Mass Vortex Theory

Development of a Solar System
From Atoms to Star

Kuhn & Seaver Publishing
Burlington, Massachusetts USA

Mass Vortex Theory; Development of a Solar System from Atoms to Star

Published by Kuhn & Seaver Publishing
PO Box 138, Burlington, MA 01803

For more information related to topics in this book, go to:
http://MassVortex.science

ISBN: 978-0-9909550-2-3

Note: Opinions and statements included in this book are solely those of the author, and are not endorsed or verified as accurate by NASA, JPL, ESA, NSF, the National Optical Astronomy Observatory, the WIYN Observatory, the Association of Universities for Research in Astronomy, Inc., the US Geological Survey, any university or any other institution. The quote by Chris Peterson of Cloudbait Observatory does not imply any endorsement or approval of ideas in this book.

Table of Contents

Introduction

The sun is a source of warmth and light that is very different from the remote stars seen far away in the night sky. But at some point, each of us learned that the sun is a star. How is our sun related to all the very many stars we see? What can we know about origins of our "star" system? Historically, many people believed that all the stars were present from the beginning of the universe. However, we now know that stars are being born in our galaxy and the universe on a regular basis. Modern telescopes have helped scientists to observe baby stars at different stages of development.

How is our solar system or any star system born? How do planets, moons and stars become present?

This book presents a new and novel theory named *Mass Vortex Theory* to answer these questions. Mass Vortex Theory makes a compelling case for compatibility with observations and experiments to date, while also making predictions that 1) differ from existing theories and 2) can be experimentally verified. For example, as of this writing, the NASA probe JUNO is orbiting Jupiter. It has several instruments on board that will attempt to peer below the surface to what lies below. One of the predictions made by Mass Vortex Theory is that Jupiter has an ice layer under the gaseous material that covers Jupiter's surface – with an atmosphere and a rocky planet below the ice layer. Will JUNO confirm the presence of Jupiter's ice layer?.

Do you see a vase or two profiles? The image can be interpreted either way. Similarly, different scientists can reach different conclusions from the same evidence.

The observations that any theory of star-system and planet formation must explain come from space probes (like JUNO), the Hubble Space Telescope [HST], the Atacama Large Millimeter/sub-millimeter Array in Chile [ALMA], the National Optical Astronomy Observatory [NOAO], the European Southern Observatory [ESO] and other reliable sources of space observations. Seismic data provides evidence for the structure of our planet and moon under the surface. Space telescopes have not tracked the birth of a star system from beginning to end. And even with the observations made so far, scientists are not able to observe the remote birth of planets and moons. Therefore, any theory of star system formation and planet formation requires an **interpretation of evidence**.

A theory is a formal explanation – involving an interpretation of evidence – that satisfies the standards of science. "Standard Theory" will be used to refer to the currently accepted theories that Mass Vortex Theory competes with.

What ideas are behind the Standard Theory interpretation of evidence?

Noted scholar Michael Woolfson [Dept. of Physics, Univ. of York, UK] reports in his book, The Origin and Evolution of the Solar System that two major concepts show up in most theories about the formation of star systems and planet formation:

1) "gravitational collapse" – or a gravitational instability – where the atoms and molecules in a big cosmic cloud gravitationally attract each other until the center gets so dense that fusion begins
2) the clumping together of leftover "solid material" to form planets, moons, asteroids and comets AFTER the sun ignites.[2]

Doug MacDougall, reports on the current ideas regarding the standard theory of planet formation in his very accessible book Why Geology Matters (2011). Doug MacDougall reports, "There are few observations to guide us through the processes that transformed the protosun and its surrounding hot disk into our present-day solar system; for the most part we have to rely on computer simulations."[1]

Thus, MacDougall asserts that what is "known" about star system and planet formation is really the current best-guess based on computer models. Additionally, Woolfson concludes that current Standard Theory does not have a compelling consensus among scholars.[2]

In the next few pages, we'll take a brief look at what Standard Theory says regarding how a star system develops and how planets are formed, before we move on to the Mass Vortex Theory.

