Introduction to Astronomy
ASTR 100 - Fall 2010

- **Prof:** Stacy McGaugh
  - **Lecture Time:** TuTh 9:30-10:45 AM
  - **Lecture Room:** PHYS 1412
- **Teaching Assistants:** See Section Info
  - **Discussion Room:** CSS 2400
  - **Discussion Times:** See Section Info
- **Textbook:** *Cosmic Perspective Fundamentals*
  by Bennett, Donahue, Schneider, & Voit
  ISBN 978-0-321566955

Class Information

The first lecture is Tuesday, August 31, 2010.

Syllabus

- Course Description
- Lecture Schedule

- Assignments

Miscellany

- Open House Schedule and related information for the University Observatory's Open House.
- There are other ASTR courses you can take after this one: ASTR Courses for Non-Majors.

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http://www.astro.umd.edu/~ssm/ASTR100/index.html

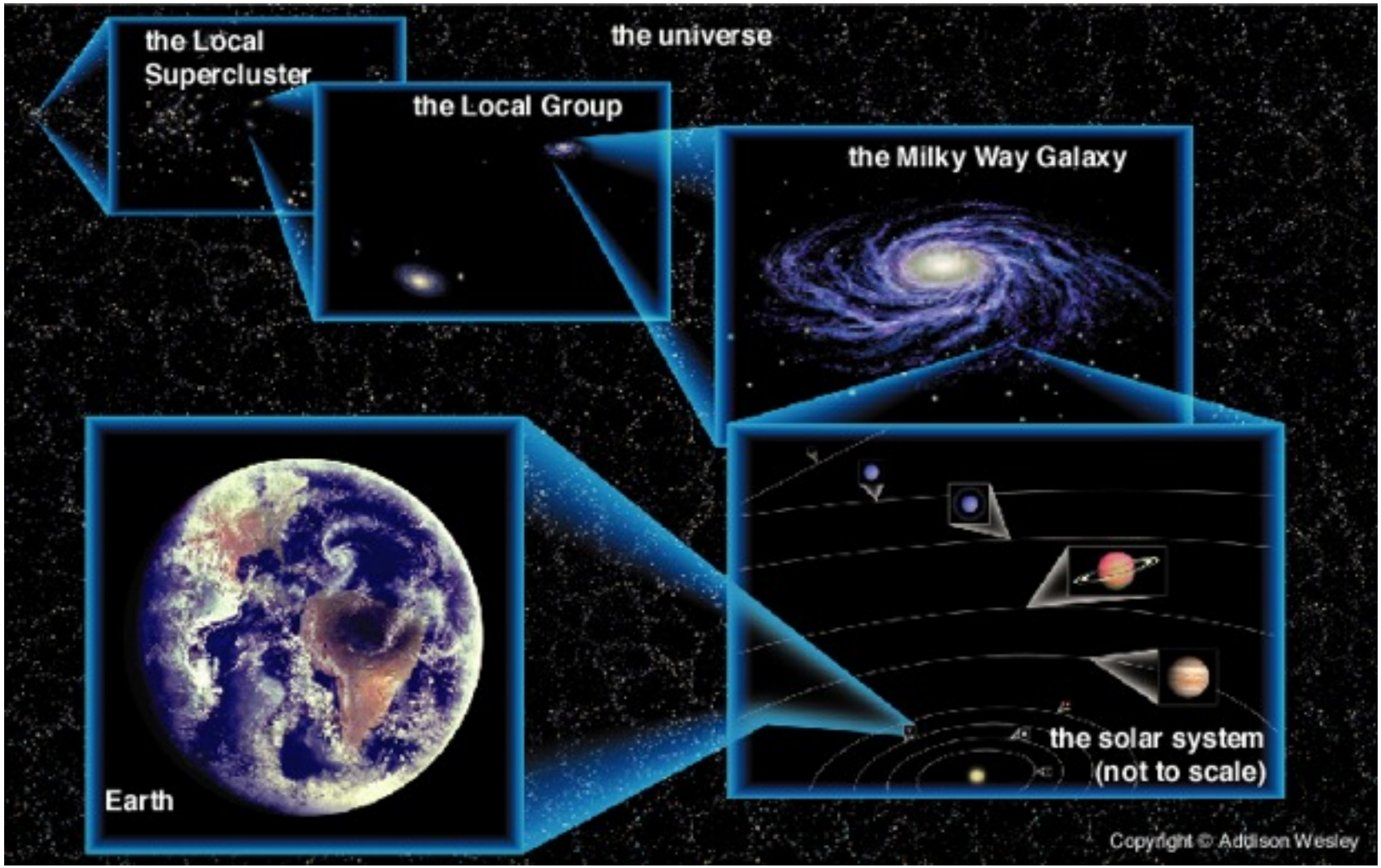
Plan

- Syllabus; administrative details
- Some Definitions
- An Idea of Scale


Sections
Offices
Lecture
You are Here
parking garage
Farm Dr
Regents Dr
Computer and Spaces Sciences Bldg
JQI
Stadium Dr
Office of Advanced Engineering Education
Chemical and Nuclear Engineering Bldg
Agricultural Engineering Bldg
Fieldhouse Dr
Bioscience Research Bldg
Maryland Psychotherapy Clinic and Research Lab
Plant Science Bldg
Physics Bldg
Hornbake Library
Geology Bldg
Dept of Physics
Campus Dr
Shriver

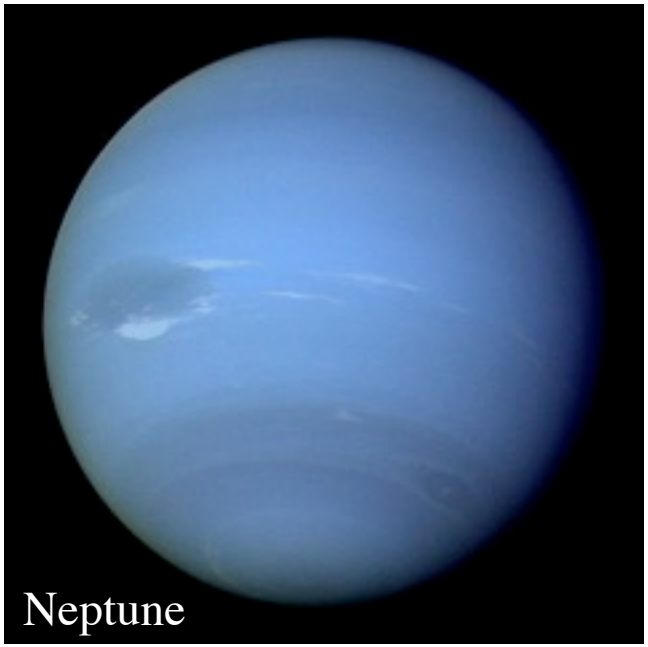
What is our place in the universe?

Our "Cosmic Address"

