176	9.7964	9.771604
Montreal	45.508	6367300	9.809	9.811166
New York City	40.711	6369083	9.802	9.802852
Prague	50.073	6365604	9.8114	9.793541
Oslo	59.911	6362161	9.819	9.835122
Ottawa	45.424	6367331	9.806	9.811021
Paris	48.864	6366051	9.809	9.816989

 How to cite this article: Zheng S. The Origin of Gravitation. JOJ scin. 2024; 3(5): 555622. DOI:10.19080/JOJS.2024.03.555622

Perth	31.952	6372184	9.794	9.788391
Rio de Janeiro	22.908	6374920	9.788	9.775631
Rome	41.902	6368643	9.803	9.804904
Rabat	34.013	6371484	9.7964	9.814812
Singapore	1.2900	6378126	9.7814	9.793499
Skopje	41.997	6368608	9.804	9.805067
Stockholm	59.334	6362350	9.818	9.834242
Sydney	33.867	6371534	9.797	9.791422
Guatemala	15.783.	6376567	9.784	9.778368
Tokyo	35.652	6370912	9.798	9.794323
Toronto	43.653	6367992	9.805	9.807939
Vancouver	49.246	6365910	9.809	9.817647
Washington, D.C	38.907	6369745	9.801	9.799766
Wellington	41.286	6368871	9.803	9.803841
Zurich	47.366	6366607	9.807	9.814396

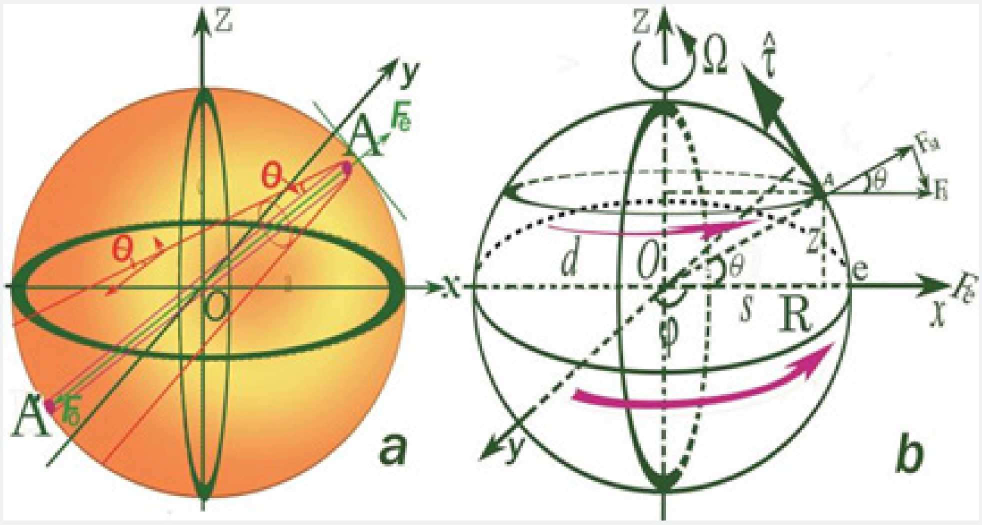

Figure 8: A schematic diagram of the Earth's gravitational field acting on matter at point A: Panel an illustrates the status of all the particles in the Earth attracting matter A; Panel b illustrates the component force at point A.

The formula for $g=\frac{a_1}{R^2}-R\cos^2 b_1$ used in Table 6 and Table 8 was obtained by the universal law of gravitation. The $g=\frac{a\sqrt{\sigma}}{\sqrt{R}}-R\cos^2\theta b$ values used in Table 5 and Table 7 were calculated via the following formula $\vec{F}_a=\frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}^{3}} G_a$: this formula strongly agrees with the actual measured data. A=24789.4975 and b=5.5443304270×10-9 were obtained via geodesy.

This Paper Discusses and Carefully Assesses the Validity of the above Conclusions

