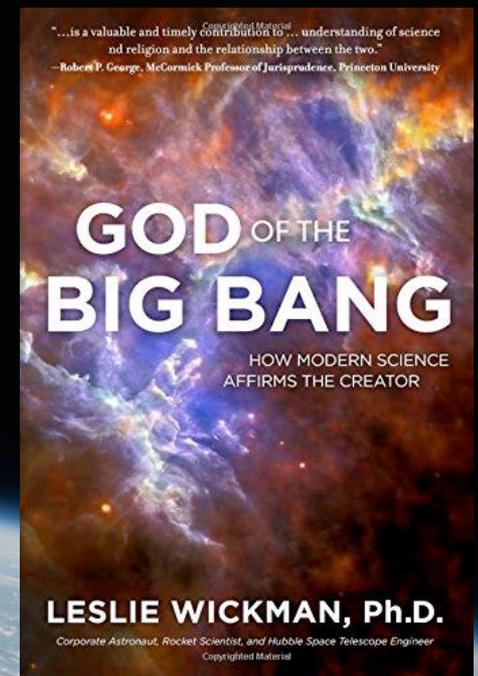


A photograph of the Space Shuttle Columbia in orbit above Earth. The shuttle is on the left, with its large solar panel arrays extended. The Earth's blue and white clouds are visible below. The background is black space.

Is the Conflict between Science & Faith Real?



*It all started with a backyard telescope
on clear, starry nights...*



Starry nights, big questions

- **Where did all this come from?**

Starry nights, big questions

- **Where did all this come from?**
- **How big is it?**

Starry nights, big questions

- **Where did all this come from?**
- **How big is it?**
- **How long has it been here?**

Starry nights, big questions

- **Where did all this come from?**
- **How big is it?**
- **How long has it been here?**
- **Why are we here?**

Starry nights, big questions

- Where did all this come from?
- How big is it?
- How long has it been here?
- Why are we here?
- How will it all end?

Starry nights, big questions

- Where did all this come from?
- How big is it?
- How long has it been here?
- Why are we here?
- How will it all end?
- Is there anyone else out there?

Think -- feel -- wonder

- **Christian home/church**
- **Secular schools**
- **Contradiction?**
- **All truth is God's truth!**

Lockheed Martin



HUBBLE SPACE TELESCOPE



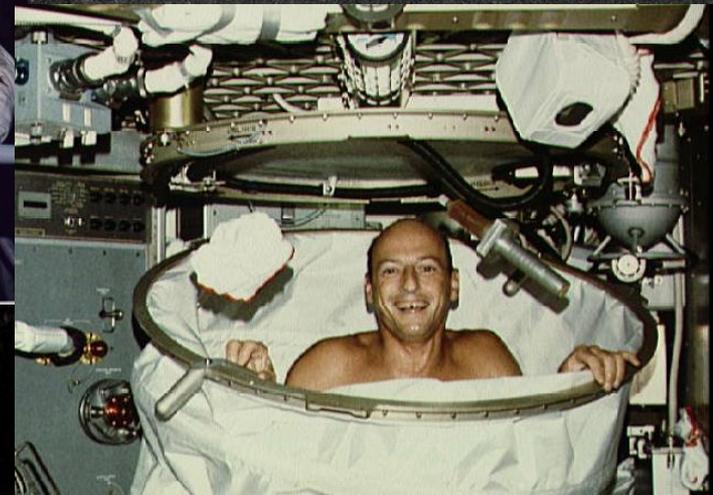
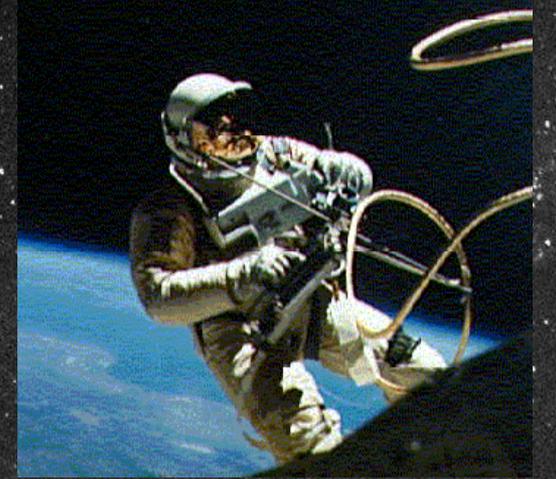
INTERNATIONAL SPACE STATION



Astronaut training

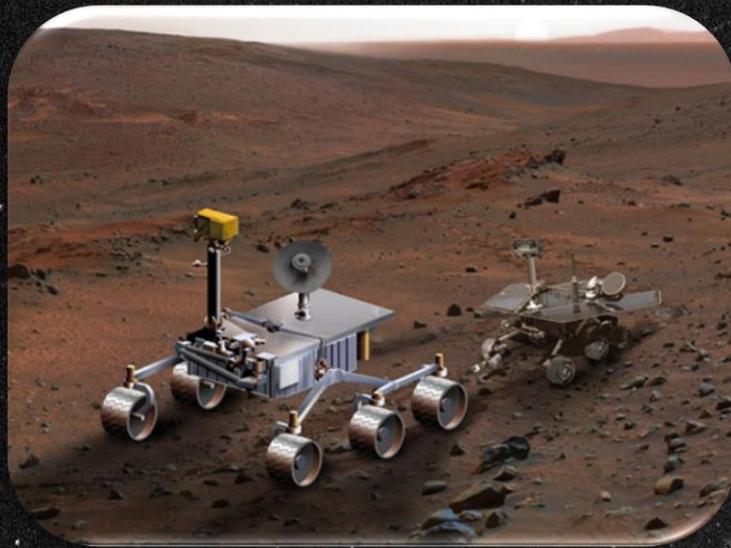


Weightless training in the KC-135.



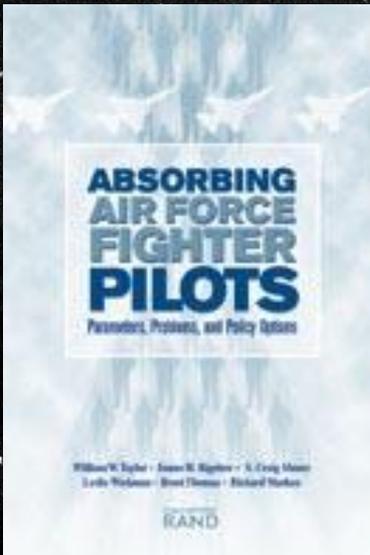
NASA *projects*

Crew Exploration Vehicle
Mars Rovers

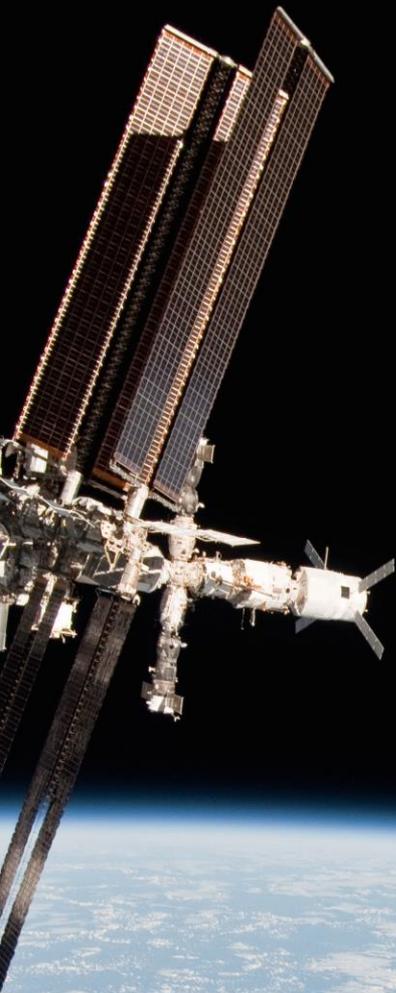


USAF studies

The RAND Corporation



Dr. Leslie Wickman, Azusa Pacific University
Center for Research in Science



AZUSA PACIFIC
UNIVERSITY

CNN

Illusion of Conflict

← EXTREME FUNDAMENTALIST POSITIONS →

~~Religion~~

(Creationism)

- 21st Century
Western Biblical
Literalism
- “Magical” creation

~~Science~~

(Scientism)

- Natural Science
- Secular Worldview
- “Godless Evolution”

A photograph of a space station in orbit over the Earth. The station's complex structure, including large solar panel arrays, is visible against the blackness of space. Below the station, the blue and white horizon of the Earth is visible, showing clouds and the curvature of the planet.