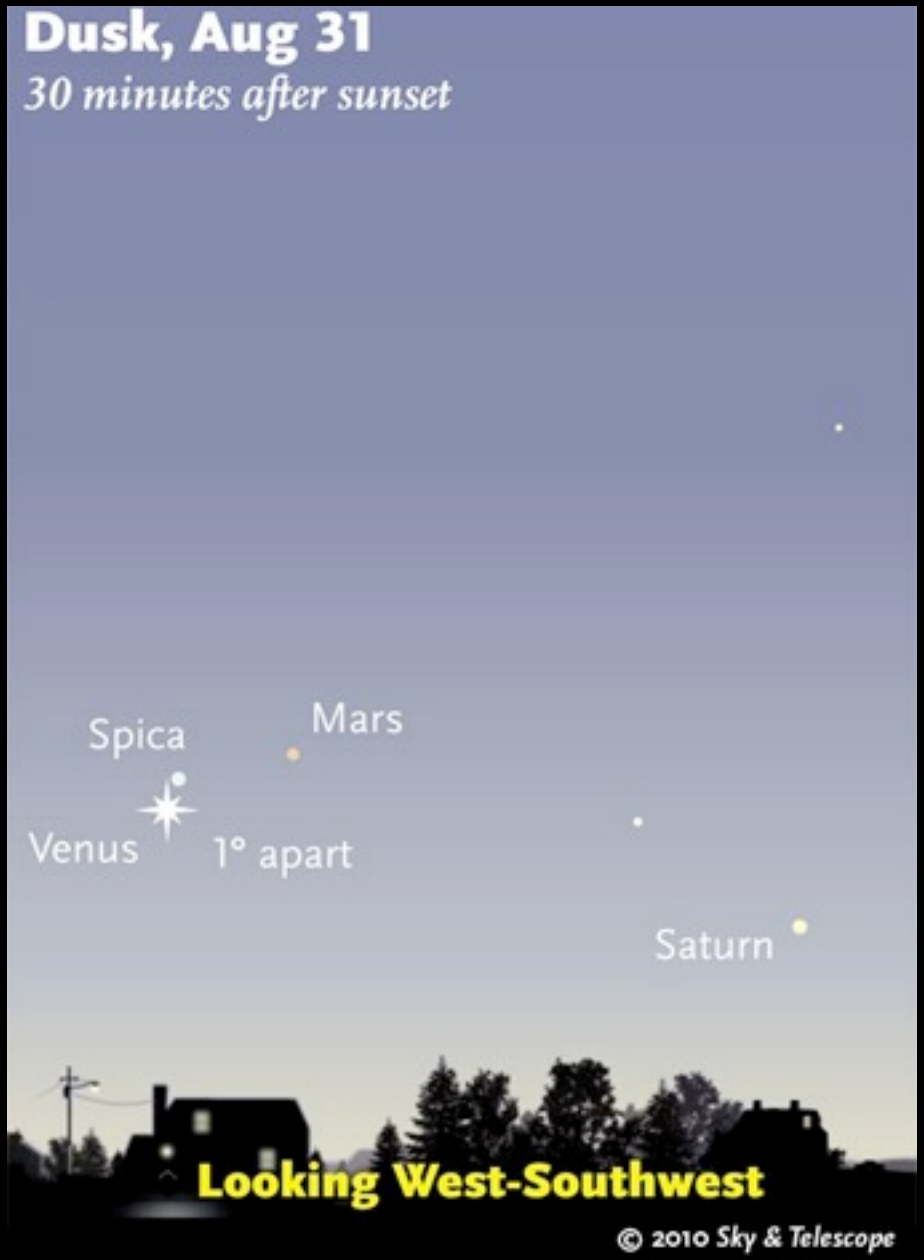


Planet

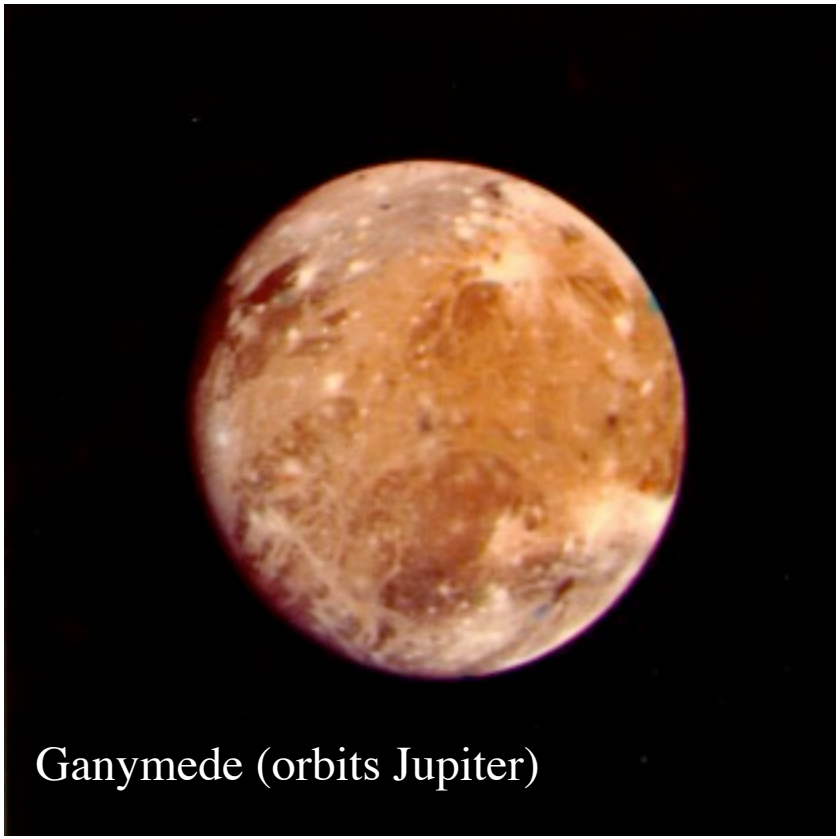

Mars


Neptune

A moderately large object that orbits a star; it shines by reflected light. Planets may be rocky, icy, or gaseous in composition.


Dusk, Aug 31
30 minutes after sunset
Spica
Mars
Venus
1° apart
Saturn
Looking West-Southwest
© 2010 Sky & Telescope

Moon (or satellite)

