The Reason Why Planets And Moons Move In The Same Direction

Wang Taihai
Wenzhou Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China
Address: Xingao Road, Aojiang town, Pingyang, Zhejiang, China 325401
Telephones: +86 577 63193511, 63628702
Mobile: 13587886133
Fax: +86 577 63628702, 63638831
Emails: ccibaj@wz.zj.cn, wth@wz.ziq.gov.cn

Abstract: The main features of our solar system are that all the planets revolve around the sun in the same direction, as do most of their moons, and all the planets lie more or less in the same plane of the sun's own rotation. For centuries scientists have tried to find a theory for the solar system origin that can explain these features. Any theory that could not explain these features was usually rejected. But through mechanical analysis, the author of this article found that these main features are not the result of our solar system's origin as most theories hypothesized but that of mechanics of their movement. The author found that if a planet does not revolve in the plane of the sun's own rotation and circle the sun counterclockwise, it will not be stable and its course will be deflected. The moving pattern of our solar system determines these main features. Only in this moving pattern can the solar system survive.
[Report and Opinion. 2009;1(1):1-5]. (ISSN: 1553-9873).

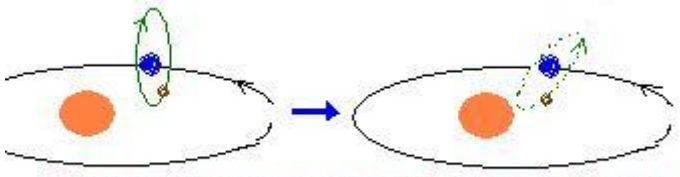
Key Words: the Sun, the Origin of the Solar System, the Coriolis Force

Up to now, theories for the origin of our solar system have tried to explain its main features that all the planets revolve around the sun in the same direction, as do most of their moons, and all the planets lie more or less in the same plane of the sun's equator. Most theories can explain these features well but can't adequately explain some other chemical or physical phenomena. In this article I will prove that these features are not the result of our solar system's origin but that of mechanics of their movement .

Through mechanical analysis, we will find that from whatever direction an alien celestial body intrudes upon our solar system, if it is captured by the sun or by a planet it will keep changing its orbit till it circles in the same direction and in the same plane as the already existing planets and moons do.

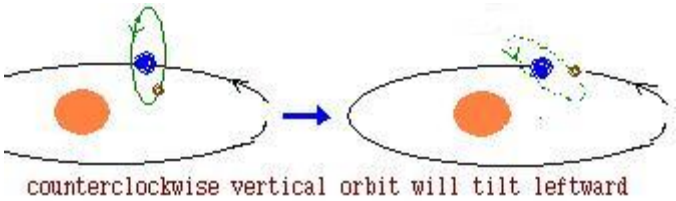
To simplify the discussion, let's take a look what will happen if the moon is not circling around the earth the way it does now. (Let's call the direction in which all the planets circle around the sun counterclockwise, with the opposite moving direction clockwise.)

Suppose the moon is orbiting the earth clockwise to start with, but because the earth/moon system is moving around the sun counterclockwise, the vertically moving moon will be deflected by the Coriolis force([1]) and its orbit around the earth will tilt rightward, eventually becoming a counterclockwise revolution. The Coriolis force will continue deflecting the moon until its orbit overlaps the plane of the sun's equator. Ultimately the moon will circle the earth counterclockwise in the plane of the earth's orbit as it almost does now.



clockwise vertical orbit will tilt rightward

Now, let's suppose the moon's orbit around the earth is vertical to the plane of the earth's orbit and the direction is counterclockwise.



counterclockwise vertical orbit will tilt leftward

As illustrated above, the moon will be deflected by the Coriolis force and its orbit around the earth will tilt leftward to become counterclockwise around the earth eventually, too. The Coriolis force will continue deflecting the moon until its orbit overlaps the plane of the sun's equator completely. Ultimately the moon will also circle the earth counterclockwise in the plane of the earth's orbit.

Then, what if the moon was captured but clockwise by the earth right in the plane of the sun's equator to start with? By mechanical analysis, we can see that in this situation either the moon will collide with the earth or its orbit be distorted to become counterclockwise.

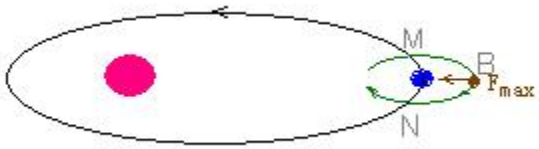
We know that when the moon moves around the earth, it is also moving around the sun. Between the moon and the earth, their masses, gravitational force, distance and the moon's relative orbital velocity to the earth must meet the Newton's law of universal gravitation and the circular motion principles. In addition, between the moon and the sun, their masses and motion parameters must also meet the Newton's law of universal gravitation and the circular motion principles. The relative orbit velocity of the moon can be calculated with the following formula.

$$V = \sqrt{\frac{F \cdot R}{m}}$$

Where:
V -the relative orbital velocity of the moon
F -the resultant force that dominates the moon's motion
R -the distance between the moon and the sun or the earth
m -the mass of the moon.

