The near giant planet in the Solar system. (unpublished)

Igor N. Krivosheev - observations, theory, calculations.
Mechanical engineer. Private Observatory. Chervishevo,
Tyumen region, Russia. 56,94586N, 65,42879E .
Equipment : MEADE LX200R 16", DSLR Nikon D700.
igorpel72@gmail.com

The search for Planet Nine is doomed to failure. The main reason for the failure is the discrepancy the stability condition in the article of Brown and Batygin.[1]

However, the search for "The Near Giant Planet of the Solar System" of my group was a success In details: [2]

My article is supported by experimental data.

There are also not published provisions:

1. The inclination of the axes of the daily rotation of the Earth and Mars. They should be no more than 2.5-3 degrees (for the known structure of the Solar system).

2. The discrepancy between the movement of Uranus. Correction of the mass of Uranus gives only the appearance of eliminating this discrepancy. The discrepancy of motion remains in force. Proof of this statement: Uranus remains lying on its side.

3. The scheme in the article, which gives an idea of the absence of an error in positional measurements of the motion of the asteroid, is too exaggerated. But this gives the most complete picture of the situation.

4. Near parabolic comets. Taking into account the obtained model of the solar system, the trajectory of motion and orbit will have large perturbations and large precession values. The trajectory of the movement has the form of an epicycloid or a kind of flower petals (and have the shape of a sinusoid with respect to an ellipse). In this case, comets will never cross the boundary of the heliosphere. Something like this will be with the orbits of TNO (KBOs). In my article, the calculated values are indicated. Experimentally obtained at: [3]

5. Precessional phenomena tend to increase in values closer to aphelion. The article gives precessions obtained at the time of astro photo sessions in fact (session on March, 2017) . The calculated values should be somewhat larger for the formation of Kirkwood Gaps. The calculated node precession should be about 33.3 arc sec per day. An anomalous precession of perihelion should be about 6.1 arc sec per day. In other words, for the formation of Kirkwood Gaps, a total precession of 36 +/- 1.5 degrees is required for one anomalistic period of 8.7 years. In this case, the Giant Planet should have: 4 anomalistic periods of approximately 8.7 years (for Kirkwood Gaps 2.5AU-2.06AU-1.9AU-2.06AU-2.5AU, a=4.2 AU , e=0.54 , i=20.94°) and 1 anomalistic period of 43.5 years (Kirkwood Gaps near 3.0 AU, 2.82AU, 3.28 AU).

More accurately:

- a = 4.2AU, e = 0.54, Period 8.57 years, anomalistic period 3177.5 ± 3 days. In the cycle of 4 period.

-a = 11.8AU, e = 0.868, Period 40.53 years, anomalistic period of 15887.3 ± 14 days. In the cycle of 1 period.

Note: To synchronize the movement of objects in the solar system, the is possible next variant:

- a = 4.2 AU, e = 0.54, a period of 8.57 years, anomalistic period of 3177.5 ± 3 days. In the cycle of 2 period. (Kirkwood gaps 2.06AU-1.9AU-2.06AU)

-a = 11.8 AU, e = 0.868, period 40.53 years, anomalous period of 15887.3 ± 14 days. In the cycle 1 period.

In any case, this phenomenon requires long-term observations.

As a result, we have the synchronization of the orbital motion of the Near Giant Planet with the orbital periods of Mars, Jupiter, Saturn, Uranus and Neptune.

Then the angles of inclination of the daily axes rotate of the giant planets will have existing values. Otherwise, the angles of inclination of the daily axes rotate of the giant planets stabilize at a level of 2-2.5 degrees.

Determine whether we have an eclipse of a star or a star variable is not difficult - look in the catalogs, their fifteen on the Internet. To search, the transit method is used.

Following the characteristics set by Brown and Batygin(Planet Nine : semi major axis 700 AU, eccentricity 0.6, mass equal 10 Earth masses)the perturbing effect from the Planet Nine is 1.47 e-13 m / sec ^ 2, at the level of the Yarkovsky effect. For comparison, the perturbing effect from the star system Alpha Centauri 1.58 e-13 m / sec ^ 2.

I express a serious doubt that with such an perturbing acceleration it is possible to lead an asteroid Pallas to angle of inclination of the orbit by 35 degrees and put on the side Uranus.

Brightness magnitude + 22.0 m, from where and why such brightness magnitude of object. If it is a gas giant (1.11 density according to Brown and Batygin [1]) and albedo as for all giant planets (an average of 0.333), then the brightness magnitude of this object (Planet Nine) should be at +16m, + 16.5m. So this object would have been seen about 20 years ago. It's a minimum.

Real TNO's (KBO's) trajectories and their orbital parameters can be confirmed only on the basis of long-term observations using radar scanning. The following factors influence the trajectory of TNO's(KBO's) movement in the heliosphere's border:

-moment of inertia (directed from the Sun);

- perturbing effect from the giant planets and the displaced part of the Sun (directed toward the Sun);

- Insignificant pressure of interstellar matter (directed towards the Sun).

Should abandon the stereotypes of thinking. Required to doing transition from statistics to dynamics. Let me remind you:

1.Leverrier and Adams calculated Neptune based on the "Theory of perturbed motion", which lies entirely in the context of Newton's Theory of Universal Gravitation.

2. In mechanics, absolutely rigid bodies are used for calculations. And the Sun is not a rigid body.

3. Well, and most importantly, I mentioned "The stability condition of the rotating system." This condition is a consequence of the "Law of conservation of momentum" (again, the legendary work of Newton "Mathematical Principles of Natural Philosophy").

Let me remind the stability condition of the rotating system. **The rotating system is stable if the center of gravity, the center of mass and the center of rotation are at the same point.** The Solar System is a stable rotating system. In our situation, it added to the central body-the Sun. The stability condition is defined in the "base" or unmoving coordinate system. For a system of rotating bodies, a common point is defined, with respect to which all bodies rotate without exception. In the case of the Solar System, a point is determined, with respect to which all bodies, including the Sun. The common center of mass, center of gravity, the center of rotation is always inside the Sun for the Solar System.

Given the asymmetry of the heliosphere and additional calculations, can be said about the displacement of the center of mass of the Sun from its physical center on 0. 705 ± 0.005 R⊙. Said displacement has a movement, and has to influence on the stability of the solar system. The approximate calculated angular velocity is equal to 400.79 ±0. 01 "/ day (refined calculated value). This movement is synchronized with the movement of all factors of the stability condition.

The maximum error in the calculation of coordinates and the astro photo sessions was 4.8 arc minutes. Taking into account the correction of calculations, there are discrepancies between the calculated coordinates and actually observed, equal : 0 arc min, 2.1 arc min, 1.9 arc min , 2.4 arc min ,1.8 arc min.

This situation indicates a possible hitting in the frame next objects:

- Near Giant Planet;

- Satellite of the Near Giant Planet;

- Lagrange points L4, L5 of the system The Near Giant Planet - Satellite, in which there is a stable state of dust.

In fact, I've doing the "blind search"(transit method) this object (the Near Giant Planet).

On May 2018, the magnitude of brightness is: not brighter than +23.8 m.

Cloudy weather did not allow my group to conduct a autumn-winter session in 2017. It is necessary to expand the search area, given that this phenomenon has been little studied.

References

[1] http://web.gps.caltech.edu/~kbatygin/Publications_files/ms_planet9.pdf

[2] http://www.kosmopoisk72.ru/download/Near_Giant_Planet_en.pdf

[3] https://arxiv.org/abs/1701.02534