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Article

What is gravity and antigravity

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To understand this question, we'll turn to an experiment, for only the experiment allows us to uncover those properties of the material world that hitherto were unknown to mankind. What is force? Why do bodies fall and why are they attracted? What is the interaction between bodies? These issues are topical to this day, as there are no exhaustive answers to these questions. Let's ask the following question: does the law of universal gravitation exist? And if it exists, it means that all bodies without exception are only attracted. Here the following question arises: can we test, experimentally, if the law of universal attraction really exists? If there is such a question, you can imagine - take any body, pick it up and let it go, it will fall, that is, it will be attracted to the ground, and then measure everything. In the presence of such actions, we can formulate some opinion about the attraction, which will seem to be true, but the very nature of attraction remains unclear. It becomes obvious that we are faced with the interaction of bodies that is complex in nature. Let's divide the entire problem into some simpler elements and formulate the task to be solved. This task is formulated as follows: how do the identical bodies interact outside the field of other bodies? The law of universal gravitation answers this question - the bodies are attracted. ***But is it really so?*** **It is to this very question that we will seek an answer here.**

Is it possible to investigate such an interaction in the conditions of the Earth? We think that it is possible. The term "identical bodies" that we use here means the bodies equal in qualitative characteristics, quantitative characteristics and properties. For this purpose we have constructed a device, whose scheme is shown in Fig. 1. The device represents two torsion balances and a set of bodies; we have chosen all the bodies that are similar qualitatively (metal-lead), but are different quantitatively, besides they are ball-shaped. The device includes the following elements:

1. **A massive body, a compensator ball. It is necessary to have two pieces;
   we used a ball with the diameter 160 mm.**
2. **Balls of the torsion balance, fixed on the beam.**

3. **An indicator ball and a ball-counterbalance.**
   We have chosen the balls with the diameter 41mm.

4. **A suspension thread of the torsion balance.**

5. **A trial body suspended on the thread (6).**

6. **The central axis of the arrangement of balls.**

7. **The common axis of the indicator balls.**

The necessary conditions for carrying out the experiment presuppose the construction of torsion balances in the premises located below the ground level and away from large moving objects such as cars, tractors, large animals as well as the movement of water currents.

The next condition is to exclude the movement of air in order to eliminate its influence on the operation of the torsion balance; then the influence of electric and magnetic fields should be excluded as well. One more condition is to maintain the stable temperature during the experiment. Failure to comply with these conditions distorts the results of the torsion balance's operation.

Trial bodies are selected on the basis of the following principle: bodies larger that the body (2), bodies equal to the body (2) and bodies smaller than the body (2). The torsion balance is suspended on the threads to the supports. The supports have the ability to rotate to twist the thread, so that the beams of the torsion balance occupy a perpendicular position to the axis of the balls' centers. After the torsion balance is suspended, it should take some time to stabilize the parameters of the suspension thread. After the length of the suspension thread is stabilized, the torsion balance is installed, so that the indicator balls are on the central axis of the balls. Next, the process of adjusting the torsion balance starts.

The torsion balance is adjusted as demonstrated in Fig. 1, on condition that the distance between the indicator balls is approximately 1.5-1.8 of the indicator ball's diameter. Then, massive compensator balls are installed on the common axis of the indicator balls (7), choosing the distance between the indicator ball and the compensator ball to be approximately equal to the diameter of the indicator ball. When the compensator balls are installed, and if the sensitivity of the torsion

balance is sufficient, one can observe how each indicator ball is attracted to its compensator ball. The next step in the process of arranging the torsion balance is to twist the torsion balance's thread in the directions shown in Fig. 1 and to return the indicator balls to the initial position, as shown in Fig. 1, and to reach the state of equilibrium.

The principle underlying the determination of interaction between bodies is as follows: if the torsion balance system shown in (Fig. 1) is in the state of equilibrium, then the smooth introduction of the trial body (5) between the indicator balls will lead the torsion balance system out of the equilibrium state. The departure from the state of equilibrium has 2 options.

The first option: if the bodies are only attracted, then the introduction of the trial ball (5) will show us that the indicator balls will be attracted to the trial ball. The second option: if the bodies have the ability to repulse, then the introduction of the trial ball (5) will show us the movement of the indicator balls towards the compensator balls.

