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1ER CONGRESO INTERNACIONAL sobre CIENCIA Y FE

Are We Just a Speck in the Universe?

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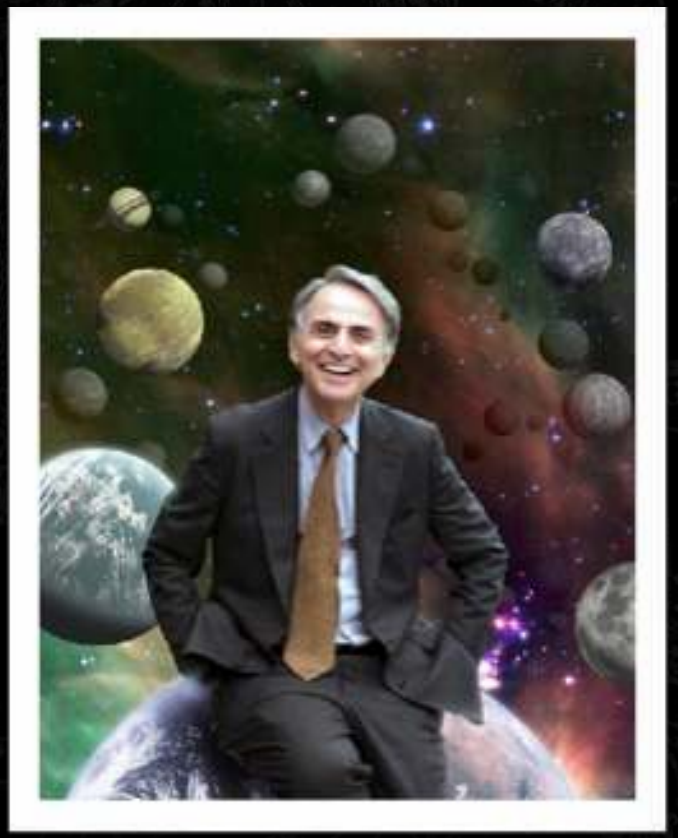
Jay W. Richards, OP, PhD
The Catholic University of America & Discovery Institute

Materialism

"The Cosmos is all that is, or ever was, or ever will be."

- Carl Sagan



Copernican Principle

". . . Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves." 

-Carl Sagan, *Pale Blue Dot*


Are we *really* an insignificant speck in the universe?
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The PRIVILEGED PLANET

Carbon and Water

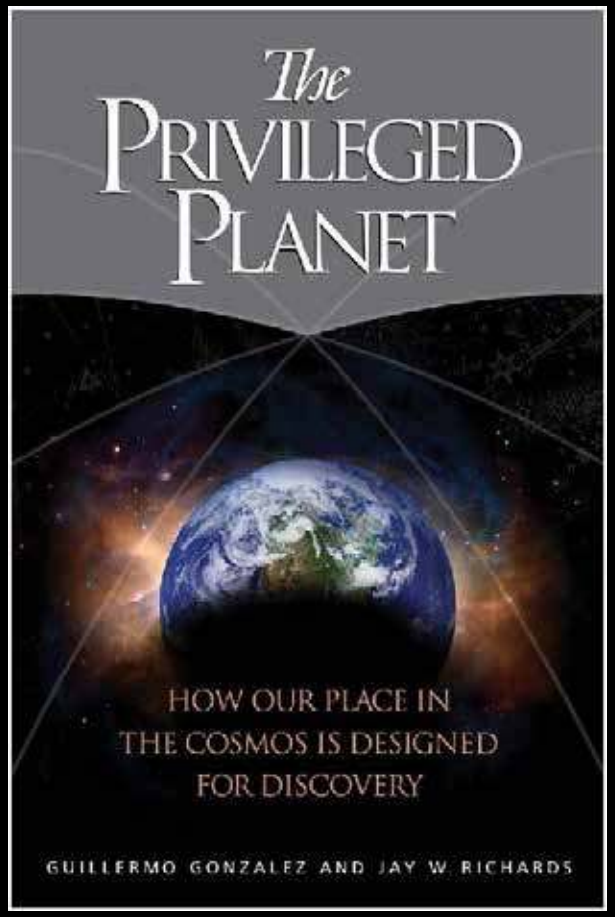

A Habitable Planet
Liquid water
Right terrestrial planet
Stabilizing moon
Plate tectonics
Right atmosphere


A Habitable Planet
• Right planetary neighbors
• Right single star
• Right galaxy
• Galactic location
• Right cosmic time

The Dilemma

Chance,
or
Design?

Our Argument



Habitability correlates *with* Measurability

The same narrow circumstances that allow us to exist also provide us with the best *overall* setting for making scientific discoveries.

