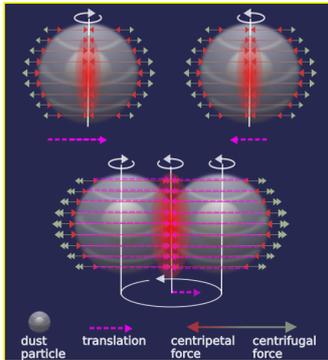


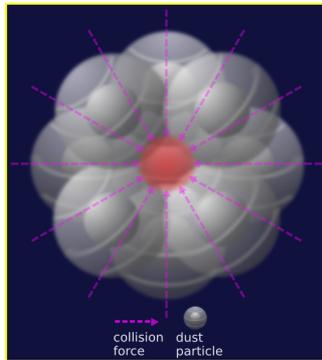
The Making of Star and Solar System

恆星與太陽系的形成

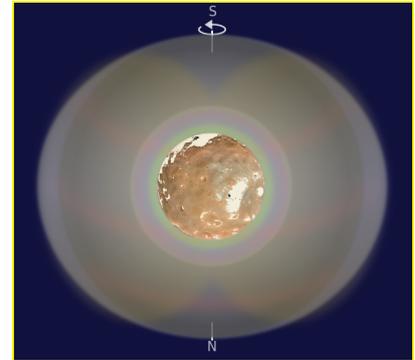
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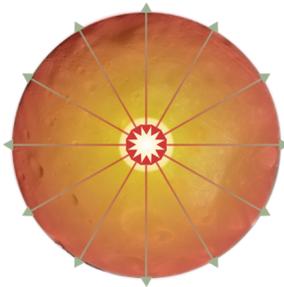
From Particle Collision



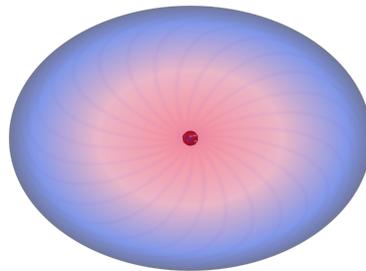
Rock Formation



Planet Formation



Nuclear Reactions of Massive Planet



Vortex Force Field of Expelled Particles



Spiral Cyclone of Solar System

ISBN 978-957-43-3428-5



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The Making of Star and Solar System

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Edition: 2017(01)-preview

2017/11

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Abstract

Nature and human create structures from ground up. From particles to atoms, dust particles to planets, and sand to skyscraper. There is no exception that a structure of larger mass can be made first before the substructures. By the laws of nature, larger body have to take more matter, energy, and time. The process of nature building cosmic bodies is vast and lengthy in human terms. Not only it involves microscopic activities that is too fast and too small, but also majority of them are too distance for us to see any details. Nonetheless, we are living on one of them.

Analogous to rolling a snow ball in space, objects in the path would be picked up. The larger it grows, the tighter it gets. Matter and energy are incorporated. Dust particles build sand, then rock, and so forth. The collisions coming from all directions would form a body of center aiming potential, gravity. Mass and energy are trapped in the body and form a rock, asteroid, planet, and on. Gravity compression of a super-sized planet can trigger nuclear reactions and become a star. *The question is, would Jupiter be our star if the Sun didn't dominate the Solar System first?*

Particles would be expelled outward by the high intensity of nuclear reactions. The centrifugal force of the star would create a disk shape of vortex force field filled with solar particles as well as uniform angular momentum. It then interact with the interstellar medium to form a bubble of heliosphere analogous to a space cyclone. Objects trapped by the storm would revolve around the star and form a solar system. In other words, star is the engine of this centrifugal vortex. It is the same phenomenon of dust devil, cyclone, or ocean vortex of particle, air, and water. Except they are funnel-shaped by gravity. However, we might not realize that we are living in the wake of constant nuclear explosions from a single nuclear engine, the Sun, in Solar System.