Mass Vortex Theory makes no attempt to go back to the beginning of time, or the beginning of the universe. Mass Vortex Theory starts with part of a nebula, which is a big cosmic cloud of gas. This is the conventional starting place for a star system.

---

[1] MacDougall (2001), Book Source 4, p 28-29

[2] Woolfson (2002), Book Source 5, p 186: "As previously indicated, there is no universally accepted theory of planetesimal formation and there are two main ideas—the first through gravitational instability within the dust disc and the second by the sticking together of solid particles when they collide. Solid material in the dust disc will tend to clump together through mutual gravitational attraction but this tendency will be opposed by disruptive solar tidal forces." —Michael Woolfson

A. Standard Theory, Beginnings

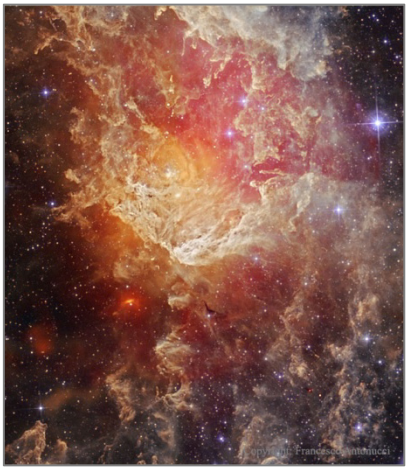
At some point in the past, a nebula became the precursor of our solar system was present in space. A *nebula* is an enormous cloud of dust, hydrogen, helium and other ionized gases that typically span a vast swath of space.

Both Standard Theory and the new theory proposed in this book start solar-system formation with part of a nebula. Standard Theory says that a nebula is born out of the dispersed matter from dying stars. Mass Vortex Theory does not concern itself with the origins of the nebula; rather it accepts a nebula as raw material used to start a star system.

Nebula Example: Carina Nebula
Image Credit: NASA, ESA, and the Hubble SM4 ERO Team

Nebula ≡ nebula is a gigantic cloud in space composed of: elemental gases (99%), plasma and dust.[1]

Star Cluster NGC 6193 and Rim Nebula NGC 6188
Image Credit: ESO Very Large Telescope



Nebula Example: NGC 67822
Image Credit: WISE, IRSA, NASA; Processing & Copyright : Francesco Antonucci

[1] https://www.universetoday.com/61103/what-is-a-nebula/

B. Standard Theory: Formation of Sun and Planets

Nebulae do not have a uniform distribution of matter. Standard Theory starts with this fact. Dense places that are found within a nebula gravitationally attract more matter, making these dense regions more dense. Then, Standard Theory employs "gravitational collapse." For example, Doug MacDougal summarizes it this way: "Either on their own or because of some external trigger, these denser regions begin to pull surrounding material into their centers through gravitational attraction. Once started, this process of gravitational collapse is self-sustaining; as the central region gets denser, its gravitational attraction increases."†

This is commonly accepted. However, there is a problem with this sequence of development. Yes, a dense area of a nebula will attract more matter, but there is a limit to how dense the region as a whole can become. In a nebula, each little cubic centimeter of gas experiences the gravitational pull of its close neighbors in such a way that distant matter does not affect it much (gravity is proportional to $1/r^2$, the inverse square of the distance between different cubic centimeters). Additionally, atoms in the gaseous nebula have small charge imbalances that cause them to repel each other; thus, they do not get close enough to form a gravitational instability. Support comes from Hawking and Penrose [1970]: "The instability of gravitation is not manifest under normal conditions owing to the extreme smallness of the gravitational constant. The pull of gravity is readily counteracted by other forces."‡ Thus, a denser part of a nebula is not going to trigger gravitational collapse.

