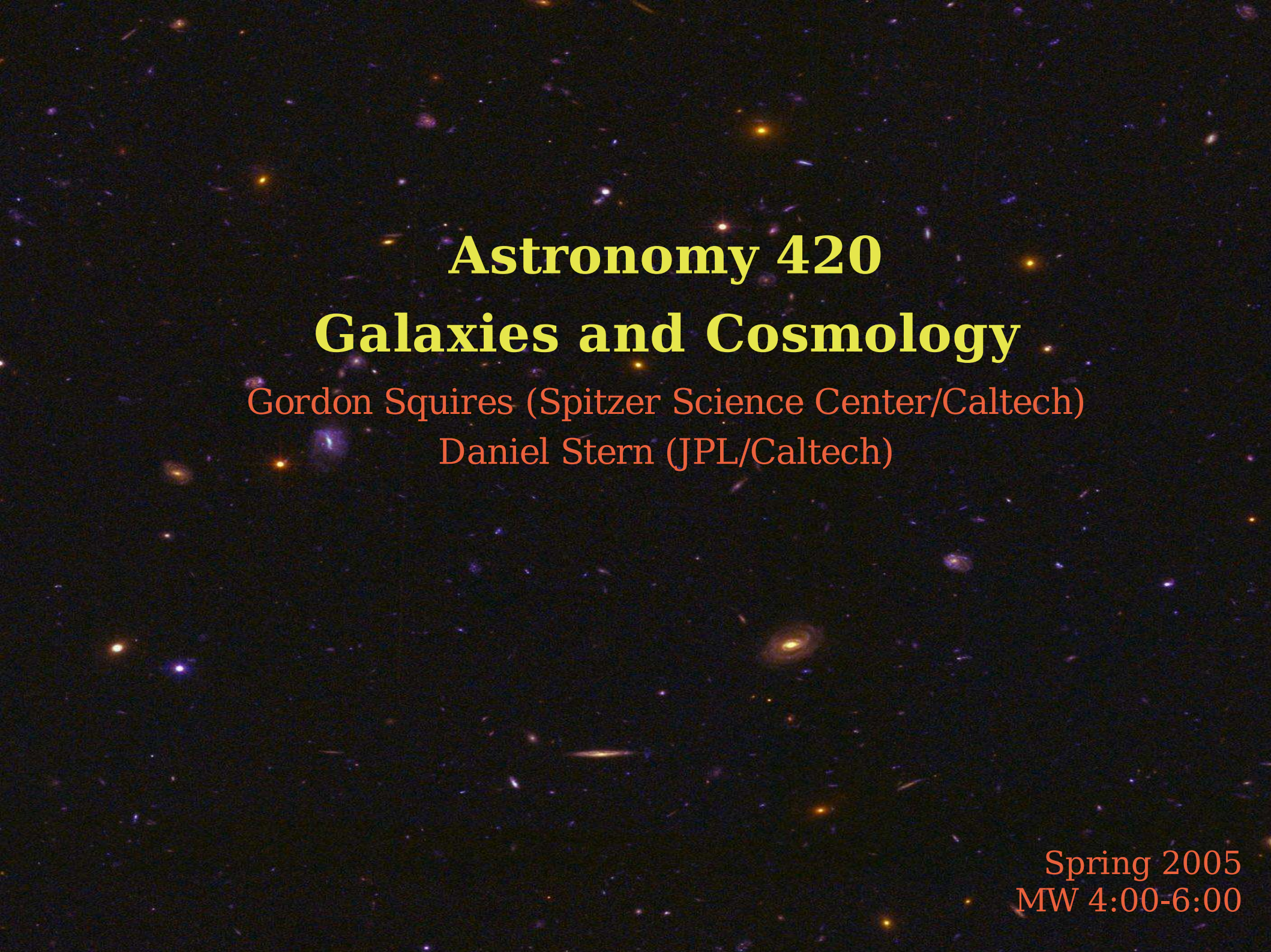


Astronomy 420
Galaxies and Cosmology

Gordon Squires (Spitzer Science Center/Caltech)
Daniel Stern (JPL/Caltech)

Spring 2005
MW 4:00-6:00

Lecture 1: Introduction & Brief History of our Views of the Universe

- course logistics
- who lecturers are
- who students are
- course overview

- the Universe: a historical perspective

1. Course logistics

- course website
- grading: homework, exams, class participation
- field trip to Palomar Observatory (Feb. 19th)
- REU opportunities

2. Who the lecturers are…

- Dr. **Gordon Squires**, assistant director (for public affairs) at the Spitzer Science Center