61%

Of American Scientists
Self-Identify as Christian

Modern Science Arose in Christianized Western Europe

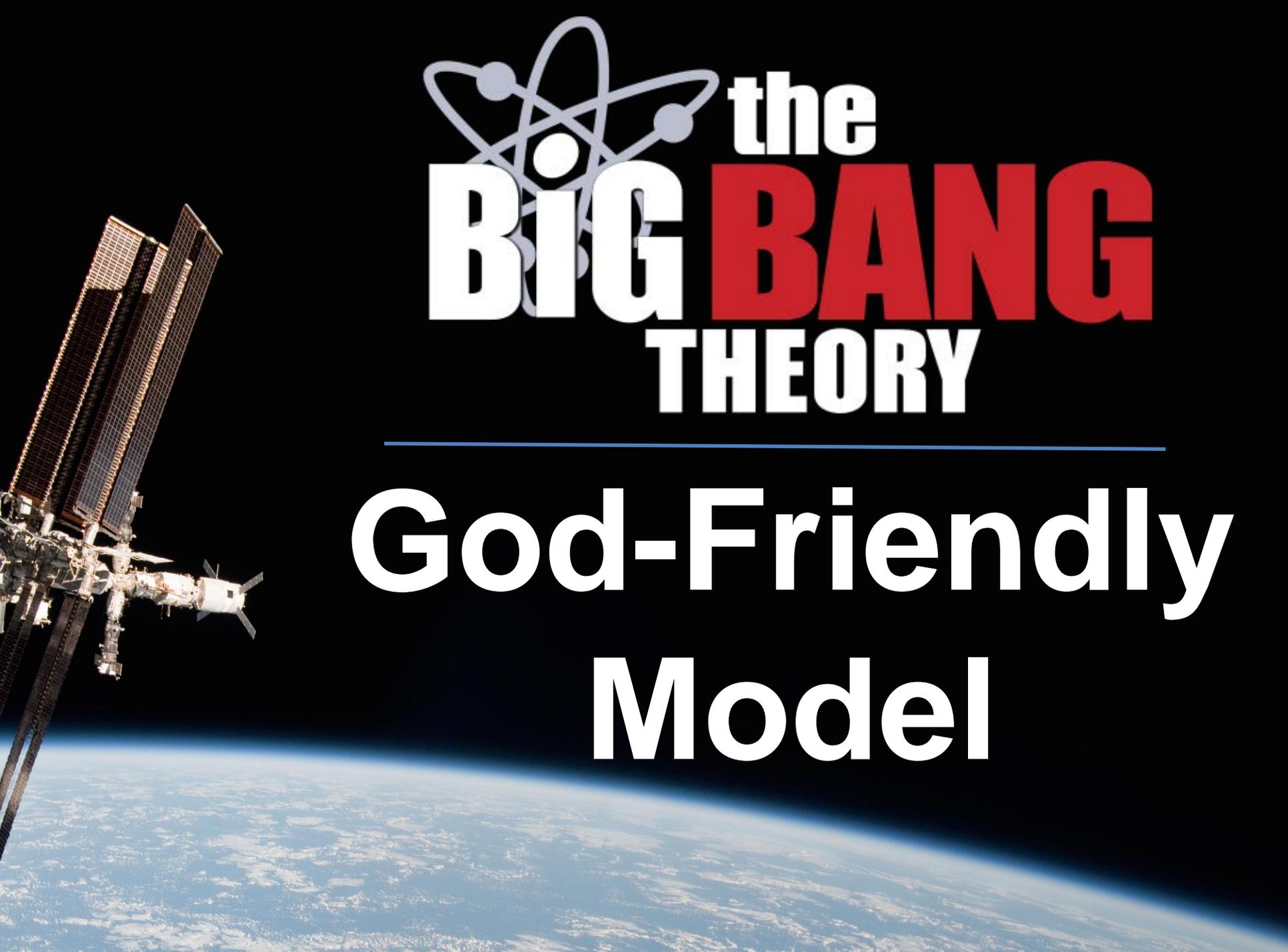
- Jews, Christians, and Muslims (monotheists) believe in a Creator who made an orderly, rational, understandable universe and gave us permission to investigate and utilize it, thereby legitimizing science and technology.
- Atheists can't explain why it is even possible for us to understand the universe.

~ Michael Covington, *"Christianity and Science"*, 1999

- Roger Bacon, 1214-1294
- Francis Bacon, 1561-1626
- Galileo Galilei, 1564-1642
- Robert Hooke, 1635-1703
- Isaac Newton, 1642-1727

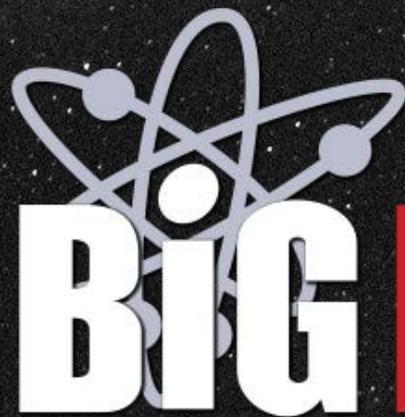
**All devout
Christians**

"The most incomprehensible thing about the universe is that it is comprehensible." ~
Albert Einstein, 1936

A satellite with large solar panels is shown in space, with the Earth's horizon and atmosphere visible in the background. The satellite is positioned on the left side of the frame, extending towards the center.

the
BIG BANG
THEORY

God-Friendly
Model



the **BIG BANG** THEORY

NOT a chaotic explosion!

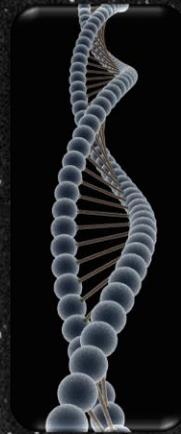
“If the rate of expansion one second after the big bang had been smaller by even [one part in a hundred thousand million million], the universe would have re-collapsed before it ever reached its present state.”

~ Stephen Hawking



The Origin of Life

Single
Living
Cell:
30v encyclopedia



“The mathematical odds of assembling a living organism are so astronomical that nobody still believes that random chance accounts for the origin of life...

Even if you optimized the conditions, it wouldn't work.

If you took all the carbon in the universe and put it on the face of the earth, allowed it to chemically react at the most rapid rate possible, and left it for a billion years, the odds of creating just one functional protein molecule would be one chance in 10 with 60 zeroes after it.”

~ Walter Bradley

Goldilocks Principle

*Too
Much*

*Too
Little*

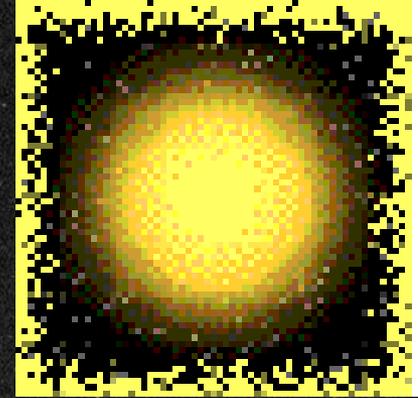
*Just
Right*

*Change
Anything
And
Life
Cannot
Exist!*



Earth's Design

– location and size



- *Earth's Location: distance from sun*
 - *1-2% farther...continual ice age*
 - *4-7% closer...too hot for oceans*
- *Earth's Size: gravity, atmosphere, heat*
 - *Bigger: hotter, thicker atmosphere*
 - *Smaller: colder, dryer, thinner atmosphere*



“THIN BLUE LINE”

- ***Earth’s gravity is just right to keep this thin layer of gases above us.***
- ***Our atmosphere:***
 - ***Acts as insulating blanket***
 - ***Protects us from harmful radiation***
 - ***Perfect composition to support life***





- ***Our atmosphere:***
 - ***78% nitrogen***
 - ***21% oxygen***
 - ***1% trace gases***

*Earth's liquid center gives us the **magnetic field** which protects us from the deadly solar winds...*

