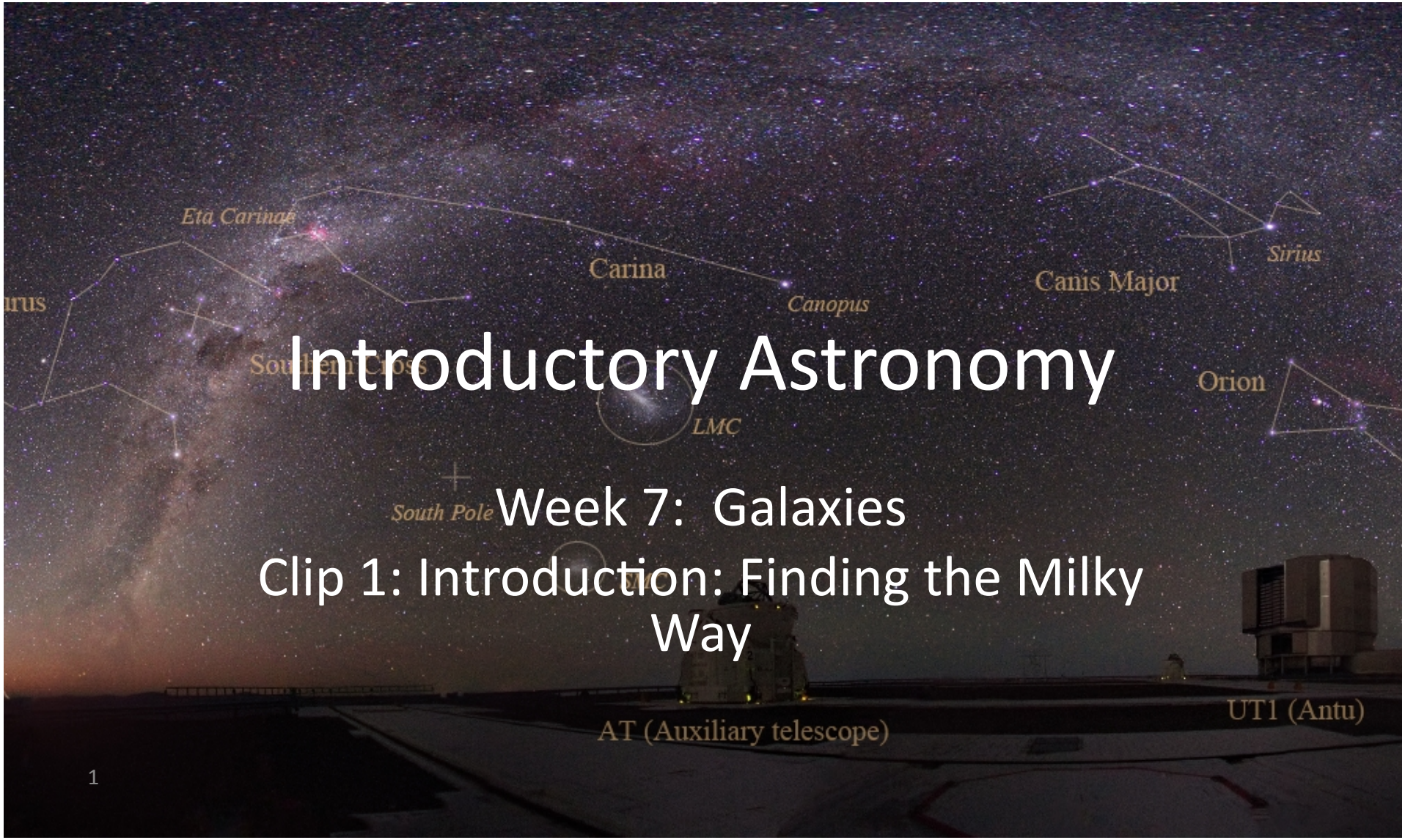


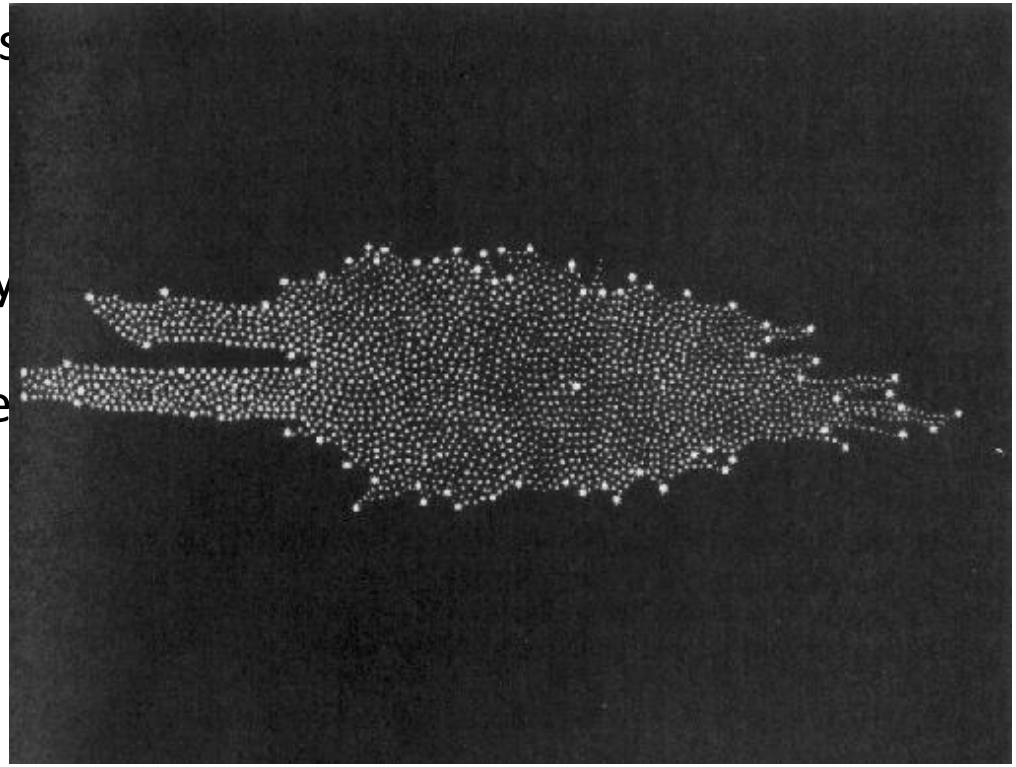
Introductory Astronomy

Week 7: Galaxies

Clip 1: Introduction: Finding the Milky Way

Where Are We?

- Galileo realized Milky Way was light of many distant stars
- Herschel 1785: Systematically counts stars in different directions: extent is how many he saw
- No preferred direction: we are near center
- Improved count by Kapteyn 1922 : spheroid 8.5×1.7Kpc. Sun: (650,38)pc



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Shapley's Clusters

- Shapley 1917: Used RR-Lyrae stars to measure distances to globular clusters: distributed in a sphere of radius 100Kpc about a point 15Kpc away in Sagittarius
- None in 10° zone of avoidance near Milky Way
- We know (Trumpler 1930):
  - Kapteyn ignored interstellar extinction so underestimated size and found Sun near center
  - Shapley saw variables but ignoring extinction attributed dimness to distance so overestimated
- Sun is about 8Kpc from center

This Week

- What we know today about the Galaxy
- How we found it is not the Universe
- Galactic Structure, Dynamics
- Cosmic Expansion
- Dark Matter

Credits

- Milky Way above VLT: Yuri Beletsky (ESO) http://apod.nasa.gov/apod/ap110509.html
- Herschel's Universe: Harvard/CFA https://www.cfa.harvard.edu/~dfabricant/huchra/2mass/images/herschel.jpg
- Shapley Cluster Counts: Todd Timberlake/OSP http://www.compadre.org/osp/items/detail.cfm?ID=11211