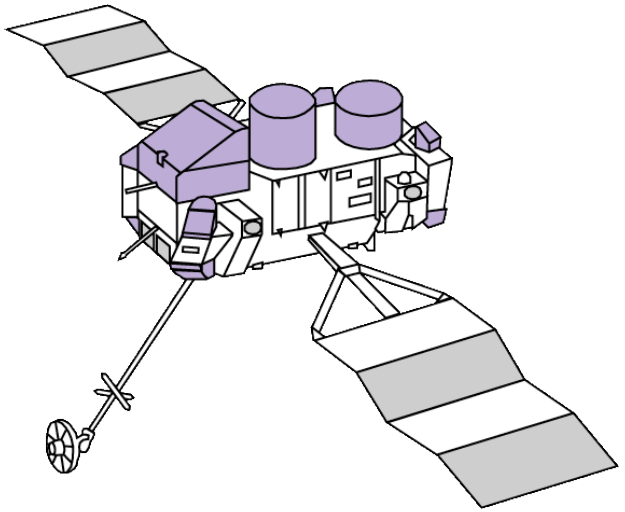
- Dr. **Daniel Stern**, research scientist at the Jet Propulsion Laboratory


Spitzer Space Telescope

25. august 2003
1:35:39 AM
cape canaveral, florida

NASA's Great Observatories

Compton Gamma-Ray Observatory



Chandra X-Ray Observatory

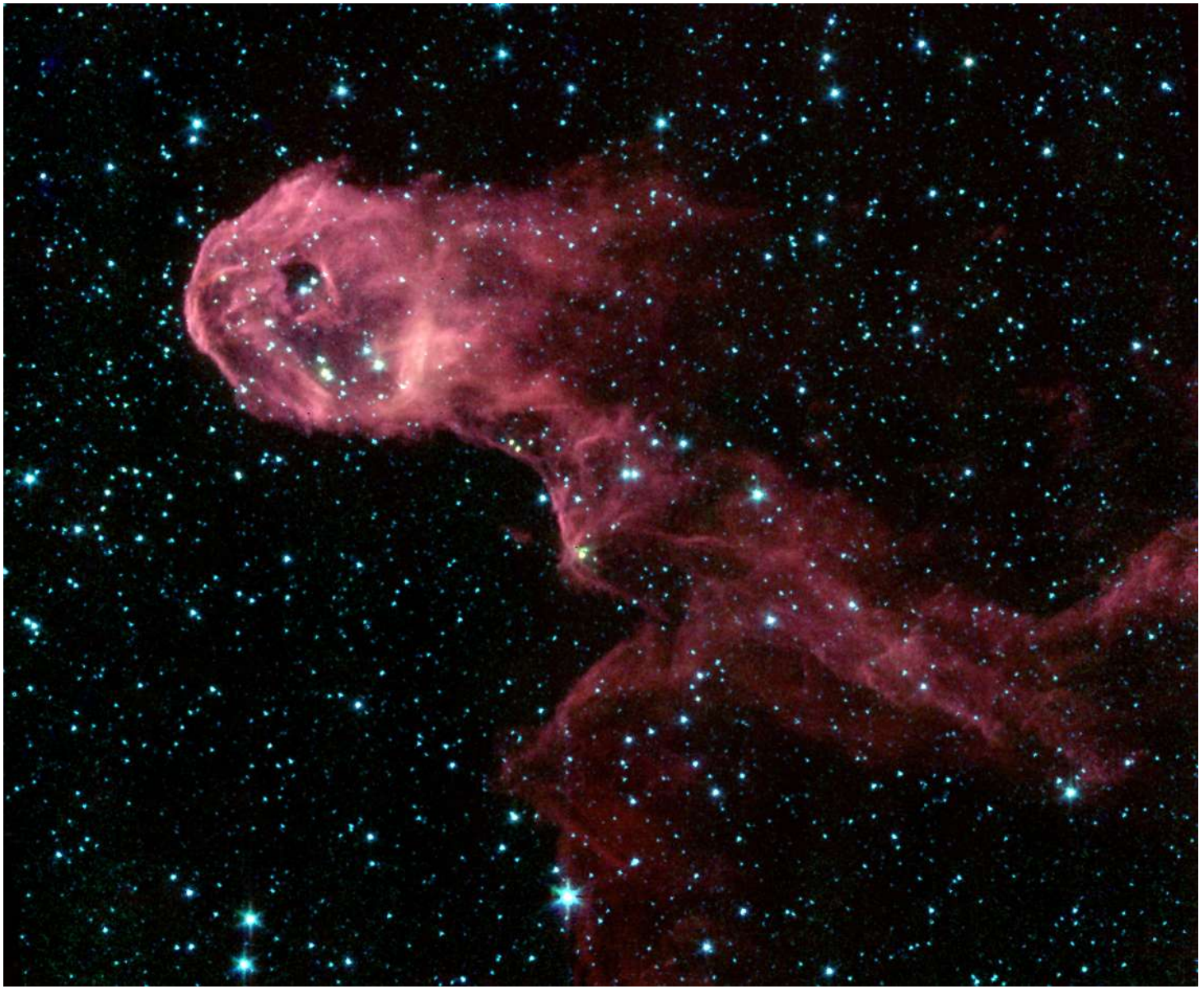