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1 Introduction

Nature and human create structures from ground up. From particles to atoms, dust particles to planets, and sand to skyscraper. There is no exception that a structure of larger mass can be made first before the substructures. By the laws of nature, larger body have to take more matter, energy, and time. The process of nature building cosmic bodies is vast and lengthy in human terms. Not only it involves microscopic activities that is too fast and too small, but also majority of them are too distance for us to see any details. Nonetheless, we are living on one of them.

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25 2 Formation of Planet and Gravity Brief

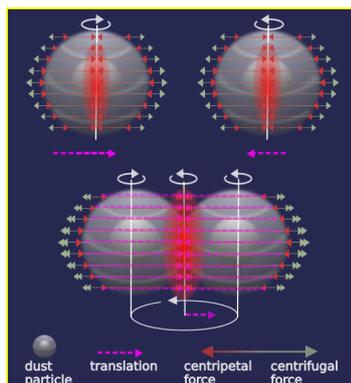


Figure 1: From Particle Collision

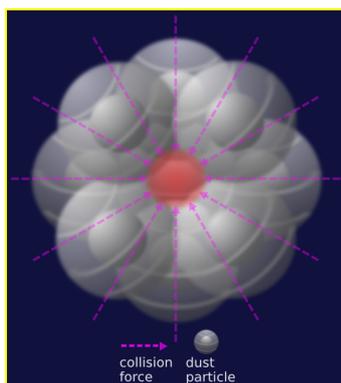


Figure 2: To Rock

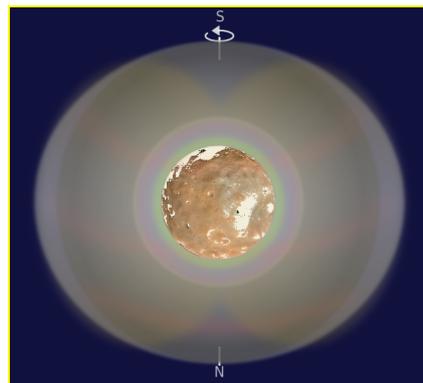


Figure 3: To Planet Formation

Gravity is a force of all elements moving toward same target in uniform acceleration regardless of their differences in composition, shape, size, and distance. Only one momentum can build such one way concentrative force, head-on congregation from gentle pairing to high speed collision. It can be started by electromagnetic attraction-repelling or disturbance in the environment. A terrestrial planet, for example, could be the coalition of dust particles initiated by static electricity. It can also be triggered by reacting to the external disturbance. The coalition builds the body and the force of keeping it together, gravity.

Analogous to rolling a snow ball in space, objects in the path would be picked up. The larger the snow ball grows, the tighter it gets. Matter and the force of union would be incorporated. Dust particles build sand, then rock, and so forth, along with gravity. The momentum is trapped within the structure. All joined elements share this center aiming potential, gravity. Meanwhile, the gathering of mass and energy forms an activity center of building structures and emerging of a plant.

The planet would provide protection for all joined components. By keeping matter and energy in place, it would allow complex interactions to continuing. Physical and chemical processes are protected and governed by the planet. It could continue to grow and develop by interacting with it's environment.

Note: The detail of the study is under *The Making of Planet and Gravity* [2].

45 3 Formation of Star

Suppose a dominating planets emerged form the development. It continues taking in more mass than others. It's gravity would continue to grow with increase mass. It's large mass enables it to take on the impact of large objects. Size does matter in this case.