Despite the unlikelihood of gravitational collapse being triggered by the cosmic gas and dust of a nebula, Standard Theory accepts gravitational collapse as the mechanism that starts things off and causes the middle of the system to become so hot and dense that nuclear fusion begins. With nuclear fusion ignited, the sun (using almost all of the original nebula material) starts shining with light and heat.

Next, remaining gas, dust, and small particles rotating around the young sun begin to cool. Grains of minerals form; then, these small grains collide and stick together. This process produces rocks of varying sizes. Through collisions and gravity, the hot rocks clump together to form planetesimals (small baby planets). Some of these grow to be planets; some turn into asteroids and meteors.

Artist's conception of solar nebula after the sun starts shining| image by NASA

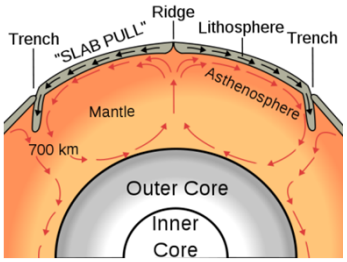
† Book Source 4, p 26 | ‡ Article Source 13

C. Standard Theory and Earth

According to Standard Theory, the planetesimal that grew into Earth gained more mass from meteors, asteroids and chondrules that bombarded the surface, and the energy from these bombardments caused all the material of the planet to heat and melt.

Consider these issues: 1) the angular momentum of matter in the early disk of gases around the Sun is consistent, so all objects in the disk will tend to orbit the Sun in their same relative positions, much as the asteroids in our Asteroid Belt do today; any collisions would be rare; 2) because the collisions are rare and happening in fairly cold space, they would not cause enough heat to melt a whole baby planet; and 3) random collisions do not account for the non-random spin or tilts of the planets.

In spite of this, Standard Theory assumes that rock collisions against a baby planet's surface were enough to completely melt it. Then, heavy elements in the molten mix, including iron, sank to the center while the lighter elements rose to the surface. In this scenario, hot regions of molten rock rose toward cooler regions; cooler regions sank toward hotter regions. This process is called *convection*. Earth scientists currently assert that convection, chemical variations, and effects due to increased-pressure-with-depth are what caused the Earth to develop its characteristic layers: core, mantle, and crust.



Mantle Convection
Credit: Wikipedia user, Surachit

This approach to planet formation does not address the formation of oceans or an atmosphere. Scientists believe that these came later via various proposed theories. Regarding moons, the focus has been on Earth's moon.

The reigning explanation for Earth's moon is the Giant Impact Hypothesis. In this theory, the nascent Earth and another baby planet called Theia crashed into each other; then, Earth continued to grow from the usual bombardment while the moon coalesced from the remaining debris. This interpretation of evidence is meant to explain why rocks from the Moon and Earth have the same features (e.g. matching silicone and titanium isotopes) instead of the expected differences.†

This ends our brief overview of the current thinking among space scientists for how stars and planets form. Next, a new theory.

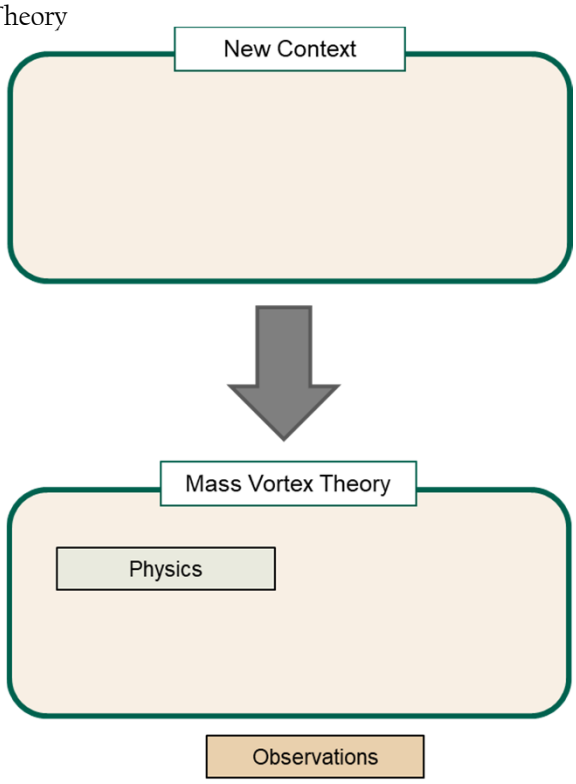
† http://www.space.com/29047-how-moon-formed-earth-collision-theory.html

