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## Gravity genesis of inertia

**Gravity genesis of inertia** is the theory of the gravitational origin of inertia. Author is Ibraev, Leonard Ivanovich, docent of the Mari State University, department of Philosophy<sup>[1]</sup>.

The author prefers to leave the modern fantastic "front edge" of science<sup>[2]</sup> to fans of burning secrets of otherworldly<sup>[3]</sup>, and most modestly to clarify just what is still an undeniable fact: itself the gravitation and inertia as they are:

1) their mutual relationship and 2) the question of their speed.

### Abstract

The irony of the classical notion of the *infinity* of the universe. Why there is no center in it?

Why shifted body does not come out of the all world's gravitational equilibrium?

The analysis of the **paradox** of the **infinity** and **ubiquity** (in any place) of its quasi-centers of gravitational equilibrium in the world's infinity. Its consequences for physics, its theory and a practice of experiments.

Why the Newtonian notion of an "*infinite* velocity" of gravitation is nonsense?

Why gravitation is has no speed? The extental concept of body.

Constancy of the **induction** speed of electromagnetic radiation ( $c=const$ ) relative to the absolute gravitational space (AGS).

The riddle of the **non**-inertial vector addition of the **inductial** speed of electromagnetic radiation ( $c=const$ ) with the **inertial** velocities of the radiator  $v$  and receiver  $u$ .

### Contents

I. § 1. The gist of the theory.

I. § 2. The Proof of the Theory. Transit: a guess → a hypothesis → its conversion into the Theory.

II. § 1. The Proof of the instantly of gravitation.

II. § 2. The Explanation of the instantness of gravitation.

III. The Consequences of The Theory of gravitational genesis of inertia – for physics.

IV. References.

### I. § 1. The gist of the theory

The gist of the theory: **inertia** ( $\equiv$  counteraction, resistance of the body to its acceleration or deceleration) is created by the equalization of gravitational **counter-gravities** by an infinite set of surrounding world masses. With a serious simplification to the *finite* possibilities of the classical mathematical apparatus, the idea gets form of:

$$f(r) = \rho m_g \iiint_{v'} \frac{(r - r') dv'}{|r - r'|^3},$$

or in the "center of the sphere" (where the radius  $r = 0$ )

$$f(0) = \rho m_g \iiint_{v'} \frac{r' dv'}{|r'|^3} \text{ etc }^{[4]}.$$

since the "center" ( $r = 0$ ) of infinity (the "radius" of the universe  $R = \infty$ ).

Like the way in a fable the cart is immovable, because it is pulled in different directions by a swan, a cancer and a pike.

Thus, inertia is the result and type of gravity, even just its particular case.

## I. § 2. The Proof of the theory.

Transit: a guess → a hypothesis → its conversion into the **theory**.

This presumption naturally raises the questions, **objections** against this idea: then why does not the object of the **shift**, at least the smallest, come out of this "center of equilibrium", thereby violating it and rushing to some one side?

And where is this "center of gravitational equilibrium" of the *entire infinite* universe, the absolute center? After all, with respect to different congregates of masses, he will endlessly shift.

The author believes that at infinity one single *geometric* center ("center" of the "sphere of infinite radius" of the universe  $R = \infty$ ) is **impossible**.

According to the accepted in philosophy and after G.Cantor also in mathematics to the definition of "equal power" (~ "number") of infinite sets – the author approves – an infinite set has also *infinitely* many such centers. That is why such a quasi-center of gravitational equilibrium of infinity is **everywhere** (!), at any point.

These are the theoretical grounds of a new idea.

In the author's opinion, the infinity and ubiquity (in any place) of the centers of equilibrium is a special **property** of the infinity of the world, although we, the beings in our practice are always finite, it appears a **paradox**.

The division of an infinite set gives **subsets** that are also infinite. In particular, its division, due to a shift of the body – at the **back** of the object there remains the same infinity of masses, which is **ahead**:  $\infty = m_b = m_a = \infty$ , - and, thus, the body is in gravitational equilibrium of masses everywhere (!) and does not come out of this equilibrium under the shift.