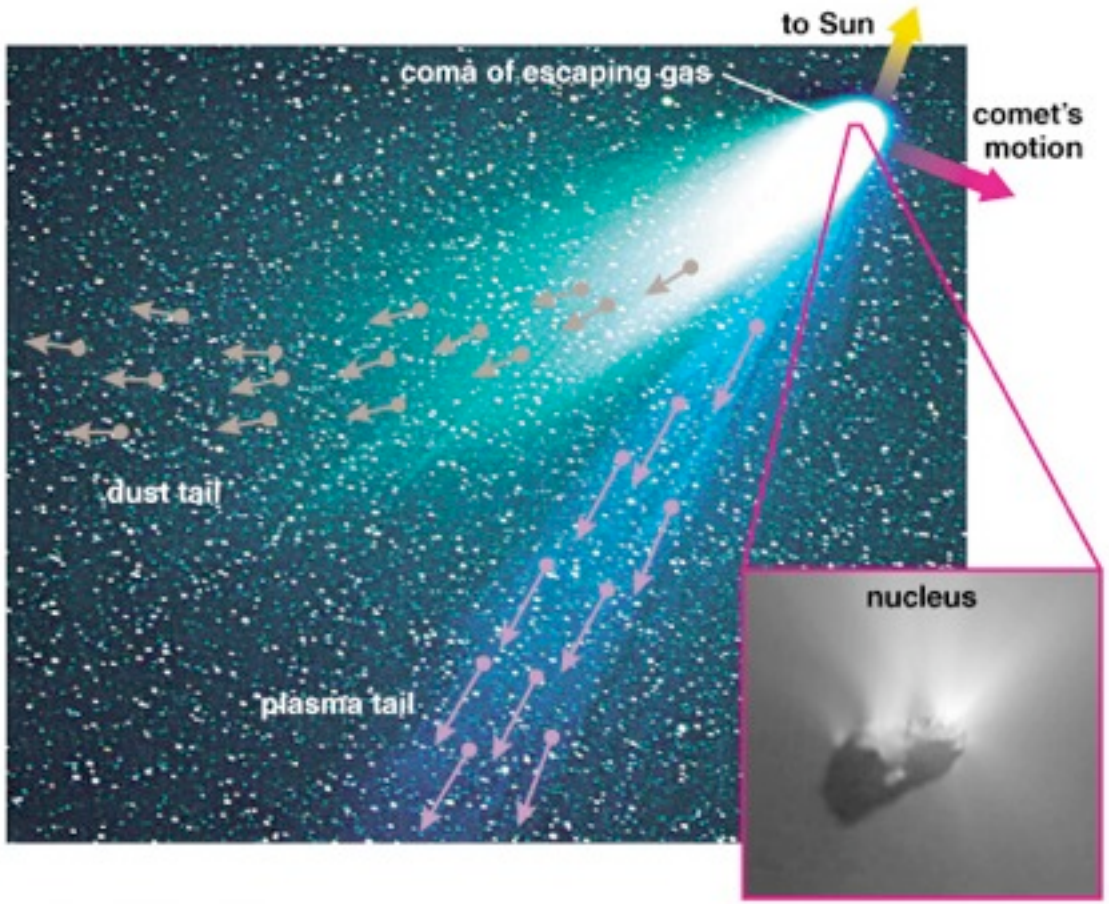

Ganymede (orbits Jupiter)

An object that orbits a planet.

Asteroid

A relatively small and rocky object that orbits a star.