Starting a New Context for Mass Vortex Theory

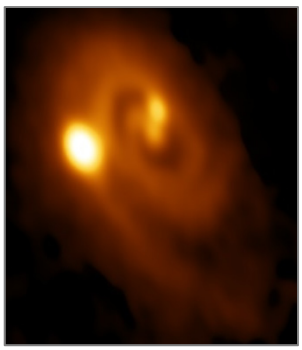
The proper way to start a new theory is to mentally open up a new, blank context.

Why is it best for a new theory to start with a blank context? It provides good boundaries in order to avoid ambiguity. The benefit is a similar one to opening a new bank account. It allows you to keep track of all the deposits and withdrawals. Over time, with good accounting, there is no ambiguity about what funds are present in the account. Similarly, in striving for desired clarity and consistency, we need to account for meanings that are added to (or deleted from) the active science context being employed. Also, the context is critical for defining and building the meanings of terms used by the theory.

Therefore, open a new part of your mind that does not contain any existing meanings, a new context for Mass Vortex Theory. You can then keep both the Standard Theory context and the Mass Vortex Theory context separate in your mind to evaluate them.



Into this new context, let's add the basics of Physics: classical physics, and relativity. This supplies our starting place for building and defining the new theory. Observations about the physical universe can be considered to be outside of the Theory proper. They will be used as a basis to decide whether something is true or false in the Theory.



Early-stage star system L1448 IRS3B, 750 light years away from Earth
Credit: ALMA Telescope

Preview

Where is this book headed? What are some of the ideas that will fill the Mass Vortex Theory context?

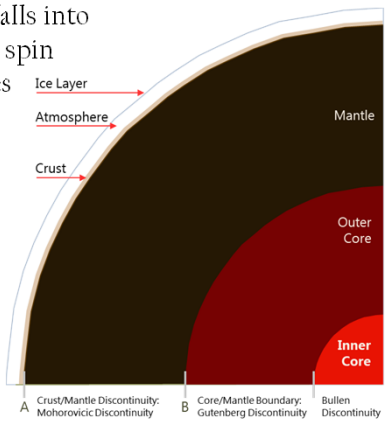
Observations of stars being born in our galaxy show an initial vortex of gases that resolves into a swirling disk (like the image to the left). A novel mechanism is proposed for how this swirling disk gets started, going from elemental gases hanging out in space to a swirling spiral disk. Then, we'll take a look at proto-stars in the Orion nebula system – as imaged by the Hubble Space Telescope – and identify five stages of development.

A planet starts as a big huge clump of metal atoms, shown above in an early-stage star system as glowing regions. The metal is mostly iron, so it contains lots of small magnetic domains that line up in cold space to form a big magnet. Each clump of iron in the image above is being accelerated towards the center. And accelerated magnetic domains produce radiation.[1]

Each clump of metal atoms, called an iron-heart, clothes itself with atoms packed in around it, bound gravitationally; this forms a protoplanet. The protoplanet flows with the gas of the vortex disk until its inertia is too great to continue, causing it to exit into an orbit. Cyclone separation happens as part of everyday life whenever someone uses a Dyson™ vacuum cleaner.

When a protoplanet exits the vortex and falls into an orbit around the center, it goes from no spin (irrotational flow) to spin. This spin causes a magnetic flux that induces an electric field. This starts a chain reaction of events that include the following results:

- Molecules
- Core, mantle, crust layers
- Discontinuity layers
- Oceans and lakes
- Atmosphere
- Ice layer



[1] "Instantaneous power radiated from magnetic dipole moments" by P.D.Morleya, and .J.Buettner; published by Elsevier
http://www.sciencedirect.com/science/article/pii/S0927650514001017

Key Physics Concepts

Following are some physics concepts used in Mass Vortex Theory. Knowledge regarding these topics will help with understanding Mass Vortex Theory.