So the equilibrium of the *infinite* masses excludes from the sum of actions the infinite masses themselves, "subtracts" itself and leaves for us and for any individual subject of action two options:

1) The dependence of the result on the action of the **own mass** solely on the object of action itself, its resistance to acceleration as a violation of equilibrium, which appears to us as its **inertia**  $m_i$ . Or

2) Plus attraction to the body of non-balanced, closer masses, and then their **mutual** attraction appears as **gravitation**:  $m_{i \rightarrow g} + \sum m_g$

That is why it turns out that the resistance ( $\equiv$  inertia) to acceleration is produced only by one **own** mass of the object  $m_i = m_g$ , - and homogeneity and isotropy of inertia are established<sup>[6]</sup>. In this homogeneity and isotropy there is a structural contrast between the mathematics of **infinity** and the "Mach's principle," with its *finite* masses and the derivation of the anisotropy of inertia, despite the fact that there is no dependence of inertia on the near masses.

The **first** actual proof of the gravity genesis of inertia is to explain to him the otherwise surprising fact that the inertial mass is always invariably and exactly equal to its gravitational mass  $m_i = m_g$ .

Their equality exists precisely because inertia is a kind of gravity. Other factual evidence is in further explanations.

## II. § 1. The **Proof** of the instantly of gravitation

The action of inertia is instant, and, since inertia is a kind of gravity, it means that the gravitational action should theoretically also be instant. And the instantly of gravitation is proved by **facts**.

The long-range action of gravitation and inertia is transmitted instant, at the same time  $t_g = 0$ , which is reflected in the formulas of Newton's laws, where there is **no** propagation of the action of gravity with any finite velocity  $v$  and therefore its *retardation* by the time  $t = s/v$  some point at a distance  $s$ , as opposed to the laws of electrodynamics, where electromagnetic emission in Maxwell's equations shows the propagation of the action just from point to point, the transfer from immediately adjacent changes with a finite light speed and, as a result, their *retardation* for a time  $t = 1/s$ .

Centuries-old astronomical and astrophysical observations of the gravitational-inertial motion of the Sun, the Moon, planets, stars and any bodies state the **absence** in them of any *retardation* for a time  $t=1/v$  in inverse relationship to their velocity  $v$ . Modern astrophysical observations of extremely fast reversing double heavy stars ("white dwarfs") and over explosions of stars, where such differences from the moment of gravitational action should be particularly large, also do not fix any differences.

Now the instantaneous transmission of the shifts of gravitation in the motion of bodies is confirmed by **all** the known facts of cosmic ballistics – throughout the accessible telescopes of the universe at distances of billions of light years<sup>[7]</sup>.

However, **how can** such instantly of a long-range action be?

Newton himself believed that gravity has an infinite velocity  $v_g = \infty$ .

But the idea of an infinite velocity  $v = s/t = \infty/0$  appears as a nonsense, a contradiction to the very notion of speed as a relation of some different and, consequently, **finite** distance traveled to time  $v = s/t$ .

Apparently, therefore, Laplace, as in a hundred years also A.Poincare, and then other researchers, paying attention to the **absence** of any  $1/v$  *delays* in the gravitational-inertial motion of the Sun, the Moon, planets and

stars, nevertheless received be careful: did not insist on  $v_g = \infty$ , but recognized that the speed of gravitation is many times greater than the light speed; for today it is checked up to  $v_g \geq 10^{11} c$ .

Now the instant transmission of the shifts of gravitation in the motion of bodies is confirmed by all the known facts of cosmic ballistics – throughout the accessible telescopes of the universe at distances of billions of light years [7].

Now, even Einstein and other relativists who, for the sake of preserving their theoretical constructions, long insisted on the "prohibition" of superlight speed, eventually silently limited themselves to the "prohibition" for gravitation to serve as a "signal," and assumed that the speed of light should be equal to the speed of their *gravitational waves*.

## II. § 2. The **Explanation** of the instantness of gravitation

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Indeed, how to combine these mutually exclusive positions – instantness and speed?

In the opinion of the author, the only solution of the gravitational **nonsense** or **paradox** is in the other. The moment of long-range action means that the gravitational field simply does **not** have a velocity:  $v_g = 0$ , and therefore the **gravitational field** is **not** radiation, but only the **extension (extent)** of the object, its **holistic nimbus**, invisible, mutually permeable and weakening with a distance of  $\sim 1/r^2$ , which is **not** arises and does **not** propagates, but **extends**, that is, **before pre-exists** and travels together with its center as one whole, of course, synchronously with the same sub-light speed as the central mass itself.