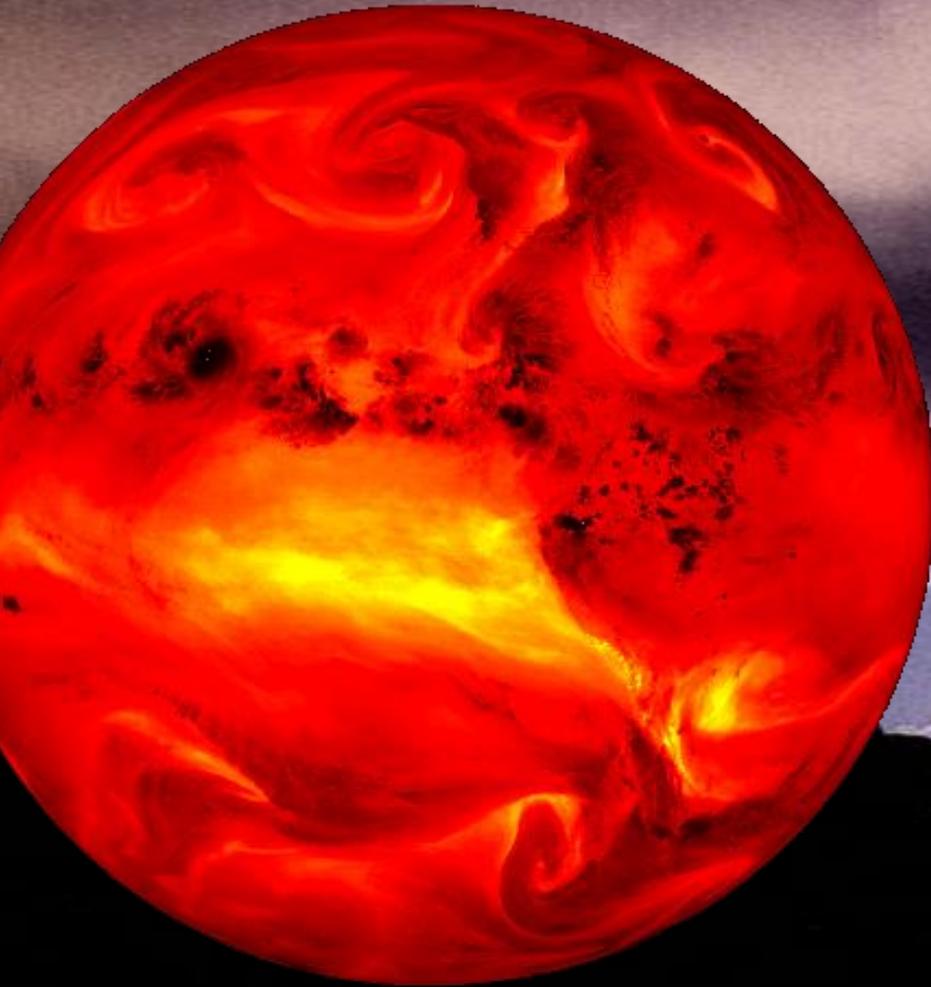
- Preserves the atmosphere*
- Enables migration*



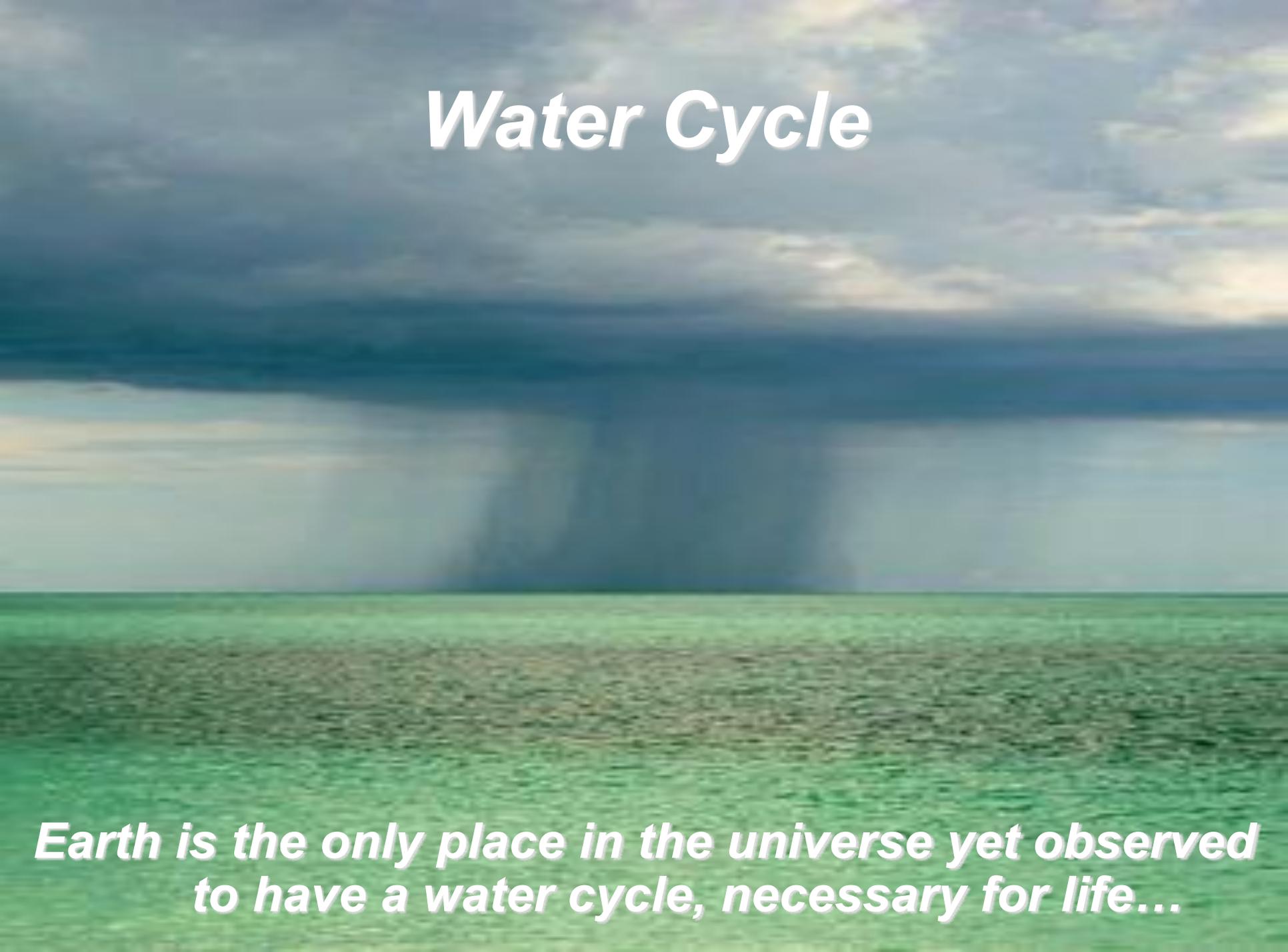
**solar wind particles creep through
magnetic field at earth's north & south
poles**



**Water vapor permeates the atmosphere,
delivering rain & keeping us warm...**



Water Cycle

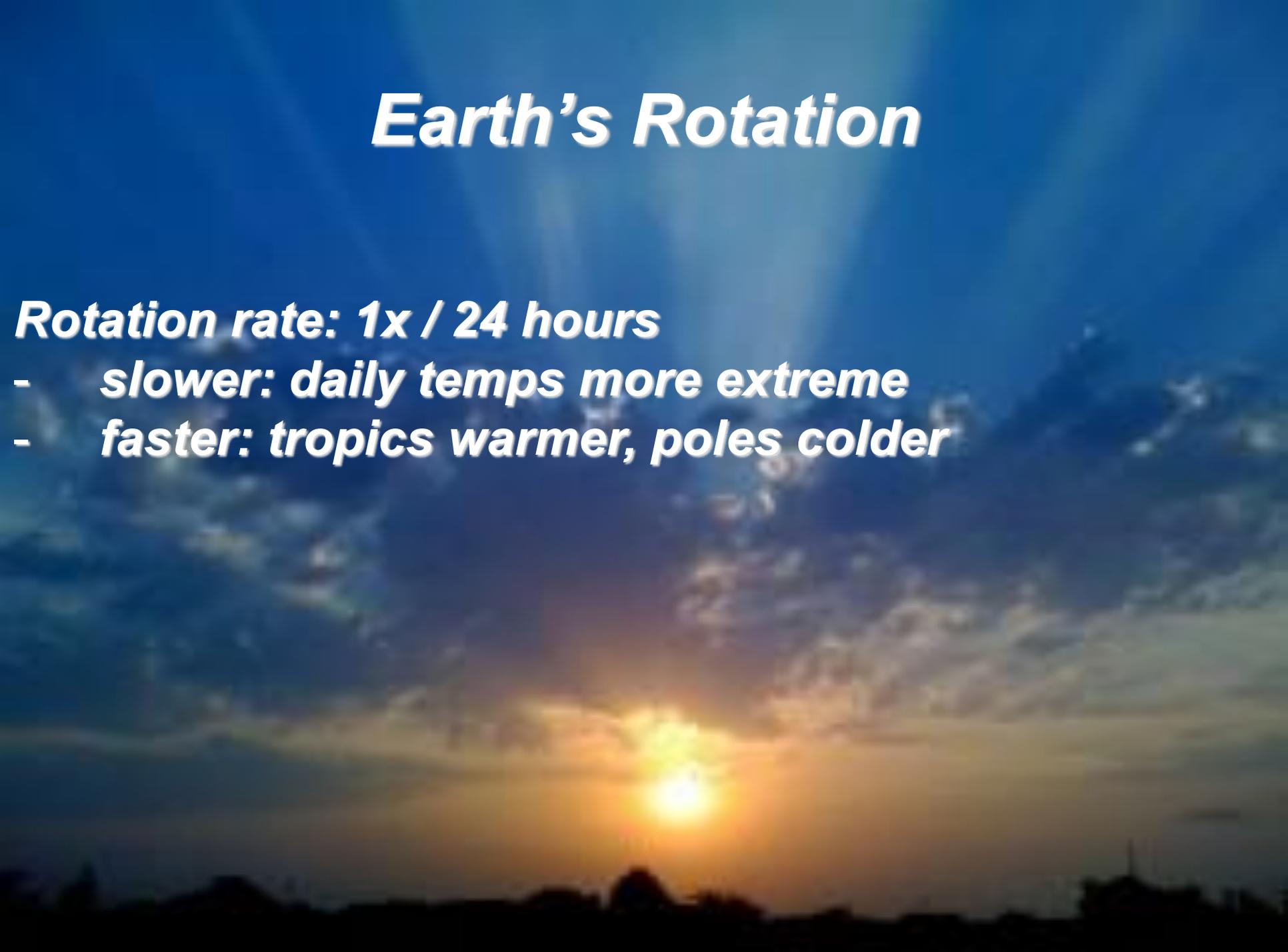
A dramatic landscape featuring a dark, stormy sky with heavy, dark clouds. A bright, greenish field or plain stretches across the foreground, contrasting sharply with the dark sky. The overall mood is intense and atmospheric.