The very conditions that make Earth hospitable to intelligent life also make it well suited to viewing and analyzing the universe as a whole.

Examples of the "Correlation"

- Perfect solar eclipses
- Layering processes
- Plate tectonics
- Transparency of atmosphere
- Planetary neighbors
- Stars
- Galactic location
- Cosmic time
- Fine-tuned cosmos

Examples of the "Correlation"

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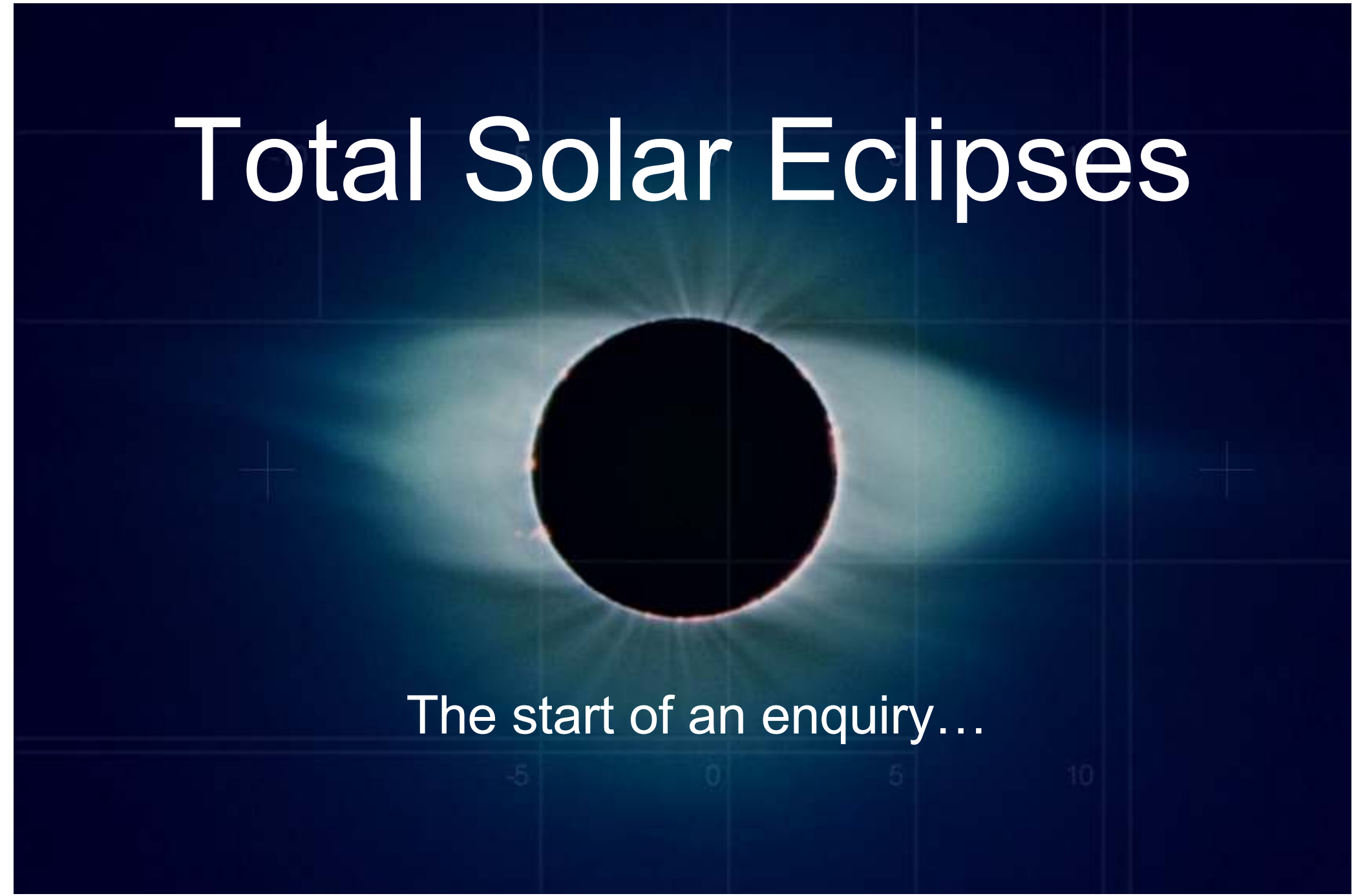
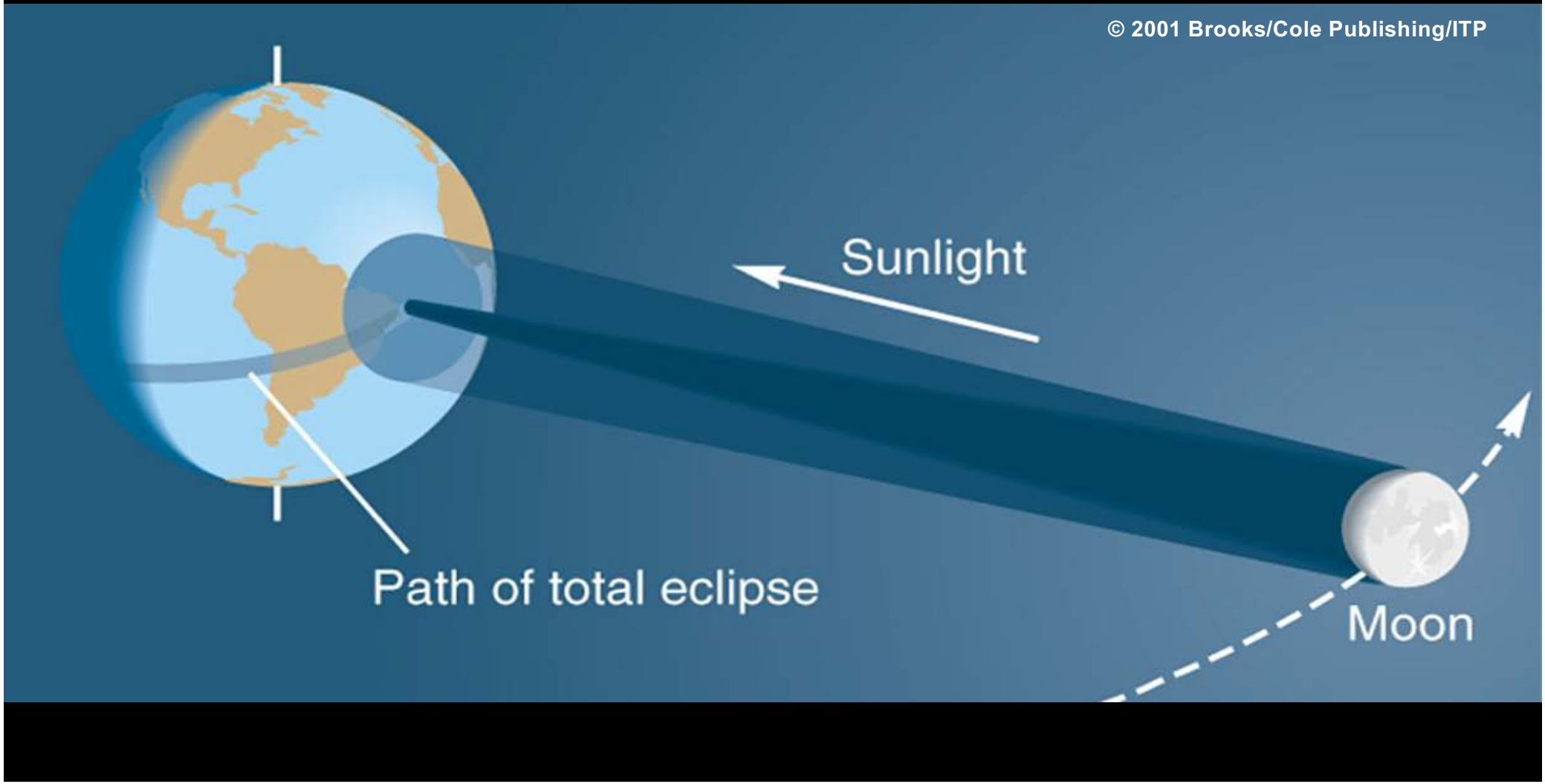
Total Solar Eclipses



