ARTIFICIAL PLANETARY DEVELOPMENT

Thought Experiment

Abstract

Why discover, inhabit, and colonize planets when you can build your own? This thought experiment serves as a roadmap to develop a man-made planet through a number of simulations and experiments. The conclusion provides 3-Dimensional architectural blueprints in pursuit to develop an artificial planetary object.

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Contents

1 Artificial Planet Development Introduction

1.1 Objective Questions

- Why discover, inhabit, and colonize planets when you can build your own?
- What is the relation between our Sun, Earth, and Moon in the Solar System and Milky Way?
- How is life supported on Earth through the relationships?
- What is gravity's role between all the planetary objects?

1.2 Objective Answers

- Simulate an earth-like planet inside a habitable (goldilocks) zone rotating around a known, discovered Yellow Dwarf (G2V) Star capable of supporting life.

1.3 Objective Description

Create an electromagnetic field powered by a magnetic pad and three orbiting objects with an iron core by using a magnetic sphere to simulate the sun, earth, and moon. The earth-like artificially developed planetary object will orbit the sun simulated object. All objects (sun, earth, and moon) will be broken down into their elements of existence. Furthermore, the artificial planet will be enclosed with a transparent shield representing the atmosphere to hold vegetation and water. All simulated objects in this experiment will act as their real-life companions and will use each other's orbits plus the magnetic field (pad) to suspend itself in midair and orbit one another. This experiments focus is not solely intended for the purpose of developing an artificial (man-made) planetary object, it will also as serve as a purpose to visually understand questions science still is asking itself and validate previous claims.

1.4 Thought Experiment Summary

Multiple rounds of experiments will be conducted to duplicate the relationships between the Sun, Earth, and Moon for the purpose to discover the development and location placement of an artificial (man-made) planetary objects for humanity and resources.

This first round of experiments will use real-life elements to collect the needed data for developing a piece of software to holographically project the simulations that will enhance the efficiency and capacity of future experiments. The second round of experiments provide us with the means to run different or larger scale simulation scenarios. Scenarios range from multi-planetary systems to the discovery of gravities origins.

The experiments and studies will lead to the development of the first universal (celestial) navigation system.

1.5 Objective Assumptions

The completion of simulating our 'Earth' relationship in a micro environment of our solar system based on the known data, stats, metrics, etc. will allow further study and experiments to construct an artificial planet based on the known data, stats, metrics, etc. of another Yellow Dwarf (G2V) Star or another deemed 'ideal' star on a macro scale. Essentially, the 3-Dimesional blueprint and architectural model/notes prior to development.

1.6 Technology Specifications

1.6.1 Hardware

- Case
  - ➢ 12-foot circumference (round)
    - ▪ Contents
      - Motors
        - ♦ Type
      - Electro (rare earth) Magnets
        - ♦ Type
      - Gears
        - ♦ Type
      - Potentiometer
        - ♦ Type
      - Battery Adapter
        - ♦ Type
      - Fan
        - ♦ Type
      - Iron Sphere
        - ♦ Three Type
      - LCD Screen
        - ♦ Type
- Electromagnetic Field(s)
  - ➢ Magnets pad (in-casing)
    - ▪ Powers objects:
      - Rotation
      - Orbit
      - Axis tilt
      - Lights (heat lamps)
- Raspberry Pi
  - ➢ Motion control
  - ➢ File Storage
- LCD Screen
  - ➢ Display and record date and time (data)
    - ▪ Hours are minutes
      - Earth rotation
        - ♦ 23.924 minutes
          - ➢ not 23.934 hours
    - ▪ Days are hours
      - Earth orbit around sun
        - ♦ 365 minutes (6.08333 hours)
          - ➢ Not 365 days
      - Moon orbit around earth
        - ♦ 27.322 hours (1639.32 minutes)

- Not 27.322 days

- Top Surface
  - Transparent (

1.6.2 Software

- Control gears
  - Orbits
- Control magnetic power
  - Orbits
  - Elevation
  - Rotation
  - Axis tilt
- Controls power
  - Automates power
-

2 Experiment One

2.1 Description

This experiment will simulate a micro solar system with only the Sun, Earth, and Moon present.

2.2 Objective

Replicate the relationship between the Sun, Earth, and Moon by normalizing the properties based upon the planetary object information commonly found.

