The new computer model clearly explains the strange trajectory of the Moon

Below is a simulation of a dramatic history of the Earth-Moon duo.

In the " *giant impact* " model of the Moon's formation below, the " *cheap"* Moon *begins its orbit in the equatorial plane of the Earth. With the standard version of this model (above table), the current tilt of the Earth is 23.5 degrees. The moon will move slowly outward along the path that changes from the equatorial plane to the "zodiacal" plane* , defined by the orbit of the Earth orbiting the Sun. However, if the **Earth** has a much greater inclination after the impact (~ 75 degrees, below) then the change between the equatorial plane and the zodiacal plane occurs suddenly, leading to large fluctuations in terms of Zodiac flat. The second image matches the 5 degrees of the Moon's current tilting **trajectory** from the zodiacal plane.

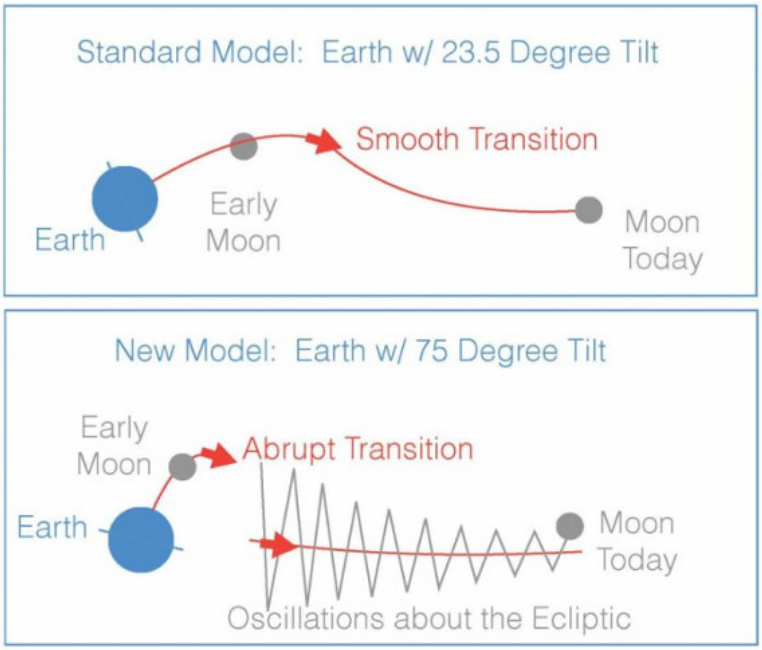

Photo source: Douglas Hamilton.
The Moon - the closest " *neighbor* " to Earth, is one of the most strange planetary bodies in the solar system. The Moon's orbit is unusually far away from Earth, with an extremely large orbital tilt. Space scientists have discussed a scenario to explain this and other features related to the Earth-Moon system.

A new study, based on a numerical model of the explosion and evolution of the Earth-Moon system, comes closer to explain all " *loose* " hypotheses than those Any explanation before. The study, published on October 31, 2016, in Nature, suggests that the effect on the Moon also causes changes that adversely affect the Earth's

rotation and its tilt.

Research shows that the impact makes the Earth spin much faster, with a steeper inclination than today. Several billion years since the impact, the complex interaction between the Earth, the Moon and the Sun has facilitated these changes, resulting in the Earth-Moon system we see today. In this scenario, the remaining heterologous objects in the Moon's orbit are remnants of the past explosion of the Earth-Moon system.

Earth-Moon system.Photo source: NASA
" *Evidence shows a huge impact releasing a large number of materials that make up the Moon. This material will form a first circle of debris, after which this circle will synthesize to form. Moon, but this scenario will not work if the Earth's axis is tilted at a 23.5 degree angle as we see it today* "- Douglas Hamilton, professor of astronomy at the University of Maryland and also is the co-author of Nature newspaper.

The physical collision gathers this debris circle together - so the Moon's orbit is immediately formed afterwards - in the equatorial plane of the Earth. When the tidal interactions between the Earth and the Moon move the Moon further away from the Earth, the Moon should move from the equatorial Earth plane to the "zodiacal" plane, corresponding to the orbit of the Earth. the earth revolves around the Sun.

But today, instead of lying in line with the **zodiacal** plane, the Moon's orbit is tilted by 5 degrees.
" *This great inclination is very strange. Until now, no proper explanation has been found, but we can understand it more if the Earth has a more impressive initial history than what we do. previously predicted,* "Hamilton said.

Hamilton, along with lead author Matija Cuk of SETI Institute and colleagues Simon Lock of Harvard University, Sarah Stewart of the University of California and Davis have tried many different perspectives. But the most successful scenario, including the effect of the Moon, has caused the Earth to spin at a very fast speed - twice as fast as the prediction rate in other models. This effect also causes the Earth to tilt more, between 60 and 80 degrees.

" *We suspect that the Earth must definitely spin especially fast after that impact. The high initial tilt of the Earth may make our planet not able to spin quickly more easily,* " Cuk said. .

The model also shows that the Moon was very close to Earth when it first formed, but then drifted away - almost 15 times the original distance. Therefore, the Sun began to have a stronger influence than the Moon's orbit.

According to the researchers, both factors - the large tilt, the rapid rotation of the Earth and the moon - migrate - outside - create the strange orbital formation of the current Moon. The newly formed Moon orbit can very well follow the Earth's equator, tilting at an angle of 60-80 degrees in accordance with the Earth's tilt.

An important finding in this new study is that if the Earth actually tilted more than 60 degrees after the Moon was formed, the Moon could not move gently from the equatorial plane of the earth to the zodiacal plane. OK. Instead, the transition happened abruptly and left the Moon with a large inclination compared to the zodiacal plane - much larger than what is observed today.

" *When the Moon moves outward, the slope of the Earth makes the transition more chaotic as the Sun becomes a bigger influence. Therefore, over billions of years, the tilt of the Face The moon slowly descends to five degrees as we see it today, so the 5-degree tilt is a much more relic-prized relic in the past,* 'Cuk said.

" *The model is not meant to answer all the remaining questions about the orbit of the Moon. The purpose of this model is to provide a framework for answering other questions in the future,* " Hamilton admitted . ".

" *There are many potential paths from the formation of the Moon to the Earth-Moon system we see today. And we have identified some of them, but there will certainly be possibilities. Another possibility occurs, "Hamilton said. "What we have now is just a model that can happen more and clarify previous efforts. We believe this is a significant improvement that helps us understand what really is. going on .* "

You finished reading the article "**The new computer model clearly explains the strange trajectory of the Moon**" edited by the **TipsMake** team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.

© 2019 TipsMake.com