Earth is the only place in the universe yet observed to have a water cycle, necessary for life...

Earth's Rotation

Rotation rate: 1x / 24 hours

- *slower: daily temps more extreme*
- *faster: tropics warmer, poles colder*



Earth's Axial Tilt

Hurricane Bonnie, Atlantic Ocean
STS-47

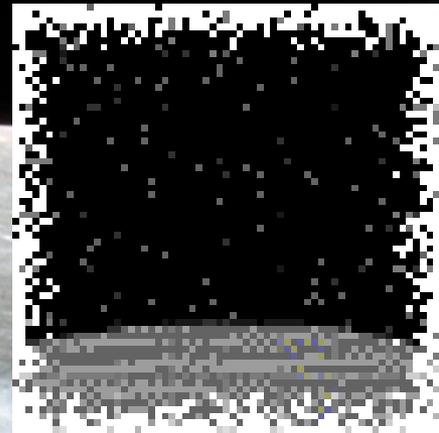
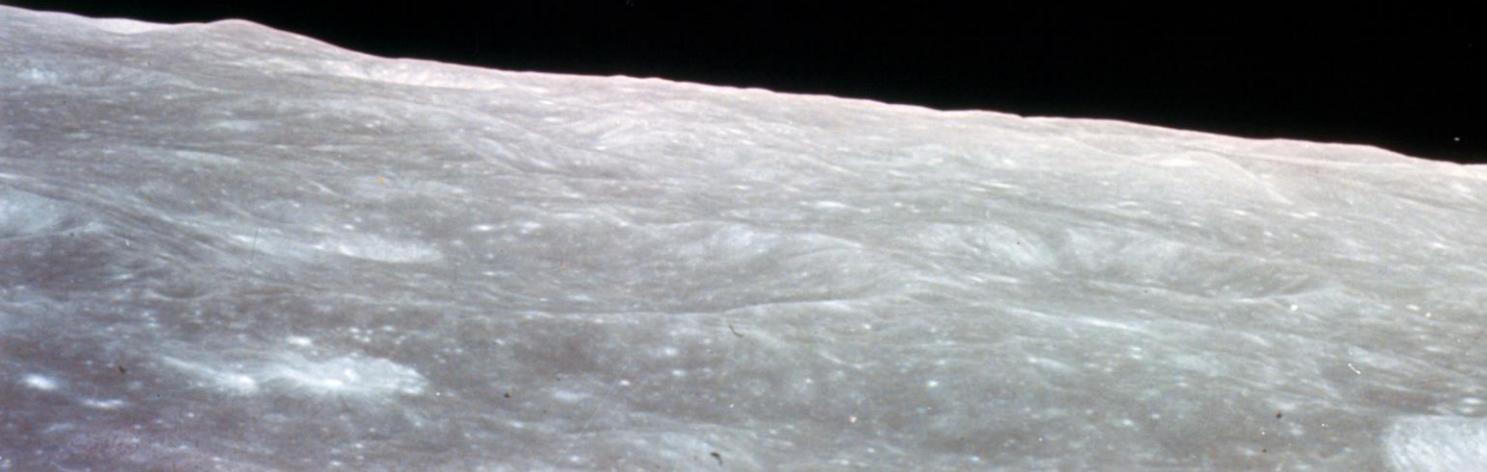


- *23.5 degree tilt -> seasons*
 - *2x farmland*



Earth's Moon

- bigger or closer...***
- smaller or farther...***
- perfect size for solar eclipses!***



Earth's Crust

- Ranges from 4 miles thick in ocean basins to 30 miles thick under some mountain peaks*
- Just 10 feet thicker...*
- Any thinner...*



Our Unique Earth

**Thousands of extra solar planets have been discovered;
many sun-like stars could perhaps support planetary
systems...**

**All of our space exploration SO FAR has shown that our
neighbors in space are not remotely capable of sustaining
life of any complexity.**



**Venus, Earth's so-called
"sister planet": slightly smaller and a
little closer to the Sun...**





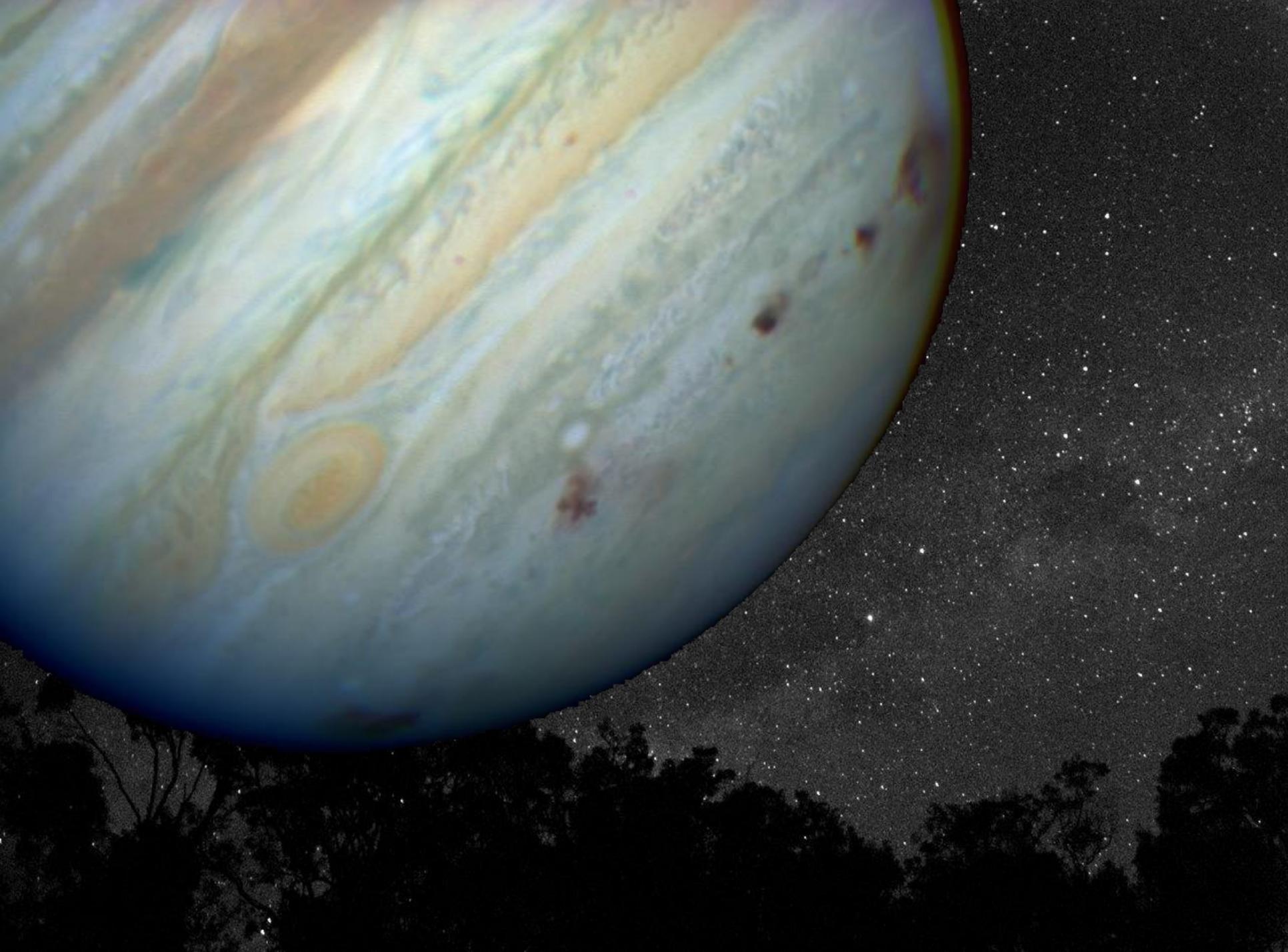
Mars, smaller & a little farther out...

