Theoretical analysis of reliability of the "Hypothesis of the atomic (quantum) motion"

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Abstract:

This article is based on the "Hypothesis of the atomic (quantum) motion", registered on the site of intellectual protection: http://www.a-priority.ru/Priority/1estestv/1estestv_catalog.html?SHOWALL_1=1 registration number: A1B031 (project of the European Academy of Natural Sciences).

The content of the article is the theoretical test of the reliability of the hypothesis, that based on

- the famous discovery of the wave properties of the material bodies by Louis de Broglie;

- centripetal acceleration of the planets of the solar system.

The theoretical test of the reliability of the hypothesis is indicate the need for further research to confirm the hypothesis, which is the goal of this article.

Keywords:

the explanation of the duality of the properties of material bodies (wave, body) by Louis de Broglie on the basis of the "Hypothesis of the atomic (quantum) motion"; the optimal change of the centripetal acceleration for the quantums of the motion of the planets of the solar system.

Introduction.

To understand this article, it is necessary to briefly review my hypothesis [4, URL]. Full version of the hypothesis [1, URL].

Relevance and scientific novelty.

This is article the explanation of the duality of the properties of material bodies (wave, body) by Louis de Broglie with the help of the alleged mechanism of motion of bodies according to the "Hypothesis of atomic (quantum) motion. So, in 2012, an experiment was conducted with molecules [2, URL], which confirms the discovery by Louis de Broglie of the wave properties material bodies.

According to my hypothesis, the mechanism of motion of a body under the action of force is a moving oscillatory process, that is, a wave process. Consequently, the discovery of Louis de Broglie confirms the reality of my hypothesis.

It is pertinent to quote the article [3, URL] (a resolution from the author Sergeyev was obtained): "The de Broglie wavelength for C70 fullerenes used in the Anton Zailinger group, calculated from the formula L = h / (mv), is $5 * 10^{-13}$,

this is 1/500 of their radius. " "It is possible that the vibration in the size of the fullerene sphere per thousandth of their diameter, due to the periodic variation of the distances between the constituent carbon atoms, determine the process of collisions of these microparticles in a moving flow, that this gives their diffraction and interference."

In my opinion, the author not only considers the wave properties of a moving molecule as periodical oscillations of its sphere, which resembles the mechanism of body motion according to my hypothesis, but also indicates that the wavelength of a molecule is equal to the amplitude of its sphere vibrations (the road elementary of the quantum of the motion according to my hypothesis) .

Goal.

We follow the example of Sergeev [3, URL] and equate the road elementary of the quantum of the motion of the body m = 1 kg, falling in the gravitational field of the Earth (according to my hypothesis), to the wavelength of its by de Broglie with the purpose of approximately calculating the parameters of the quantum of motion: period , velocity elementary and road elementary to evaluate the possibility of experimental determination (measurement) of these parameters.

Road elementary of the quantum of the motion:

$$X = \frac{1}{a \times L^2};$$

Wthere: a - acceleration of the body m**,** L - change of the velocity reaction of the inertial mass when the force change on the 1 N, value pretends to constant and require experimental determination [1,URL].

Wavelength of the body *m* by de Broglie:

$$\lambda = \frac{h}{m \times \frac{1}{L}};$$

where: h - Plank constant (6.6 * 10-34 J * s), 1/L – velocity elementary of the quantum of the motion [1,URL].

So, under the condition that a = g - is the acceleration of gravity:is the intensity of the gravitational field of the Earth:

$$\frac{h}{m \times \frac{1}{L}} = \frac{1}{g \times L^2};$$

from where:

$$L = \sqrt[3]{\frac{m}{g \times h}} = \sqrt[3]{\frac{1}{9.8 \times 6.6 \times 10^{-34}}} = 5.37 \times 10^{10} [s/m];$$

i.e:

$$T = \frac{1}{g \times L} = 1.9 \times 10^{-12}[s],$$

where T – period of the quantum of the motion;

$$\frac{1}{L} = 0.186 \times 10^{-10}[{}^{m}/_{s}];$$

$$X = \frac{1}{g \times L^2} = 3.5 \times 10^{-23}[m].$$

Thus, the results obtained demonstrate the complexity of the experimental measurement of the quantum of motion. Therefore, the main task of experimental confirmation of the hypothesis is to confirm its practical conclusion of the "Principle of the optimal motion" [1, URL].

