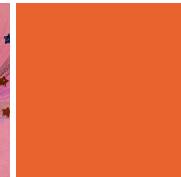


Session 9: Galaxies

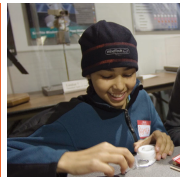


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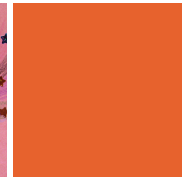


The Main Concepts...

1. A galaxy is a large collection of stars, gas and dust.
2. We live in a galaxy called the Milky Way.
3. Our Sun and planets are in the “suburbs” of the Milky Way.
4. There are billions of galaxies in the Universe.
5. Galaxies come in three basic shapes; spiral, elliptical and irregular.



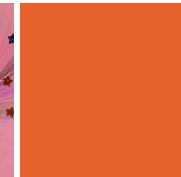
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Composition and Size of Galaxies



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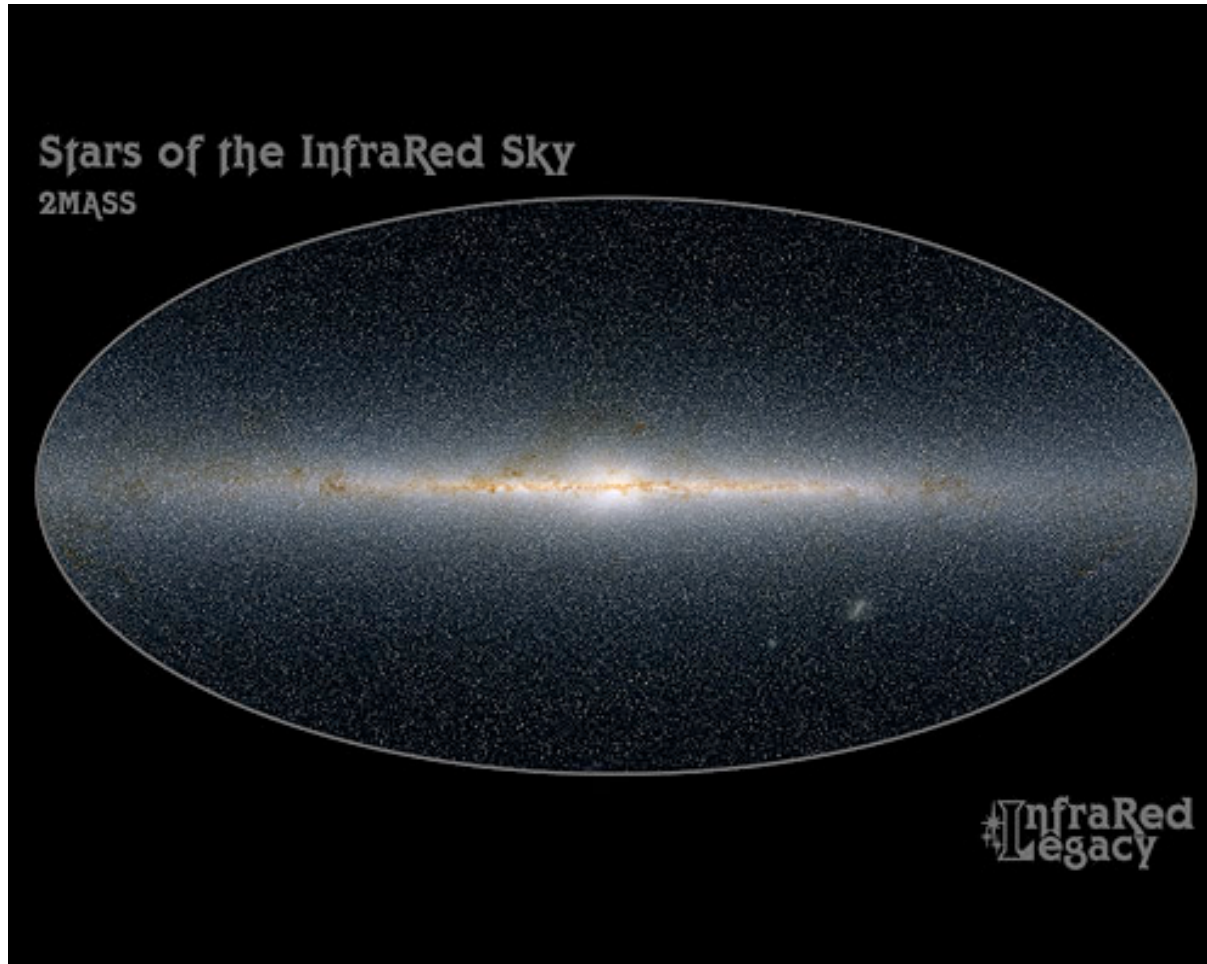
Our View of the Milky Way Galaxy



