S-SHAPED ROTATION PLANE OF PLANETS AS PLANETARY SYSTEMS PART – GENERAL LAW OF NATURE

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Abstract

Circa 1100 B.C. the Chinese scientist Chu Kong, watching the shadow of a gnomon during winter and summer solstices, measured the obliquity of ecliptic and defined its value: 23° 54' 02" [1], [2], [3].

Since then until present is supposed to believe, that the planets of the Solar system rotate in the same plane – the ecliptic, with not large deviations of a few degrees of separate planets from the rotation plane of the Earth.

Rotation planes of all the planets during millennia and centuries passed was characterized with the only parameter. i.e. the angle of incline. Any other parameters characterizing the rotation planes of the planets, have never been done and they do not exist at present.

The given research of the coordinates of the planets' rotation plane showed, that any objects forming a planetary type system move along a wavy trajectory.

It is shown, that the "flatness" of rotation of the planets is S-shaped.

Introduction

On the 4th of February, 2019 the "Nature Astronomy" magazine published an article by the scientists of the Chinese Academy of Sciences and the Macquarie University (Australia) devoted to research of the parameters of the Milky Way based on observing of the cepheids.[4]

The results of the research enabled the scientists to conclude that the plane of the Milky Way Galaxy is mot flat (in the literary understanding), but it has a prolate S-shape.

On the 2nd of August, 2019 the "Science" magazine published an article of the Polish astronomers "A 3D Card of the Milky Way Based on Observation of the Classic Parameters of the Cepheids" where it was also said that the Milky Way Galaxy is not flat (in the literary understanding), but it is curved in a shape of a prolate letter S. [5]

The Chinese and Australian scientists advanced a hypothesis that the distortion of the plane happens under the influence of the spin moment of the rotation of the massive internal disc of the stars of the Milky Way.

The Polish scientists believe that the distortion is caused by the collision of the Milky Way Galaxy with the other galaxies.

As research done, the S-shape of the rotation plane of the objects composing the planetary type systems is a general law of the nature.

A confirmation that the plane of rotation of planets is S-shaped had been in sight of the astronomers of the world since 1475, when Regiomontanus, aka Johannes Müller) published in Nurenberg his famous script "The Ephemeris", and when in 1672 Giovanni Domenico Cassini

and Jean Richer defined the distance between the Earth and the Sun. Nonetheless, no one had noticed it for the centuries passed.

On the basis of the published and indisputable data a calculation of the parameters of the rotation plane of the Earth and Mars was fulfilled, proving, that the Solar system planets' rotation plane is wavy. The plane of rotation of the planets is curved and has a shape of a prolate S.