The study of the exponents of the optimal change of the centripetal acceleration for the quantum of the motion of the planets of the solar system.

For simplicity, we will assume that the average orbits of the planets of the solar system are circular and characterized by an average radius.

Naturally, these orbits are optimal and, consequently, centripetal accelerations of planets are also optimal and are calculated according to the formula indicated in Fig.1.

Should be noted that the centripetal accelerations of the planets are simultaneously the intensities of the gravitational field of the Sun in the middle orbits of the planets.

Taking into account the material [1, URL], we assume that the speed of the planets changes discretely in the direction. That is quantum.

1/L – the module of the vector of the change elementary of the velocity of the planets by direction (the main parameter of the quantum of the motion of the planets), where $L = 5.37 \times 10^{10}[{}^{s}/_{m}]$ according to the above discussion.

The purpose of the theoretical study of the quantum of the motion of the planets of the solar system is to analyze the areas of the exponents of the optimal variation of centripetal accelerations for the quantum the motion of the planets on the basis of formula 1 [1, URL]:

$\boldsymbol{a = \frac{1}{m} \times (\exp(t \times L \times g_1) - 1)}$ where:

$\mathbf{g_1}$ **-** are the natural (optimal) centripetal accelerations of planets in the solar system in medium orbits;

m - is the mass of the planets.

