

Formation of Luna, Earths Moon

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This paper is not a detailed report on the analysis of the structure of the Moon. This is an *outline* of one hypothesis of how Luna, aka the Moon, was formed.

To understand how the Moon came to be, we have to go back into time to see how the protostar, our Sun, was formed. The belief is that, a gas and particle cloud collapsed and coalesced into a protostar. And that, the planets of our solar system formed in much the same way from the remaining gas and particle field or disc.

Whilst this works for the star, one of the basic problems with this generalisation of planetary formation is the lack of reasons for why the gas and particle disc developed planets. What created the formation of protoplanets? How did particles attract without a strong force?

It is believed that static electricity was the binding element that drew particles together and held them in place. Thus creating an object that could then 'hold onto' other particle objects in such a way that a snow ball effect began. These bonded objects grew into protoplanets. Masses that heated as they grew and eventually became molten spheres with their own gravitational effects, that dragged smaller objects into their surface, as they cleared their orbits of other objects: the coalescence of matter.

However there is an alternative model to the beginning of our solar system that explains planetary formation in a more logical sense. That model is Solar Fission.

Solar Fission is the formation of protoplanets from ejected masses of an protostar. The Swiss astronomer Louis Jacot, postulated that planets were expelled, one at a time, from the Sun, specifically from an equatorial bulge caused by rotation.¹ In the same way that this model shows planets were sling-shot out of the Sun, it also can show (with some afterthought) how moons were drawn out of the ejected masses.

The rotation of our star, the Sun, is in three different sections. The equatorial section of the Sun rotates faster than the southern and northern sections. When the Sun was a protostar, it may have rotated at a much faster rate than it does now. Given that the equatorial section spins faster than the other two sections it is not unreasonable to consider a twisting action developing between the different sections of the Sun. Also, the layers of the Sun rotate at different speeds. Putting all of this together gives the idea that there was very great tensions throughout the body of the Sun and especially between the different rotating sections. It may be that the twisting could only go so far before there was a release of stored energy: like the unravelling of a twisted rubber band. This stored energy may have been powerful enough to eject massive amounts of star material out into space.² The material contained heavy elements (more on this in my next paper).

1 https://en.wikipedia.org/wiki/History_of_Solar_System_formation_and_evolution_hypotheses (Solar Fission)

2 More on this in my next paper: The formation of the Solar System.

Rocky planets that have moons

When a solar mass is slingshot out of a protostar, it moves in an arch that has the same direction of the stars rotation. This slingshot motion begins the orbit of the solar mass. On its journey from the corona of the star to its final orbiting distance, a protoplanet will 'grow' a tail and look like a comet. This tail of molten mass, is drawn out of the solar ejection by the stars gravity. Gravity is pulling/pushing the tail out of the side of the solar mass that faces the star. As the solar mass ejection moves further out from the star, the tail collects into a ball of molten matter connected to the main ejection by a molten umbilical cord. This action causes the main ball of molten mass to be dragged in an anti clockwise motion. Eventually the umbilical cord is so thin that it separates from the two balls of molten mass, and each end of the cord is drawn up and into the respective balls. This leaves a moon orbiting the larger mass in the same direction that the larger mass rotates. And, the larger mass is orbiting the star in the same direction that the star rotates.

If, as many would contend, that there was a collision between two rocky planets (Earth being one) that caused our Moon to form, then both planets would have shattered into hundreds of millions of separate pieces, creating asteroids. These new asteroids would not have coalesced into a new planet Earth or a moon. The evidence for that is found in the asteroid belt. The pieces of the two collision planets would have been cast great distances apart from each other, and therefore unable to coalesce. The two rocky planets would have met 'midships' as both planets gravity would be trying to pull/push the other into the core of the planet. A collision that only just scraped the Earth would not be possible. Gravity and the speed of the two planets would have made that scenario impossible. Using modelling software to gain a conclusion as to how the Moon was formed is fraught with problems. Programmable software can be manipulated to give any desired result, without regards to reality.

However, if the proto Earth and a wandering protoplanet (proto in this instance meaning molten) collided, that would surely also be a catastrophic event. It would suggest that at least one large object would reform. However that doesn't mean a moon would also form. The largest mass would consume all the smaller molten masses.

Rocky Planets without moons

There are in our solar system three rocky planets that do not have moons. Mars has two orbiting objects, however, they are not spherical and it is more likely that they are trapped asteroids. Venus however has no moons and no trapped objects. Mercury also has no moons or trapped objects. So what happened to these planets to make them different, in the regards to moons, than Earth.

Mercury being so close to the Sun, ~ 54 million kilometres, may not have had the time required to form a tail, or, it had a tail partial extraction but the tail was quickly drawn back into the planet. This can be explained by the following. As Mercury's solar mass ejection moved out from the Sun it spun at a very fast rate. Each time the partially extracted tail was facing the Sun it would be drawn out further and each time the tail was partially and fully on the opposite side, Mercury's gravity pulled the tail back in. Because the tail did not form a solid mass on the opposite end to Mercury, it was eventually reabsorbed and therefore no moon was made.

This argument is not as sound when it comes to Venus. Venus is ~100 kilometres out from the Sun's surface. That is roughly twice the distance of Mercury. There should have been enough time for an

umbilical cord to be formed containing a solid mass at each end. However as we know Venus has no moons. The following scenario may be the answer.

As Venus was travelling out from the Sun's surface, a tail did indeed develop and it had a structure on its end that became a connected protomoon. During the early phase of planetary development, while Venus was still connected to its forming moon, the moon object was flung into Venus causing the planet to alter its spin and slow down dramatically.³ The reason for this collision was most likely that the molten umbilical cord was much longer than the Earth/Moon cord and this caused an erratic orbit around Venus eventually leading to a collision. Because each mass at either end of the umbilical cord was molten, Venus absorbed its moon at the point of collision suffering the retrograde rotation that it has today and slowing its orbit around the Sun.

Why Mars has no moon

Mars is, at minimum distance, ~50 million kilometres from Earth. However this range increases because Mars and the Earth both have elliptical orbits. The expectation is that Mars had a moon in its protoplanet stage and that this moon was flung out of Mars orbit into the region now known as the asteroid belt, possibly colliding with other objects forming many of the asteroids that orbit the Sun between Mars and Jupiter. It has even been suggested that Ceres, the asteroid belt's largest object may actually be the moon of Mars.

Gas Giants and their moons

When the gas giants were ejected from the protostar, they were large enough to reign in any umbilical cords that may have formed. So how did they get their moons? Basically the four gas giants; Jupiter, Saturn, Uranus and Neptune, were like small protostars, in that they contained more gas than solids. These giants were molten and they also spun at very fast speeds that were a result of being flung out of the Sun in protostar phase. As they rotated rocky elements were flung to the outer layers where they collected and eventually were shot out of the proto gas giant to form moons.

Conclusions for Luna

Our Moon orbits with a five degree tilt, this can be explained by the forces exerted on the umbilical cord connects between the two objects. There is no reason why the Moon should fall directly in line with the Earth's equatorial plane. In fact it could have been on any angle, even vertical. The whole idea of the expulsion of matter from the sun and the development of a twin molten masses with a molten mass connection between them, can lead into any type of orbital system that you can think off. There are no guarantees of uniformity. The physical variances within the protostar and the forces exerted from expulsion and the connected gravities, have given us our Earth Moon system. It is also quite possible that our Moon has never rotated on its 4.5 billion years orbit around the Earth. It certainly now, does not.⁴

³ Think of the Bolas used by gauchos to stop an ostrich.

⁴ See Does the Moon Rotate on my website. gregoryround.com

