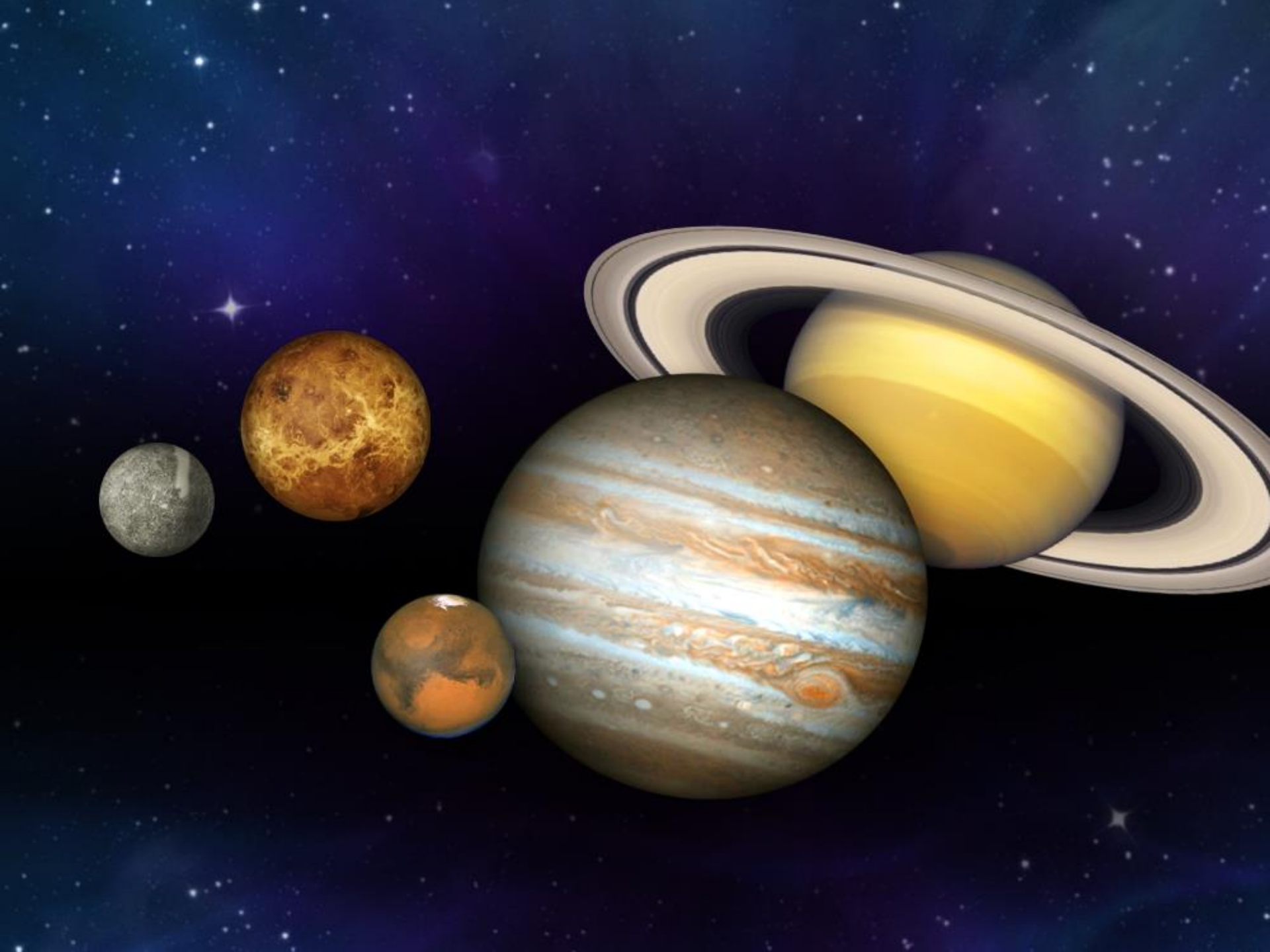
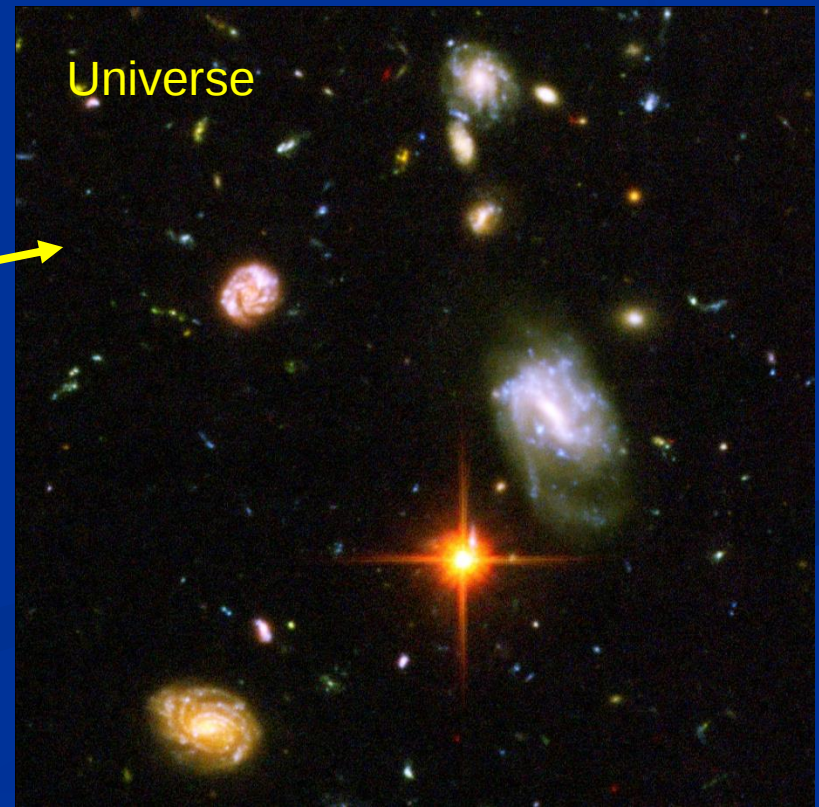
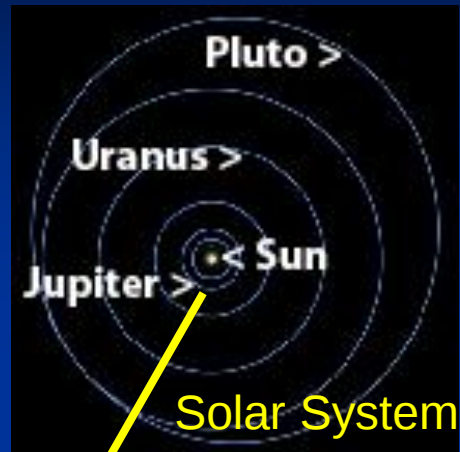
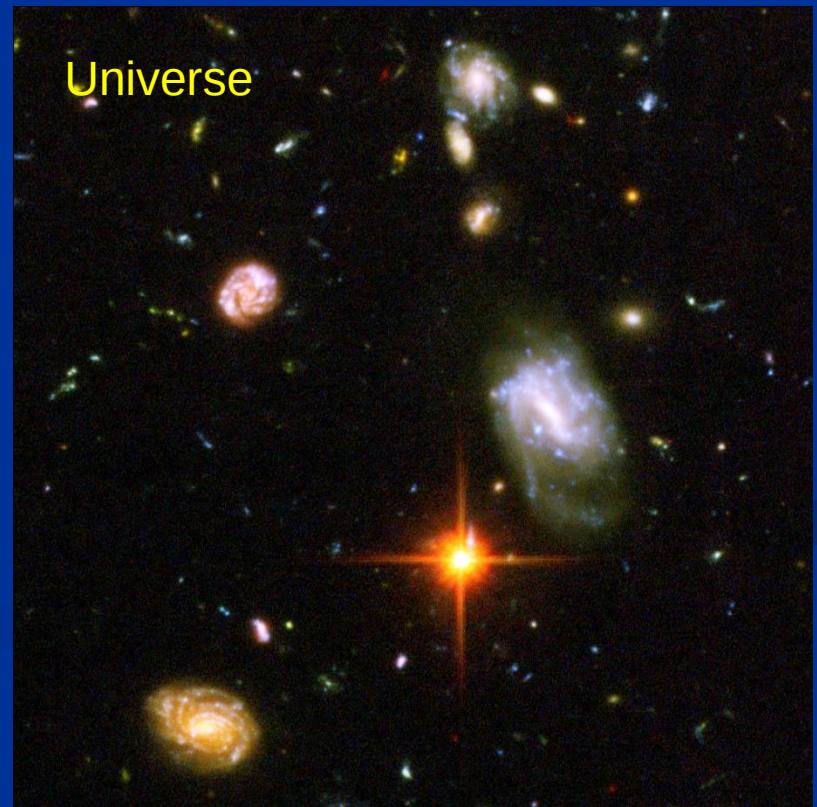
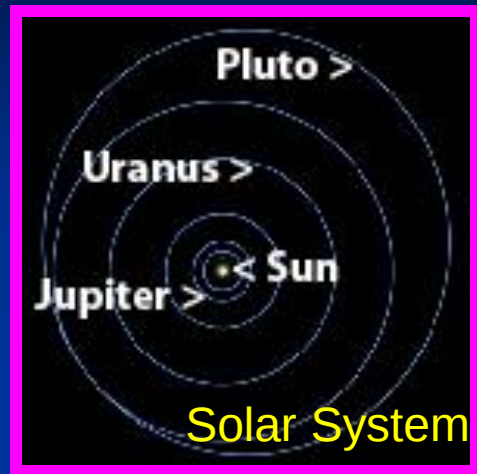




What's the Difference?



The Solar System



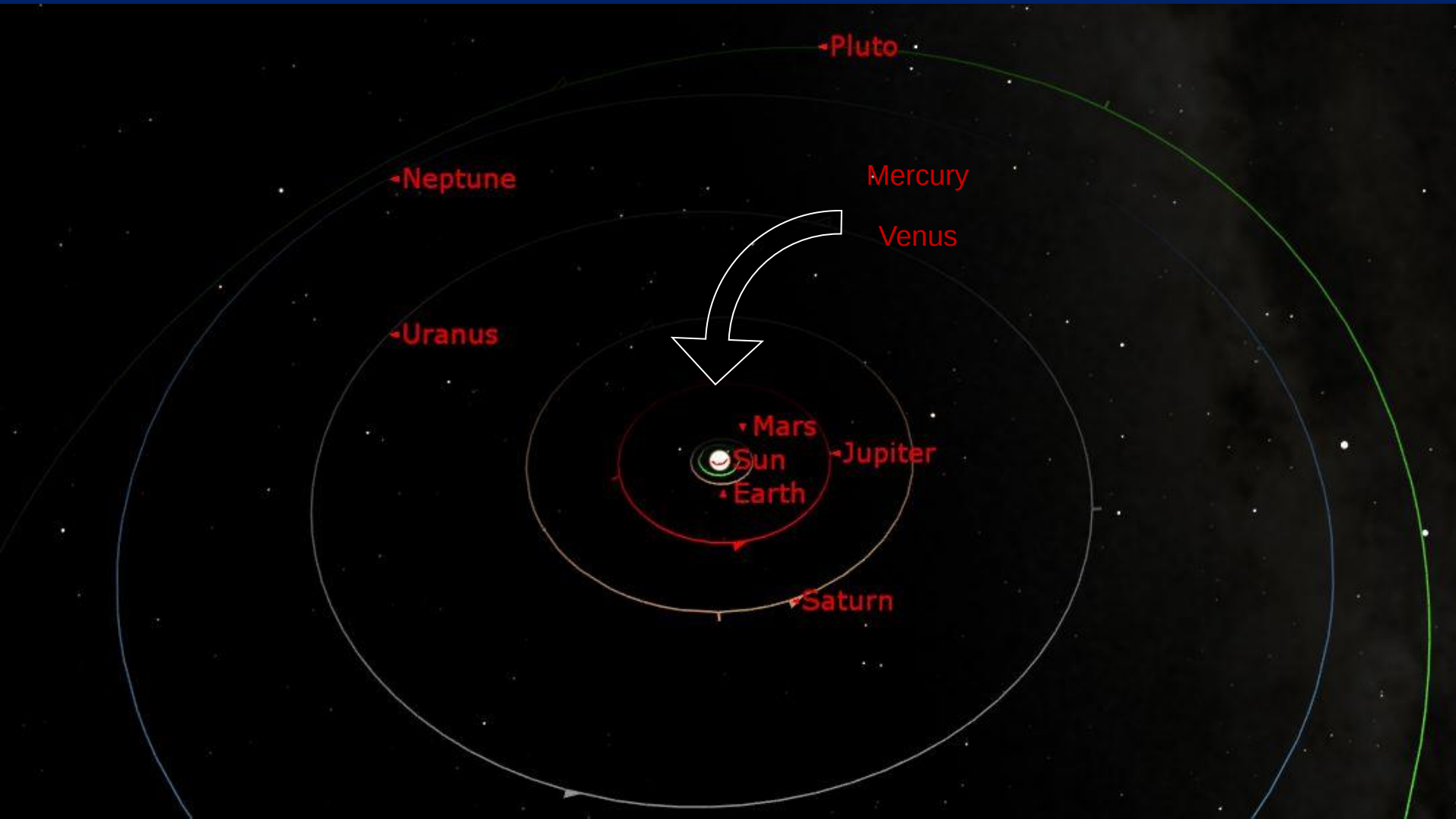
My Very Elegant Mother Just Sat Upon Nine Porcupines