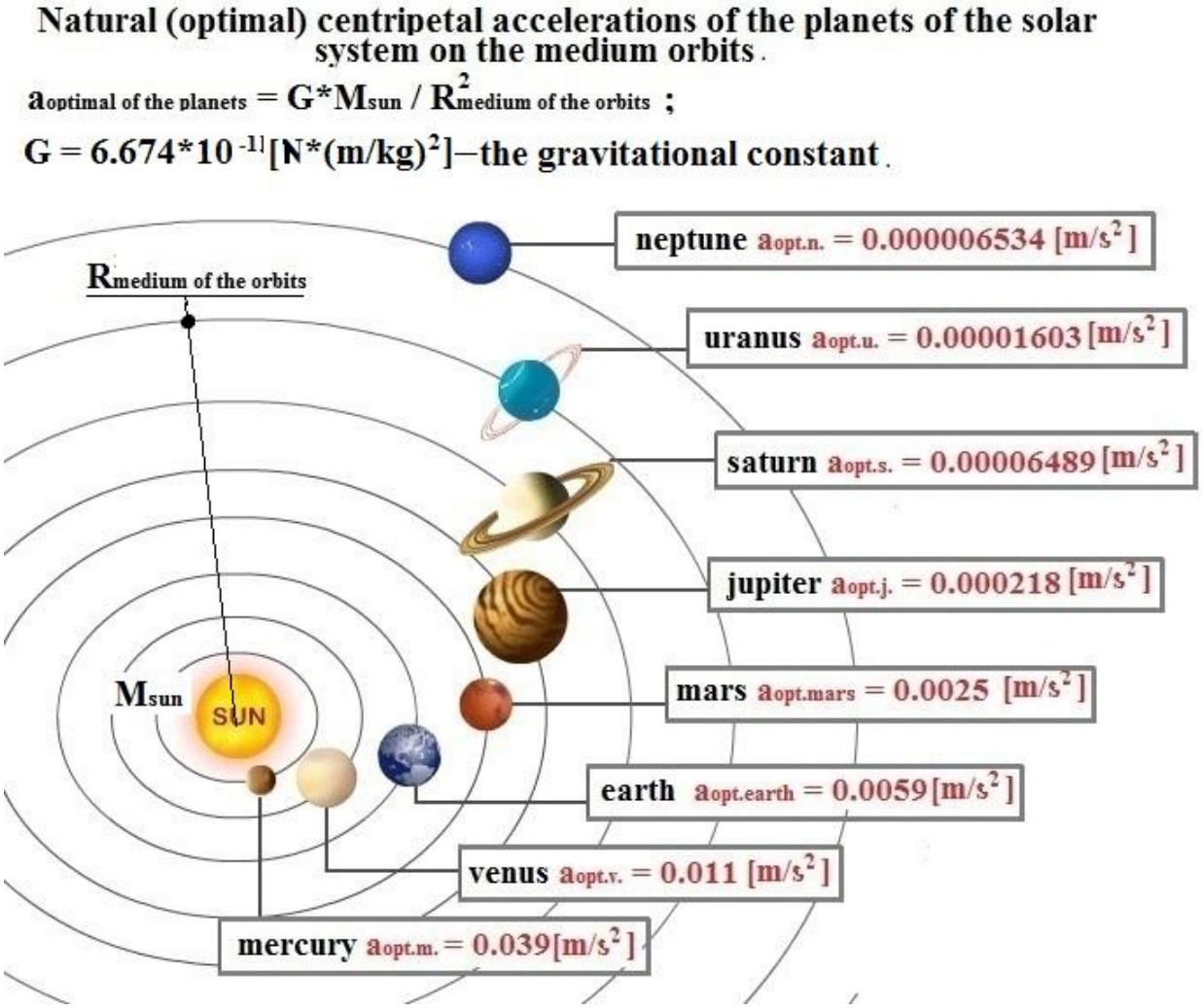

Fig.1. Natural (optimal) centripetal accelerations of the planets of the solar system.

This theoretical study will be conducted using the Graph program.