Calculation of parameters of rotation of the Earth, construction of a graph

Figure 1 shows the plane of the rotation of the Earth around the Sun, where δ is the inclination angle for each point of time, R is the distance between the Sun and the Earth for each point of time. There is also a parameter "B", which is the distance from the plane of the celestial equator to the plane of the rotation of the Earth, or the coordinate of the rotation plane of the planet for each point of time.
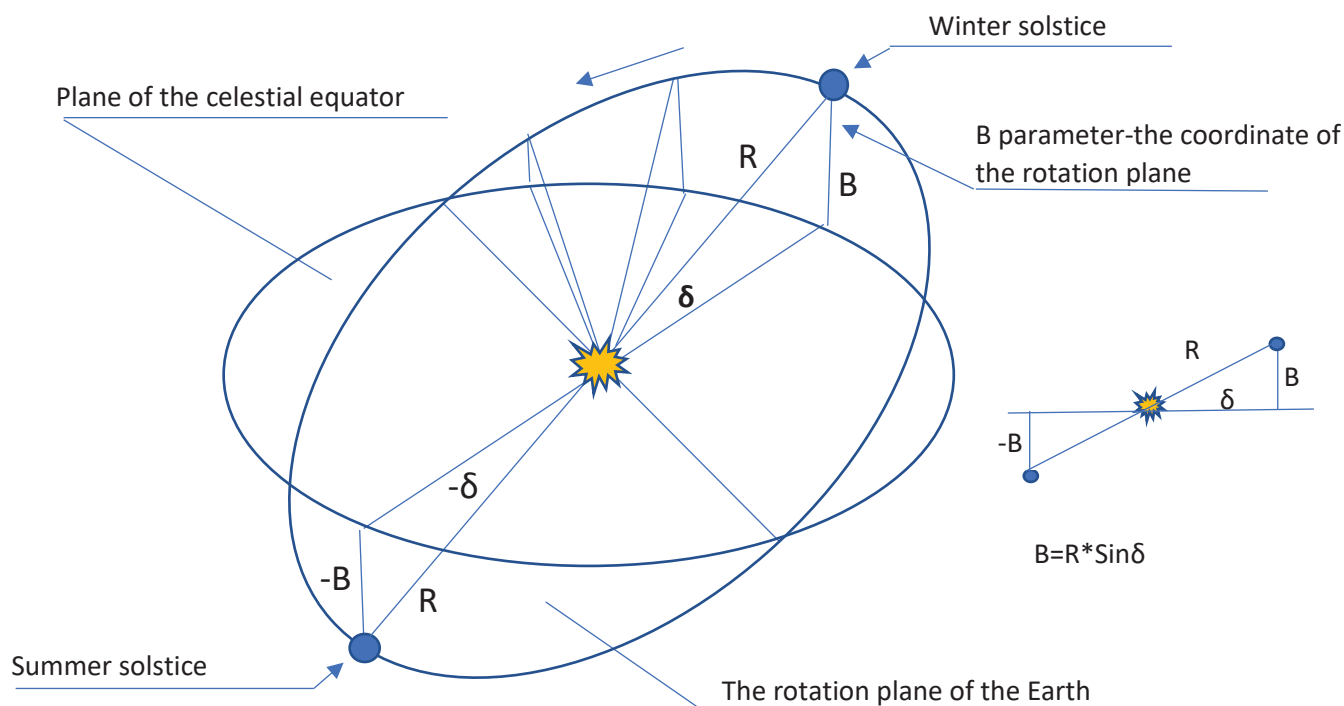

Figure 1

Parameter "B", which is the distance from the plane of the celestial equator to the plane of the rotation of the Earth, or the coordinate of the rotation plane of the planet for each point of time.

This is the unnoticed parameter, which no one researched. Knowing the value of the inclination angle and the distance between the Earth and the Sun, it is easy to define the value of parameter "B" – the coordinate of the rotation plane of the Earth for each point of time. $B = R * \sin δ$.

Find below a fragment of an Excel table showing the calculation chain of the parameters of the rotation plane of the planets.

Excel table fragment

	Declination δ of the sun		Date		"B" parameter B=R*Sinδ*(-1)	
	-23,08		01.01.2020		57626354,12	
	-23		02.01.2020		57437475,89	
	-22,92		03.01.2020		57248485,68	
	-22,82		04.01.2020		57012091,01	
	-22,72		05.01.2020		56775522,67	
	-22,61		06.01.2020		56515097,77	
	-22,5		07.01.2020		56254464,56	

Table. To calculate parameter B of the rotation plane of the Earth, the distance between the Earth and the Sun is supposed be equal to 147 mln km.