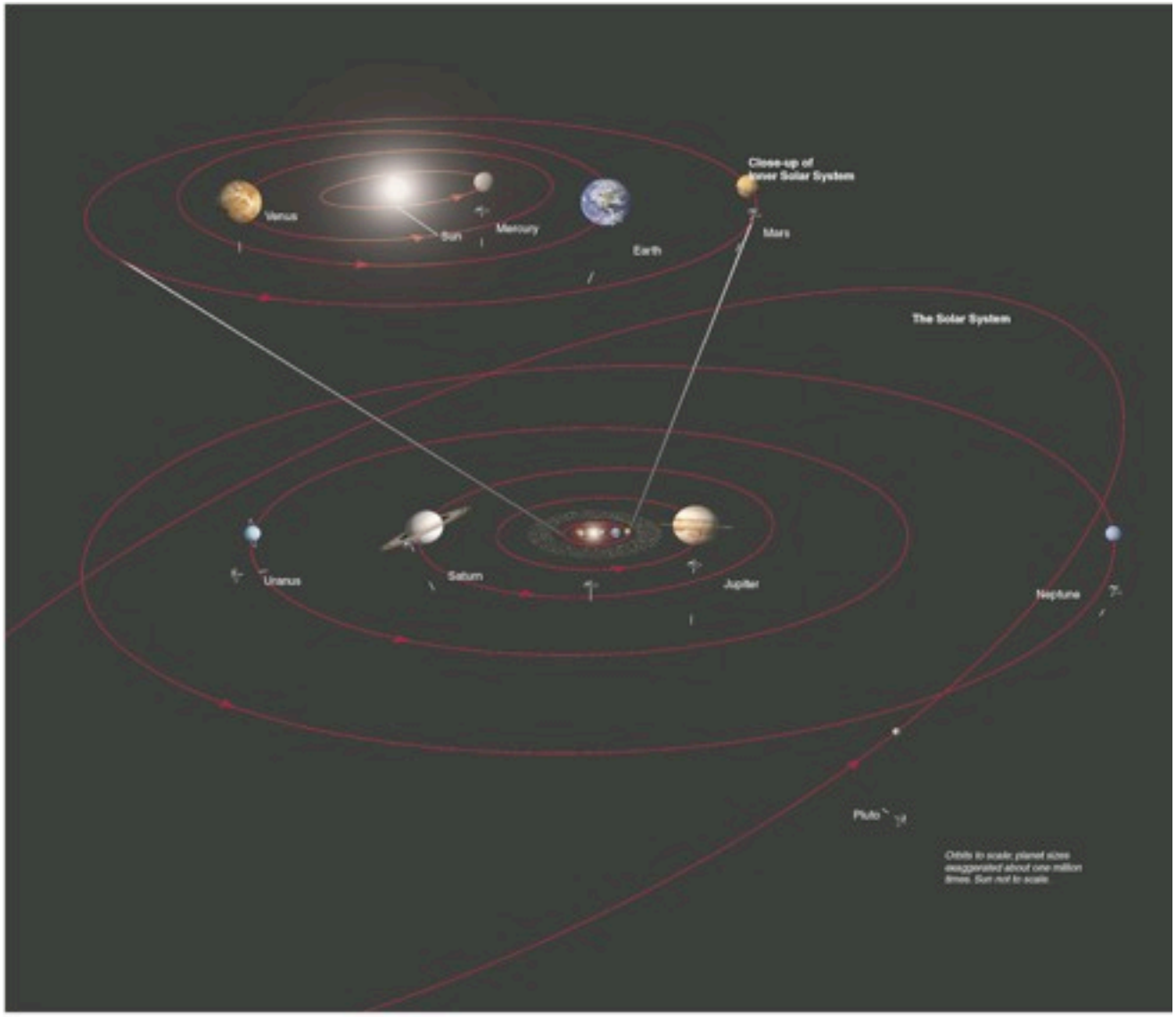
Comet



A relatively small and icy object that orbits a star.

Solar (Star) System

A star and all the material that orbits it, including its planets and moons



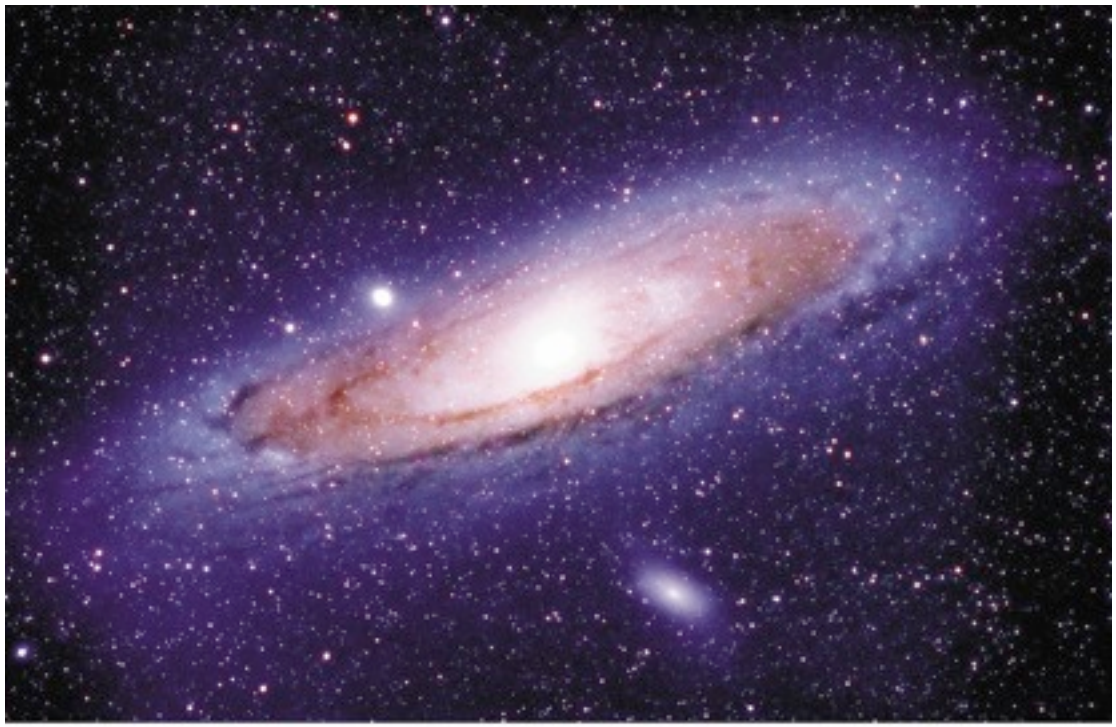
Nebula

An interstellar cloud
of gas and/or dust

Typically larger than the solar system - may contain many stars

Galaxy

A great island of stars in space, all held together by gravity and orbiting a common center



100s of billions of stars

Universe

The sum total of all matter and energy; that is, everything within and between all galaxies

100s of billions of galaxies...
in the observable portion of the universe

Light travel time & distance

- Light travels at a finite speed (300,000 km/s).