Our planetary big brothers Jupiter and Saturn...



1994: Comet Shoemaker-Levy







Our Sun

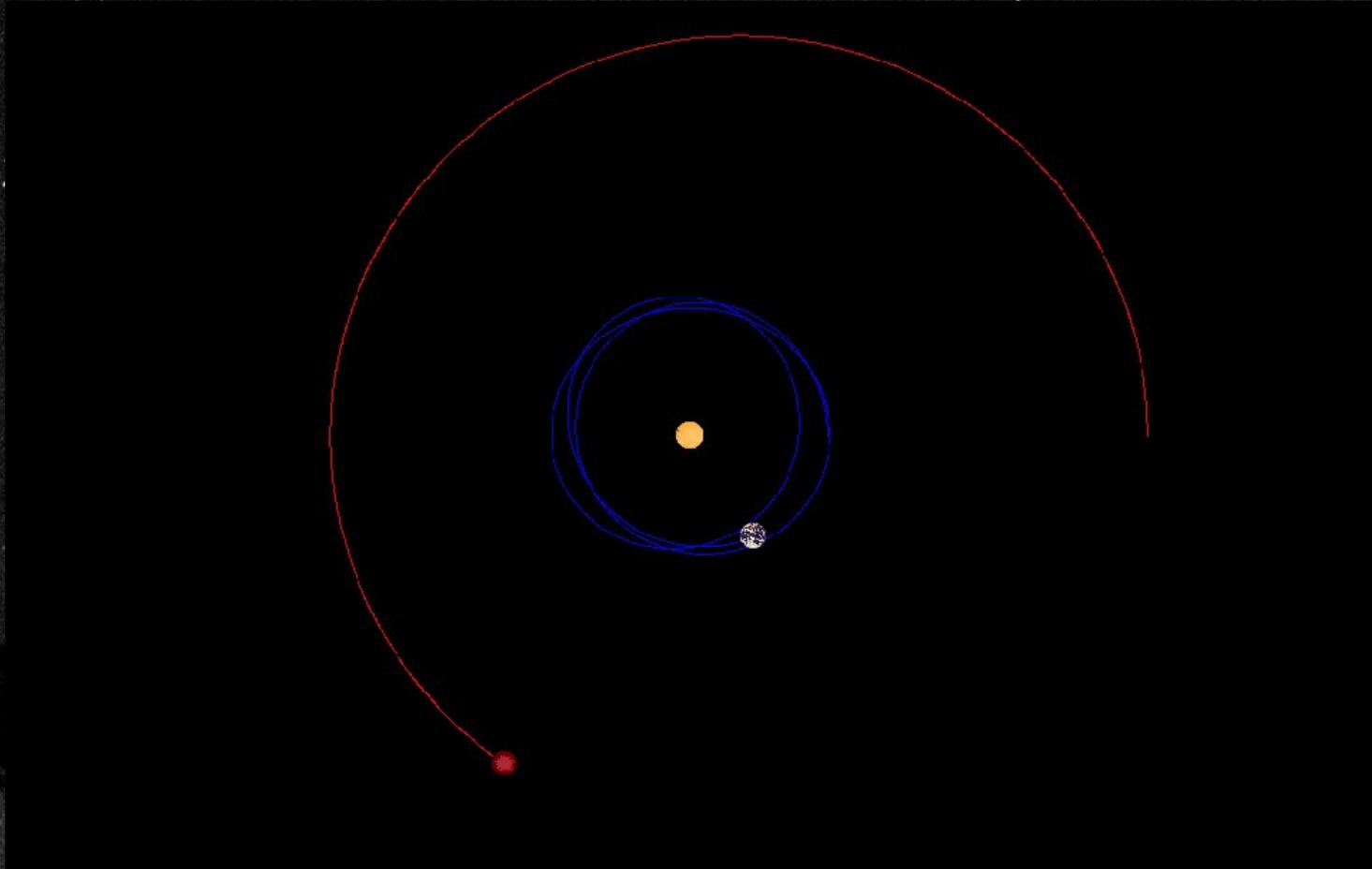
G2, medium sized, middle aged
perfect brightness, size and age for life

Change anything, no life!