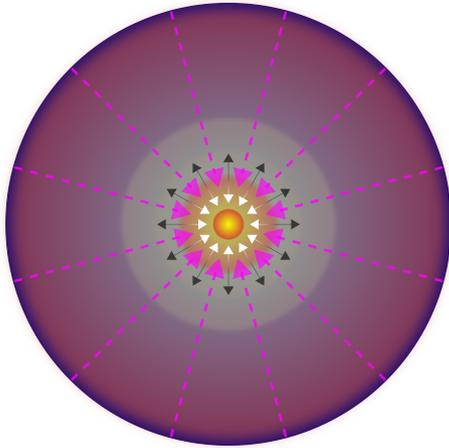


Figure 4: Colliding Compression

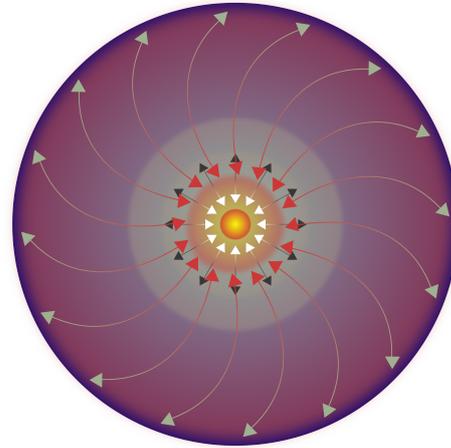


Figure 5: Rotating Compression

50 There is no restriction on planets to grow. A overgrown planet would have massive gravity compression. The released energy could cause the hyper reactions of the environment. Stable structures will not survive. Compression is essential in our technology. For instance, compressing diesel fuel, it powers the engines, and implosion triggers the nuclear reactions of weapons.

55 I believe a star can only come from massive planet instead of a spontaneous collapsing of gravity[9]. I don't believe there is gravitational collapse. It is more of a specious interpretation. Gravity is potential not structure. Structure can collapse but not the force. Force depends on the mass and the velocity. There is no force when there is no mass. If there is such thing as gravitational collapse, the mass of the body has to be in the first place. To
60 build a shining star. It has to collect massive matter to enable such intensive compression to initiate nuclear reactions. Few electrons would not be able to shine a light bulb. Water droplets have to be formed before we see a thunder cloud. All substructures have to be built before the final structure could take place. Personally, I believe it can not be counterintuitive or contradicting to real life observations. It is the real world we live in makes the universe,
65 isn't it? Isn't the Sun largest nuclear reactor, or fusion bomb, in Solar System?

Nevertheless, I believe a planet can grow and transform. The nuclear reactions of fission and fusion can be triggered by the massive gravity of a overgrown planet, hence a star.

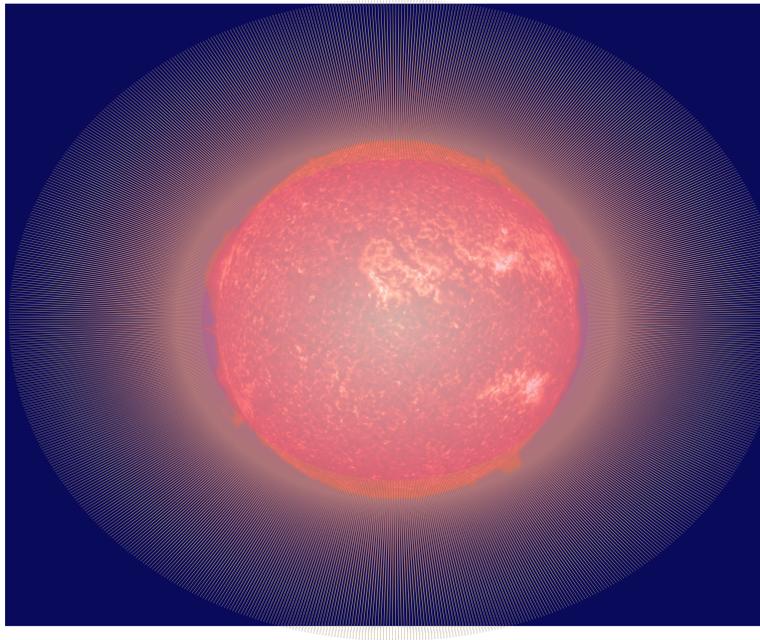


Figure 6: Birth of A Star

70 I believe it is also a major stage of the recycle process. Complex structures built on a stable and gentle environment of planet will be taken apart in the process of growing mass and energy. Release energy would cause the elements to escape. High activities of elements will generate high frequency of radiations. In the meantime, it's magnetic fields will intensify. Particles would be propelled outward by the nuclear reactions. The centrifugal force of the
75 star would create a disk shape of force field filled with solar particles. A heliosphere will be created.