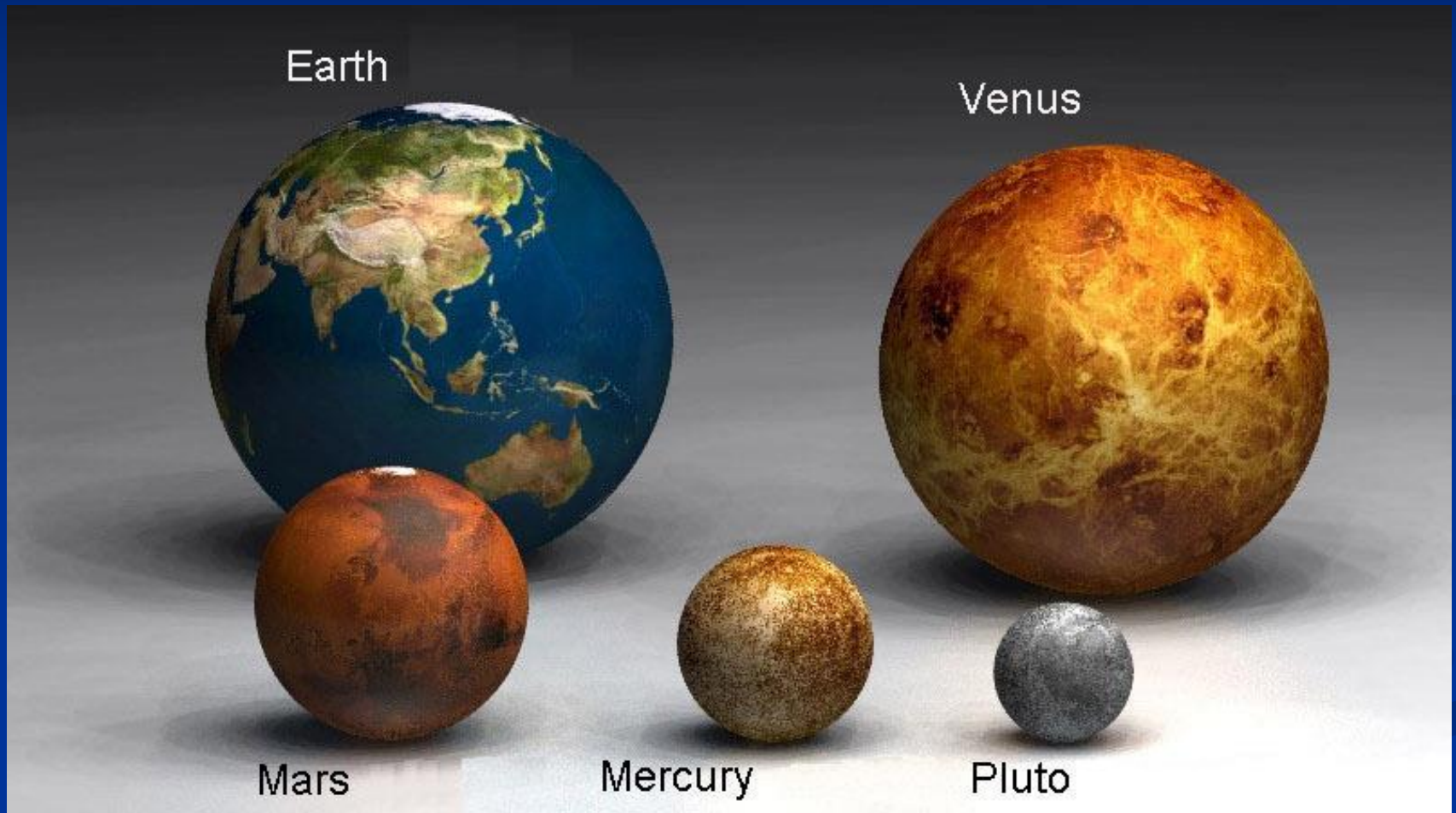
My Very Elegant Mother Just Sat Upon Nine Porcupines