We performed this very experiment and observed the following. With the introduction between the indicator balls of the trial ball (5) equal to the indicator ball, the indicator balls of the torsion balance began moving towards the massive compensator balls. Repeating the experiment, we always invariably received one and the same result.

This result graphically demonstrates that there is not only the gravitational attraction between the bodies, but there is also the gravitational repulsion between the bodies. The experiment's conditions excluded the impact of other interactions, i.e. magnetic and electrical. Investigating the phenomenon of gravitational repulsion, we started to change the conditions of the experiment, namely, we began using trail bodies, whose size was smaller than that of the indicator one and observed the following. When reducing the trial balls compared with the indicator balls, we observed a stable gravitational repulsion, though up to certain critical values. For instance, at the diameter of the trial ball (20.2 mm), the torsion balance practically did not register the presence of either the attraction or the repulsion. We began to reduce the trial bodies still further, and the torsion balance began to register a weak attraction to the trial ball; however a further reduction of the trial bodies did not give us any result, because the torsion balance's sensitivity was distinctly insufficient.

Diagram of the torsion balance

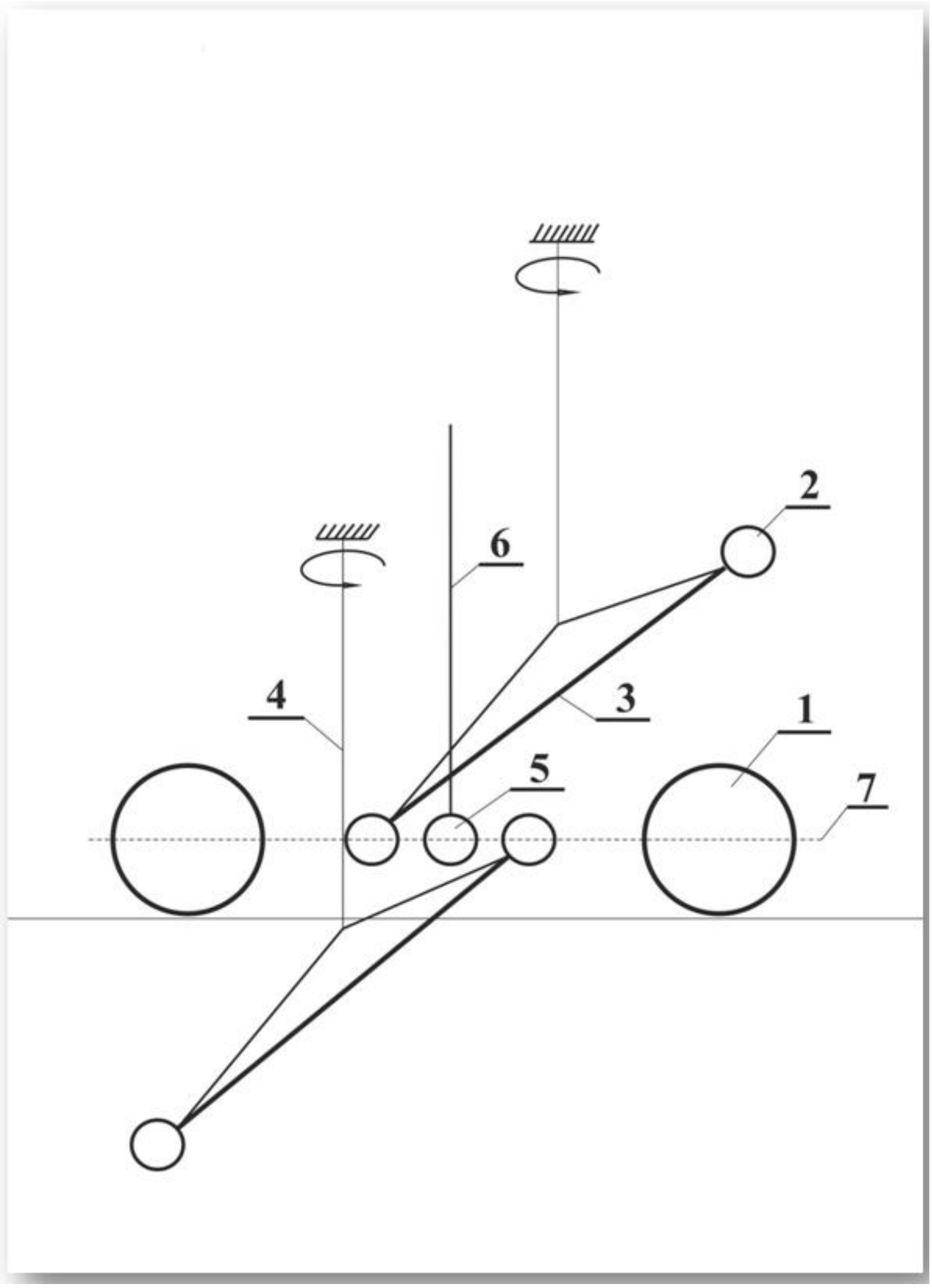

Fig.1

That's why we decided to change the experiment's conditions and began using the trail bodies bigger than the indicator ball. For this purpose, we had to rearrange the torsion balance and to increase the distance between the indicator balls, which allowed us to observe the following. When the trial balls were bigger than the indicator balls, with the difference between them being almost indistinguishable, a steady repulsion was observed. A subsequent increase in the trial balls made it possible to observe a smooth decrease in repulsion. When using the trial balls proportional to the