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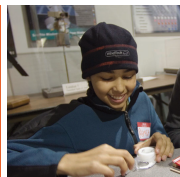


Another View of Our Galaxy

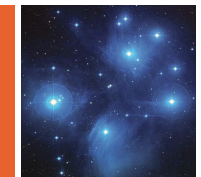
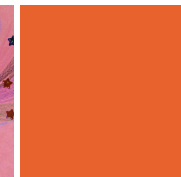


We live in the disk of our galaxy - so we see our galaxy edge-on.

To see our galaxy, we need to use light that can get through all the dust in the disk (for example, infrared).



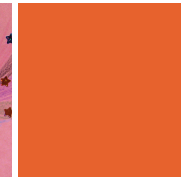
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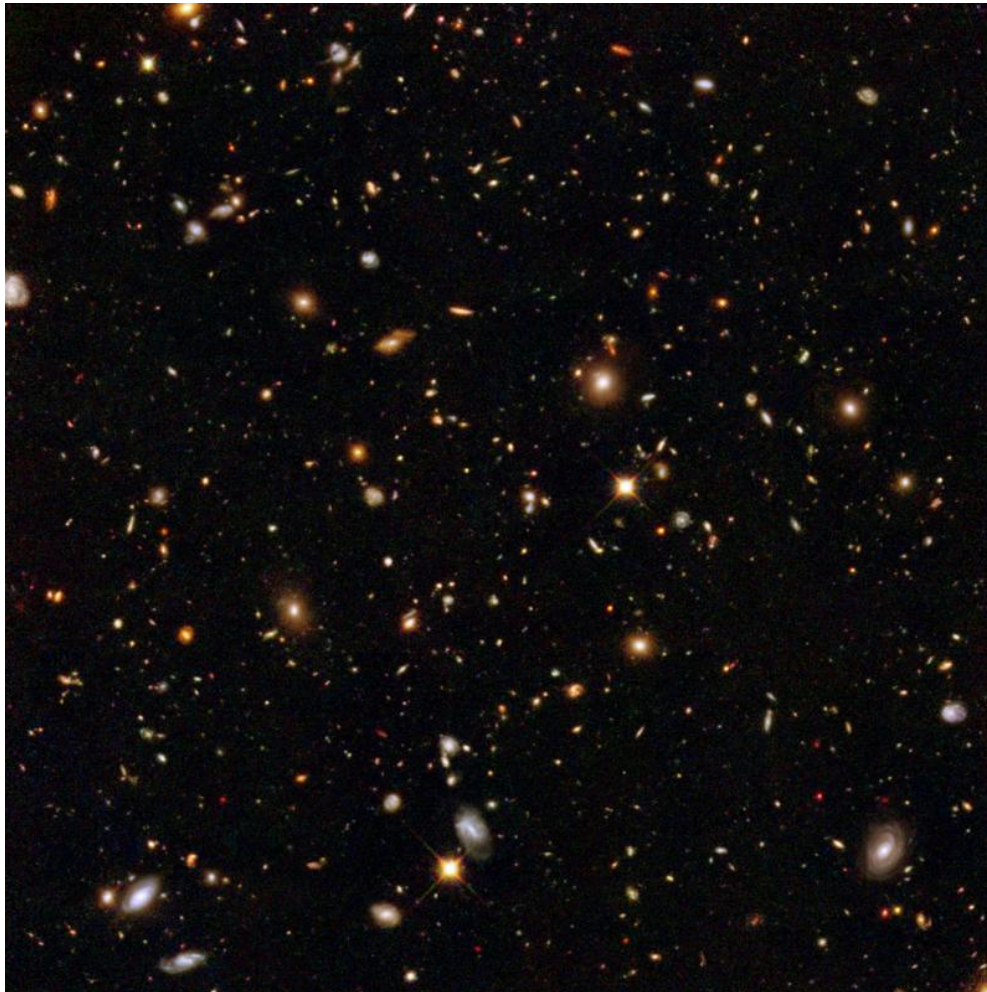
Drawing of Our Own Galaxy...