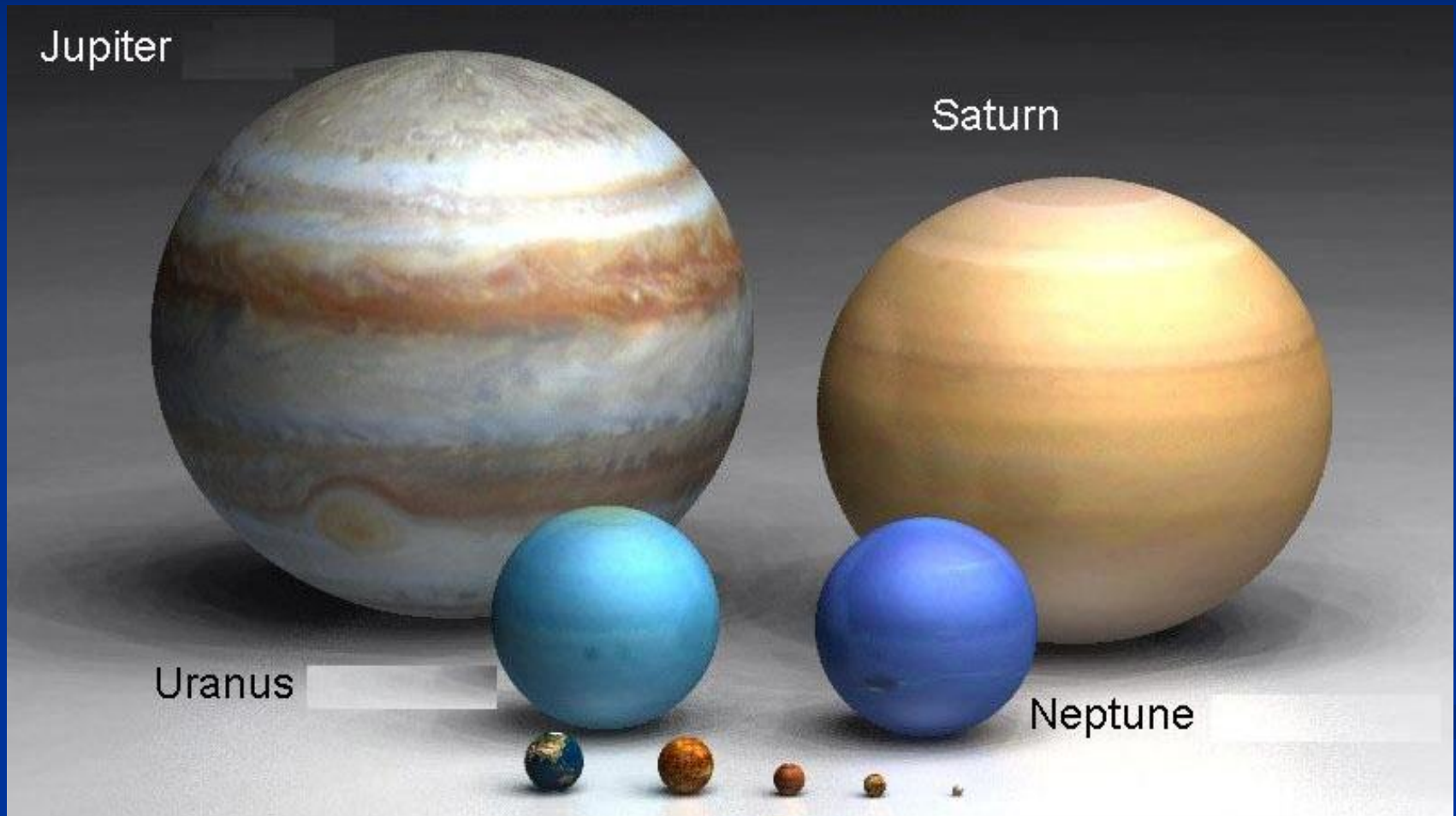
Solar System



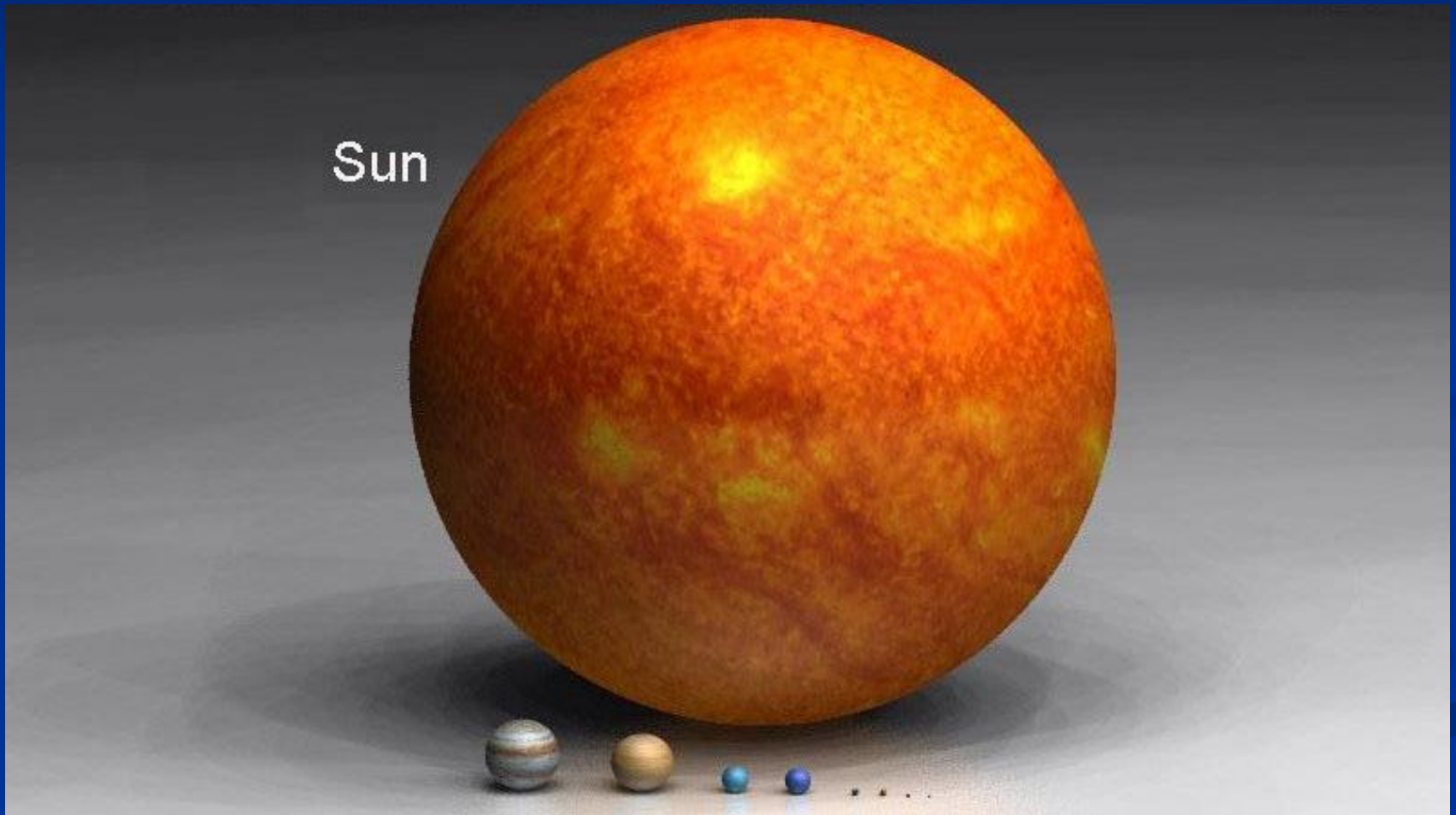
The Size of the Planets



The Size of the Planets



The Size of the Planets



Astronomical Term

Astronomical Unit (AU)

- Mean distance from the Earth to the Sun
- 92,955,807 Miles
- Handy for measuring distances in the Solar System.



Distances in AU

■ Planets

Mercury: 0.387 AU
Venus: 0.723 AU
Earth: 1.000 AU
Mars: 1.524 AU

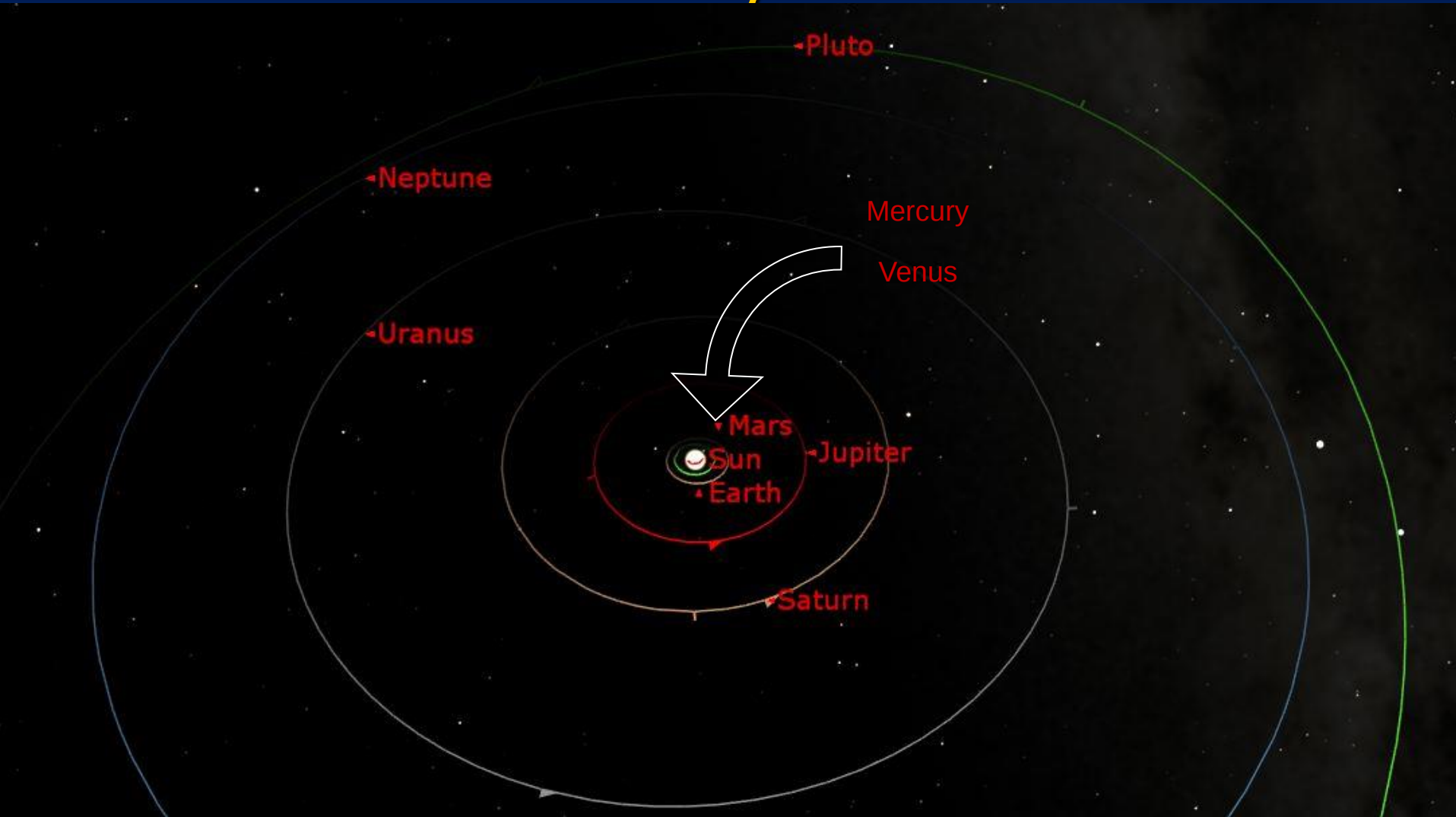
Jupiter: 5.203 AU
Saturn: 9.582 AU
Uranus: 19.201 AU
Neptune: 30.07 AU

■ Other

Ceres: 2.767 AU
Pluto: 39.53 AU
Eris: 67.958 AU
Sedna: 85 AU



Solar System





Poplar Creek Golf Course

Pluto

Neptune

Uranus

Saturn

Jupiter

Mars

Holiday Inn & Suites San Mateo-San Francisco SFO

San Mateo Parent's Nursery School

Safari Run, San Mateo

Americas Best Value Inn San Mateo San Francisco

North Shoreview Montessori
11 min drive - home

SHOREVIEW

Outer Planets
EAST SAN MATEO

LEAD Elementary School



Tabla Indian Restaurant - SM



Ryder Court Park



Seal Point Park



College Park Elementary School



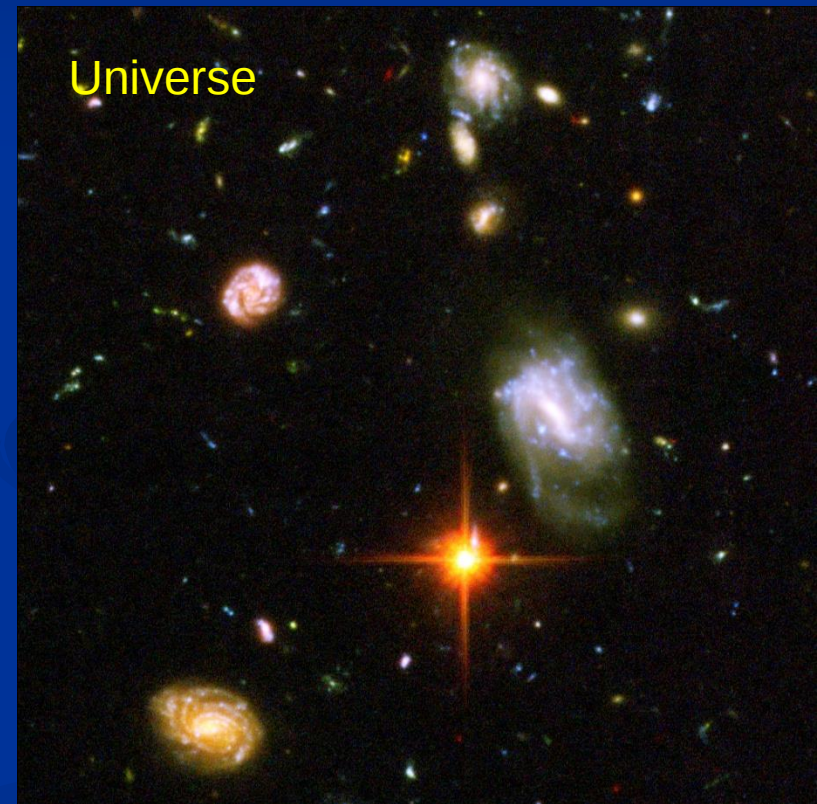
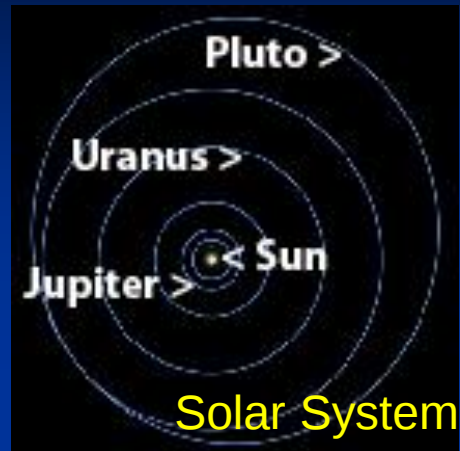
Kinder Academy Montessori

A Boeing 747 Cruising at 550 MPH.