2.3 Reasoning

Once able to duplicate the relationship between the Sun, Earth, and Moon will we be able to gather data from another Star and its surroundings for the purpose of discovering the development location of our Artificial (man-made) Planetary Object.

2.4 Objective Questions

- What role does gravity play with the sun, earth and moon?
- What is the source of gravity?
- Overtime, does magnetism take control or influence the man-made mechanisms?
- How does life support itself?
- What is the timeframe until vegetation reveals itself?
-

2.5 Technical Specifications

2.6 Materials Needed:

- Melted Iron Core Sphere (3)
  - Magnets (3)
  - Gravity simulation through magnetic powered field
    - Each Iron Core emits a different frequency based upon the planetary object

        - All planetary objects will be suspended through a magnetic pad
- Rock
    - base of sphere
- Dirt
    - fill in cracks of rock
- Sand
    - fill in cracks of rock that dirt cannot
- Plants
    - grass, weeds, small plants to construct an atmosphere, moisture, air, and water
- Water
    - basins to serve as bodies of water
- Power source
    - LED light that generates heat for artificial planet (sun)
        - Possible microwave radiation
- Reflective surface
    - Moon providing extra component of gravity to form weather, seasons, waves/tides, eco-systems, internal clocks for living beings, etc. that shape planet surface and life as we know it
- Magnetic Pad
    - Magnetics underlying the pad to create an artificial representation of Space and Time
        - Magnets

2.7 Step by Step Objectives

- Create a large circular magnetic pad
    - Simulation of Space, Time, and Gravity that will suspend planetary objects in air
        - Set frequency of magnets
            - Suspend planetary objects
            - Rotate objects
            - Enable lunar and earth orbit
- Create a Large Sun (24 IN Diameter) planetary object power source “Sun (846,676 MI Diameter)”
    - Use LED light or Heat Lamp in the form of a sphere
        - Iron core in center of object serves as gravity and power source
    - Set frequency of magnet (iron core)
        - Enable earth orbit
- Create a Medium Earth (6-8 IN Diameter) planetary “Artificial Planet (7,918 MI Diameter)”
    - Use natural elements to form oblong sphere
        - Earth, Water, Air, Fire
        - Iron core in center of object serves as gravity and power source
    - Create basins for water and vegetation
        - Vegetation – grass, weeds (pot?), small plants
            - CO2
    - Wrap plastic ball (hamster wheel) to secure ‘H2O and CO2’ in place
        - Atmosphere and magnetic field

    - Set frequency of magnets (iron core)
        - Orbit the sun
        - Simulate the rotation of 24-hour cycle
        - Enable lunar orbit
- Create small (4-6 IN Diameter) planetary object “Moon (2,158 MI Diameter)”
    - Use rocks and moon elements to form a sphere
    - Set frequency of magnets (iron core)
        - Orbit the Artificial Planet (Earth)
        - Simulate the rotation of moon
- Research G2V stars and solar system surroundings
    - Gather data and mimic metrics to repeat experiment

2.8 Planetary Objects Information

2.8.1 Sun

- Size (Radius)
    - 432,168.2 miles / 695,608 kilometers
- Distance from Earth
    - 92.92 million miles / 149.60 million kilometers / 1 astronomical mile
- Equatorial Inclination
    - 7.25 with respect to the ecliptic
- Equatorial Radius
    - Metric – 695,508 km
    - English – 432,168.2 mi
    - Scientific Notation – 6.9551 x 10^5 km
    - By Comparison – 109.2 x that of Earth
- Equatorial Circumference
    - Metric – 4,370,005.6 km
    - English – 2,715,395.6 mi
    - Scientific Notation – 4.37001 x 10^6 km
    - By Comparison – 109.2 x that of Earth
- Volume
    - Metric – 1,409,272,569,059,860,00 km3
    - English – 338,102,469,632,763,000 mi3
    - Scientific Notation – 1.40927 x 10^18 km3
    - By Comparison – 1,301,018.805 Earths
- Mass
    - Metric – 1,989,100,000,000,000,000,000,000,000,000 kg
    - English – 4,385,214,857,119,400,000,000,000,000,000 lbs
    - Scientific Notation – 1.989 x 10^30 kg
    - By Comparison – 333,060.402 x Earth’s
- Density
    - Metric – 1,409 g/cm3
    - By Comparison – 0.256 that of Earth
- Surface Area