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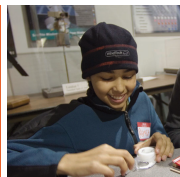


There Are Billions of Galaxies

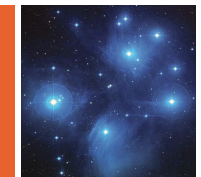
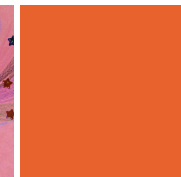


Small patch of the sky as seen by the **Hubble Space Telescope** (Ultra Deep Field)

Almost every point of light here is a galaxy!



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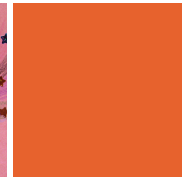
Three Basic Shapes for Galaxies

1. Spiral galaxy

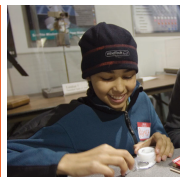
- A flat disk with a central bulge
- Often has spiral pattern in the disk
- The disk spins like a wheel
- Our own galaxy, the **Milky Way**, is a spiral galaxy



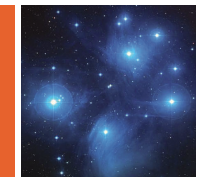
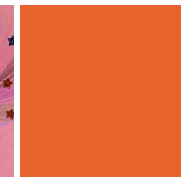
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Spiral Galaxies from Different Angles



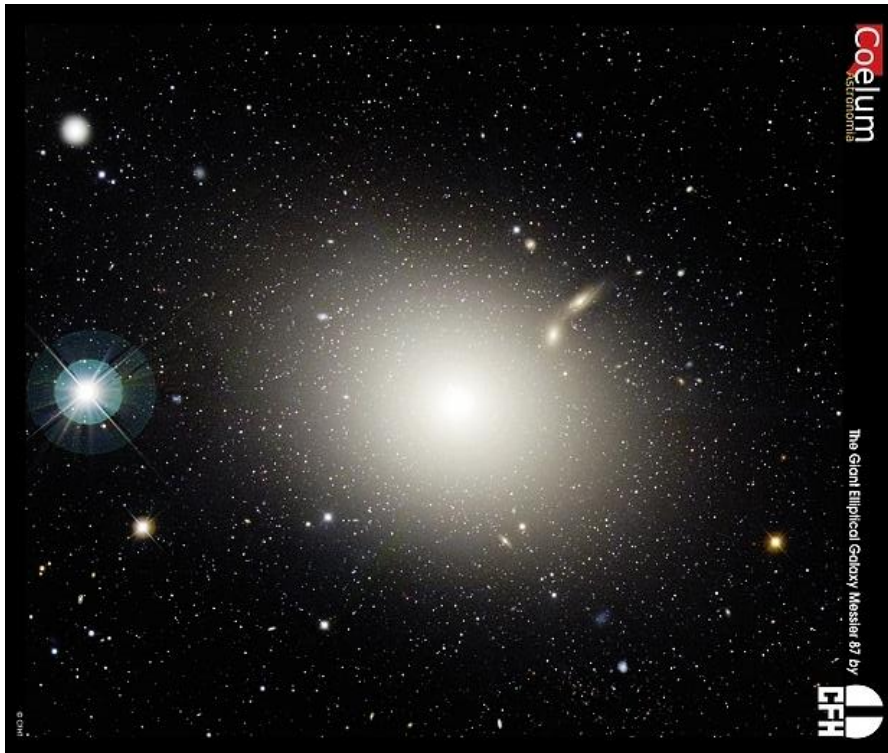
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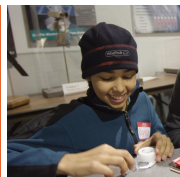
Three Basic Shapes for Galaxies

2. Elliptical galaxy

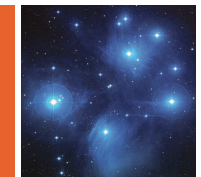
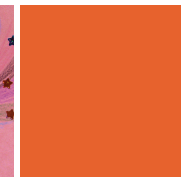
Large round/elliptical “balls” of stars



**Giant Elliptical
Galaxy M87 in Virgo**



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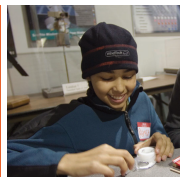


Three Basic Shapes for Galaxies

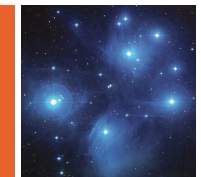
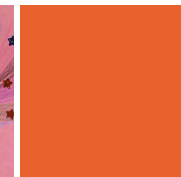
3. Irregular galaxy

Everything that is not a spiral or an elliptical galaxy!

Large Magellanic Cloud



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Interacting Galaxies



“The Mice”, an example of two galaxies that are colliding with each other.



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