The graph №1 of incline deviations and the graph №2 of changes of the coordinates of the Earth's rotation (i.e. the graph of the surface of the rotation of the Earth) are based on the results of the calculations.
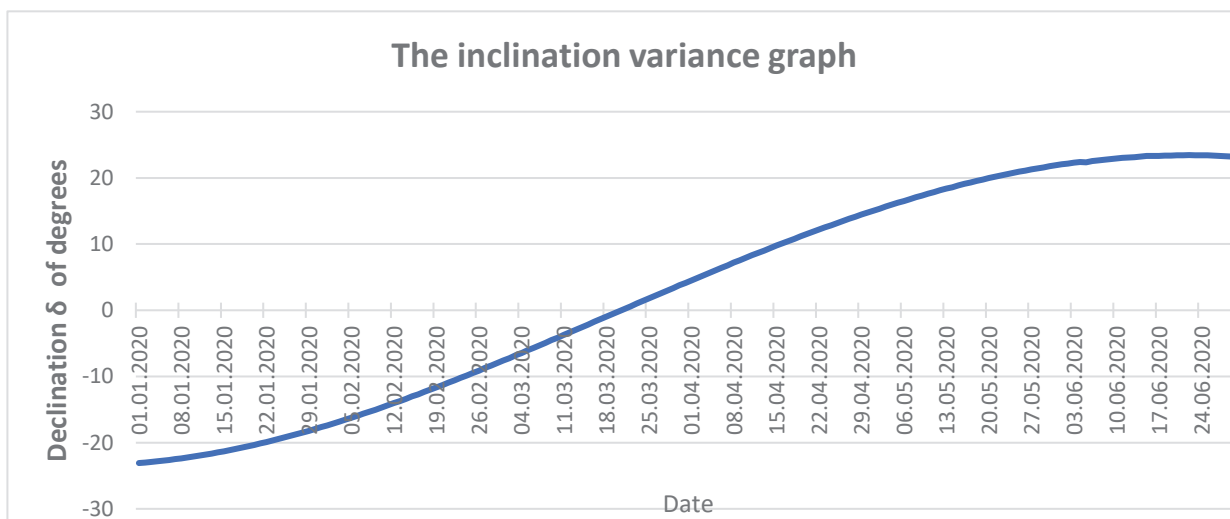
Graph 1. The angle δ of declination varies according to the sinusoidal law

As is seen from graph 1, the inclination angle δ varies as per the sine law.

"B" coordinates of the rotation plane of the Earth also vary as per the sine law.
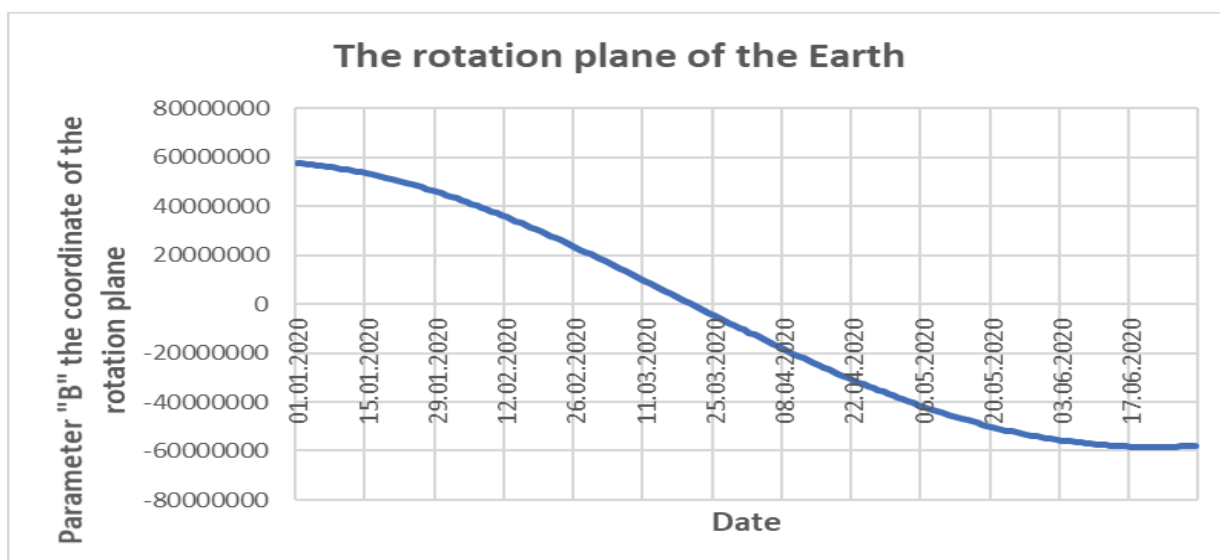
Graph 2. Wavelike (S-shaped) plane of the Earth's rotation around the Sun

The reasons why and under influence of what forces the angle of incline varies, and, respectively, parameter "B", are not explained in the present article.

