

*Materials of Conferences***LAW OF SECULAR PLANET SHIFT**

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Using the Quantum theory of gravitation (QTG) the decrease of Earth's and Mars' orbital radius, caused by their gravitation absorption, have been calculated. The obtained result is in agreement with data of radio metering of an interplanetary space vehicle «Viking», directed to Mars in 1975.

The motion of planets of solar system in their orbits around the sun meets three laws of Kepler [1]. These laws come from the Newton's law of gravitation and the law of conservation of mechanical energy

$$W = W_k + W_n = \text{const.}$$

Kepler formulated his laws in the following way:

- All planets of solar system move in elliptic orbits, in one focus of which is the sun.
- The line connecting the planet and the Sun sweeps out equal area in equal time.

– The square of the orbital period of a planet is directly proportional to the cube of the semi-major axis of its orbit.

– From conservation of mechanical energy it comes that all planet orbits are static and planets' periods around the sun are constant.

In the Quantum theory of gravitation (QTG), worked out by the author [2, 3] there's used a concept about flux of gravitons, filling the Universe and being energetic basis of gravitation. Despite incredibly weak character of graviton interaction with a matter, some part of them is still absorbed by bodies, whereby the gravitation interaction appears. As a result of this absorption, mass of bodies is increased. It is not a great difficulty to estimate relative increase in mass caused by the absorption of gravitons in terms of QTG.

In the work [2] there has been introduced a concept – effective flux density of gravitons, that is density of that part of the flux of gravitons that is absorbed by the matter. It was also found that the effective density of graviton flux depends on the matter density (ρ) in which their absorption takes place and has the following form:

$$\rho_g^{\text{eff}} = 2,5 \cdot 10^{-15} \cdot \rho.$$

Taking this into consideration it is clear that in the body with volume V mass ($\rho_g^{\text{eff}} \cdot V$) will be

absorbed, and consequently the relative increase of mass will be:

$$\frac{\Delta M}{M} = \frac{\rho_g^{\text{eff}}}{\rho} = 2,5 \cdot 10^{-15}.$$

The increase of mass happens during time order $V^{1/3}/C$, where S - is speed of gravitons presumably coinciding with the speed of light.

Slowdown of mass M , moving with speed V with graviton flux can be quantitatively de-

scribed by introducing negative acceleration, value of which is usually found by dividing force by the mass $W = F_{\text{mop}}/M$.

Using the concept of effective density of graviton flux we have that velocity pressure [4] has the following value:

$$p = \rho_g^{\text{eff}} \cdot \frac{v^2}{2},$$

where $v = wR_0$ (linear velocity of a stellar body, caused by its orbital motion).

Therafter, full deceleration force will be:

$$F_{\text{mop}} = \rho_g^{\text{eff}} \cdot v^2 \cdot \frac{S}{2},$$

where $S = pR^2$ – cross-section area of a stellar body.

Taking into consideration that the work of decelerative force leads to a decrease of total en-

ergy of the body, we get the following expression for a value of orbit radius change (law of secular planet shift):

$$\frac{dr}{dt} = 2k(kt - a^{1/2}),$$

where
$$k = \frac{3}{8} \cdot \frac{\rho_g^{eff}}{\rho} \cdot \frac{(\gamma Mc)^{1/2}}{R},$$

$$\frac{\rho_g^{eff}}{\rho} = 2,5 \cdot 10^{-15},$$

R – is planet radius,

a – is a semi-major axis of the orbit of the planet at initial time.

As it is reported [5, 6] the results of radio metering of the interplanetary space vehicle «Viking», directed to Mars in 1975, showed the

Earth's shift towards the Sun about 30–40 meters a year, and Mars more than 100 meters. In a summary table 1 there introduced calculation results of shifts of some planets towards the Sun according to the formula of the law of secular planet shift towards center body (the Sun) and the results of radio metering of the interplanetary space vehicle «Viking», directed to Mars in 1975. It is clear, that there is agreement of these data with the theoretical estimate. This is a weighty evidence of reasonableness of the law of secular planet shift towards center body (the Sun).

Stellar body	$W, m/c \cdot 2 \cdot 10^{-13}$	ΔR_{theor}	ΔR_{observ}
Mercury	9,4	68,5 m	–
Earth	1,3	40,9 m	30-40 m
Mars	1,5	85 m	more 100 m

As it has been already marked earlier, the results of radio metering of the interplanetary space vehicle «Viking», directed to Mars in 1975, showed Earth's shift towards the Sun about 30-40 meters a year and Mars more than 100 meters. An attempt to explain the phenomenon by assuming the birth of additional material within the planet runs into considerable difficulties, as it does not seem possible to explain why and how an additional material is born within the planet in terms of existing scientific belief. The described discovery naturally explains the experimental results obtained during the expedition of Viking to Mars.

Consequence of reduction of planet's orbit is reduction of period of its circuit around the center body and acceleration of its apparent motion. In case of intersecting orbits, for instance with a comet or asteroid, it may lead to a situation when both cosmic bodies happen to be in the same moment of time in an intersecting point with time. The law of secular planet shift makes it possible to predict such kind of occurrences.

For the Earth, no less important consequence of the reduction of its orbit (secular ap-

proach to the sun) will be an inevitable increase of average temperatures on its surface (secular warming).

References

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