    - Metric – 6,078,747,774,547 km2
    - English – 2,347,017,636,988 square miles
    - Scientific Notation – 6.07877 x 10^12 km2
    - By Comparison – 11,917.607 Earths
- Surface Gravity
    - Metric – 274.0 m/s2
    - English – 899.0 ft/s2
    - Scientific Notation – 2.740 x 10^2 m/s2
    - By Comparison – 27.96 x Earth's surface gravity
- Escape Velocity
    - Metric – 2,223,720 km/h
    - English – 1,381,756 mph
    - Scientific Notation – 6.177 x 10^5 m/s
    - By Comparison – 55.20 x Earth
- Sidereal Rotation Period
    - 25.38 Earth Days
    - 609.12 Horus
    - By Comparison – Rotation slows to about 35 days at the poles
- Surface Temperature
    - Metric – 5,500 C
    - English – 10,000 F
- Effective Temperature
    - Metric – 5504 C
    - English – 9939 F
    - Scientific Notation – 5777 K
- Other Facts
    - Spectral Type - G2 V
    - Luminosity – 3.83 x 10^33 ergs/sec.
    - Age – 4.6 Billion Years
    - Composition – 92.1% Hydrogen, 7.8% Helium
    - Synodic Period – 27.2753 days
    - Rotation Period at Equator – 26.8 days
    - Rotation Period at Poles – 36 days
    - Velocity Relative to Near Stars – 19.7 km/s
    - Mean Distance to Earth – 146.60 million km (92.96 million mi) (1 astronomical unit)
    - Solar Constant (Total Solar Irradiance) – 1.365 – 1.369 kW/m2
- Source
    - https://solarsystem.nasa.gov/planets/sun/facts
    - http://ssd.jpl.nasa.gov/

2.8.2 Earth

- Orbit Size Around Sun
    - Metric – 149,598,262 km
    - English – 92,956,050 miles

    - Scientific Notation – 1.4959826 x 10^8 km
    - Astronomical Units – 1.000 A.U.
- Mean Orbit Velocity
    - Metric – 107,218 km/h
    - English – 66,622 mph
    - Scientific Notation – 2.9783 x 10^4 m/s
- Orbit Eccentricity
    - 0.01671123
- Equatorial Inclination
    - 23.4393 degrees
- Equatorial Radius
    - Metric – 6,371.00 km
    - English – 3,958.8 miles
    - Scientific Notation – 6.3710 x 10^3 km
- Equatorial Circumference
    - Metric – 40,030.2 km
    - English – 24,873.6 miles
    - Scientific Notation – 4.00302 x 10^4 km
- Volume
    - Metric – 1,083,206,916,846 km3
    - English – 259,875,159,532 miles3
    - Scientific Notation – 1.08321 x 10^12 km3
- Mass
    - Metric – 5,972,190,000,000,000,000,000,000 kg
    - Scientific Notation – 5.9722 x 10^24 kg
- Density
    - Metric – 5.513 g/cm3
- Surface Area
    - Metric – 510,064,472 km2
    - English – 196,936,994 square miles
    - Scientific Notation – 5.1006 x 10^8 km2
- Surface Gravity
    - Metric – 9.80655 m/s2
    - English – 32.041 ft/s2
- Escape Velocity
    - Metric – 40,284 m/s2
    - English – 25,031 mph
    - Scientific Notation – 1.119 x 10^4 m/s
- Sidereal Rotation Period
    - 0.997726968 Earth Days
    - 23.934 Hours
- Surface Temperature
    - Metric – -88/58 (min/max) C
    - English - -126/136 (min/max) F

    - Scientific Notation –185/331 (min/max) K
- Atmospheric Constituents
    - Nitrogen, Oxygen
    - Scientific Notation – N2, O2
    - By Comparison – N2 is 80% of Earth's air and is a crucial element in DNA
- Source
    - https://solarsystem.nasa.gov/planets/earth/facts
    - http://ssd.jpl.nasa.gov/