compensator ball, the indicator ball was attracted to the trial ball. This experience allows us to consistently observe both the attraction and the repulsion of bodies, and makes it possible, after all the results of observation are summarized, to conclude the following. *The qualitatively and quantitatively similar bodies repulse*, because the maximum repulsion is observed for exactly the similar bodies, and only smaller bodies can fall on larger bodies. Here we emphasize that *it is the smaller bodies that can fall on large bodies*, since this is the property we perceive as the attraction or gravitation of bodies. The experiment we performed graphically demonstrates that the law of universal gravitation does not exist, because such a law fails to withstand the experimental verification.

For the law of universal gravitation asserts that all bodies are only attracted, or experience the gravitational attraction, under the condition of magnetic and electrical neutrality.

Everything that is known in modern physics to date cannot explain the result of the described experiment, since mankind's level of cognition of the material world is obviously insufficient.

We have carried out the following additional experiment. We began to heat the trial ball and, under the condition of equality of both the indicator ball and the trial ball, we observed an increase in the gravitational repulsion. This allowed us to draw the following general conclusion: a change in the body's temperature affects the gravitational properties of bodies. We summarized the results of our investigations and plotted a diagram of the gravitational interaction of bodies (see Fig.2). The diagram shown in Fig. 2 is an approximation interpreting the interaction of bodies, which shows the general character of their interaction. The M axis in the diagram is represented by the value of the trial body, and the F axis is represented by the value of the interaction

force expressed in relative units. The maximum repulsion is shown under the condition of equality (Mn = Mu) between the trial ball and the indicator ball.