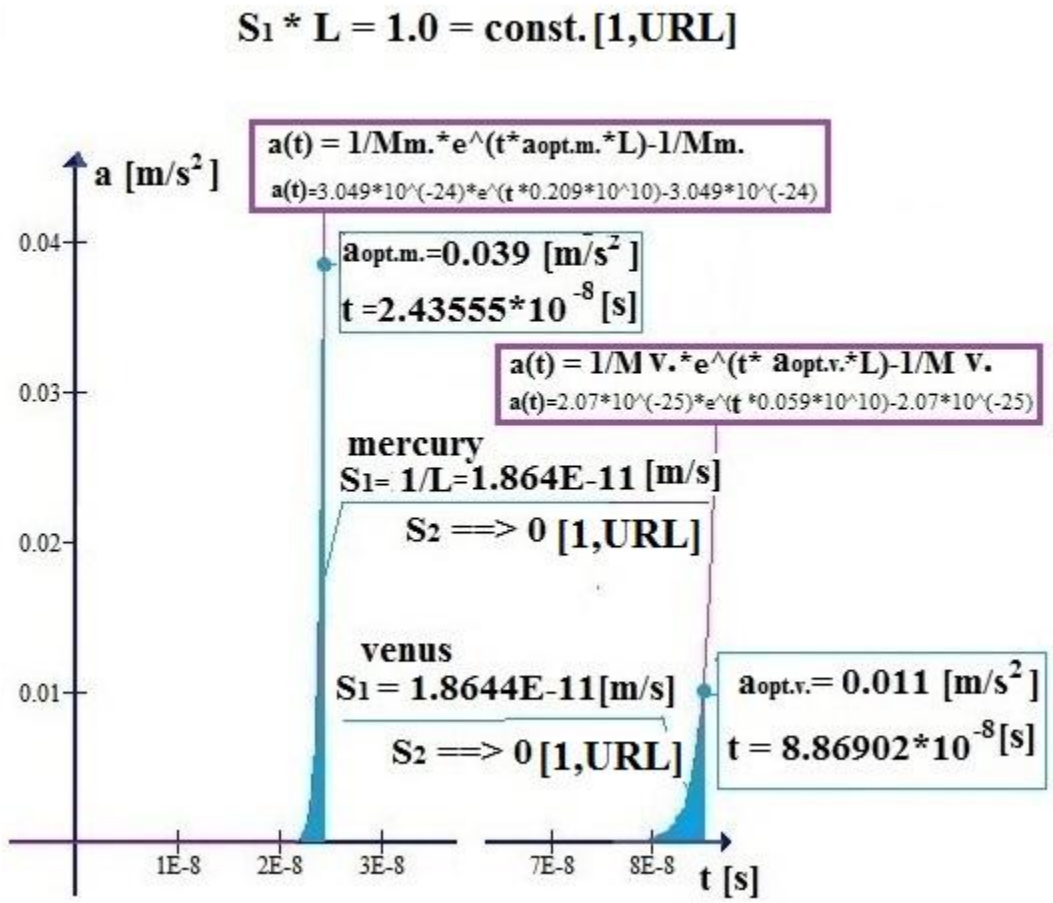

Fig. 2. An the optimal change of the centripetal accelerations for the quantums of the motion of the Mercury and Venus.