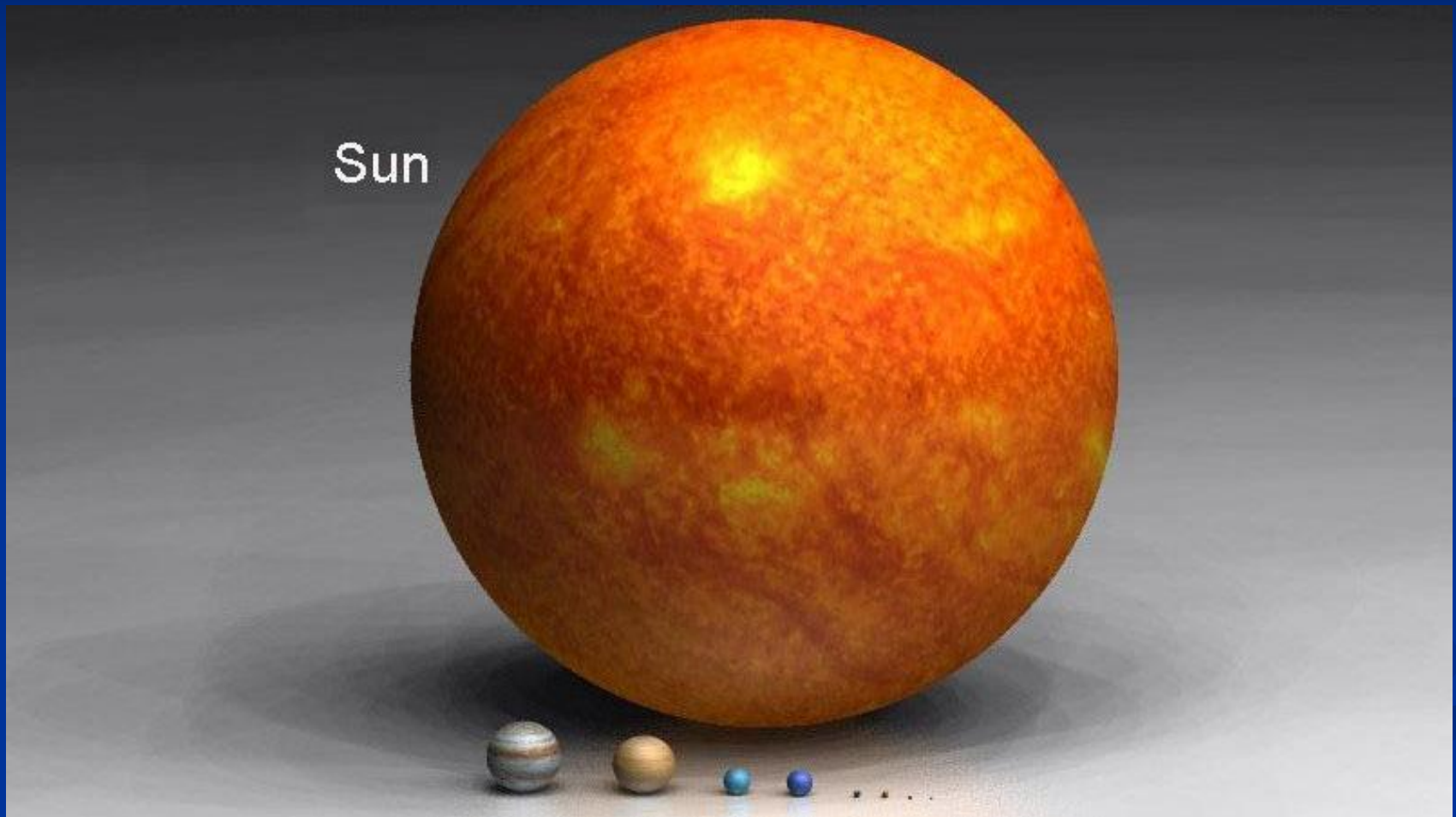
- To travel from San Francisco to New York takes about 6 Hours.
- To travel all of the way around the Earth takes less than 2 days.
- To get from Earth to the Sun would take 18 Years!
- To get from the Sun to Pluto would take 700 Years!
- To get to the nearest star would take 4,718,913 years



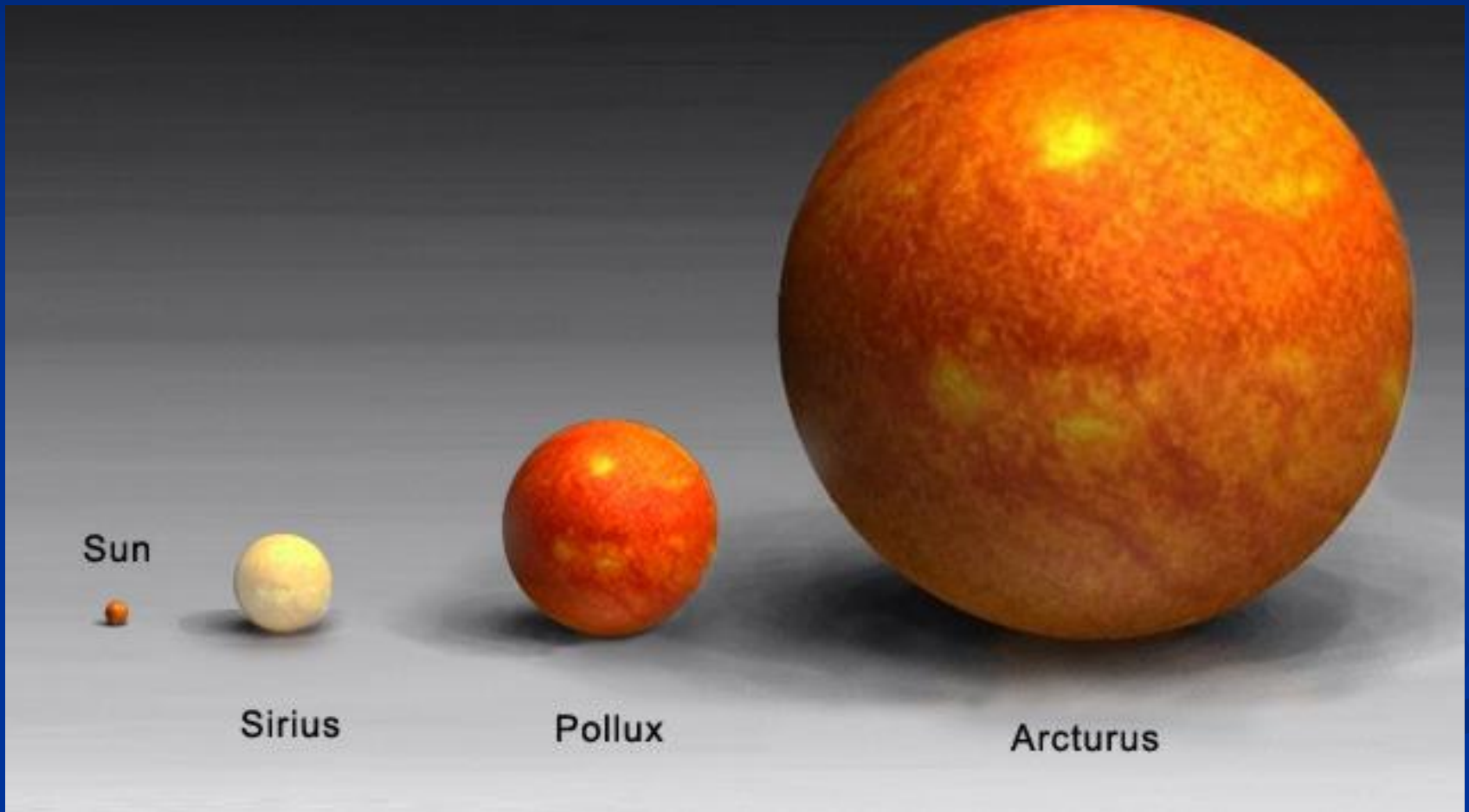
The Galaxy



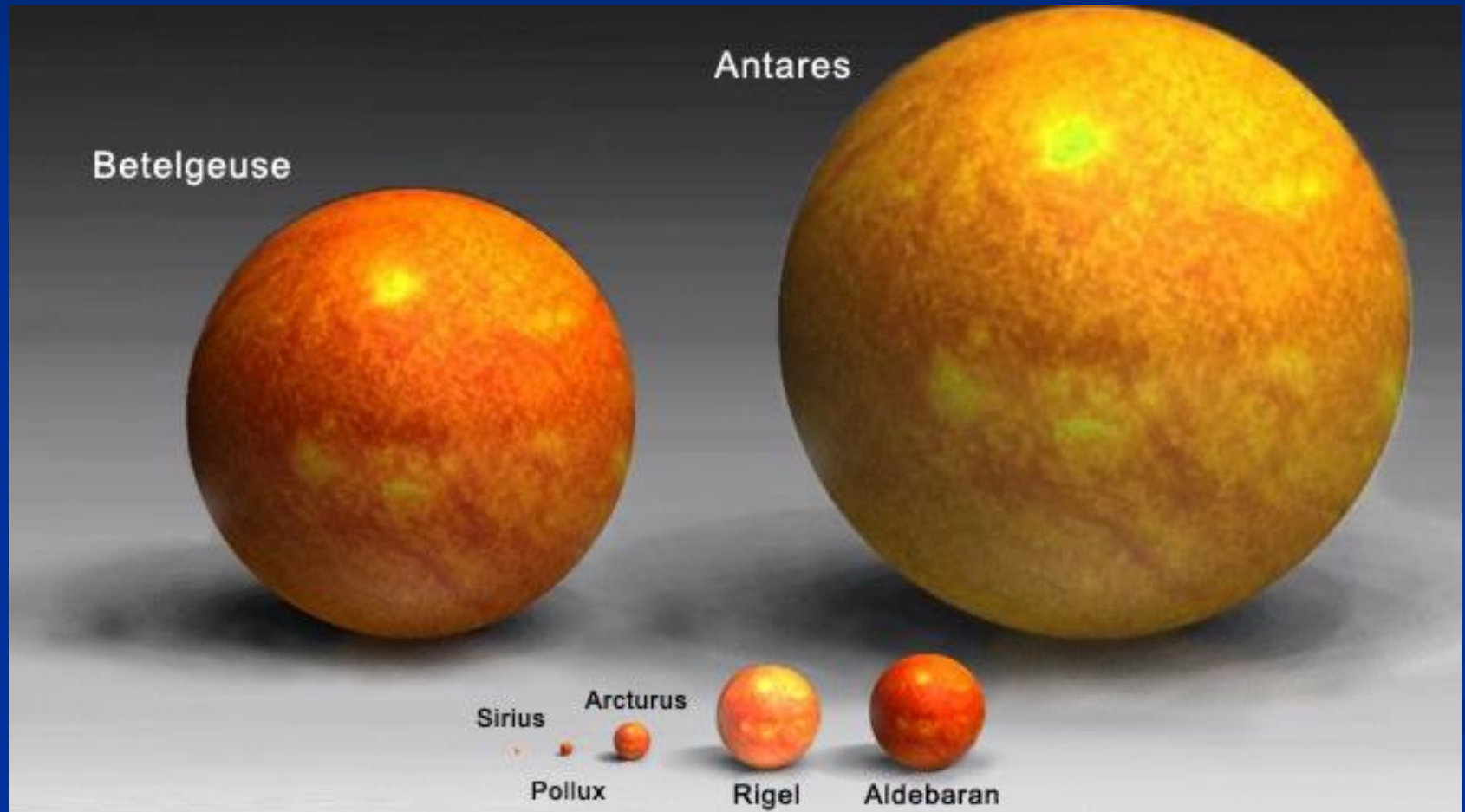
The Size of the Sun



The Size of the Sun



The Size of the Sun

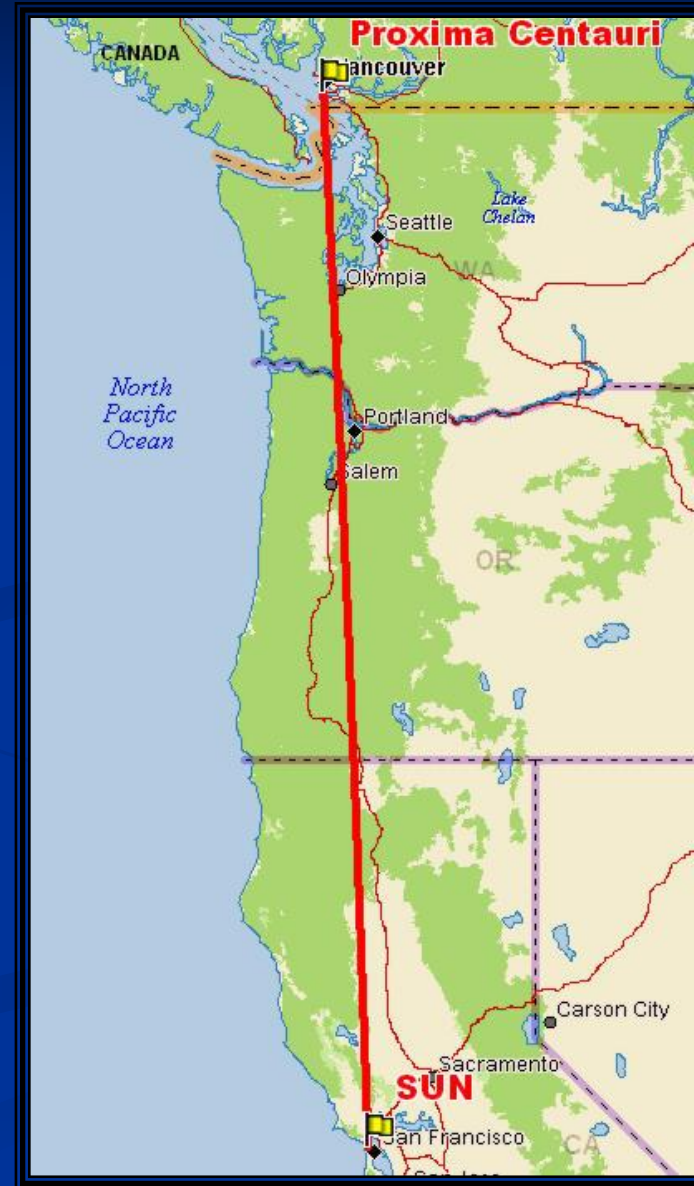


The Distance Between Suns

Shrinking the sun to the size of a golf ball.