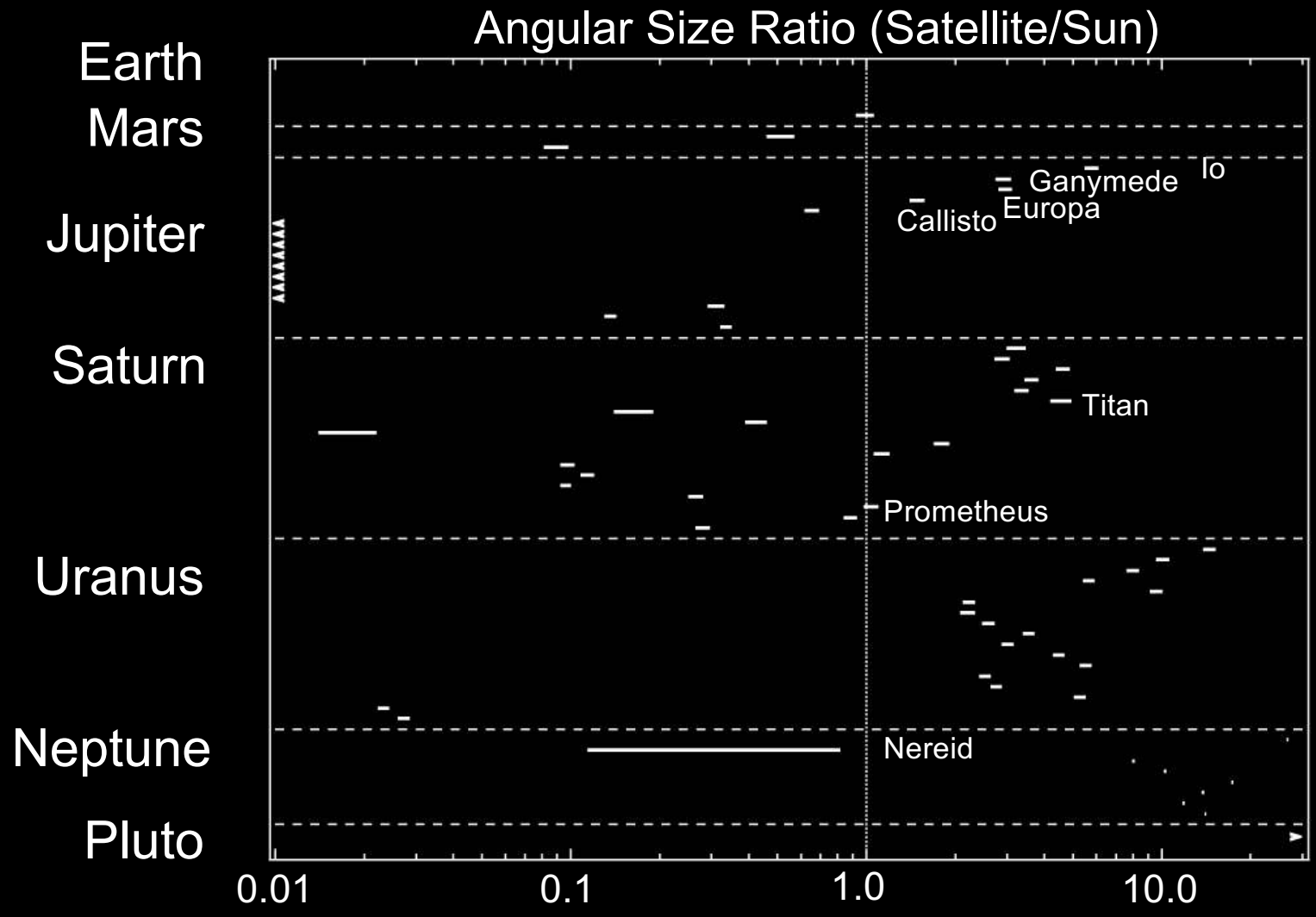
The start of an enquiry…

How To See an Eclipse



Perfect Eclipses

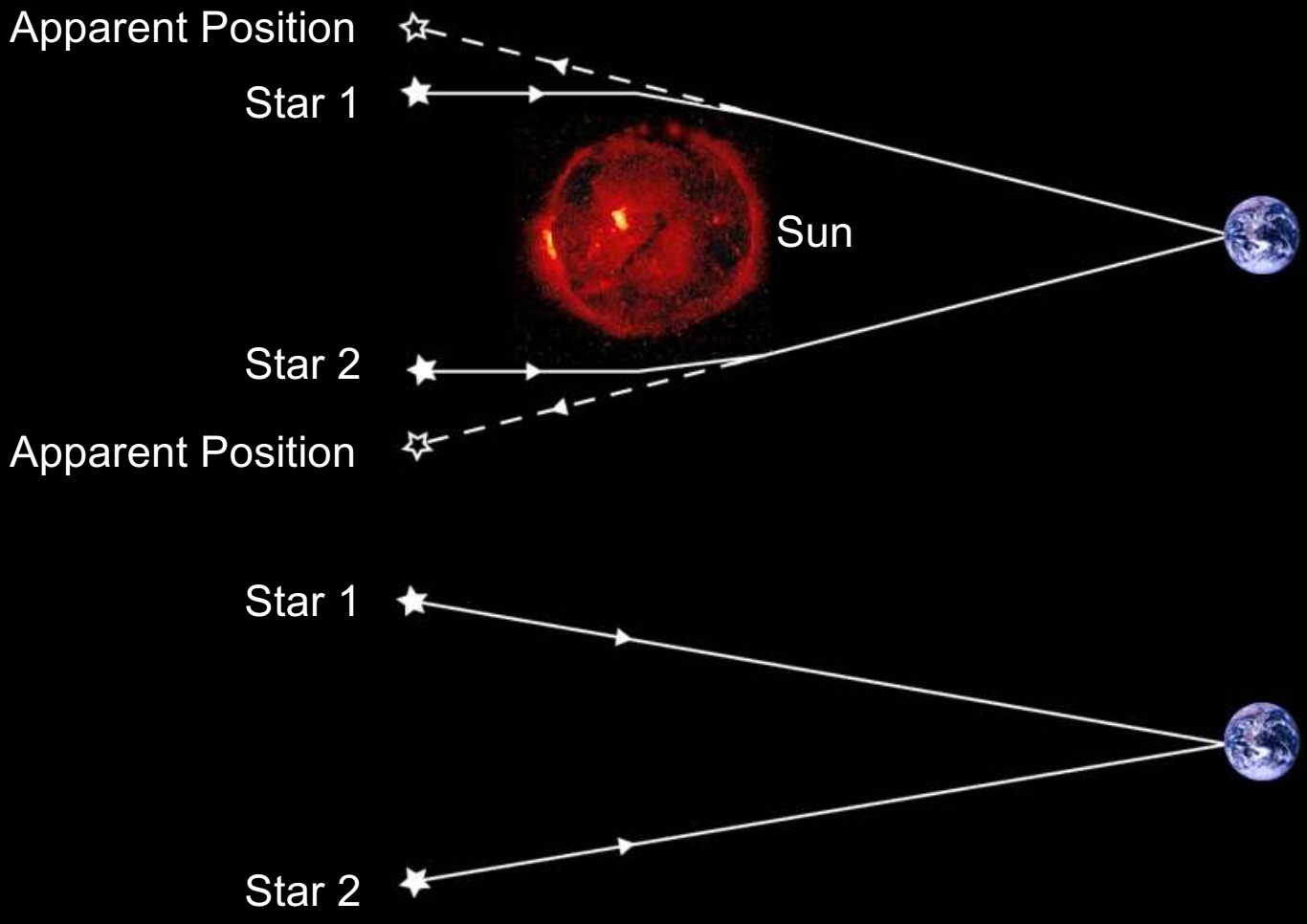