That's why even if the velocity of the body and its gravitational field (nimbus) is less than the light speed  $v < c$ , nevertheless, its detection in action at any distance is instant:  $v_m < c$ , but  $t_g = s/v_g = 0$ , as well as and the inertia action  $t_i = 0$ .

But then it turns out that nowadays the generally accepted **understanding** of the body is erroneous. The bodies are **not** at all *limited* to their visible and resisting surface, but extend their fields – nimbus to infinity and as a web they are linked to a single whole world, where the shift of any particle **acts** on all others, although, of course, in varying degrees, depending on the distance and from exceeding their quantum threshold.

Finally, the cherished dream of a "unified theory" comes true – the dialectic of the discontinuity and the fusion (the corpuscularity and continuum of the field).

## III. The Consequences of The Theory of gravity genesis of inertia – for physics go far.

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There is still a problem or riddle ahead – the meeting of gravitation (including inertia) with electromagnetic radiation: what should be their interrelation?

As all physicists, even theoreticians (I hope) know, electromagnetic radiation arises as a result of charge **acceleration**. Moreover, the acceleration is not relative to some neighboring body, which for some cause has shifted, but from the violation of its **own** inertia, and therefore, relative to the **world's gravitational** space, and, as we cleared up, is undoubtedly absolute. – AGS.

And electromagnetic radiation is propagated **no** longer by *inertia*, but by Maxwell's **induction** with a constant speed ( $c = \text{const}$ ) relative to AGS.

What is the **addition** of its **induction** speed (and almost **no** inertial) radiation to the **inertial**, but **different** velocity  $v$  of the charge- radiator and the velocity of the receiver  $u$  in the same AGS?

Physicists are arguing and discussing about this for the second century. And it's not surprising. Us, the inhabitants of the surrounding gravitational - inertial world of mechanics, it is not easy to **imagine** the strange (almost completely) **not-inertial** world of electrodynamics and with the **non-inertial** unthinkable **inverse** vector addition of velocities.

This is the topic of our next analysis. Briefly see:

*L.I. Ibraev. The Theory of the Absoluteness of Gravitation and Electrodynamics. 2018.*

In detail <sup>[1]</sup>

## References

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<sup>[1]</sup> © 1991 *Leonard I. Ibraev. To the Theory of relative absoluteness. // Л.И. Ибраев. К теории относительной абсолютности. Изд. 1-е, МарПИК - "Периодика", 1991. 209 с. Изд. 2. "Стринг", 2009.– 246 с. ISBN 978-5-91716-016-0. PACS: 01.70.+w/01.55.+b/ 04.40.Nr [libraev@mail.ru](mailto:libraev@mail.ru)*

*Internet: [www.L.I.Ibraev. The Theory of Absoluteness. Resume](http://www.L.I.Ibraev.TheTheoryofAbsoluteness.Resume). [www.L.I.Ibraev. The Theory of Absoluteness of Gravitation and Electrodynamics. Theses](http://www.L.I.Ibraev.TheTheoryofAbsolutenessofGravitationandElectrodynamics.Theses). In the documents — a list of his other publications on this topic.*

<sup>[2]</sup> See. **Field** (physics) – Wikipedia. Gravitation – Wikipedia; Альтернативные теории гравитации – Wikipedia.

[3] For example, *B.G. Wallace. The Farce of Physics. // Journal of Theoretics, 1993; D. Pratt. The Farce of Modern Physics. 2008. В.П. Глушко, Д.С. Муса. Миражи современной физики. Алматы. Изд. «Нур-Принт», 2015. List of unsolved problems in physics – Wikipedia.* And let the lists contain a bizarre mixture of real and pseudo problems, the fact of general dissatisfaction with the current theoretical situation is important.

[4] To the Theory of relative absoluteness, equations 25.1 - 3

[5] *Cantor G.: Кантор Г. Труды по теории множеств. М., Наука, 1985, с.135-141, 147, 263. Наука. Величайшие теории. – Вып. 30. М., 2015, с. 122, 157.*

[6] See: **To the Theory of relative absoluteness.** The chapter 25.

[7] Ibid, chapters 25, 26.

[8] Ibid, chapter 26 a.