The distance to the nearest star (Proxima Centauri) would be 770 miles.





How Big is One Billion?

- A Rich Uncle leaves you One Billion Dollars
- He puts it in a trust that will pay you \$10,000 per day.
- How long will the money last?

**IT WOULD LAST
278 YEARS AND 288
DAYS!**

Astronomical Term

Light Year.

- It is a distance measure, not a time measure
- A light year is the distance light travels in one year.
- Light travel at 186,000 Miles Per Second and can go around the world more than 7 times in one second.
- Equal to 63,240 AU.

**A LIGHT YEAR IS
5,878,499,810,000
MILES**



Milky Way Galaxy





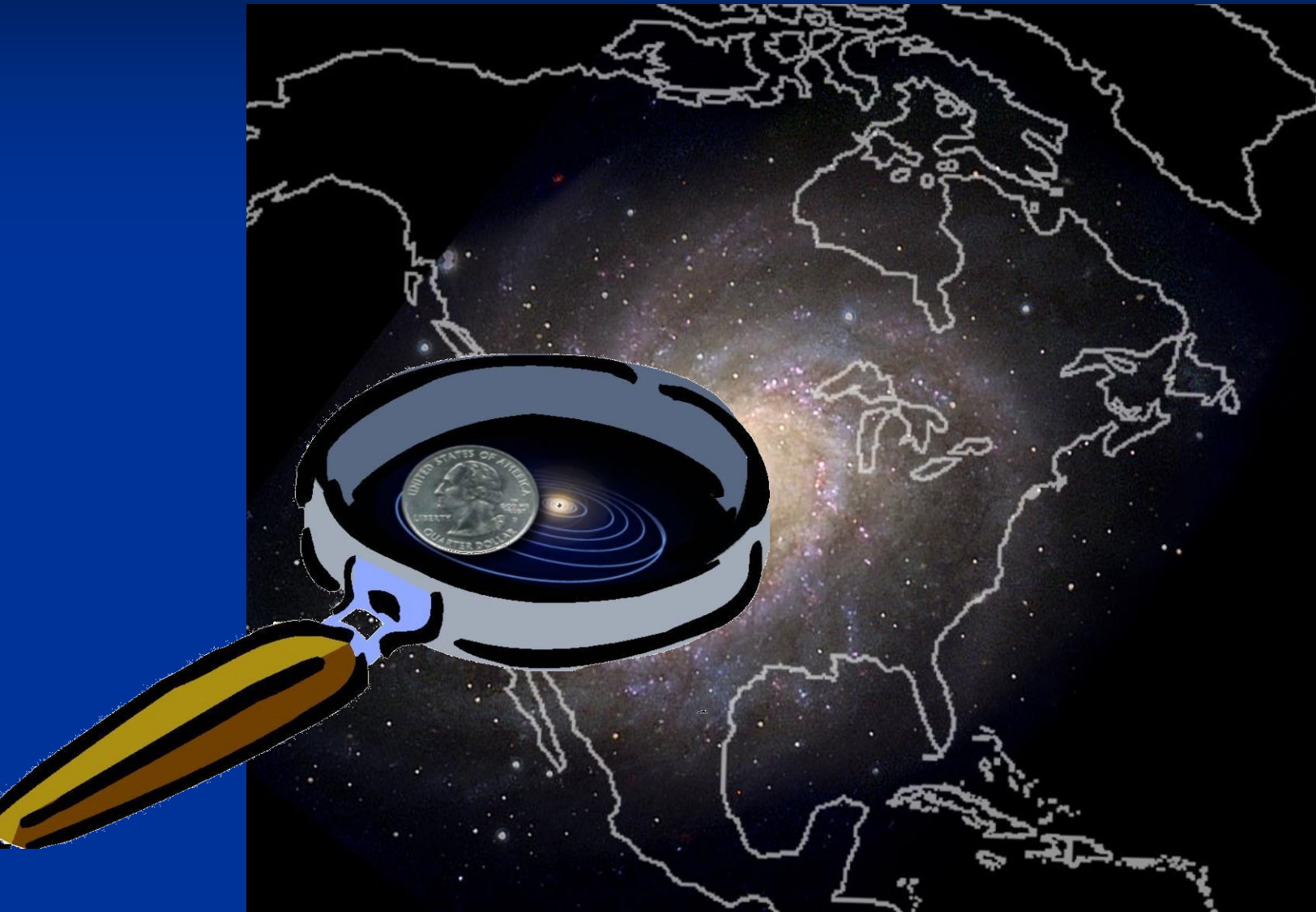
The Size of the Galaxy

Imagine the Solar System so small that that distance from the sun to Pluto is the diameter of a quarter.



THEN...

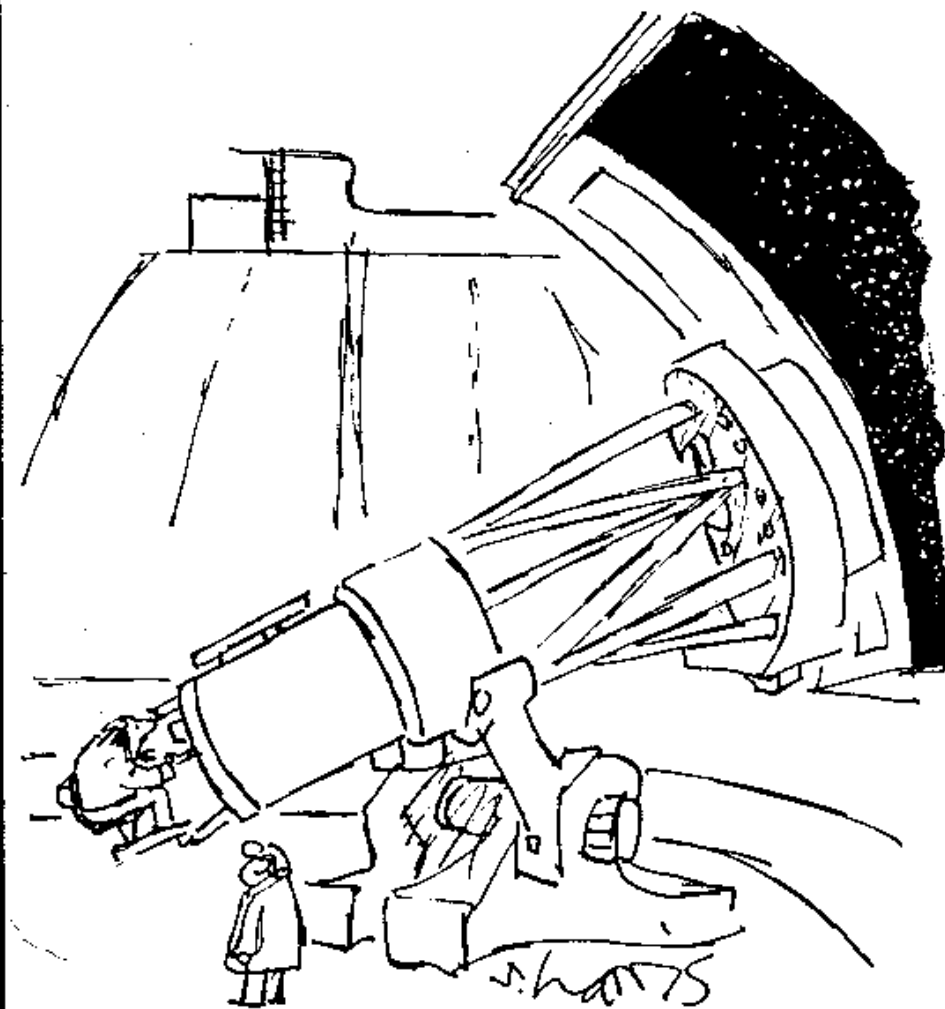
...the Galaxy would be the size of North America





How Many Stars in our Galaxy?

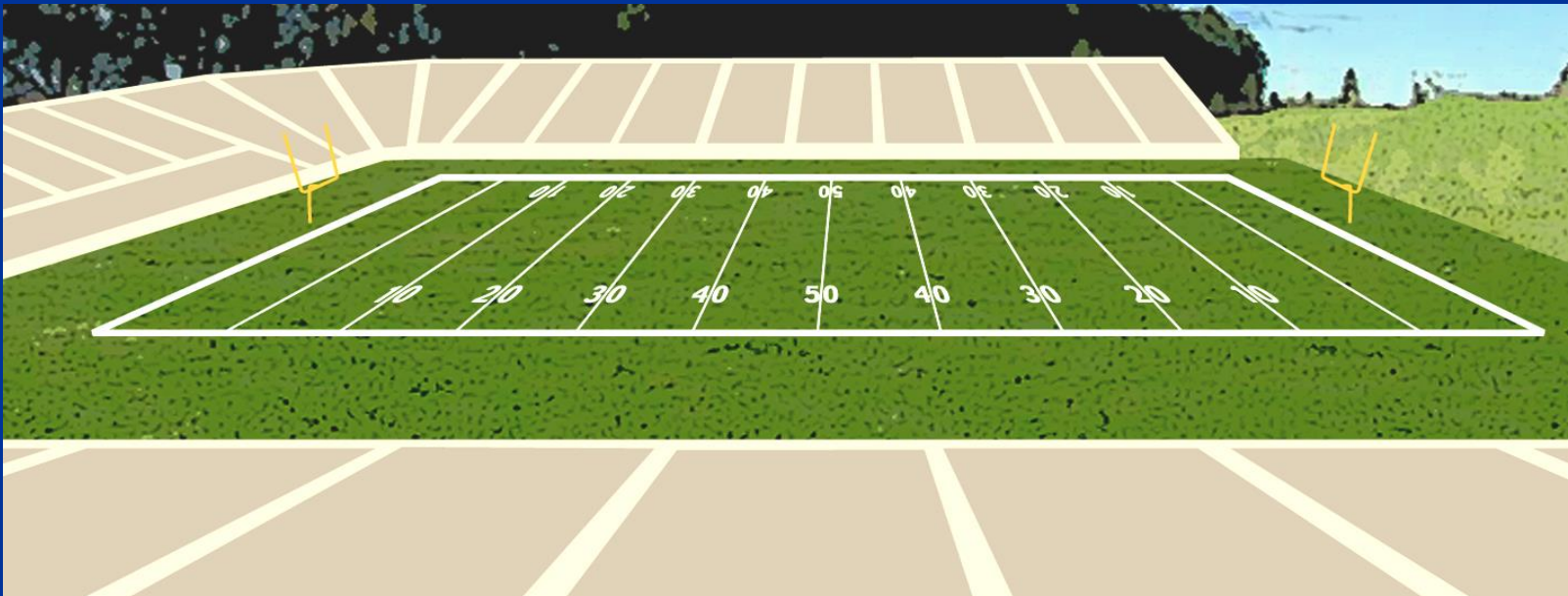
About 400 BILLION
Stars!!!