Solar Eclipses in the Solar System



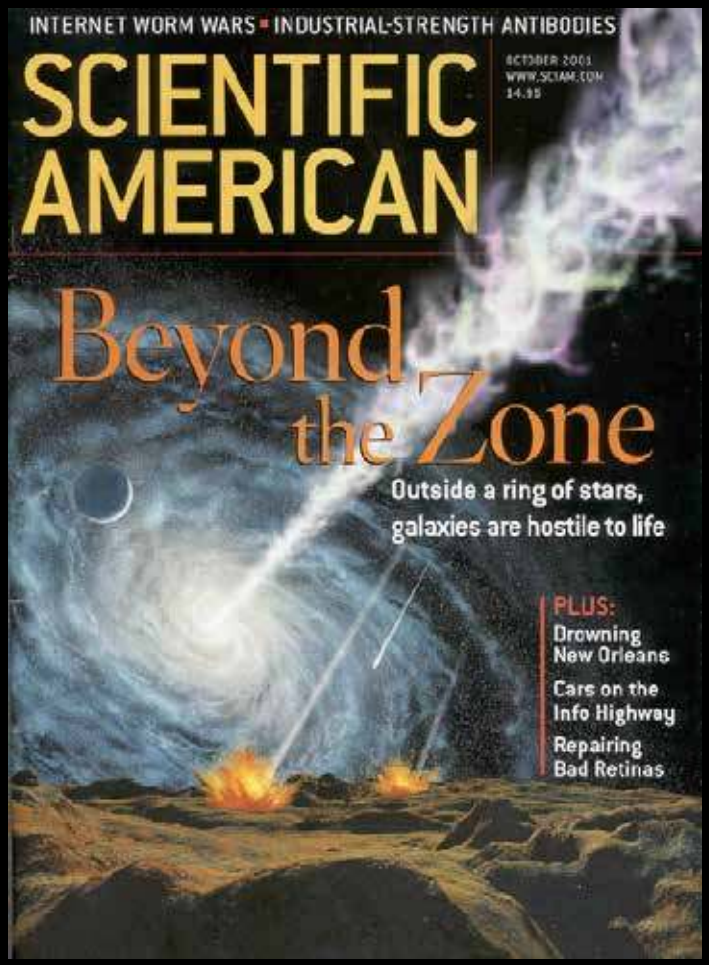
Eclipses are important for scientific discovery.