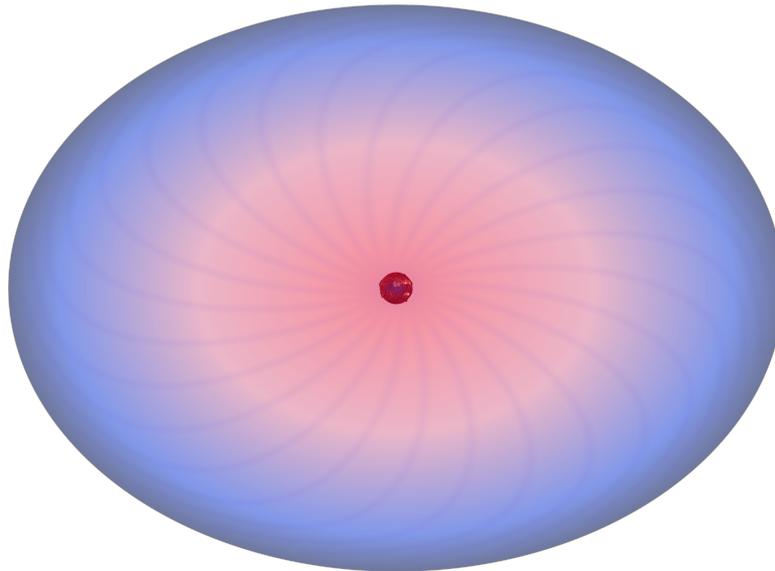
Suppose the region is filled with small objects, dust, air, and particles. The nuclear reactions of the overgrown planet could expel a vast explosion of particles and create a loudest sonic boom. Analogous to a nuclear explosion in free space in spherical form. Small
80 objects, dust particles, and air particles alike would be blown to the edge. Large objects could be displaced, however, remain relatively close. The main difference of this nuclear reaction is not a short burst of energy and particles of our nuclear bomb. Particles are flying out at velocity no less than man-made nuclear reactions. It is a length process of expelling particles and energy from a massive object, a star.

85 4 Vortex Force of A Star

There would be possible for more planets overgrown into stars in the region. However, the fundamental principle is the same. Coalition and collision will continue to happen. I

believe all possible developments from particle collision to merging of galaxies, along with recycle process continue to play out in the universe. To simplified it, we will focus on the
90 creation of single star system like ours.

In a single star system, such as Solar System, there is no other propulsion engine lager than the Sun. Charged particles leaving with the uniform momentum from the Sun. It is powered by the outward radiating force and the rotating of the star. A vortex force field filled with particles is created and driven by the star, Figure 7.



95

Figure 7: Vortex Force of A Star

All objects are weightlessly free floating in the space. All have their own intrinsic translating and angular momentums. In the beginning, planets and alike are moving their own intrinsic momentums. They continue to move in unregulated trajectories. Chances of collision remain high. They could collide, large or small. Some may collide with the star.
100 However, the dominating mass and stability of the gyro momentum of the star would overcome the impact and gain more mass and momentum.

The growth of the star also intensify it's solar storm. It could overpower the objects and trap them in the vortex. Objects trapped by the storm would revolve around the star and
105 form a solar system. It is the same phenomenon of hurricane or tornado in zero gravity space. The star has to be much more massive than the objects within it's reach. The Sun is estimated to have about 99.86% of the total mass of the Solar System. This solar wind will continue to act upon all objects and alter their intrinsic momentums. Eventually nearby objects would obey the orbiting trajectory set by the solar particles to form a disk shape
110 solar cyclone. On the other hand, the distance objects trapped by the solar storm would

likely continue to orbit in non uniformed orbits. I would not say a perfect disk shape solar system is impossible. It could be if the star can remain domination long enough. It is this vortex force driving the objects orbiting the same redirection.