"Let's see, now ... picking up where we left off ...
one billion, sixty-two million, thirty thousand,
four hundred and thirteen ... one billion, sixty-
two million, thirty thousand, four hundred and
fourteen ... "

How Many Stars in our Galaxy?

- ❖ Take a Football Field
- ❖ Build a 8 foot wall all around it
- ❖ Fill the field with birdseed



How Many Stars in our Galaxy?

There would be about as many seeds on the field as stars in our galaxy



400 BILLION Seeds



400 BILLION Stars

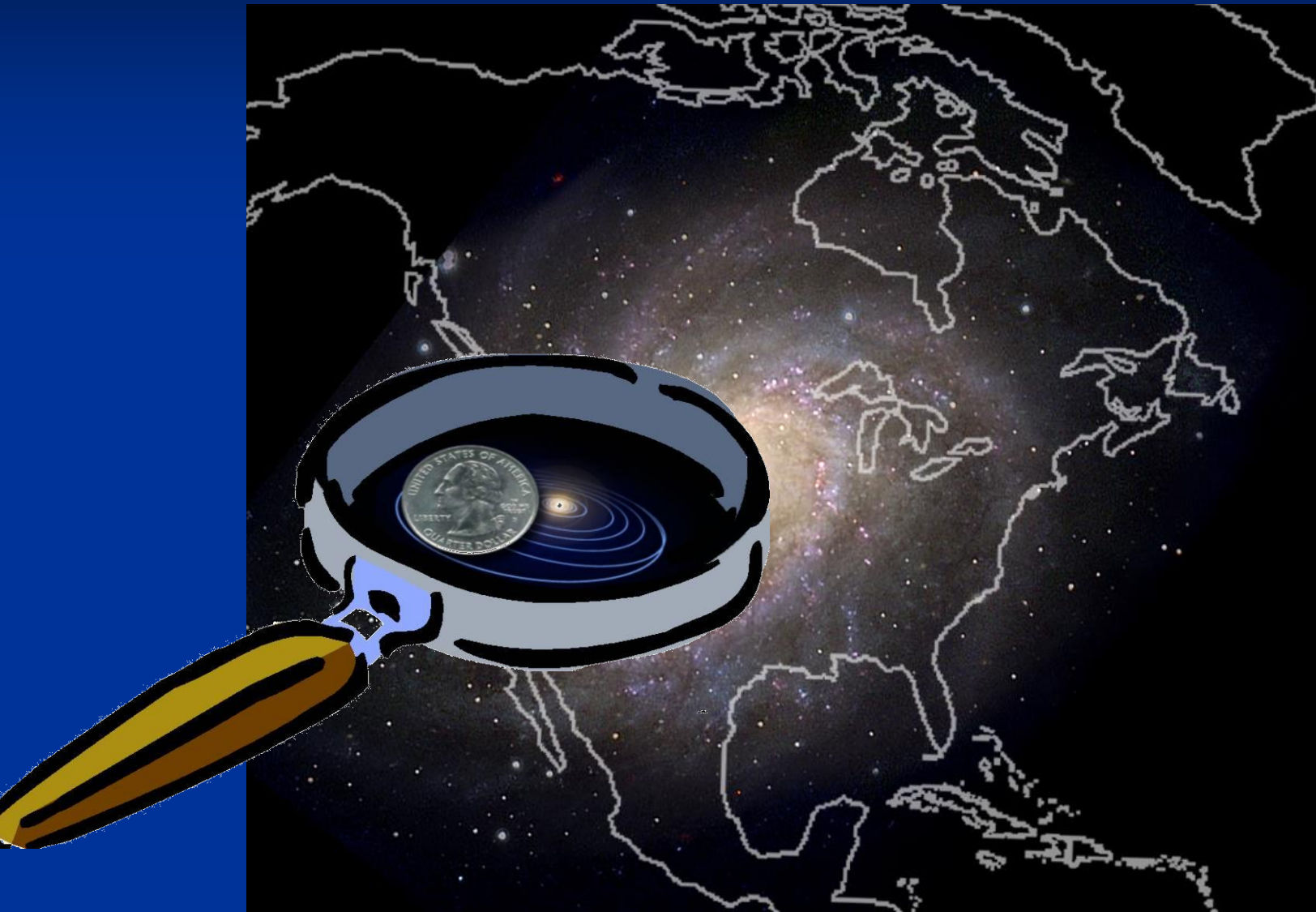
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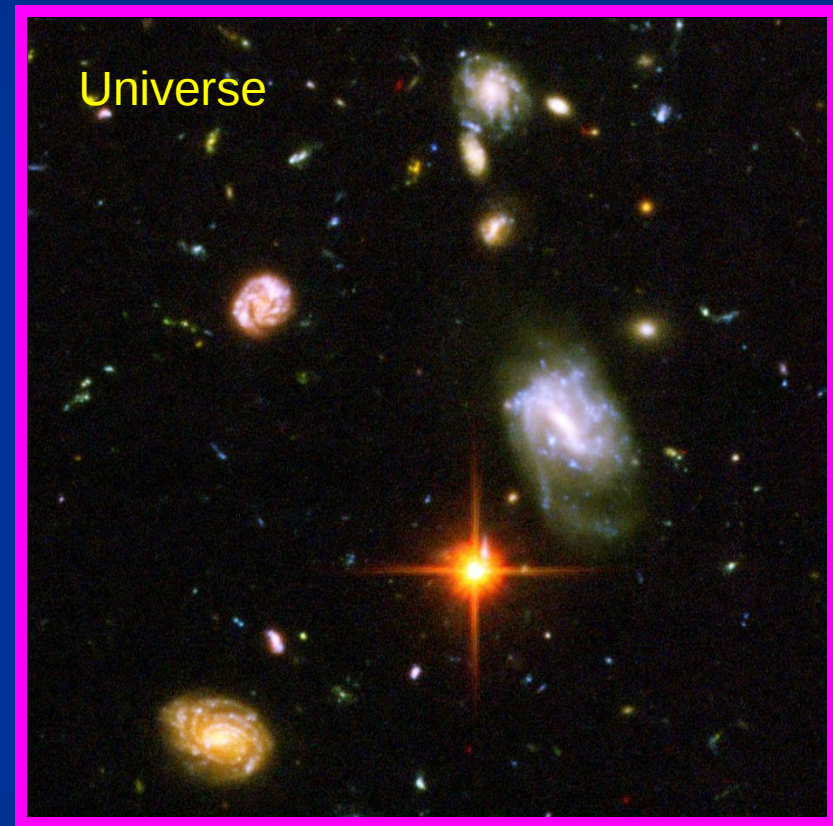
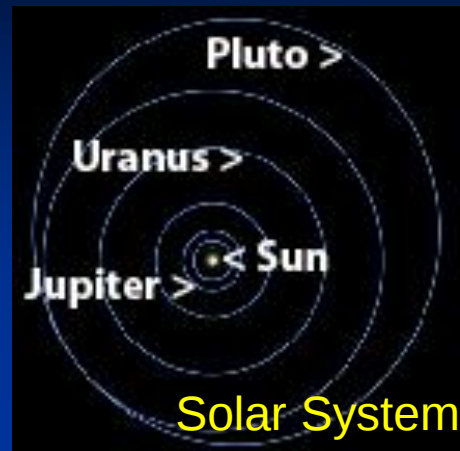


THEN...

...the Galaxy would be the size of North America



The Universe



M31 Andromeda Galaxy

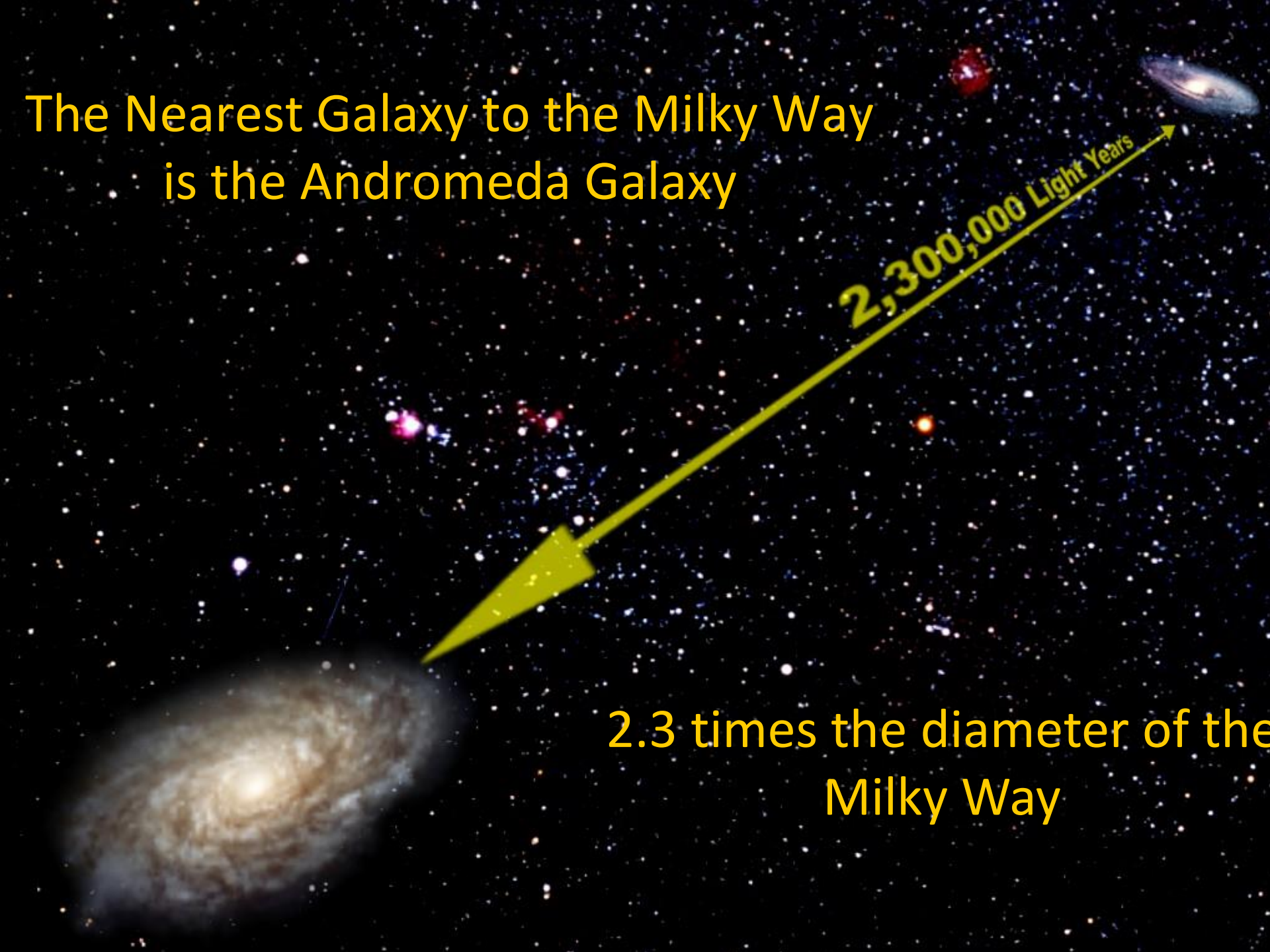
8 Feet



The Nearest Galaxy to the Milky Way
is the Andromeda Galaxy

2,300,000 Light Years

2.3 times the diameter of the
Milky Way



Andromeda and Milky Way Galaxies will collide

- Hurtling together at 245,000 MPH
- Will Collide in about 4 Billion Years
- Collision will take billions of years
- Earth will have been burned up by the Sun by then
- Stars will not collide - there is too much distance between them.



