

# THE LAW OF HARMONY AND ITS APPLICATION: WE WILL LIVE MUCH LONGER!

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## Abstract

Humans are fascinating creatures. They are concerned with diverse problems: from issues of the microworld (for example, does the graviton particle exist?) to problems of the macroworld (for example, how much longer will our Universe exist?). Furthermore, it is always beneficial to know more about ourselves—for instance, our optimal weight (do we need to lose weight, and if so, by how much?). We provide answers to some of these questions in this article.

Let's start from afar—with the Law of Universal Gravitation, published by Isaac Newton in 1687 and known to every high school student. It states that any two bodies in the universe attract each other with a force,

$$F = G \frac{m_1 m_2}{R^2},$$

which is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. Here, the proportionality constant  $G$  is called the "gravitational constant". Its value was determined later, in 1798, by the British scientist Henry Cavendish using a torsion balance:  $G \simeq 6.67 \cdot 10^{-11} \text{ m}^3 \cdot \text{s}^{-2} \cdot \text{kg}^{-1}$ .

It should be noted that Newton initially established this law for the Earth-Moon system by comparing the centripetal acceleration of the Moon with the acceleration of free fall,  $g \simeq 9.8 \text{ m/s}^2$ . Newton then generalized this formulation from celestial bodies to all objects (the principle of universality). However, due to the extremely weak forces of attraction, Henry Cavendish was only able to experimentally verify this law for small masses much later. As a consequence of the law of universal gravitation, Newton theoretically derived the laws of planetary motion—previously obtained through trajectory analysis by the famous German astronomer Johannes Kepler—and described the possible orbits of celestial bodies.

To calculate the Moon's motion, Newton used the formulas for the orbital period  $T = \frac{2\pi R}{v}$ , centripetal acceleration  $a = \frac{v^2}{R}$ , and his own Second Law,  $a = \frac{F}{m}$ .

From the law of universal gravitation, we obtain:

$$a = \frac{GmM}{mR^2} = \frac{GM}{R^2} \Rightarrow v = \sqrt{\frac{GM}{R}} \Rightarrow T = 2\pi R \sqrt{\frac{R}{GM}}.$$

In the same way, the orbital period of a satellite is calculated based on the mass of the celestial body and the radius of the orbit.

Let's look at the resulting formula from a different perspective. It provides a certain temporal characteristic,  $T$ , of a celestial body based on its mass,  $M$ , and size,  $R$ . Now, here is the main idea: following Newton's lead, we will apply this formula to any body in the universe (the principle of universality). If a body is not spherical, we will clarify what value we should adopt for  $R$ . We will call the value  $T$  the "gravitational period" of the body and the value  $R$  its "gravitational radius" (not to be confused with the Schwarzschild radius or Planck length). Thus, we have assigned an individual "time" to every material object. In this context, time acts as a characteristic of the gravitational properties of material bodies. Is there a physical meaning to this "time"? What information does it carry about the body, and how can it be utilized?

## APPLICATION TO HUMANS

I recall a classmate from 8th grade—a tall, thin boy who played basketball. He was 175 cm tall and weighed 53 kg. If we calculate his gravitational period using the formula proposed above, taking half of his height ( $R = 1.75/2$ ) as  $R$ , we get  $T \simeq 86,495 \text{ s}$ . This is 24 hours, accurate to within 1.5 minutes! In other words, this boy's gravitational period coincides with the Earth's axial rotation period. What is

remarkable is that the formula used to calculate the human gravitational period contains no terrestrial parameters—only the parameters of the human himself! This coincidence with the 24-hour cycle suggests that this individual lives in harmony with the planet: his biorhythms align with the physical rhythms of the Earth. For this reason, the author has named the principle used to calculate the gravitational period the "LAW OF HARMONY". This individual possesses the optimal weight for his height. The closer a person's gravitational period is to 24 hours, the more optimal their weight is! From the "Law of Harmony," a new simplified and approximate formula is derived, which allows you to find your own personal gravitational period (in hours) based on your height and weight:

$$T = 272\sqrt{\frac{H^3}{M}} : 3600 \quad (*)$$

where  $H$  is your height in centimeters and  $M$  is your mass in kilograms. The author's own parameters are  $H = 166$  cm and  $M = 90$  kg, which result in  $T = 17$  hours. Unfortunately, this is far from 24 hours! The author needs to lose a significant amount of weight!