2.8.3 Moon

- Orbit Size Around Earth
    - Metric – 384,400 km
    - English – 238,855 miles
    - Scientific Notation – 3.84400 x 10^5 km
    - Astronomical Units – 0.00257 A.U.
    - By Comparison – 0.00257 x Earth's Distance from the Sun
- Sidereal Orbit Period
    - 0.074803559 Earth Years
    - 27.322 Earth Days
- Orbit Circumference
    - Metric – 2,413,402.16 km
    - English – 1,499,618.58 miles
    - Scientific Notation – 2.413 x 10^6 km
- Mean Orbit Velocity
    - Metric – 3,680.6 km/h
    - English – 2,287.0 mph
    - Scientific Notation – 1,022 m/s
    - By Comparison – 0.034 x Earth
- Orbit Eccentricity
    - 0.554
    - By Comparison – 3.315 x Earth
- Equatorial Inclination
    - 6.68 degrees
- Equatorial Radius
    - Metric – 1737.5 km
    - English – 1079.6 miles
    - Scientific Notation – 1.738 x 10^3 km
    - By Comparison – 0.2727 x Earth
- Equatorial Circumference
    - Metric – 10,917.0 km
    - English – 6,783.5 miles
    - Scientific Notation – 1.0917 x 10^4 km
- Volume
    - Metric – 21,971,669,064 km3

    - Scientific Notation – 2.197 x 10^10 km3
    - By Comparison – 0.020 x Earth
- Mass
    - Metric – 73,476,730,924,573,500,000,000 kg
    - Scientific Notation – 7.3477 x 10^22 kg
    - By Comparison – 0.0123 x Earth
- Density
    - Metric – 3.344 g/cm3
    - By Comparison – 0.607 x Earth
- Surface Area
    - Metric – 37,936,694.79 km2
    - English – 14,647,439.75 square miles
    - Scientific Notation – 3.793669 x 10^7 km2
    - By Comparison – 0.074 x Earth
- Surface Gravity
    - Metric – 1.624 m/s2
    - English – 5,328 ft/s2
    - Scientific Notation – 1.624 m/s2
    - By Comparison – 0.166 x Earth
- Escape Velocity
    - Metric – 8,552 km/h
    - English – 5,314 mph
    - Scientific Notation – 2,376 m/s
    - By Comparison – 0.212 x Earth
- Sidereal Rotation Period
    - 27.322 Earth Days
    - 655.73 Hours
    - By Comparison – Synchronous with Orbital Period
- Surface Temperature
    - Metric – -233/123 C
    - English – -387/253 F
    - Scientific Notation –40/396 K
- Other Facts
    - Because of the gravitational pull of the sun, the extreme ranges of the Moon from the Earth are from 356,400 km to 406,700 km.
- Source
    - https://solarsystem.nasa.gov/planets/moon/facts

3 Experiment Two

3.1 Description

This experiment is the result of a successful first experiment mimicking the relationship between our solar systems Sun, Earth, and Moon. Experiment two will be the first phase of discovering the location of our developed artificial (man-made) planetary object and its elements. Once the location is

found we will create an artificial (man-made) solar system based upon the star that will provide energy and gravity for our artificial (man-made) planetary object.

3.2 Objective

Discover the best location for developing an artificial (man-made) planetary object. After this discovery, will we be able to gather the data about the properties of its star to recreate and support life around it.

- Star System
  - GJ 1061 Horologium Constellation (Nicolas Louis de Lacaille)
    - 3.7 parsecs (11 light years away)
    - M5.5V Red Dwarf Star (Sun)

3.3 Reasoning

Once successful, we will be able to recreate a holographic blueprint that simulates this artificial (man-made) solar system and its planetary objects to run different scenarios or relocate our artificial (man-made) planetary object.