Destination	Light travel time
Moon	1 second
Sun	8 minutes
Sirius	8 years
Andromeda Galaxy	2.5 million years

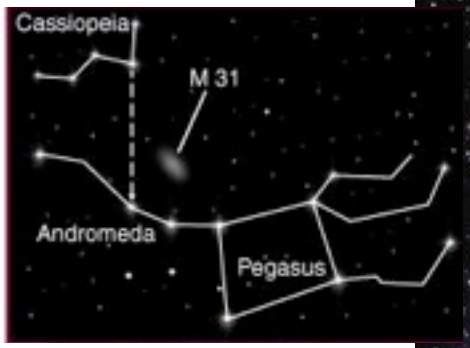
- Thus, we see objects as they were in the past:

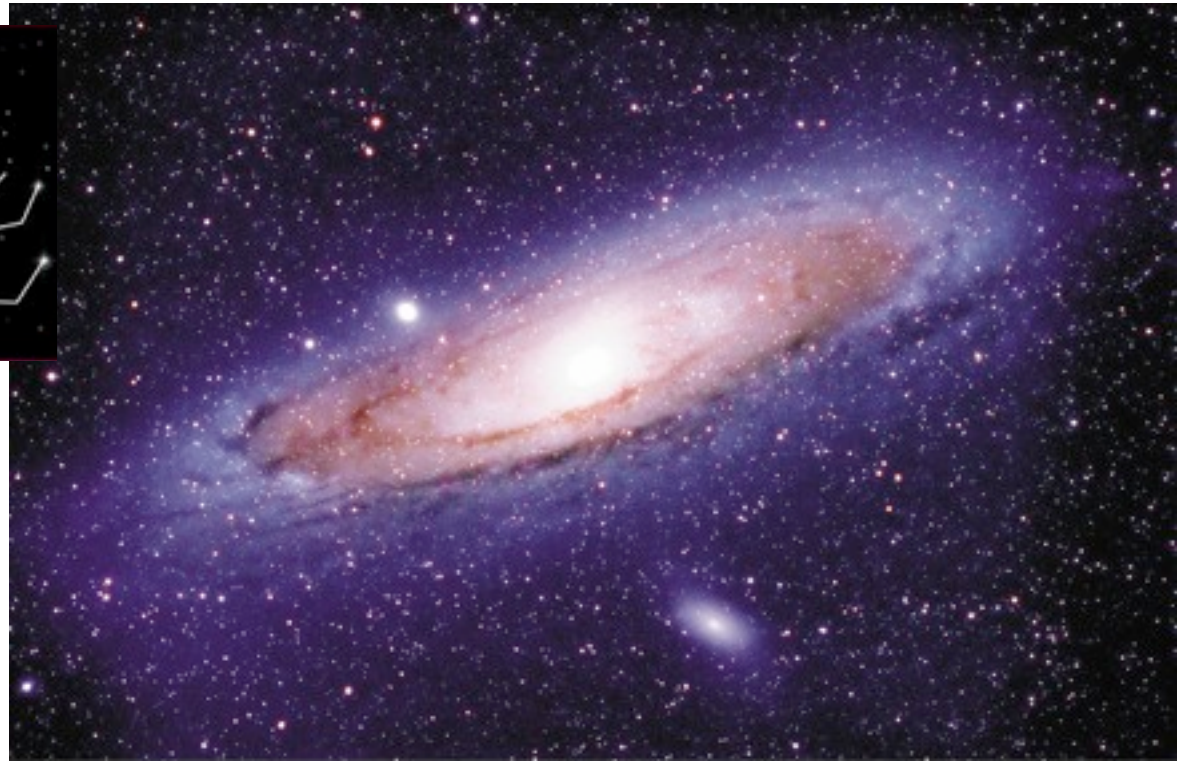
The farther away we look in distance, the further back we look in time.

Example:

This photo shows the Andromeda Galaxy as it looked about 2 1/2 million years ago.

Question: When will we be able to see what it looks like now?





Definition: **Light-Year**

- The **distance** light can travel in one year.
- About 10 trillion kilometers (6 trillion miles). (10^{13} km)

$$d = c \times t$$

distance = (speed of light) x (travel time)