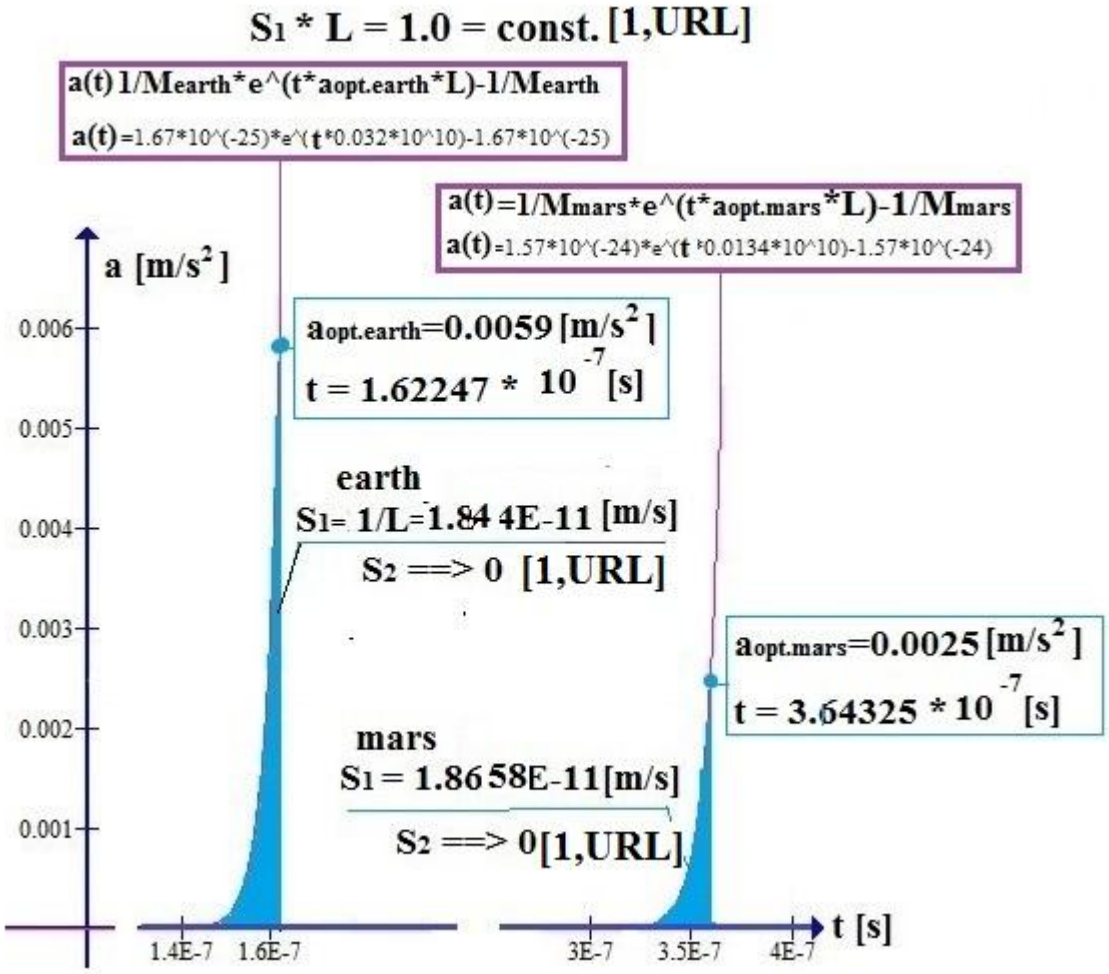

Fig.3.An the optimal change of the centripetal accelerations for the quantums of the motion of the Earth and Mars.

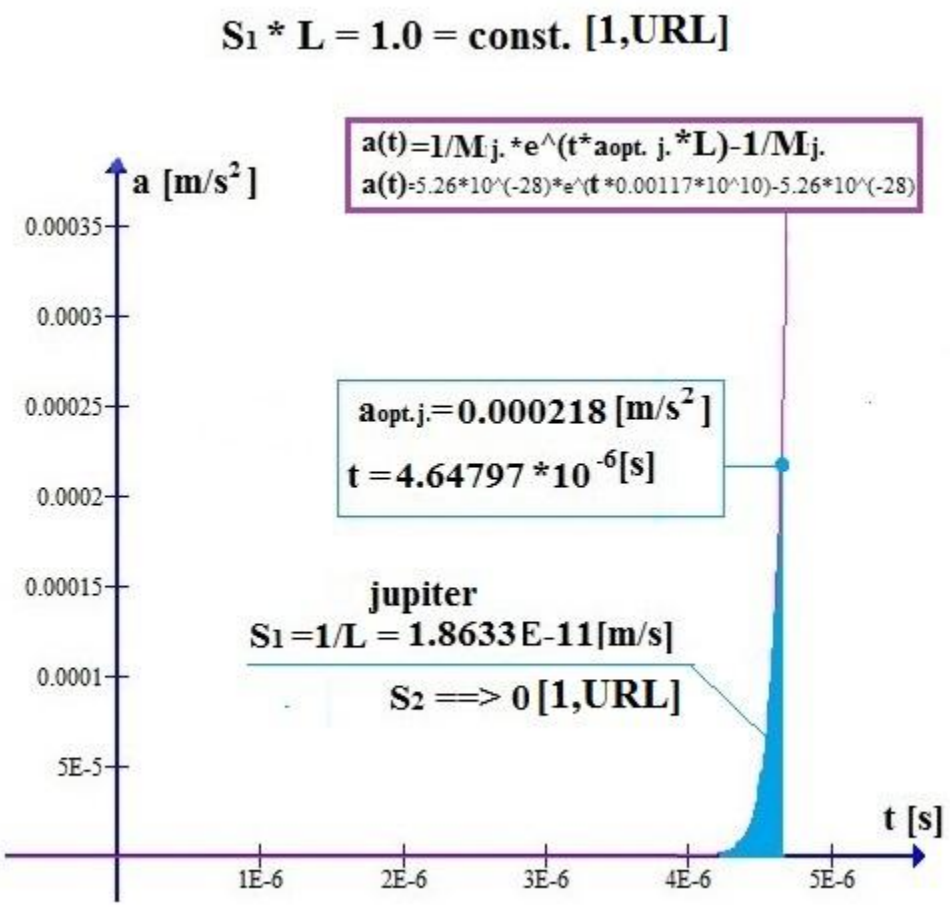

Fig.4.An the optimal change of the centripetal acceleration for the quantums of the motion of the Jupiter.