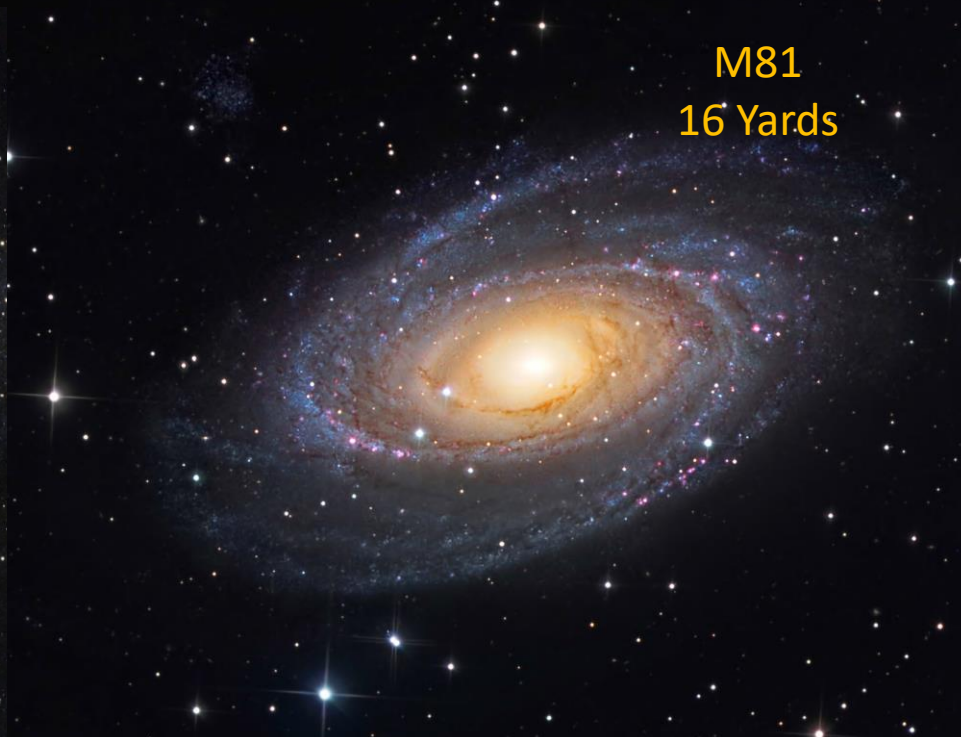


0.000 billion years

M33 Pinwheel Galaxy
8 Feet



M81
16 Yards

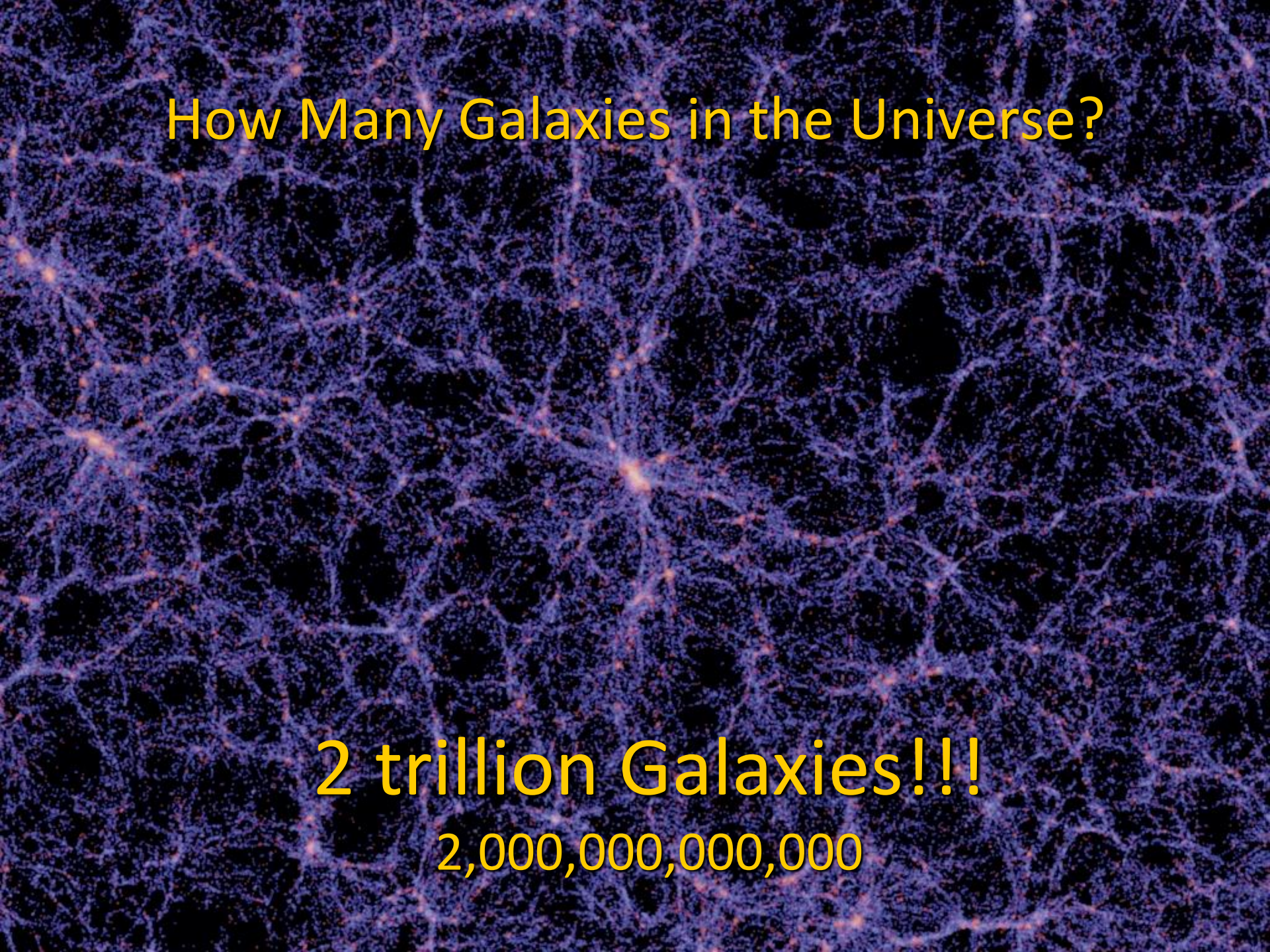


M33 Whirlpool Galaxy
50 Yards



M104 Sombrero Galaxy
67 Yards



A visualization of the cosmic web, showing a dense network of blue filaments and nodes against a black background. The filaments represent the distribution of dark matter, while the nodes represent clusters of galaxies. The overall structure is complex and interconnected, with many smaller filaments branching off from the main ones.

How Many Galaxies in the Universe?

2 trillion Galaxies!!!

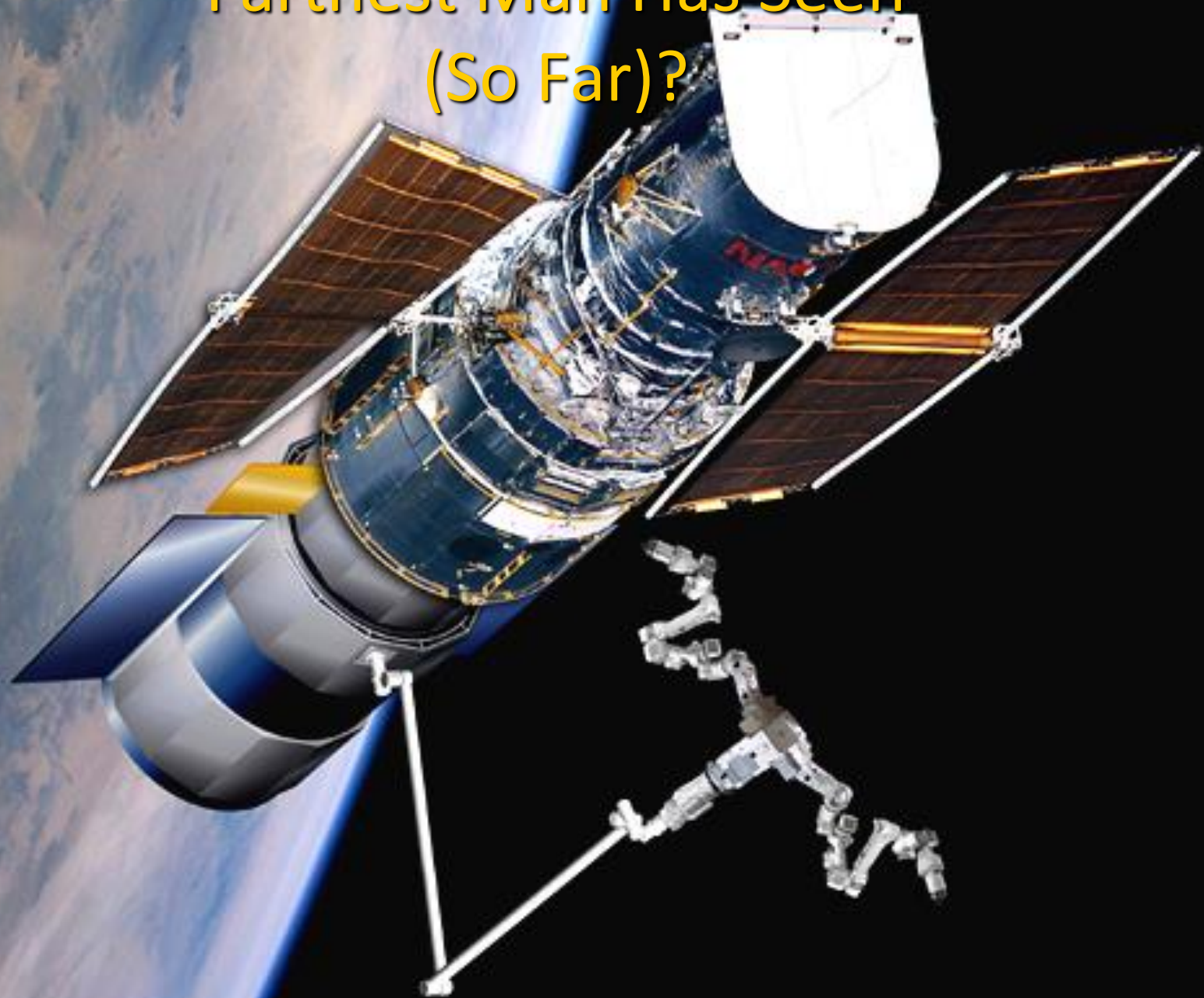
2,000,000,000,000

How Many Galaxies in the Universe?