3.4 Materials Needed

- Melted Iron Core Sphere (3)
  - Gravity simulation through magnetic powered field
    - Each Iron Core emits a different frequency based upon the planetary object
    - All planetary objects will be suspended through a magnetic pad
- Rock
  - base of sphere
- Dirt
  - fill in cracks of rock
- Sand
  - fill in cracks of rock that dirt cannot
- Plants
  - grass, weeds, small plants to construct an atmosphere, moisture, air, and water
- Water
  - basins to serve as bodies of water
- Power source
  - LED light that generates heat for artificial planet
  - Microwave radiation
- Reflective surface
  - Moon providing extra component of gravity to form weather, seasons, waves/tides, eco-systems, internal clocks for living beings, etc. that shape planet surface and life as we know it
- Magnetic Pad
  - Magnetics underlying the pad to create an artificial representation of Space and Time

3.5 Step by Step Objectives

- Create a large rectangular or square magnetic pad

    - Simulation of Space, Time, and Gravity that will suspend planetary objects in air
        - Set frequency of magnets
            - Suspend planetary objects
            - Rotate objects
            - Enable lunar and earth orbit
- Create a Large (mm Diameter) planetary object power source “Sun (MI Diameter)”
    - Use LED light or Heat Lamp in the form of a sphere
        - Iron core in center of object serves as gravity and power source
    - Set frequency of magnet (iron core)
        - Enable earth orbit
- Create a Medium (mm Diameter) planetary “Artificial Planet (MI Diameter)”
    - Use natural elements to form sphere
        - Earth, Water, Air, Fire
        - Iron core in center of object serves as gravity and power source
    - Create basins for water and vegetation
        - Vegetation – grass, weeds (pot?), small plants
            - CO2
    - Wrap plastic ball (hamster wheel) to secure ‘H2O and CO2’ in place
        - Atmosphere and magnetic field
    - Set frequency of magnets (iron core)
        - Orbit the sun
        - Simulate the rotation of 24-hour cycle
        - Enable lunar orbit
- Create small (mm Diameter) planetary object “Moon (MI Diameter)”
    - Use rocks and moon elements to form a sphere
    - Set frequency of magnets (iron core)
        - Orbit the Artificial Planet (Earth)
        - Simulate the rotation of moon
- Research G2V stars and solar system surroundings

Gather data and mimic metrics to repeat experiment

3.6 Planetary Objects Information

3.6.1 Sun

X

3.6.2 Earth

X

3.6.3 Moon

X

4 Experiment Three

4.1 Description

This experiment is the result of a successful first and second experiment. Experiment three will be the start of importing our data into a software program that will digitally project our micro (man-made) solar system using holographic imagery (light projection) and laser projection. Our third experiment will serve as a 3-Dimensional architectural footprint that will allow us to survey a number of stars for the location of our artificial (man-made) planetary object.

4.2 Objective

Discover multiple locations for developing an artificial (man-made) planetary object. We will sort through the multiple locations and run simulations using the imported data to determine a number of locations based upon the artificial (man-made) planetary object we develop. After this discovery, will we be able to gather the data about the properties of its star to recreate and support life around it based upon the artificial (man-made) planetary objects use.

4.3 Reasoning

Once successful, we will be able to recreate multiple simulations of our artificial (man-made) planetary object of our choosing. These simulations will be able to determine if we are developing a planet for life or resources. If life, the function of life. If resources, what materials we would like to harvest. For profitable reasons, we might develop an operating system that geographically displays all transmissions and information in relation to our solar system. Other commercialized functions may range from a universal navigation system to a video game or show for entertainment and educational purposes.

4.4 Materials Needed:

X

4.5 Step by Step Objectives

X

4.6 Planetary Objects Information

4.6.1 Sun

X

4.6.2 Earth

X

4.6.3 Moon

X

5 Technology Advancements Needed

- Tractor Beam
    - Ability to pull and place objects in space

        - Construction Equipment
- Planetary Colonization
    - Colonize the moon or other planet to lower the costs of manufacturing and distributing parts and objects to space
        - Facility
- 3D Printing
    - Capability to create large objects in a multitude of materials
        - Production (Assembly Line)
- Fuel (Fusion)
    - Ability to travel faster at half the cost with an extended travel duration
        - Power and Fuel (Energy)
- Reusable Rockets
    - Ability to lower costs of manufacturing and shipping (distribution)
        - Equipment for power supply (Semi-Trucks)
- Terraforming
    - Ability to create an atmosphere and needed elements to support life
        - Life
- Renewable Energy
    - Ability to support alternate modes of energy serving as life support
        - Solar, Wind, Water (Power and Fuel) (Energy)
- Holographic Imagery / Laser Projection
    - Ability to map out 3D blueprints and architectural notes/plans
        - Mapping

6 Artificial Planet Location Ideal Conditions

- Stable surroundings
    - Mature G2V Star System
    - Stable asteroid, comet, meteor(ite) pass throughs
    - No planetary solar system existence
    - No planet formation existence
- Examine life cycle of star system
    - Age
    - Stage of life
    - Stability of star
    - Power and energy generation
- No less than 20 light years away

7 Funding Requirements

7.1 Capital Requirements

7.1.1 X

7.2 Grant Requirements

7.2.1 Individual or Business

- Dependent on best outcome

7.2.2 Funding Instrument Type

- Grant
- Other?