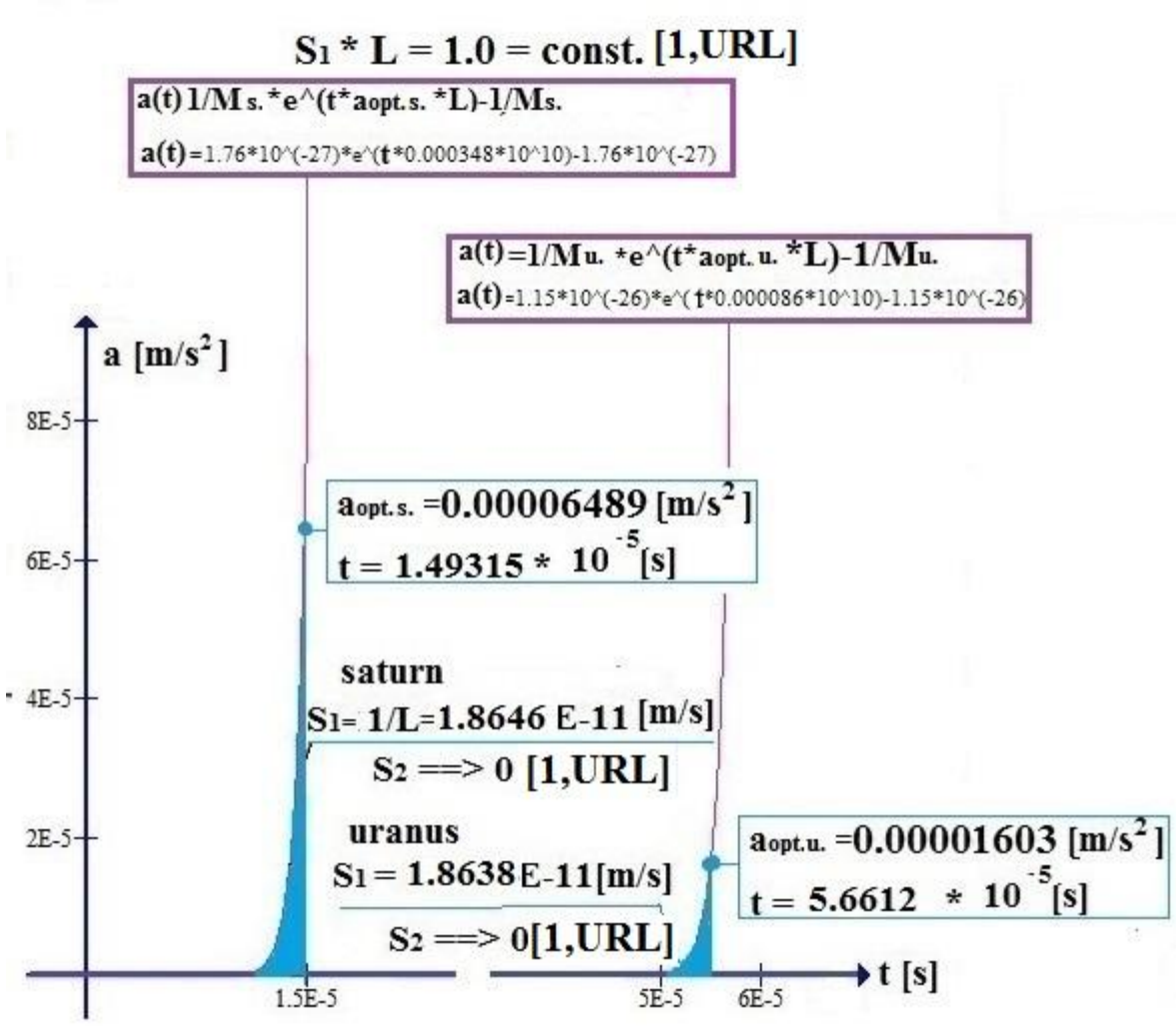

Fig.5.An the optimal change of the centripetal accelerations for the quantums of the motion of the Saturn and Uranus.