These matters will be covered in a separate article.

The present calculation is an independent part of the common theory.

The values of the incline angles δ and of the average distance between the Sun and the Earth are borrowed from the open sources.

The Excel table with the complete calculations can be loaded at the link.
https://yadi.sk/i/xDQNgvjH2dSGOA

Graph 3 represents the rotation plane of Mars; the calculation is unavailable.
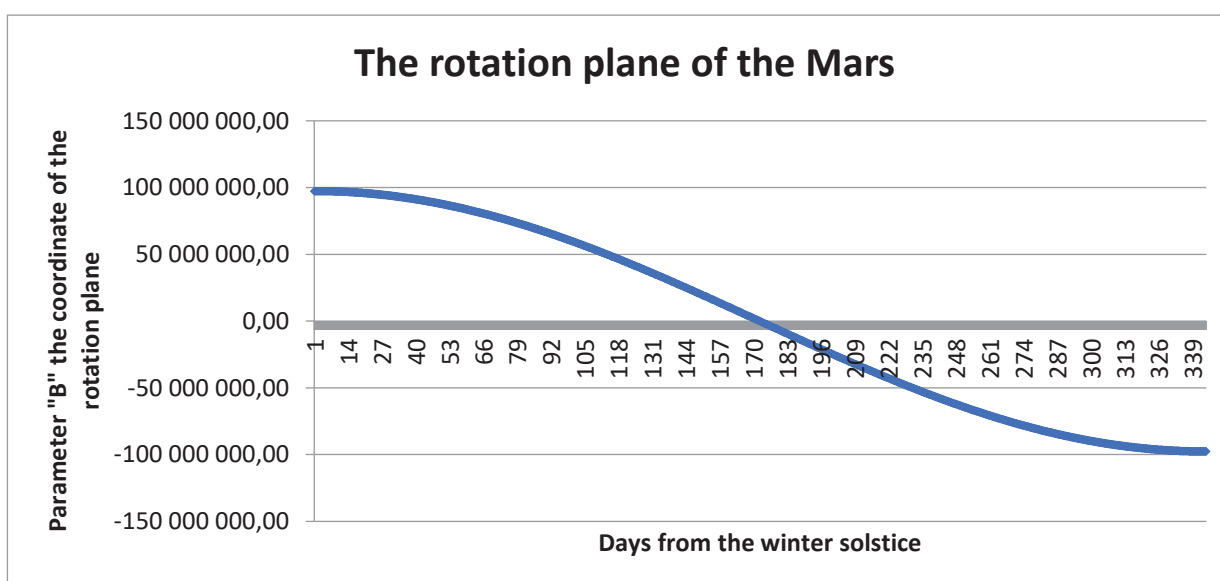
Graph 3. Wavelike (S-shaped) plane of the Mars rotation around the Sun

Conclusion

The calculation fulfilled is a direct proof that the rotation plane of planets as part of planetary type systems is S-shaped, and this is a general law of the nature.

P.S. Size on the X axis not in scale.

All the parameters presented need to be ascertained.

List of references

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3. Wolf R. Handbuch der Astronomie, ihrer Geschichte und Literatur. Bd. I, II, Zürich, 1890 — 1892.

4. Chen, X, and others An intuitive 3D map of the Galactic warp's precession traced by classical Cepheids. *Nature Astronomy*. February 2019 г.

5. Dorota, M. and others   *Science:* Vol. 365, Issue 6452, pp. 478-482 DOI: .1126/science. aau3181 *"A 3D Card of the Milky Way Based on Observation of the Classic Parameters of the Cepheids"*