Mass[3]

Singularity — A singularity, in the context of black holes and Mass Vortex Theory, is a point in space that is completely filled with pure mass.

Vortex Flow — "A region in a fluid in which the flow rotates around an axis."[1] A "fluid" is a term referring to both liquids and gases, anything that behaves according to fluid dynamics. There are two main types of vortex flow: i) *rigid body rotation* where the speed of particles in the fluid increase with radial distance from the axis; and ii) *irrotational flow* where the speed of particles in the fluid is inversely proportional to the radial distance from the vortex axis.

Black Hole

Cyclonic Separation

Electromagnetic Induction — a changing magnetic field creates an electric field and a changing electric field creates a magnetic field.

Magnetic Force between Parallel Wires [Parallel Paths] — see Appendix MF. Common knowledge involves the behavior of parallel wires, but the behavior also carries over into the movement of charged particles in parallel paths in space.

Magnetic Domains and Ferromagnetic Material

Ability of electrons in a neutral object to respond to a magnetic field

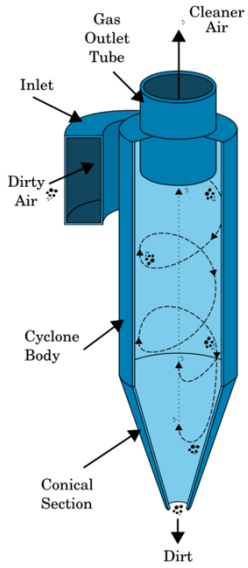
Structure of an Atom

An Atomic Element's Z Number, High-Z Elements & HZE ions

Neutron Decay

Centrifugal Force

Means for creating luminescence and incandescence[2]



Cyclonic Separation

The initial vortex of a star system can be thought of as a kind of fluid, where the fluid has a characteristic viscosity and density; a protoplanet can be thought of as an object moving along a curved trajectory within the vortex fluid. In this case – when the object is denser than the fluid – the motion is away from the center. This result is due to the equations of motion.

---

1 https://en.wikipedia.org/wiki/Vortex | 2 https://www.britannica.com/science/luminescence
3 http://www.einstein-online.info/dictionary?search_letter=m&set_language=en#mass

Ready to Move On

So far, we've covered an overview of Standard Theory, initialized a new context for Mass Vortex Theory, identified some key physics concepts that are involved in Mass Vortex Theory and taken a peak at what is ahead.

In business, there is an expression regarding an easy decision : "That's a no brainer." Decisions provoked by the following content are *not* that. As you are exposed to new ideas about star-system development and planet formation, you will need to dispense with an understandable desire to rely on experts and examine the theory on its own merits.

The following mental journey begins with star system formation in general and then moves towards our solar system in particular, including the initial conditions of Earth. Then, we consider the mass-vortex development of a galaxy. Insights from the development of a star system help to inform us about how a galaxy develops.

Mass Vortex Theory is set forth through the following sections.

- Mass Vortex Theory: Star System Formation
  a) System Development – Overview
  b) Planet Formation
  c) Moon Formation
  d) Sun Formation
- Unique Features of Our Solar System
  a) The Killer Crash
  b) Ice Layers
  c) Mass Densities & Elemental Analysis
- Mass Vortex Theory: Galaxy Formation
- Conclusion
  Includes: summary, initial conditions of the Earth, key predictions made by Mass Vortex Theory, a proposed new definition of a planet, ideas for big projects, a solution for the paradox of youth, and new understanding regarding dark energy

The Appendix follows the Conclusion. It contains some supporting details and interesting additional information.

This book is tailored to a broad science-literate readership.