- Test of General Relativity
- Makes chromosphere detectable
- Helps reveal stars as hot balls of gas

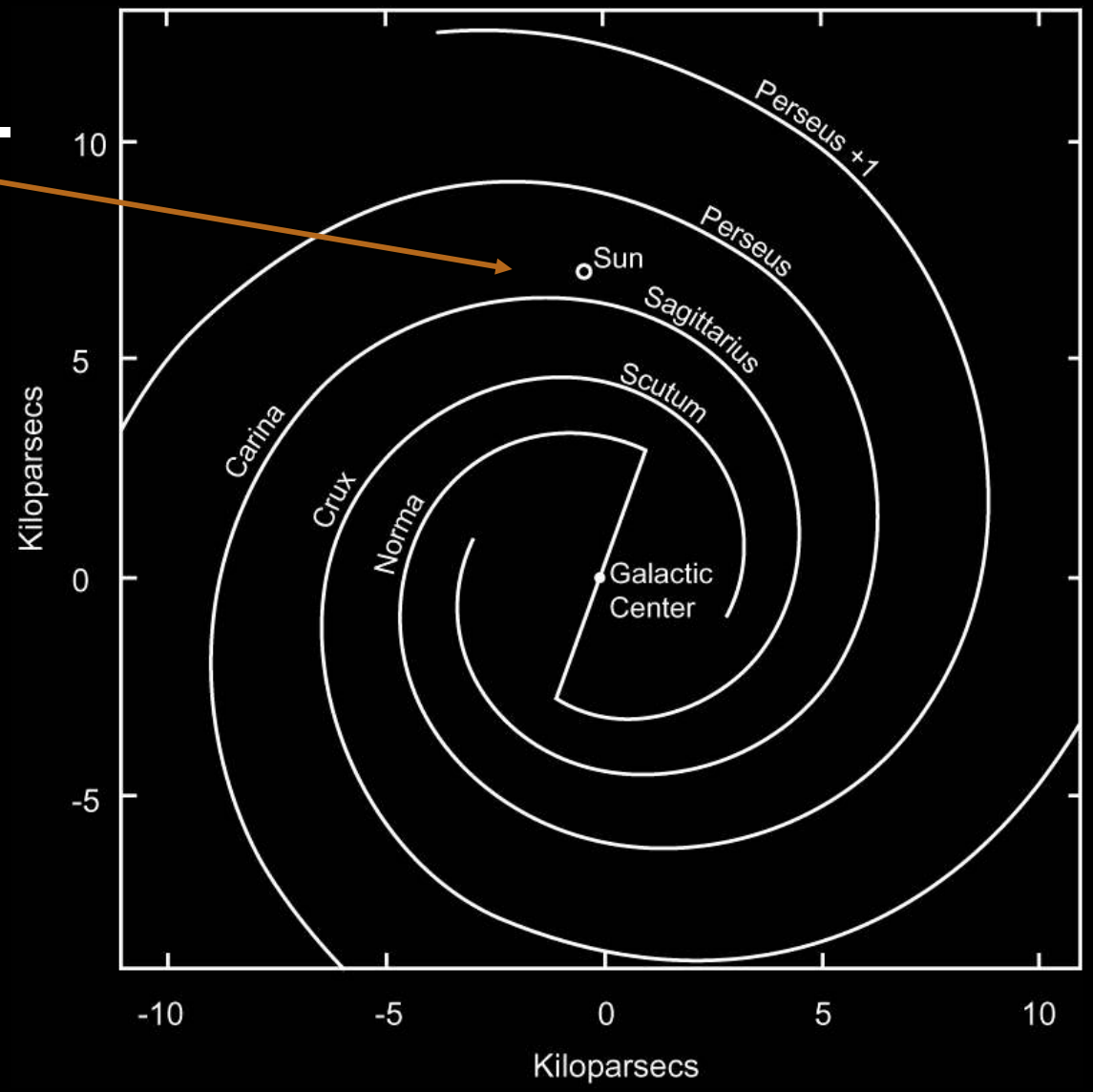
Test of General Relativity