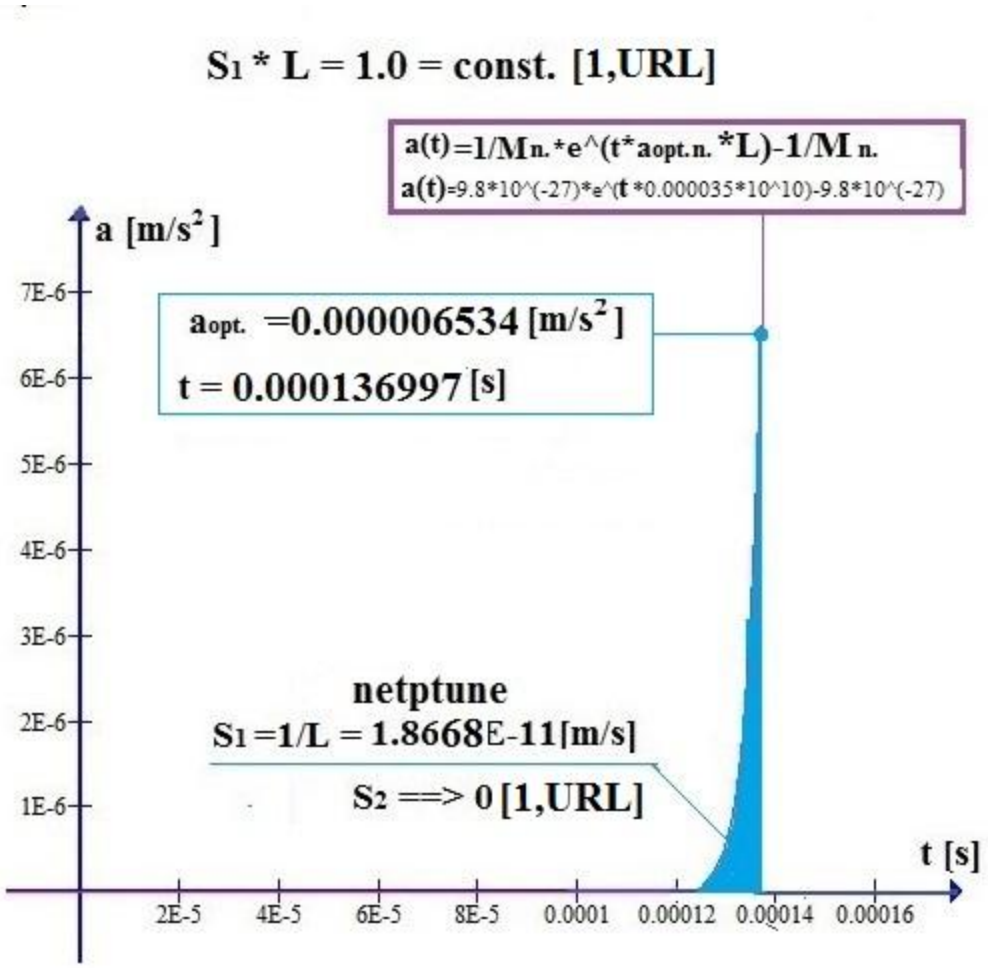

Fig.6.An the optimal change of the centripetal acceleration for the quantums of the motion of the Neptune.

Conclusion: the area of the exponents of the optimal change of the centripetal acceleration for the quantaums of the motion of the planets of the solar system or the module of the vector of the change elementary of the velocity of the planets by direction is constant for all planets $S_1 = 1/L \sim 1.86 * 10^{-11}$ [m/s]. In this case, $S_2 => 0$.

Thus, our solar system can be an indicator of the consistency of the "Hypothesis of the atomic (quantum) motion."

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