Despite it's power to alter the trajectories of planets and alike, it would be very difficult to alter the rotation of an objects. In real life, we can hit a tale tennis ball to any direction. However, its' spin remains stable regardless of the direction it travels. It would take a very long time for it's spin to slow down in near frictionless free space.

Like the edge of a storm, it would interacts with the interstellar medium to form a bubble of heliosphere. The trajectory and the rotation of the star creates a spiral storm.

5 Solar System - A Space Cyclone

The speed of Solar Wind can reached up to one million miles per hour[13]. It is faster than the explosion of man-made explosives. The heliosphere will be formed into a spiral disk shape of force field. Objects within the reach will be caught like floating ping-pong balls revolve around the star, Figure 8.

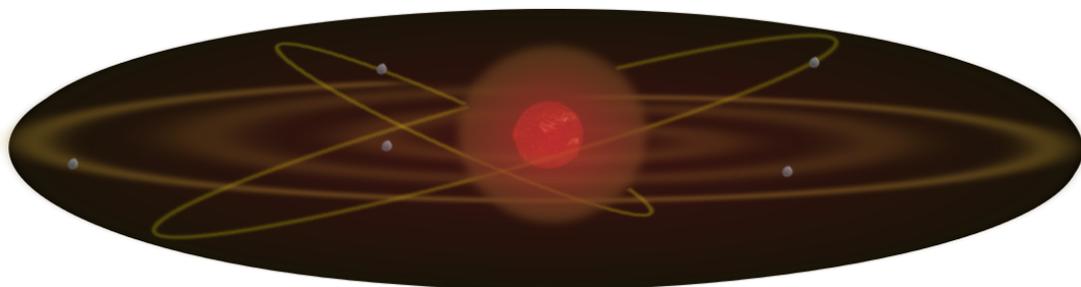


Figure 8: Solar Cyclone

Particles expelled by a star also carry the intrinsic angular momentum. It embraces all objects within it's heliosphere. Particles and momentum continue to pass onto the objects. Eventually, the intrinsic momentums of the objects will be overpowered by Sun's vortex force and form the disc.

Certainly, there were objects escaped. And, there are objects caught in the storm but continue to resist the vortex momentum with their inertias. These objects would orbit in a wide trajectories. The Sun is the only engine continues to produce vortex force in Solar System. However, I don't believe the Sun is done with them yet. Unless they were affected by other forces when they run wide away, they will be brought down to a flat vortex disc

if the Sun remains as is long enough. Here, Figure 9 and n 10 shows only the disc of eight planets.



Figure 9: Spiral Solar System

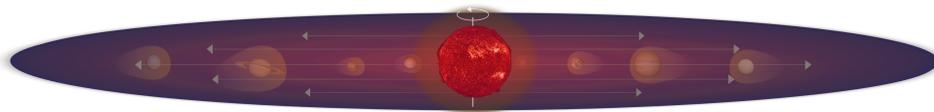


Figure 10: Spiral Solar System Disc

Table 1 and Figure 11 below is a comparison of orbital speed and distance of planets in Solar System.

Planet	Orbital Speed km/s	Distance From The Sun million km
Mercury	47.87	58
Venus	35.02	108
Earth	30.00	150
Mars	24.13	228
Jupiter	13.07	779
Saturn	9.69	1,433
Uranus	6.81	2,877
Neptune	5.43	4,503
Pluto	4.70	5,874