Below are examples of individuals whose physical parameters are close to the "ideal" according to the Law of Harmony.

## WOMEN

The height and weight of Russian rhythmic gymnastics champions vary but typically fall within the range of 160–175 cm and 46–53 kg.

For example: Alina Kabaeva (166 cm, 50 kg), Evgenia Kanaeva (174 cm, 50 kg), Margarita Mamun (170 cm, 50 kg), Yana Kudryavtseva (170 cm, 52 kg), and Karolina Sevastyanova (173 cm, 51 kg).

For Karolina Sevastyanova, the formula yields  $T = 24.07$  hours.

## MEN

Luke Campbell — British boxer and 2012 Olympic champion. Height: 175 cm, weight: 54 kg,  $T=23.80$  hours.

Victor Wembanyama — French basketball player, one of the tallest in the NBA. Height: 223.5 cm, weight: 107 kg,  $T=24.41$  hours.

Galen Rupp — One of the most successful American marathon runners. Height: 180 cm, weight: 61 kg,  $T=23.36$  hours.

Swami Sivananda — A famous Indian yoga guru who passed away in May 2025 at the age of 128. He stood 158 cm tall and weighed 41 kg,  $T=23.43$  hours.

Most of the 8.3 billion people alive today are overweight. Humans do not need so much! Apparently, eating multiple times every day in such large volumes is a harmful habit.

Verify this for yourself by calculating your personal gravitational period using the formula (\*), and consider adjusting your eating habits if needed.

## FORMULATION OF THE LAW OF HARMONY

Within every material body, there occurs a periodic gravitational oscillatory process with a period  $T$ , determined by the formula:

$$T = 2\pi R\sqrt{\frac{R}{GM}}$$

This process is the source of specific gravitational waves emitted by the body. For spherical bodies, the formula can be written as follows:

$$T = \sqrt{\frac{3\pi}{G\rho}}$$

where  $\rho = \frac{M}{V}$  is the average density of the body.

**Note.** In classical General Relativity, a single body at rest does not radiate because the microscopic motions of its particles are stochastic and mutually cancel out. However, if the particles are synchronized, they produce coherent motion. This synchronization mechanism may be of a quantum nature (see [4]).

# APPLICATION TO NEUTRON STARS — PULSARS

Neutron stars are among the most extreme objects in the universe in terms of density and rotation speed. Their average density is estimated to range from  $10^{14}$  to  $10^{17}$  kg/m<sup>3</sup>.

According to the Law of Harmony, this yields a gravitational wave frequency  $\nu = \frac{1}{T}$  within the range of  $26.6 \leq \nu \leq 841.3$  Hz.

The maximum confirmed rotation frequency of a pulsar is 716 revolutions per second (for PSR J1748-2446ad). Thus, the physical meaning of the gravitational period for pulsars is their rotation frequency—specifically  $\nu \propto \sqrt{G\rho}$ —is completely consistent with the Law of Harmony.

Gravitational waves are predicted by the General Theory of Relativity (GR). They were first directly detected in September 2015 from the merger of two black holes. As of the beginning of 2026, gravitational waves from an isolated (single) pulsar have not been directly detected.

This is due to the extremely weak energy they carry or the possible partial conversion of a gravitational wave into an electromagnetic wave of the same frequency under the influence of the pulsar's extremely strong magnetic fields, resulting in additional energy loss.