A DIAGRAM OF THE GRAVITATIONAL INTERACTION OF BODIES

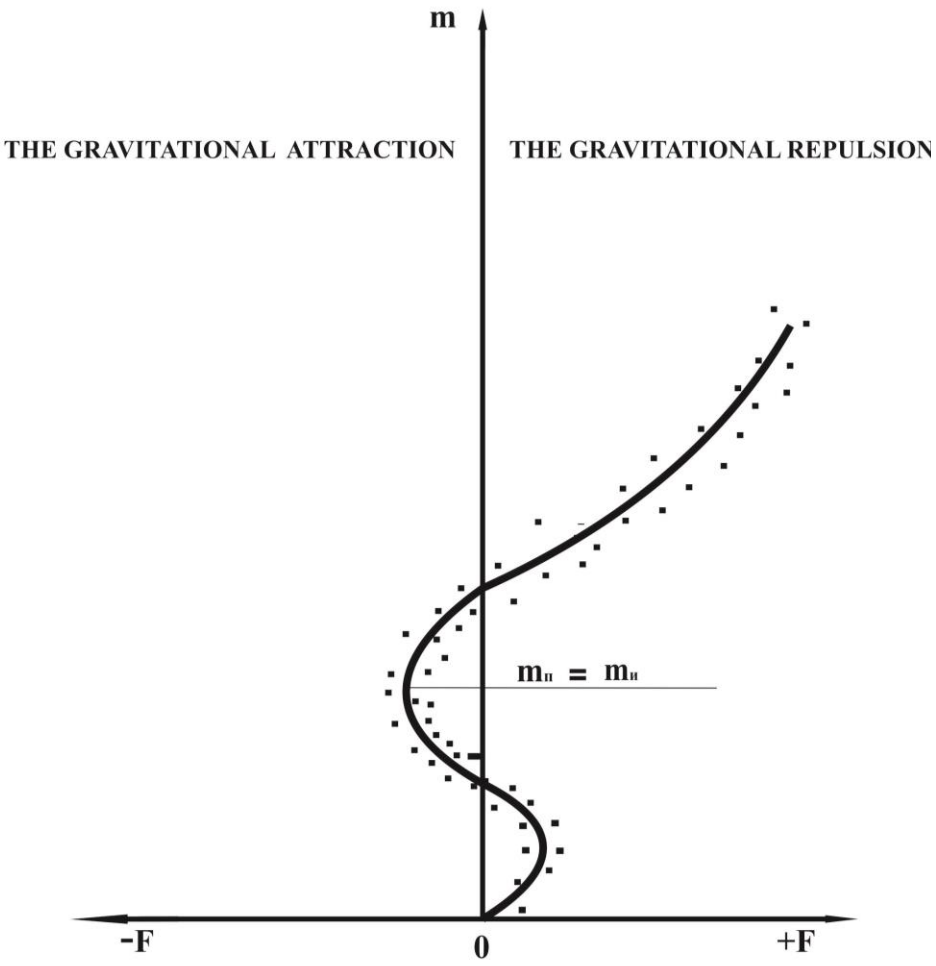

FIG 2

We are inclined to put forward the following explanation of the phenomenon of nature described above. First, we have to consider the presence of gravitational repulsion of bodies just as a fact. Second, the gravitational repulsion of bodies is not the interaction between bodies, but is, in the first place, the interaction between the body and the space, in which it is located, because the gravitational repulsion of bodies is a consequence of interaction between the body and the space.

And the following question arises here: what are the properties of space?

We know the following properties of space: the presence of volume, the presence of quantitative properties and the presence electromagnetic properties.

Considering the interaction between the body and the space, we have to admit that it has a force character, namely, the gravitational force is applied to the body from the direction of space, or otherwise, the body experiences pressure from the direction of space. And here we have to admit that the space is a material object, for it possesses all the properties of material bodies. We will consider separately one more property of material bodies – quality. The question arises: does the space have the property of quality?

But then, what we are talking about is quality: what is it? Let's look at D. Mendeleyev's Table of Elements, in which all the chemical elements are shown. Each of them initially differs from the other qualitatively. All chemical elements are in unity, and this unity is secured by the belonging of all chemical elements and all elementary particles to the material space, because they all exist precisely in the material space. The presence of qualitative differences in general becomes possible, under the condition that the space has the property of quality, like any material object. In this connection, in our perception, the presence of qualitative differences among material bodies is initially the presence of a difference in qualitative properties between the qualitative properties of space and the qualitative properties of material bodies and objects. The space, as a material object, also possesses quantitative properties. Then, as a consequence, all bodies also possess quantitative properties. Now the presence of unity between the space and all material bodies in general becomes obvious. The presence of such a unity generates one more

property of material bodies, which in our perception is represented by discreteness. We use the term discreteness in two meanings.

First, it exists separately, for it is the material space that serves as a division. And the second meaning of discreteness is the difference of two qualitative properties.

It is just from these positions that we consider the gravitational interaction of bodies, i. e. the interaction of the material space and the material body.

Here we do not present a quantitative evaluation of the gravitational interaction, because, initially the fact is important.

And the quantitative dependence is only a consequence of this fact, and the theme of another article.

We are inclined to offer all interested people to confirm or deny this fact, because any other option is not available, since facts are stubborn things.

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