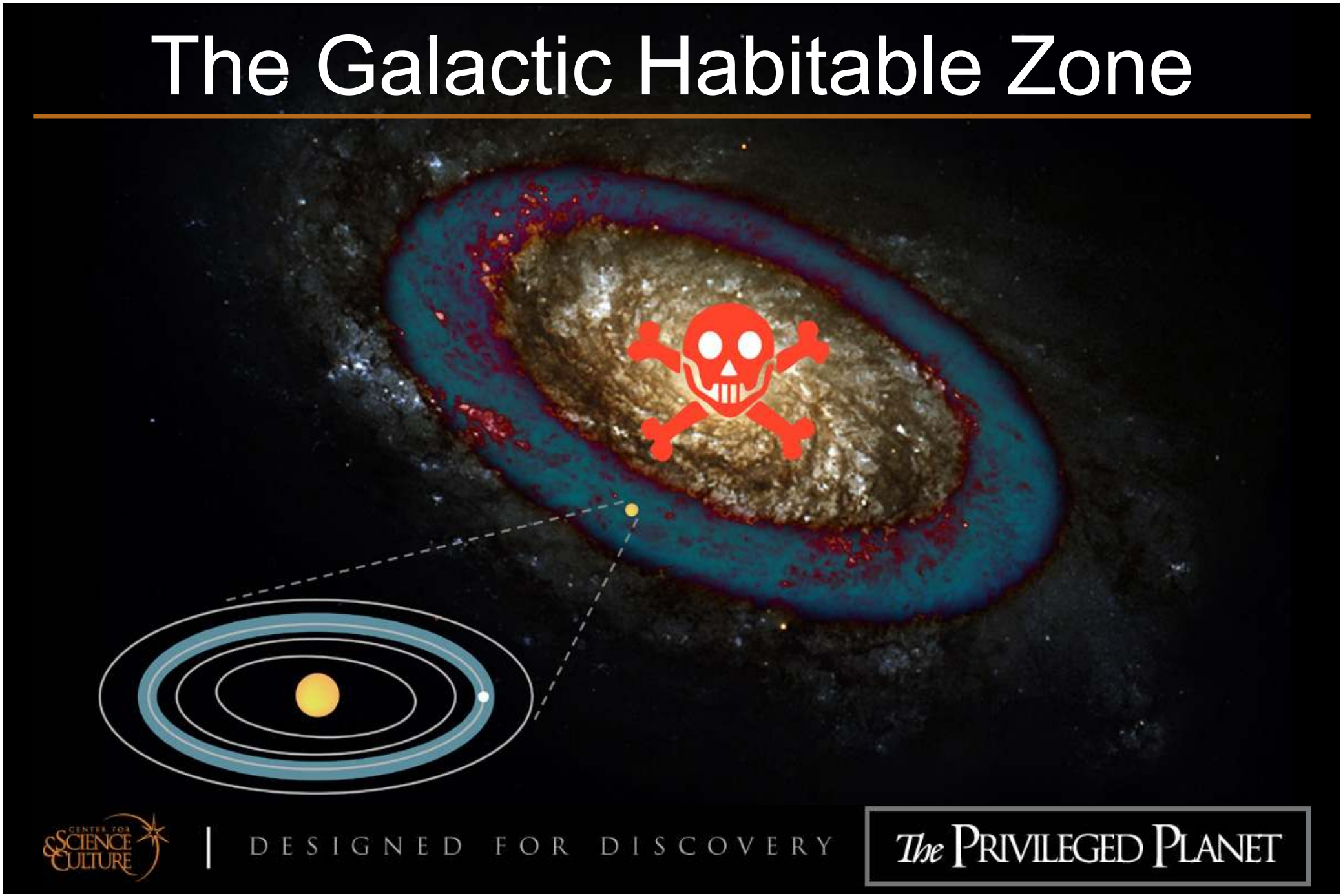
The Galactic Habitable Zone



We are here.


Perseus +1
Perseus
Sun
Sagittarius
Scutum
Carina
Crux
Norma
Galactic
Center
10
5
0
-5
Kiloparsecs
-10
-5
0
5
10
Kiloparsecs