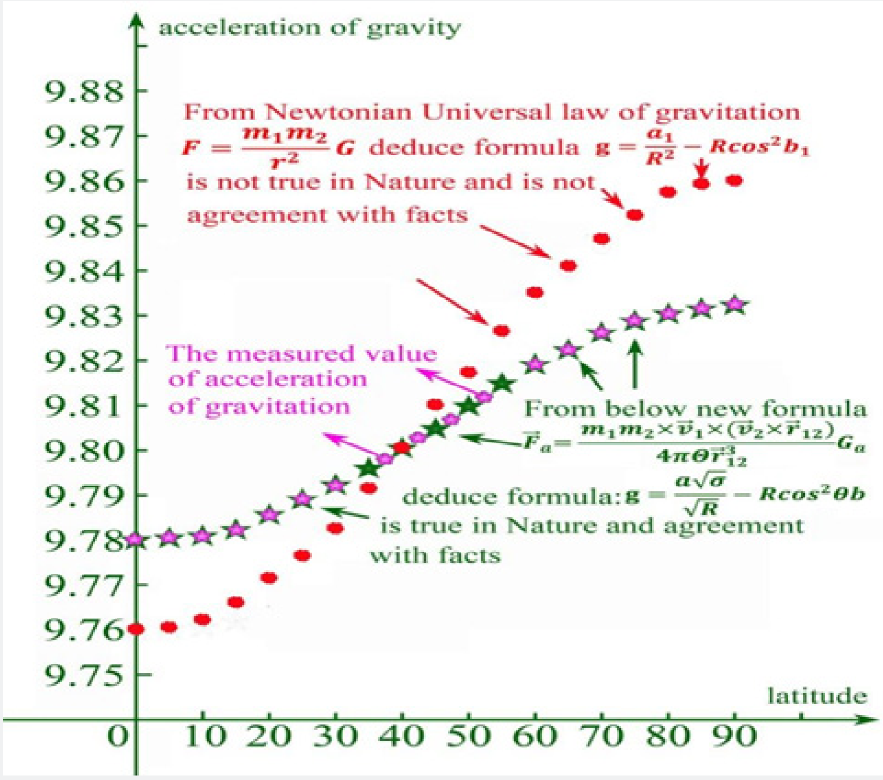

Figure 9: The dotted line is the acceleration of gravity obtained by the Newtonian universal law of gravitation; the purple lines are the measured actual values, and the pentagon line is the acceleration of gravity calculated by the following formula: $g = \frac{a\sqrt{\sigma}}{\sqrt{R}} - R\cos^2\theta b$. The right and validity of the new formula are clearly shown.

This paper provides the new discovery that moving photons generate gravitation, applying this discovery and the formula $\vec{F}_a = \frac{m_1 m_2 \times \vec{v}_1 \times \left(\vec{v}_2 \times \vec{r}_{12}\right)}{4\pi\theta \vec{r}^{3}} G_a$ to describe the interaction between photons and other particles; between electrons, atoms, atoms and molecules, and shows the universality of this formula and discovery. This is the first study to show that there is a more accurate formula than the universal law of gravitation to describe the gravity field of earth and deduce the universal law of gravitation in the earth. All these results clearly show the origin of gravitation, and the validity of this conclusion presented a clear natural law.

Data Availability Statement

All the data needed to evaluate the conclusions of this study are included in the manuscript.

Acknowledgment

First: here I am very fondly remembering my father Zheng heizi, he gave me great love, and that is the very driving force of my moving forward. I want to express my appreciation sincerely for My young uncle sister Gou susheng. My young brother zheng guoman, and my friend Shao shengtang, Jiu guoqiang, Wang xuezheng, Xi xinghua , wan huashan, wang zhulin, wang yongbao, zhai rangyi. Wang xiaoqi. Ma songxiong, Yang yuchang, My middle school teacher Zhang linxiang. They give me a lot of supports when I do this works.

References

1. Einstein A 17 (1905) Annalen der Physik. Ann Phys 17: 132-147.
2. Lewis GN (1926) The Conservation of Photons. Nature 118: 874-875.
3. Broglie LD (1923) Waves and Quanta. Nature 112: 540.
4. Zheng shengming (2021) The essence of light TechRxiv Preprint.
5. Zheng shengming (2012) Nature Mechanism-Force origin. China humanity technology publishing house.
6. Haynes WM (2016) Line Spectra of the Elements. Handbook of chemistry and physics 97th. CRC Press p. 10-21.
7. Robinson JW (1990) Atomic spectroscopy. Marcel Dekker. Inc. New York. Basael.
8. Dean JA(1992) Langes handbook of chemistry. McGraw Hill. Inc. New York.

9. Gillies GT (1988) Status of The Newtonian Gravitational Constant. Gravitational Measurements. Fundamental Metrology and Constants. Springer Netherlands pp. 191-214.

10. Haynes WM (2016) Standard ITS 90 Thermocouple Tables. Handbook of chemistry and physics 97th. CRC Press pp.2670.

11. Michele Caputo (1967) The Gravity Field of The Earth. Academic press, London, New York p.79-90.

12. Fandom (2000) Units of Measurement Wiki. WiKi.

DOI: 10.19080/JOJS.2024.03.555622