To simplify the problem, let us take four representative points A,B,M and N in the moon's orbit for analysis. When the moon is at point M or N, its relative orbit velocity to the sun is the same as that of the earth. As the moon moves clockwise further to point A, its relative orbit tangential velocity to the sun increases to the highest, but the forces from the sun and the earth are in opposite directions so that the resultant force (F) on the moon is at a minimum. Now the moon is at a minimum distance to the sun (R), too. According the equation above, the moon should have a minimum relative orbital velocity to the sun (V). But the actual value is at maximum.

When we take point B for analysis, we will also find the inconsistence where the moon should have a highest relative velocity to the sun but the actual value is the lowest.



From the above analysis, we can see if a moon runs but clockwise around a planet, its orbit would not be stable. By further analysis we can see its orbit will be elongated to a narrow strip by and by and the collision possibility between the moon and its planet is very high or is inevitable.

However a moon comes to be captured by a planet, the moon can only move stably around the planet counterclockwise, the same as the way our moon is moving around the earth.

The above analysis accounts not only for the orbits of the moons around their planets but also accounts for the planets' orbit and the periodic comets around their suns. The principle is the same. The sun is moving around the Milky Way Galaxy center at a very high relative velocity. Any captured planet or periodic comet that doesn't move within the plane of the sun's equator will be deflected by the Coriolis force and be made to run counterclockwise around the sun within its equator plane. So the main features that the planets all revolve around the sun in the same direction, as most of their moons do, and the planets all lie more or less in the same plane of the sun's own rotation are not the result of the formation of the solar system, but is the result of the dynamics of our solar system.

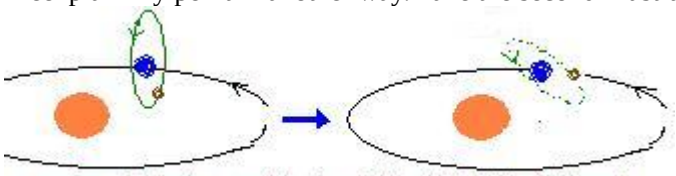
Date: 2005-7-18

Notes:

(1).Coriolis force is a sidewise force exerted on a body when it moves in a rotating reference frame. It is a fictitious force because it is a by-product of measuring coordinates with respect to a rotating coordinate system as opposed to an actual push or pull.

PS

1. Some are suspicious of the Coriolis Force effect, and argued with me on Coriolis Force fiercely. So I reexplain my point in another way. Take the second illustration for example.



Let's see what will happen if the moon circles the earth freely in a counterclockwise polar orbit.

When the moon is right over the earth's north pole, its velocity (V) relative to the sun is the same as that of the earth because they are at the same orbital distance to the sun. Now the moon circles in, its centripetal force (F) to the sun is reduced. Why, because part of it is balanced off by the earth on the opposite side. On the other hand, its distance to the sun (R) is shortened now. Now let's use the formula

$$V = \sqrt{\frac{F \cdot R}{m}}$$

The F and the R are both reduced, but its velocity is the same as the earth's. So once the moon moves in between the Sun and the Earth, the moon will have redundant velocity and will go faster than required by the F and R.

A track and field athlete knows this principle well. The lead runner always occupies the innermost tack while turning so he can keep himself ahead of the others.

Now the moon is in the inner track and with the same relative velocity to the sun, it will surpass the earth. Thus moon's orbit changes.

When the moon is ahead of the earth, universal gravitation force between the moon and the earth, and that of between the moon and the sun will apply a resultant force that will slow the moon down; Only when the speed of the moon is reduced by this among can the V, F and R in the above formula be satisfied.

2. I make a summary of what my article already provided, what my article is expected to provide, and what I can further provide. I just don't want to disappoint all the visitors here.

-It provides a new idea(the Reason Why planets and Moons Move in the Same Direction) on an old topic.

-It provides a laconic deduction.

-It provides a qualitative analysis.

-It is expected to provide detailed deduction on the origin of the solar system, including how the sun, the planets and their moons formed, what were they before they became spheres...

-It is expected to present the reasoning mathematically.

quantitative analysis is expected.

-My specialty is not math, physics, or cosmology. And I am not in research. So it's not easy for me to present quantitative analysis if I get no help from competent scholars. Aware of my weakness, I deliberately chose this title for my article. I think my article can be considered as a complete thesis for the title I use(the Reason Why planets and Moons Move in the Same Direction) .

-If you ask me how the birth of suns, their planets and moons come about, it's out of the topic that I want to discuss. As Darwin told us the reason why polar bears are white, but should you censure him for not answering the question why there are white polar bears on earth? Those are two different topics.

-In my reasoning, I must simplify all the complicated systems so that I can reason it with my brain, or I will have to recourse to the advanced theories or complicated formulas which are beyond my competence.

-So, what I have provided and that I would provide are all basically qualitative analysis, just as Copernicus did when he discovered our solar system is solar-centric, but gave no equation to show how that is achieved.

I do hope my work can be further carried on by competent scholars in quantitative ways.

The Contact information of the Author:

Mr. Wang Taihai
Wenzhou Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China
Address: Xingao Road, Aojiang town, Pingyang, Zhejiang, China 325401
Tel: +86 577 63193511, 63628702
Mobile: 13587886133
Fax: +86 577 63628702, 63638831
Email: ccibaj@wz.zj.cn wth@wz.ziq.gov.cn

Note: This article was primarily published in [Academia Arena, 2009;1(1):43-46]. ISSN 1553-992X.