The wall would need to be 20 feet high



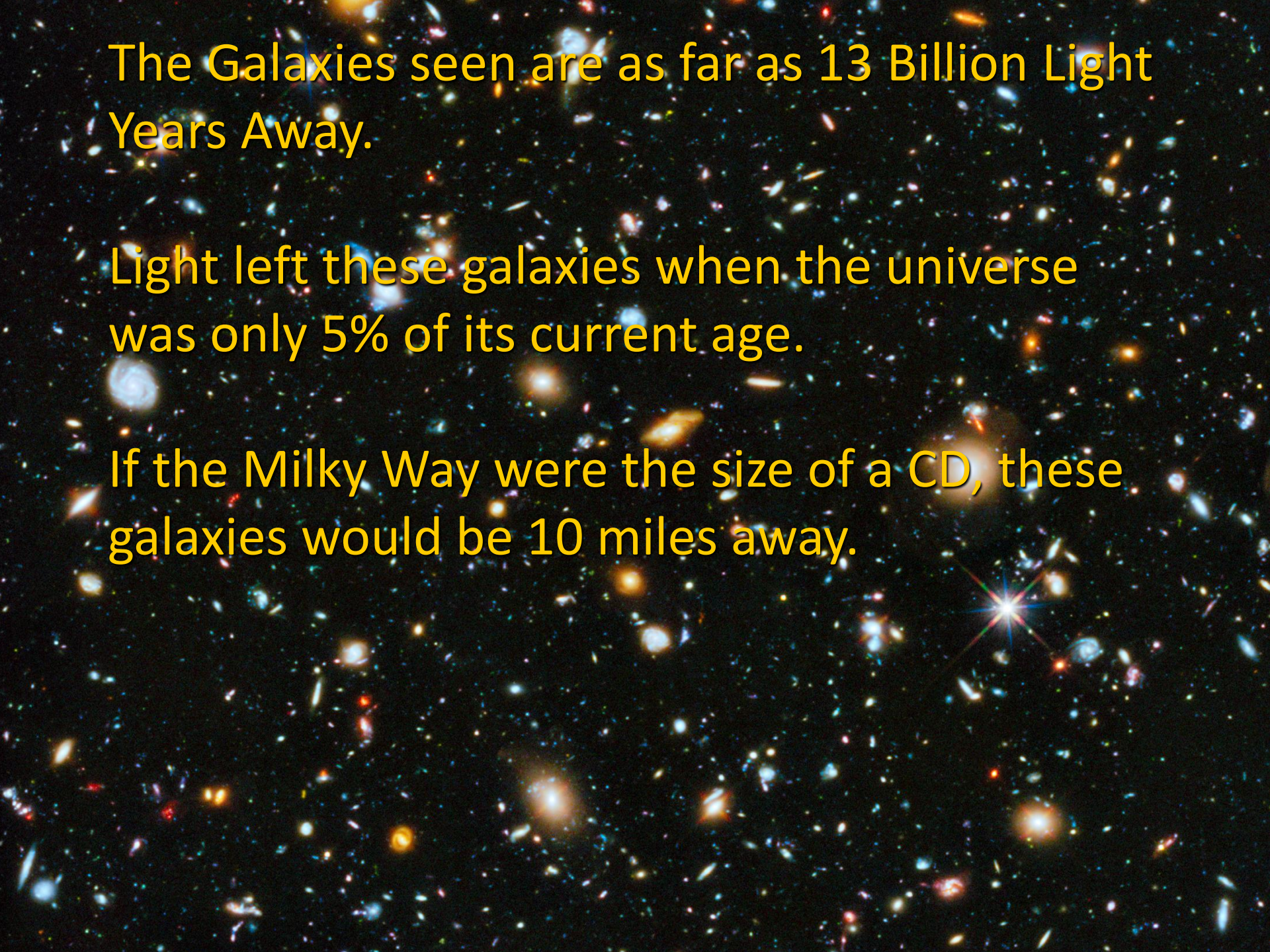
Farthest Man Has Seen
(So Far)?



Hubble's Farthest View of Earth Seen

- Small part of the sky
- Few known stars
- 1,000,000 Second Exposure (11+ Days)
- Taken Sept. 24, 2003 to Jan. 16, 2004

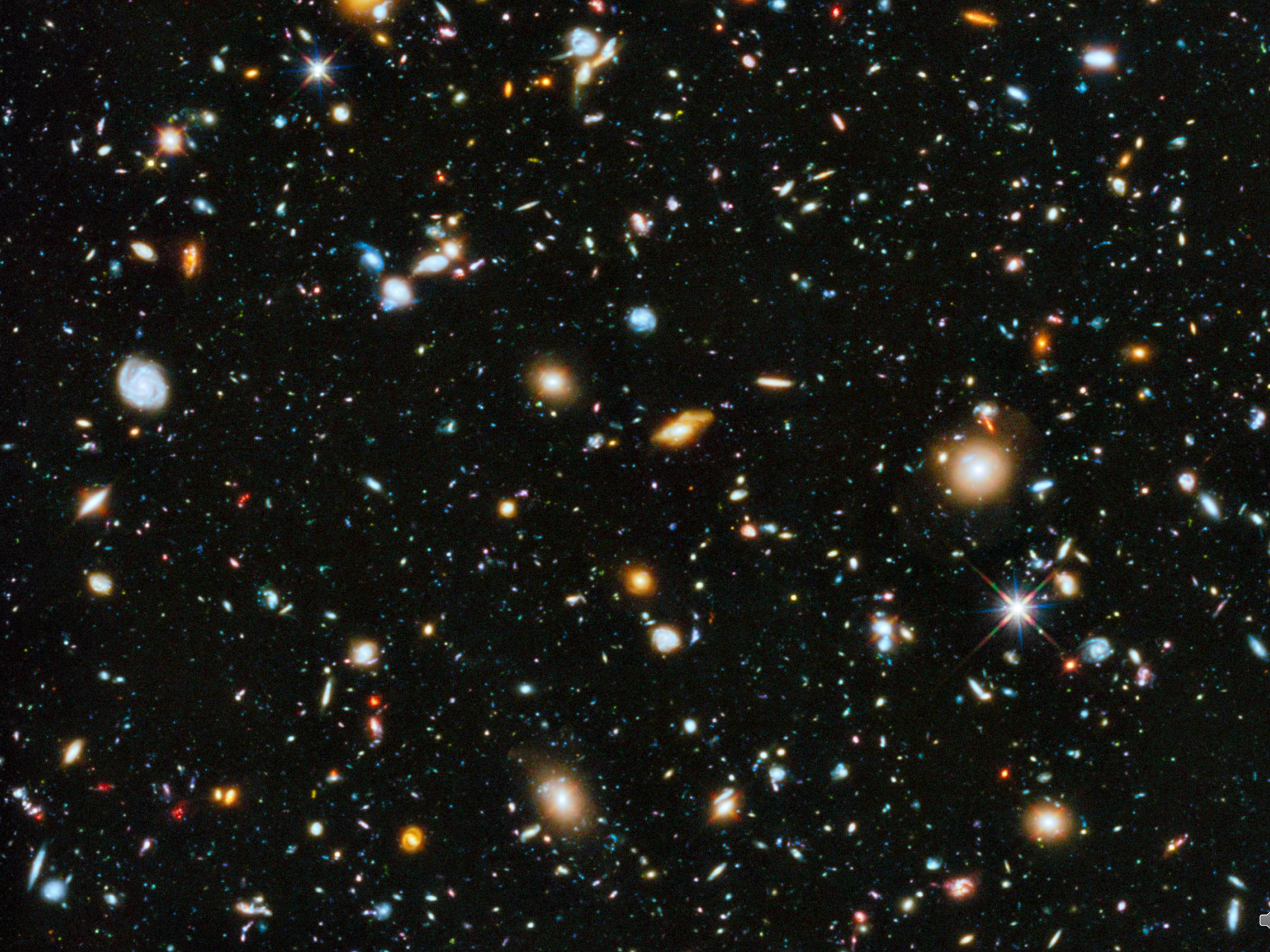


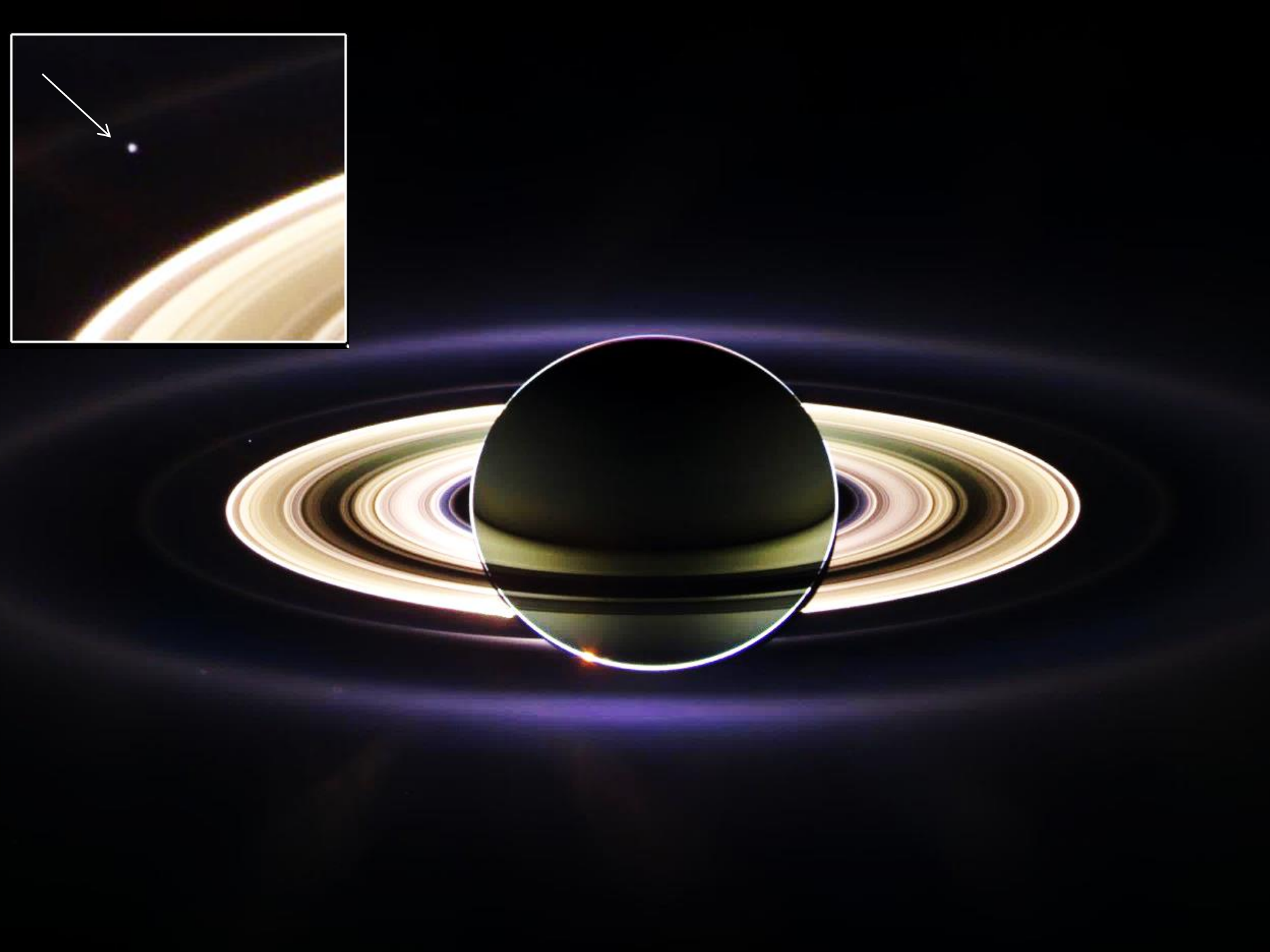


The Galaxies seen are as far as 13 Billion Light Years Away.

Light left these galaxies when the universe was only 5% of its current age.

If the Milky Way were the size of a CD, these galaxies would be 10 miles away.





A stylized image of Saturn with its rings, set against a dark background. A black circle is centered over the planet, and a blue rectangular border frames the text. The word "Questions?" is written in a large, white, sans-serif font across the center of the image.

Questions?