Table 1: Average Orbital Speed and Distance

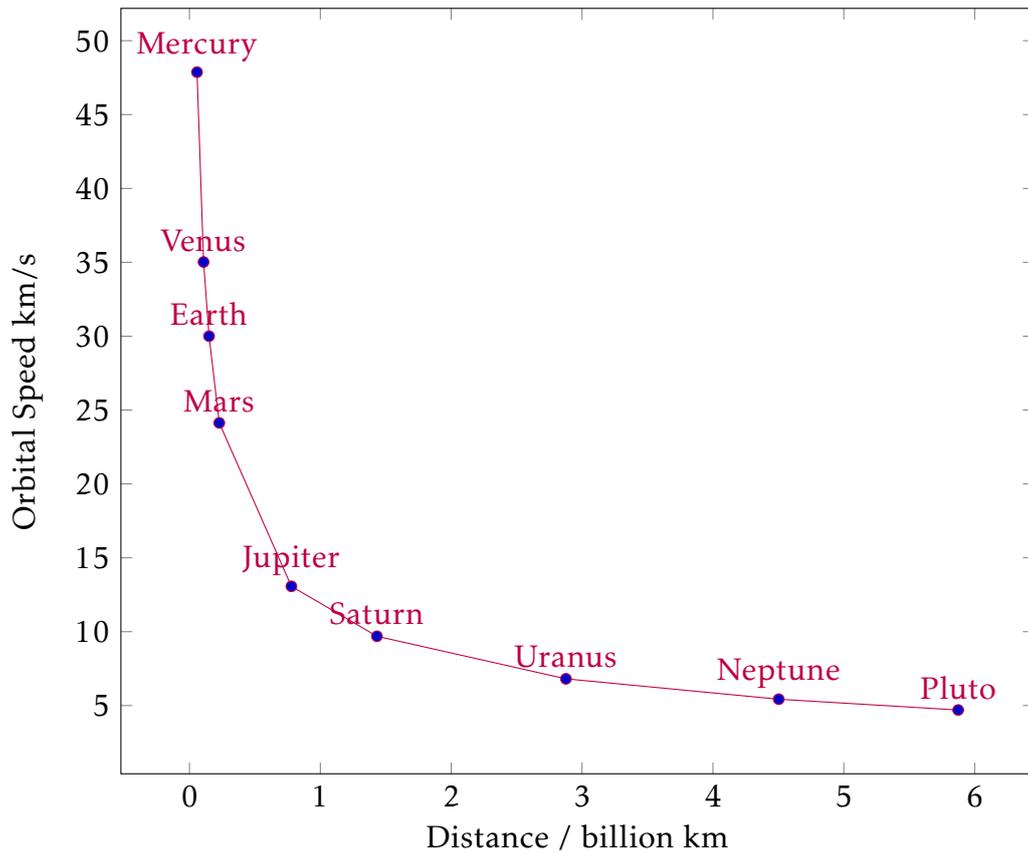


Figure 11: Average Orbital Speed and Distance

The Sun continues to expel and distribute particles and momentum (energy) to objects in it's reach. It limits the free moving and collisions by forcing all objects to revolve around in same direction. A stable environment of seasonal and daily cycle is created. It enables complex structures to evolve under this regulated environment. Hence, now, our existence!

6 Gyro Momentum Of The Universe

Gyro motion is everywhere in the universe. Water going down the kitchen sink taking food particles with it. Swirling dusts, whirlpools, tornadoes, cyclones, and many kind of vortexes. It is everywhere large or small, from atomic world to galaxies. Here is just few examples, Figure 12 - Figure 15:



Figure 12: A whirlpool in a small pond, Wikipedia[15]

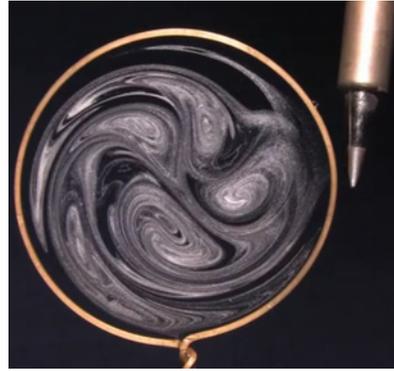


Figure 13: Heat Convection, Don Pettit, ISS[5]