7.2.3 Eligibility

- Small Business
- For profit, other than small business
- Unrestricted

7.2.4 Category

- Agriculture
  - APC
- Business and Commerce
  - APC
  - ATLS
- Community Development
  - APC
- Disaster Prevention and Relief
  - APC
  - ATLS
- Education
  - APC
- Energy
  - ATLS
- Environment
  - APC
  - ATLS
- Humanities
  - APC
- Natural Resources
  - APC
- Science and technology and other research and development
  - APC
  - ATLS
- Transportation
  - ATLS

7.2.5 Agency

- Department of Agriculture
  - APC
- Department of Commerce
  - APC
  - ATLS
- Department of Defense
  - APC
  - ATLS
- Department of Education
  - APC
- Department of Energy

        - ATLS
    - Environment Protection Agency
        - APC
        - ATLS
    - National Aeronautics and Space Administration
        - APC
    - National Endowment for the Humanities
        - APC
    - National Science Foundation
        - APC
    - Small Business Administration
        - APC
        - ATLS

8 Concluding Statements

8.1 Further Questions to Answer

- Do(es) god(s) exist?
- Is Earth the only planetary object with life inside our galaxy?
    - The position of Earth in relation to the sun, knowing the sun is responsible for forming the Milky Way (galaxy),
- Did an ancient, advanced civilization create earth for the same purpose of this experiment?
- Are we a byproduct of an experiment made by an ancient civilization that is no longer in existence?
- Were we created to preserve the meaning of life and humanity itself?
- Did Mars' iron core ever exist or did it die along with the planet itself?
- Are we living in an infinite loop of space and time?
- Where does the main source of gravity come from?
    - Multiple sun-like Yellow Dwarf (G2V stars) stars?
- How does the universe and/or multiverse connect and support itself?
    - Is the universe or multiverse powered by a greater sun-like planetary object that emits gravity and magnetic fields throughout the entirety of the universe and multiverse?
    - Is the universe/multiverse held up by a magnetic field 'blanket' without a planetary object?
        - Inside the entirety of a universe/multiverse, does gravity suspend and support itself through the cumulation of other gravity powered planetary objects inside every known/unknown solar system?
    - Does the existence of gravity and anti-gravity create space and time?

8.2 Further Assumptions to Answer

- If advanced ancient civilization created earth, do we associate them as god(s) or do we believe they have a(n) god(s) or a(n) architect(s) too?
    - If advanced ancient civilization created earth, is it a continuous domino effect cycle?
- If existing technology supports the creation of an artificial planet, do we proceed and how does the present day global community react or support the endeavor?
    - If existing technology supports the creation of an artificial planet, how long do we estimate the time of completion and colonization?