## THE LIFESPAN OF THE UNIVERSE

According to scientific research published in 2025, the "Big Crunch" (collapse) scenario is considered one of the likely models for the ultimate fate of the Universe. The timeline depends on the behavior of dark energy. A group of physicists led by Henry Tye of Cornell University, based on data from the DES and DESI observatories (published in the spring of 2025), calculated that the total lifespan of the Universe is approximately 33.3 billion years. Since the Universe is currently 13.8 billion years old, there are roughly 19.5–20 billion years left until the final collapse.

The author concludes that this forecast is erroneous. The Law of Harmony provides a more optimistic prediction. The average density of the Universe is approximately equal to the critical density,  $\rho = 9.31 \cdot 10^{-27}$  kg/m<sup>3</sup>. According to the Law of Harmony, using the formula

$$T = \sqrt{\frac{3\pi}{G\rho}},$$

we obtain a value of  $T = 3.896 \cdot 10^{18}$  s, which equals approximately 123.5 billion years. Thus, the gravitational period of the Universe is about 123 billion years. It is natural to interpret this as a periodic gravitational process of expansion and contraction. For half of this time, the Universe expands, and then it begins to contract until it reaches collapse—after which the cycle repeats!. According to this scenario, there are about 110 billion years left until the collapse (which is five times longer than in Henry Tye's model). So, we still have plenty of time!

## GRAVITON MASS

The graviton is a hypothetical elementary particle that, according to theories of quantum gravity, acts as the mediator of the gravitational force. In several theoretical models, the graviton is considered a particle with a non-zero rest mass, although in General Relativity it is assumed to be strictly massless. Such approaches are known as massive gravity theories. These theories provide an upper bound for the rest mass of the graviton. We can obtain a value for the graviton mass,  $m$ , by using the gravitational period of the Universe calculated in the previous section ( $T = 3.896 \cdot 10^{18}$  s). Using the relation  $mc^2 = h\nu = \frac{h}{T}$  we obtain:

$$m = \frac{h}{T \cdot c^2} \simeq 0.189 \cdot 10^{-68} \text{ kg}.$$

(Note:  $0.189 \cdot 10^{-68}$  is mathematically the same as  $1.89 \cdot 10^{-69}$ , which is the standard scientific notation)

Here,  $h = 6.626 \cdot 10^{-34}$  m<sup>2</sup>kg · s<sup>-1</sup> is Planck's constant, and  $c = 2.9979 \cdot 10^8$  m/s is the speed of light in a vacuum. It should be noted that this result is in good agreement with the estimate  $m \leq 10^{-68}$  kg provided by Goldhaber and Nieto [1], as well as the recent findings by Loeb [5].

Furthermore, the graviton mass obtained in this study closely aligns with the value of  $m = 1.909 \cdot 10^{-69}$  kg derived from the holographic principle by Haranas and Gkigkitzis [2].

If the mass of the graviton corresponds to this exact number, it would mean that the Universe is a self-consistent system where the properties of the smallest particle are strictly dictated by the scale and complexity of the entire cosmos.

**Note.** Within the framework of bimetric gravity, the identified graviton mass is consistent with a scenario of cosmic collapse via a Big Crunch in 110 billion years (see [3]).

## CONCLUSION

The use of gravitational waves truly opens up horizons for humanity that were previously considered science fiction. As of early 2026, this field is actively developing in several key areas, including gravitational lasers, energy transfer, and space communications. In the long term, mastering gravitational wave management may bring us closer to the development of Warp Drives—theoretical methods of moving through space by distorting it. Who knows, perhaps this was the true purpose of the Great Pyramids of Egypt, rather than ritualistic considerations. The coincidence between the gravitational periods of the Great Pyramid of Giza and the planet Mars indirectly points to this possibility, see <https://universalmathsolver.com/blog/>.

By studying particles that cannot be seen and the depths of space that cannot be reached, we ultimately learn to better understand ourselves. After all, a human being is also a "variable field" in which the movement of thoughts gives rise to waves of ideas that change the world.

P.S. All calculations in this note were performed using the guaranteed accuracy calculator of the UMS program (see <https://universalmathsolver.com>).

## References

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