Figure 14: Hurricane Isabel from ISS[11]

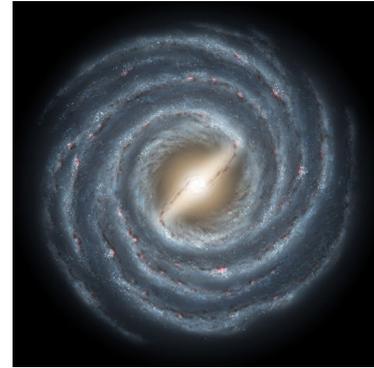


Figure 15: Milky Way, NASA[4]

I believe this gyro momentum is passed on from fundamental particles. All higher structure
160 inherit this fundamental force of the universe.

7 Summary

To me, Jupiter, Saturn, Uranus, or Neptune could have had a chance to build a star. However,
the Sun got it first. It took the most of the mass and energy in this region of Milky Way. Sun
is the engine of this centrifugal vortex of Solar System. It regulates the orbits and seasons of
165 objects within its reach. It limits the random collisions and stabilizes the environment for
complex structures to be built. The similar processes are happening in the space. Structures
are built and rebuilt, de-structure and recycle continue on.

We might not realize that we are living in the wake of constant nuclear explosions from
a single nuclear engine, the Sun, in Solar System. However, I believe the surface activities
170 of Jupiter is showing its potential. The complex vortices of Jupiter are not primarily driven
by gravity and centrifugal force of rotating and orbiting. It is most likely to be the atomic

activities to create such fine details. If Jupiter got a chance to gather more mass, it's gravity compression could trigger the nuclear reactions and become a star with it's subsystem. I would not say the Solar System is done as is, and Jupiter can never get a chance. However, 175 it is very unlikely we will have a chance to see how it is played out.

I don't believe building of star or solar system is more mysterious than the formation of planets. Neither it is by gravity pull, nor by mind-boggling interpretations, see Appendix in Section ???. Star is a larger cosmic body would have to take more matter, energy, and time. It is the same principle all constructions have to obey. A sudden appearance of a star in 180 the sky does not mean the star is build instantly or spontaneously. It's very unlikely we can see a planet in the process of growing into massive body. Only when the nuclear reactions are triggered. Then, the light turned on and we can detect. On the other hand, we see the coalition of structures day in and day out.

We can only compress particles in short burst of implosion to trigger the fission and 185 fusion reactions. The Sun, on the other scale, constantly compresses itself with powerful gravity. The nuclear reactions will continue as long as the compression did not reach another critical point of explosion, or the reactions slows down.

Nevertheless, expelled particles and energy will not disappear. Part of the mass and energy would pass onto all bodies in the Solar System; Some may escape into interstel- 190 lar space; Other parts would interact with interstellar medium and create bow wave and heliopause[10], the bubble wall, of the Solar System, Figure 16.

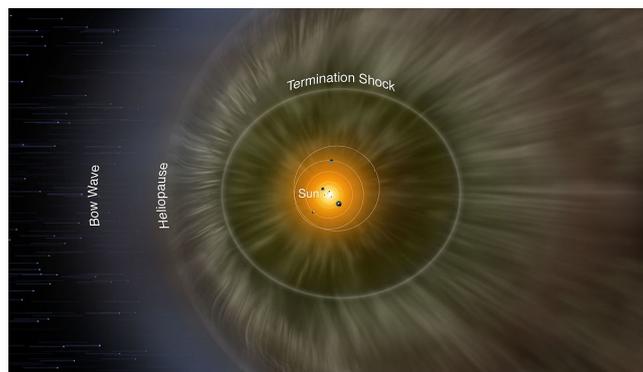


Figure 16: Hheliopause-NASA

Isn't the Solar System resemblance of a cyclone powered by the vortex force of the Sun in 195 weightless space? Except, it can only be disk shape, there is no gravity to funnel-shape it, isn't it?

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ISBN 978-957-43-3428-5



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