- Based on known theories, acceleration is a form(s) gravity:
    - Based on the experiment, is gravity formed from magnetism?
    - Based on the experiment, is gravity the sole contributor of speed and time?
    - Based on the experiment, is space formed through a greater source of gravity and magnetism?
- Based on recent discoveries and findings of radio transmissions hitting earth deemed and believed "alien-advanced-intelligent life", is this radio transmission interference of a greater gravity/power source acting similar to how the Sun acts in the center of our Milky Way?
    - Based on this assumption, does this support the question, is the universe/multiverse powered by a greater sun-like planetary object that emits gravity and magnetic fields throughout the entirety of the universe/multiverse?
    - Based on this assumption, does this support the question, is the universe/multiverse held up by a magnetic field 'blanket' without a planetary object?
        - Based on this assumption, does this support the question, does gravity suspend and support itself through the cumulation of other gravity powered planetary objects inside every known/unknown solar system or galaxy?
    - Based on this assumption, does this support the question, all three previous claims/questions intersect and react?
    - Based on this assumption, does this support the question, was this radio transmission the end or start of a life cycle for another galaxies sun?
        - Recent discoveries support the fact that another powerful dwarf star was brought into existence near the time the radio transmission was discovered.
            - Based on this assumption:
                - What is the orbital cycle of this object?
                - What is the size of this object?
                - What is the make-up of this object?
                -
        -
    - Based on the current knowledge of our solar system and galaxy, is it impossible or possible for another earth-like planet to exist?
        - Based on this assumption, do other earth-like planets exist solely in other galaxies separate from our Milky Way?
            - My assumption is that earth will be the only object without an identical 'habitable" companion with the capacity to support intelligent life in our known galaxy. In order to discover another earth-like planet, we must aim our discoveries outside our galaxy.
                - If my assumption leads to be incorrect, the next best assumptions are:
                    - Intelligent life come in all make-ups and conditions
                    - Meaning of intelligent life must be challenged
                    - Intelligent life could be an exact opposite. For instance, a being that breathes CO2 and exhales O2.
        - Based on this assumption, do alternate universes exist inside other galaxies?

- My assumption, split decision. It is solely dependent on the number of galaxies and universes in existence based on my previous personal assumption.
    - Based upon my assumption, there might be multiple types of alternate universes, not just alternate universes of our own but others.
- Based on this assumption, when the sun dies will the Milky Way die with it?
    - Based on this assumption, the formation of our sun brought forth the birth to a galaxy?
    - Based on this assumption, how long will it take for the entirety of the Milky Way to die?

9 References

9.1 Television (Documentaries)

- Bill Nye Saves the World, Season 1 – Episode 1, Netflix (2017)
- Bill Nye Saves the World, Season 1 – Episode 2, Netflix (2017)
- Bill Nye Saves the World, Season 1 – Episode 5, Netflix (2017)
- Cosmos: A Spacetime Odyssey, Season 1 – Episode 8, Sisters of the Sun, Fox (2014)
- Cosmos: A Spacetime Odyssey, Season 1 – Episode 9, The Lost Worlds of Planet Earth, Fox (2014)
- Cosmos: A Spacetime Odyssey, Season 1 – Episode 10, The Electric Boy, Fox (2014)
- Curiosity – Did God Create the Universe, Stephen Hawking, Discovery Channel (2012)
- Stephen Hawking and the Theory of Everything, Acorn Media and Discovery Channel (2007)
- Into the Universe with Stephen Hawking, Discovery Channel (2011)
- The Inexplicable Universe with Neil DeGrasse Tyson, Season 1 – Episode 3, xx (2013)
- NOVA: Treasures of the Earth, Season 1 – Episode 1, PBS (2016)
- NOVA: Treasures of the Earth, Season 1 - Episode 2, PBS (2016)
- NOVA: Treasures of the Earth, Season 1 - Episode 3, PBS (2016)
- Horizon – Secrets of the Solar System, BBC (2015)
- The New Frontier, Season 1 – Episode 1 (Earth), xx (2015)
- The New Frontier, Season 1 – Episode 5 (The Planet Makers), xx (2015)
- The New Frontier, Season 1 – Episode 8 (The Sun), xx (2015)
- Forces of Nature, Season 1 – Episode 1 (Shape), PBS (2016)
- Forces of Nature, Season 1 – Episode 2 (Elements), PBS (2016)
- Forces of Nature, Season 1 – Episode 4 (Motion), PBS (2016)

9.2 Articles

9.3 Academic Journals

9.4 Websites

- https://solarsystem.nasa.gov/planets/
- https://ssd.jpl.nasa.gov/
- http://www.constellation-guide.com/constellation-list/horologium-constellation/

9.5 Books

- The Illustrated - A Brief History of Time - The Universe in a Nutshell, Stephen Hawking.
- The Big Picture, Sean Carroll
- Space Chronicles – Facing the Ultimate Frontier, Neil DeGrasse Tyson
- Astrophysics for People in a Hurry, Neil DeGrasse Tyson
- Quantum Fuzz, Michael S. Walker

9.6 Videos

- To Scale: The Solar System, Wylie Overstreet & Alex Gorosh, (2015) (https://youtu.be/zR3Igc3Rhfg?list=LLZFeGldJ2LK9jYmxBQgSOMQ)
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