***Our sun appears to
be a single star
(no nearby partner)***



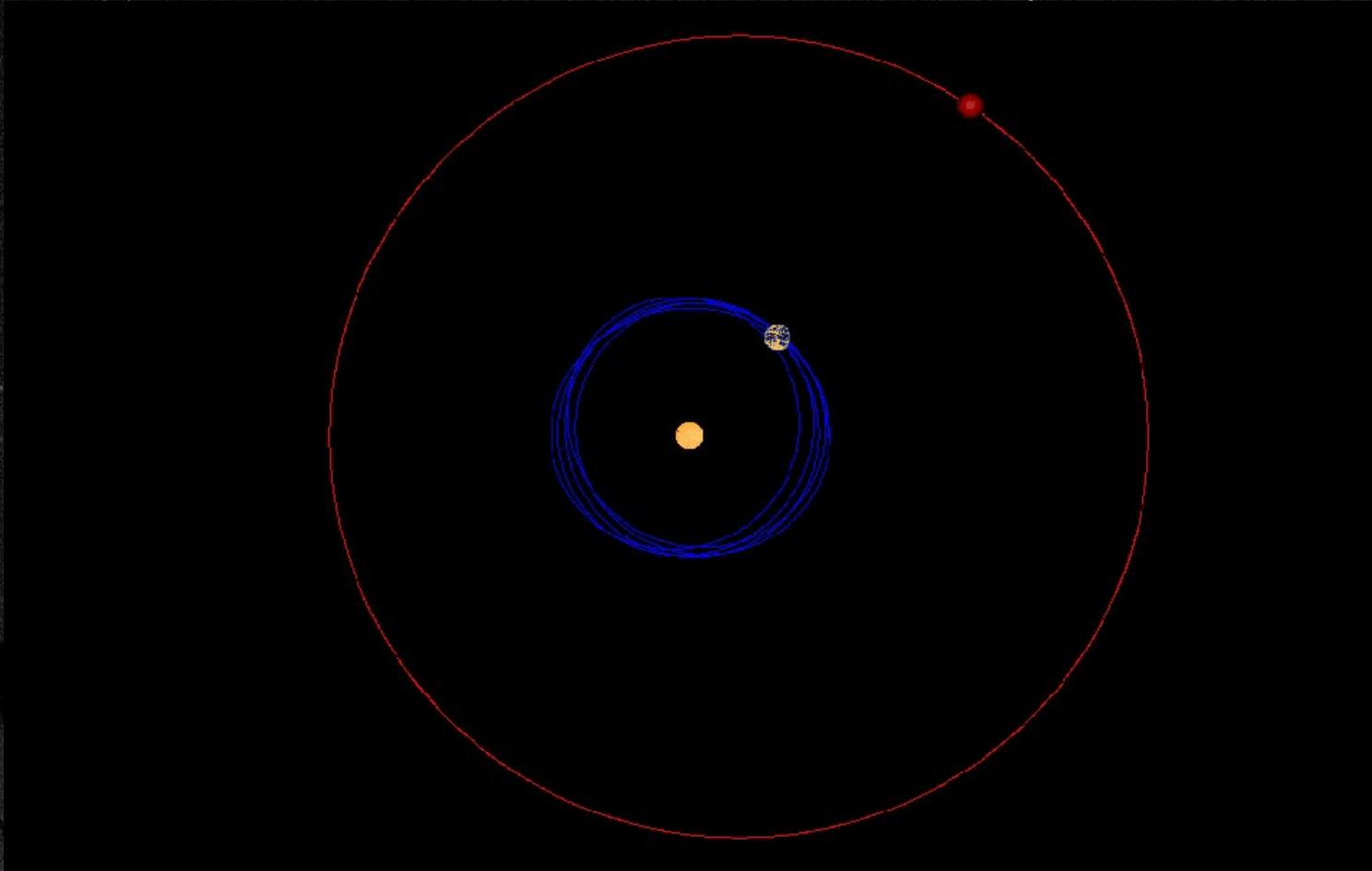
Earth in a Binary Star System - 1



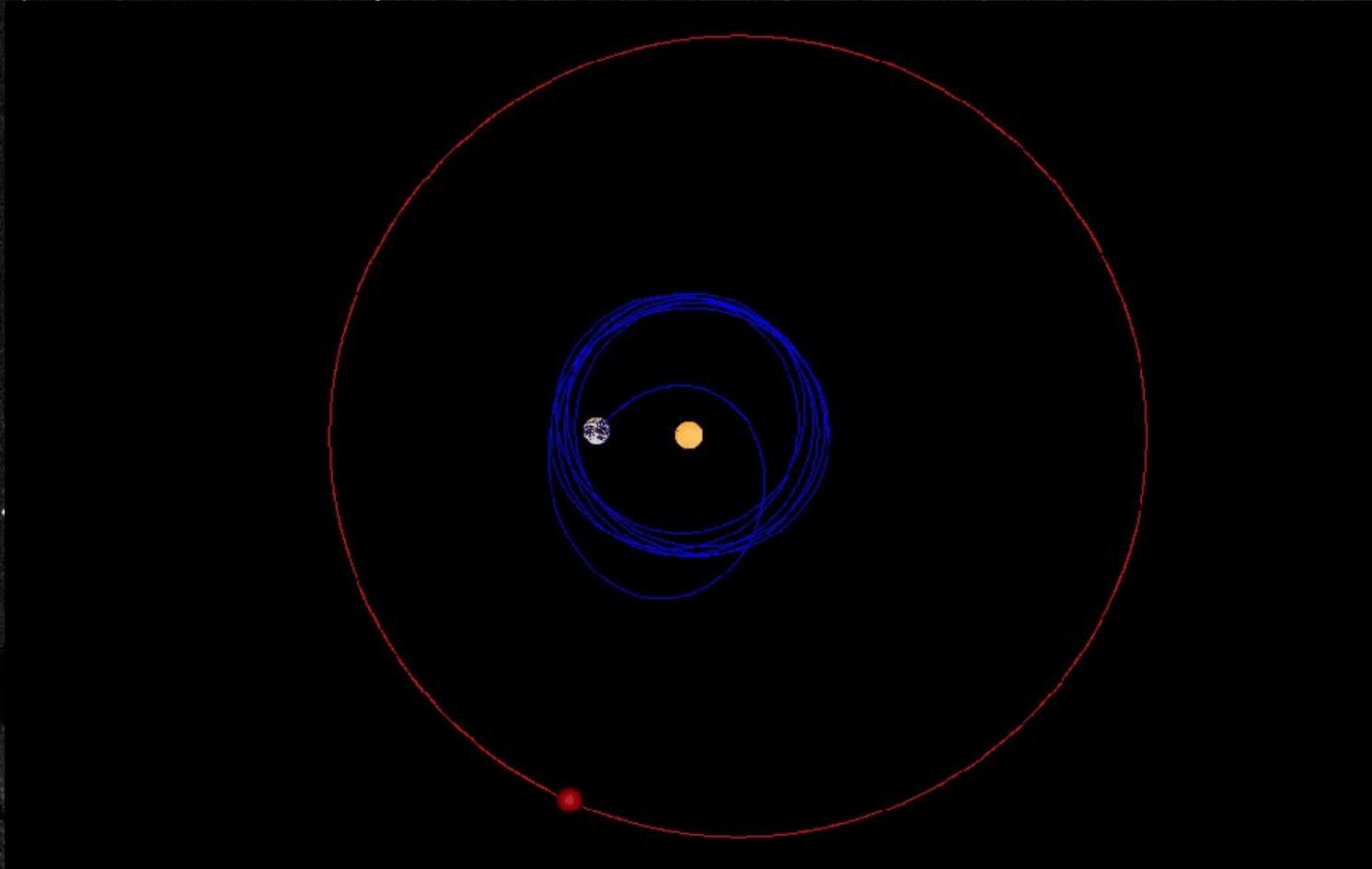
2nd Star: 70% mass of the Sun

3.3 AU from the Sun

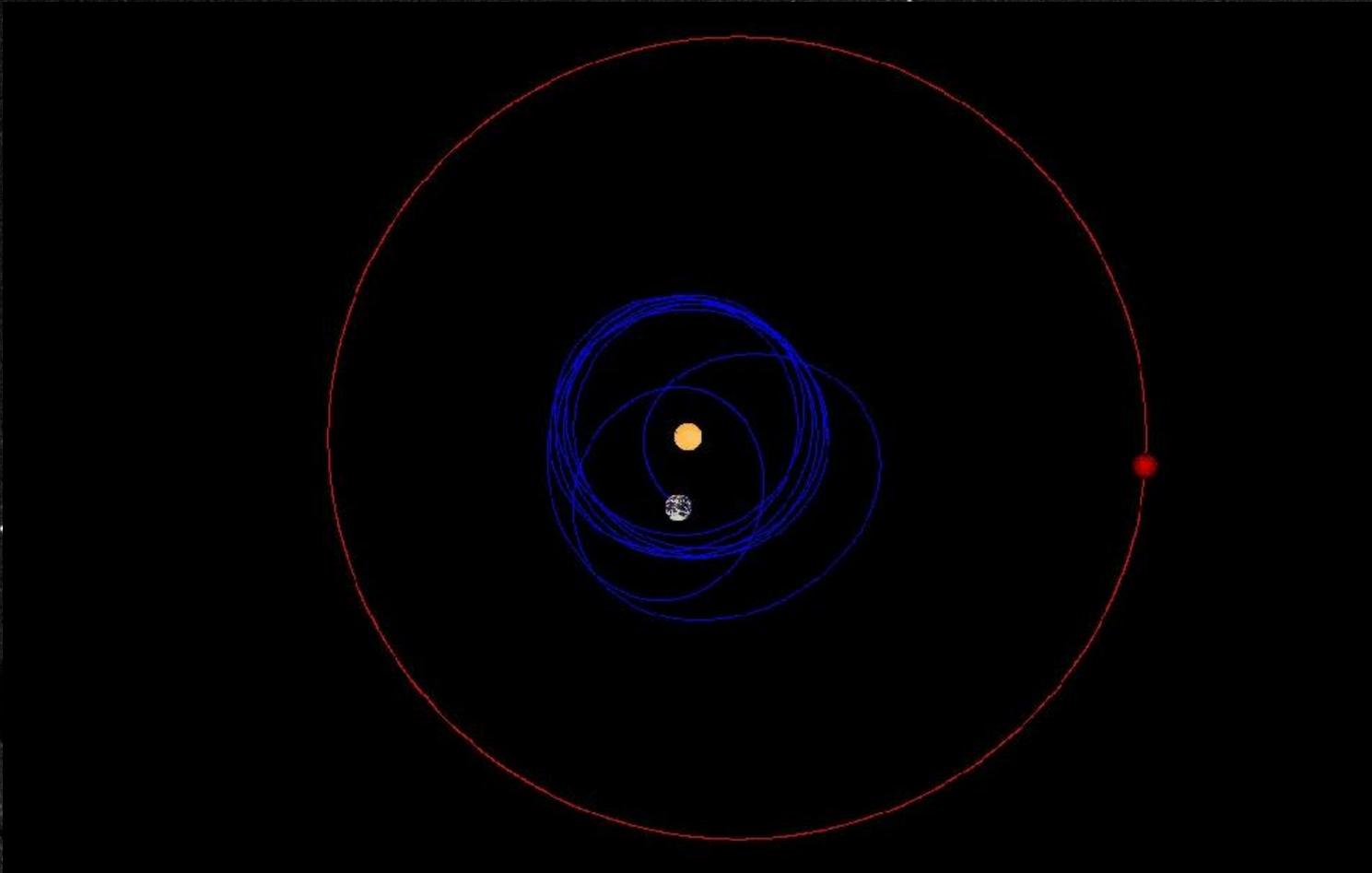
Earth in a Binary Star System - 2



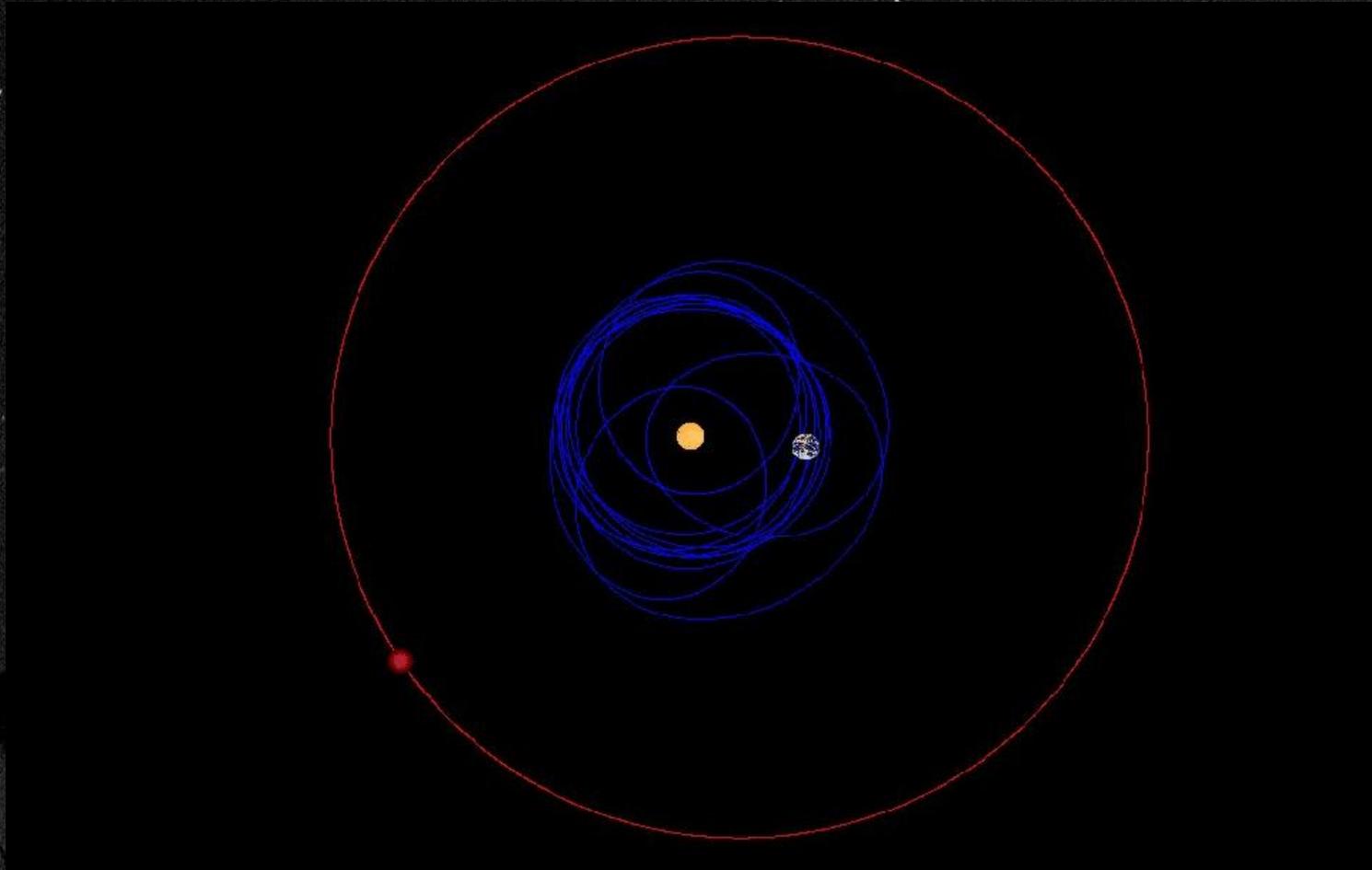
Earth in a Binary Star System - 3



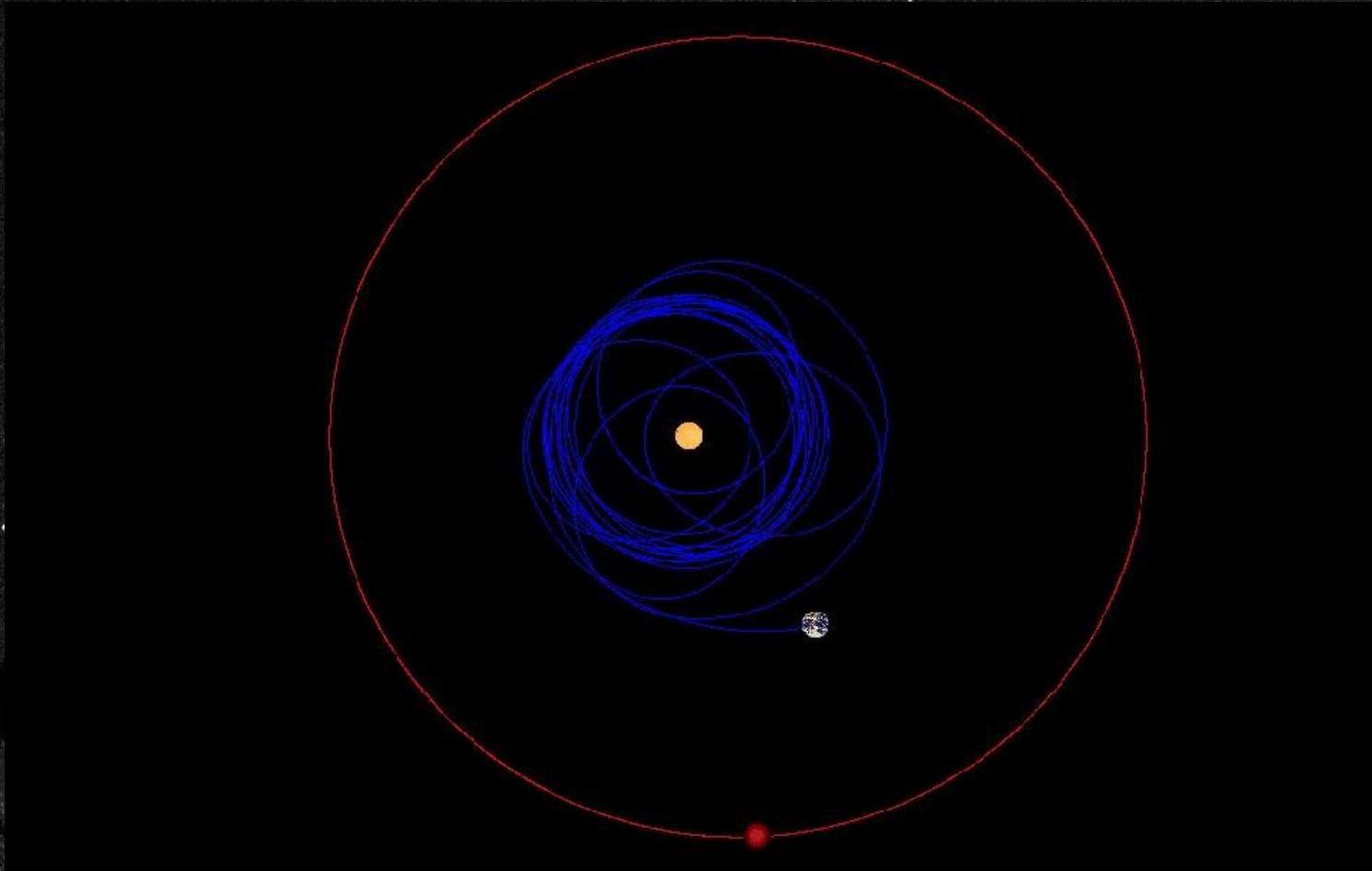
Earth in a Binary Star System - 4



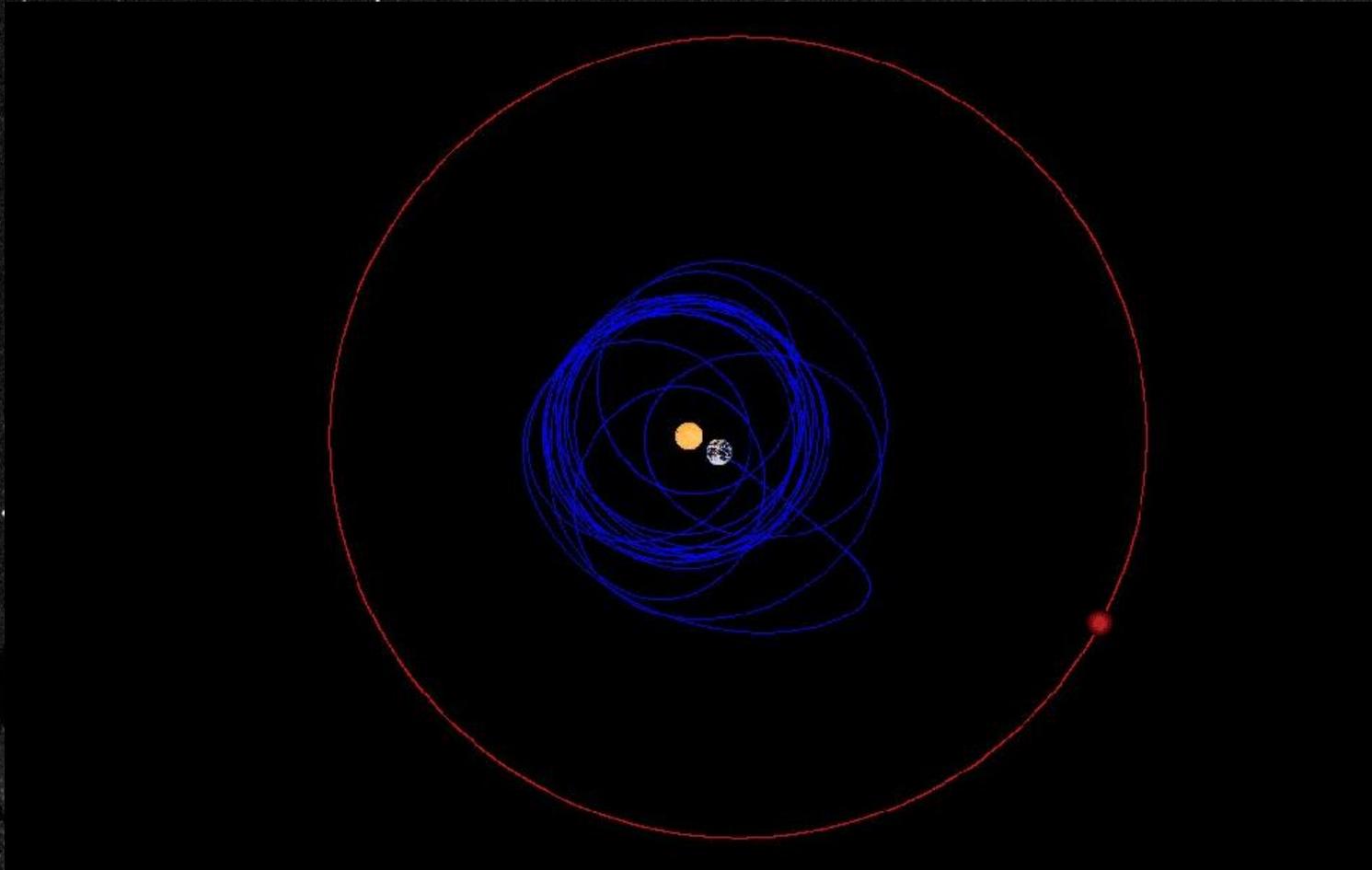
Earth in a Binary Star System - 5



Earth in a Binary Star System - 6

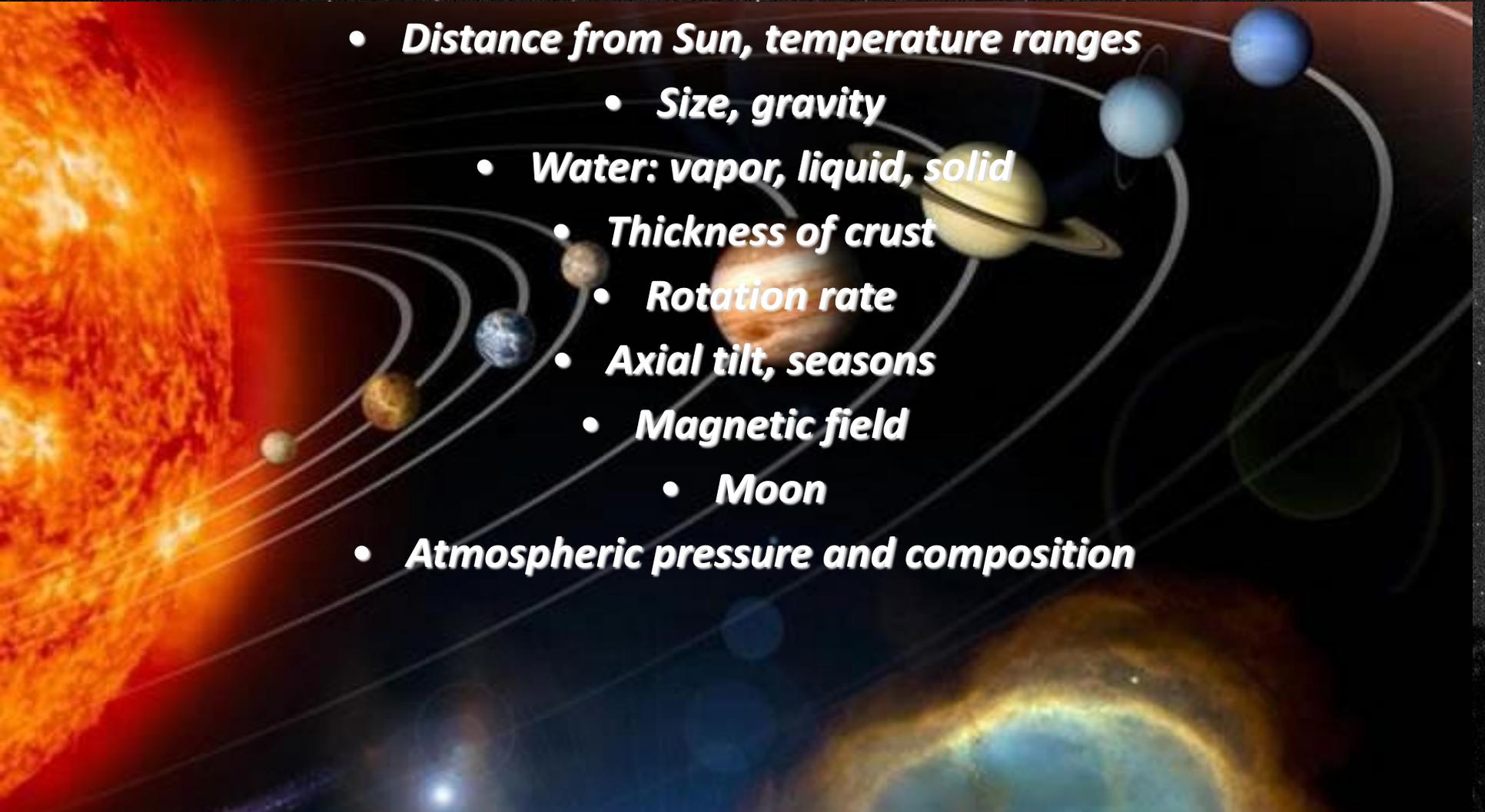


Earth in a Binary Star System - 7



Just Right Earth

Cosmic Lottery??

- 
- ***Distance from Sun, temperature ranges***
 - ***Size, gravity***
 - ***Water: vapor, liquid, solid***
 - ***Thickness of crust***
 - ***Rotation rate***
 - ***Axial tilt, seasons***
 - ***Magnetic field***
 - ***Moon***
 - ***Atmospheric pressure and composition***

Change anything and life cannot exist!

Fine-tuning throughout the universe

- **Velocity of light: amount of radiation**
- **Electromagnetic force: chemical bonding**
- **Strong nuclear force: atom/element building**