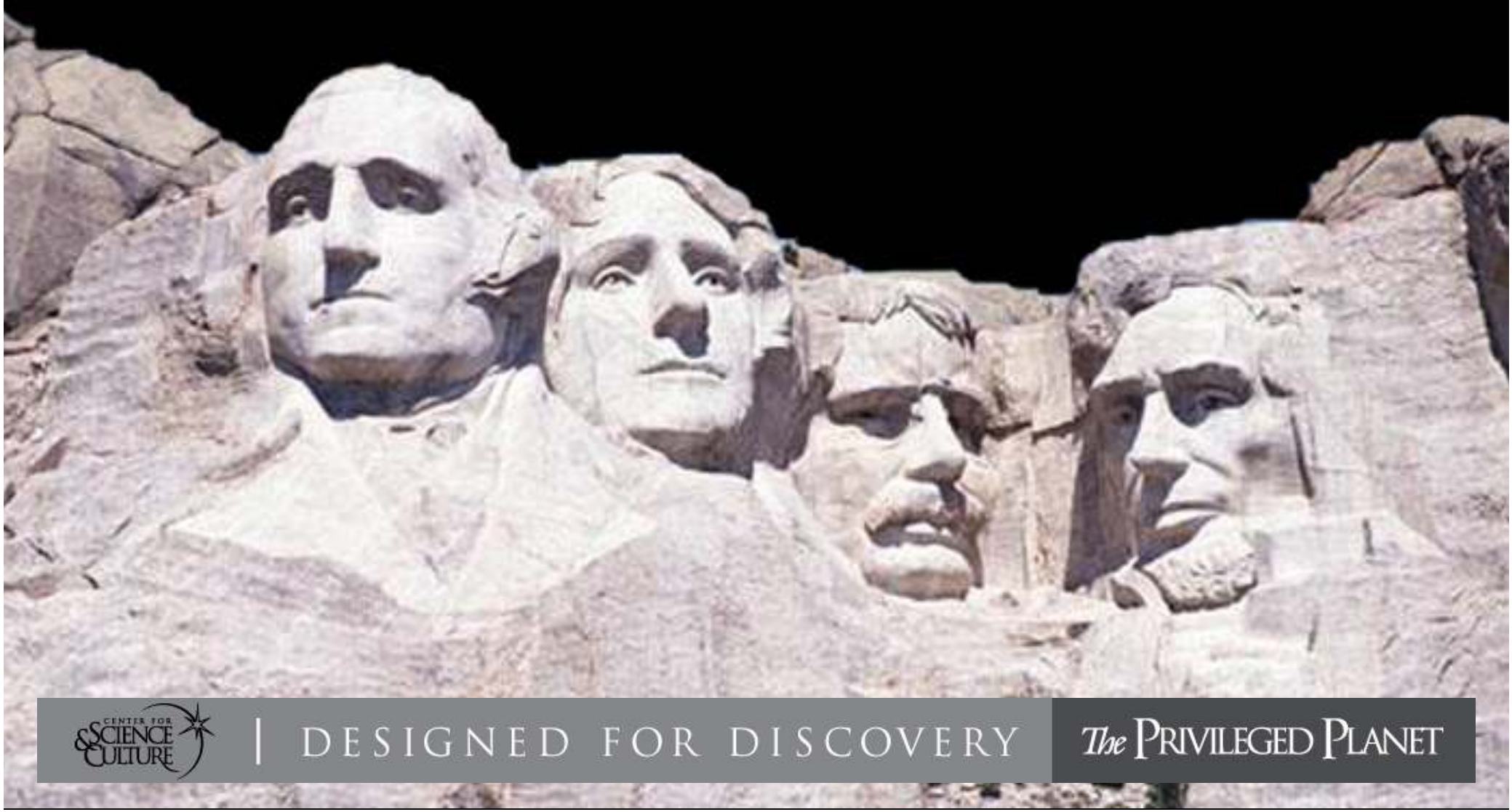
The Galactic Habitable Zone



For science, where would you want to be?


SO
WHAT?

Detecting Design



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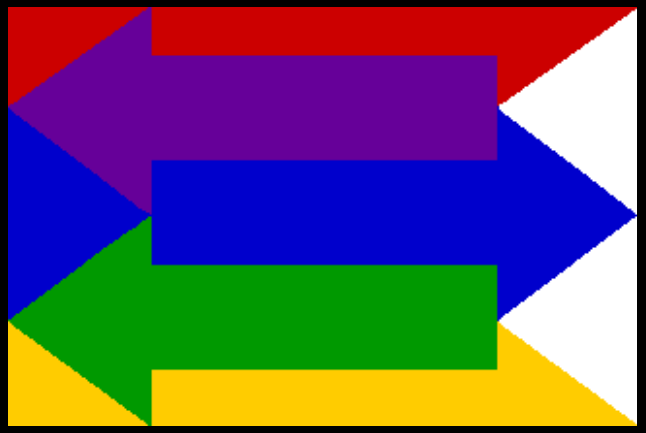
Complexity = Improbability

- The conditions that allow for habitability are improbable.
- The conditions that allow for measurability are improbable.

Specification = a meaningful pattern



The correlation of habitability and measurability forms a meaningful pattern.


The Pattern:
Observers plus good conditions
for observing

A Modest Conclusion

The universe is fine-tuned so that environments habitable to observers will provide the best overall conditions for observation and discovery.

The universe is designed for *discovery*.

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