- **Expansion rate of universe: galaxy/star formation**
- **Mass density of the universe: expansion/crunch**



Against the odds...

- **Probability for 9 life-supporting design characteristics existing in one of the traditional 9 planets of our solar system:**

1 in 50 million

- **If we consider the several hundred finely tuned characteristics of the entire universe, the odds are more like 1 in 10^{280} for life to exist anywhere in the cosmos!**



The Multiverse Hypothesis

- Primary counter-argument to design
- An infinite number of separate universes, each with a different set of physical laws
- More chances for one universe to get all the numbers just right?

Chance, or Intelligence?

“...the degree of bio-friendliness we observe in the universe seems far in excess of what is needed to give rise to a few observers... If the ingenious bio-friendliness of our universe were the result of randomness, we might expect the observed universe to be minimally, rather than optimally, biophilic. Note too, that multi-verse explanations still need to assume the existence of laws of some sort, so they do not offer a complete explanation of the law-like order of the universe. Finally, invoking an infinity of unseen universes to explain certain features of the universe we do observe seems the antithesis of Occam’s Razor: It is an infinitely complex explanation.”

- Paul Davies, theoretical physicist

Science and Religion

can enlighten and inform each other as we seek to know ultimate
TRUTH



“For now we see through a glass, darkly, but then we shall see face to face; now I know in part; but then shall I know even as also I am known.” I Corinthians 13:12

■ **SCIENCE** is the tool we use to explore God's **CREATION!**



Tips for Getting Comfortable with the “Science & Faith” Dialog

- Approach the dialog with humility and grace, for “now we see through a glass darkly...”
- Understand the spectrum of positions/arguments on all sides
- Realize that most people are on a journey, still figuring out where they stand
- Recognize that these issues are not fundamental to your faith or your salvation
- Learn to live with the tension
- **It’s okay not to have it all figured out**
- **You don’t have to have all the “right” answers**
- **Don’t let arguments/disagreements upset you**

Saint Augustine's Advice:

In essentials, unity;
In non-essentials, liberty;
In all things, charity