Hubble Space Telescope

Spitzer Space Telescope

IC 1396: the Elephant's Trunk Nebula

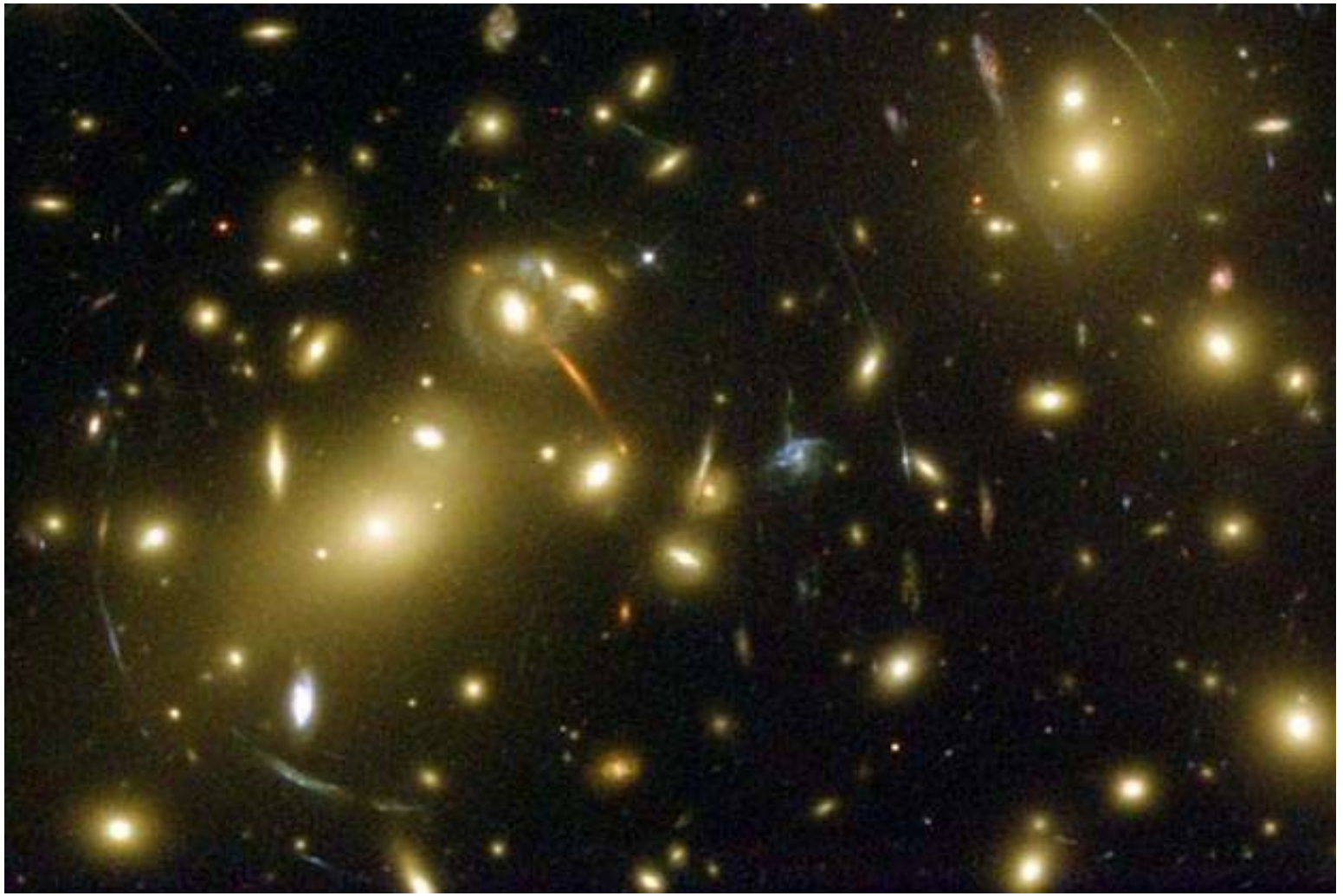
visible light (Canada-France-Hawaii Telescope)

IC 1396: the Elephant's Trunk Nebula



mid-infrared light (Spitzer Space Telescope)

Gordon's science: weak & strong gravitational lensing by massive galaxy clusters

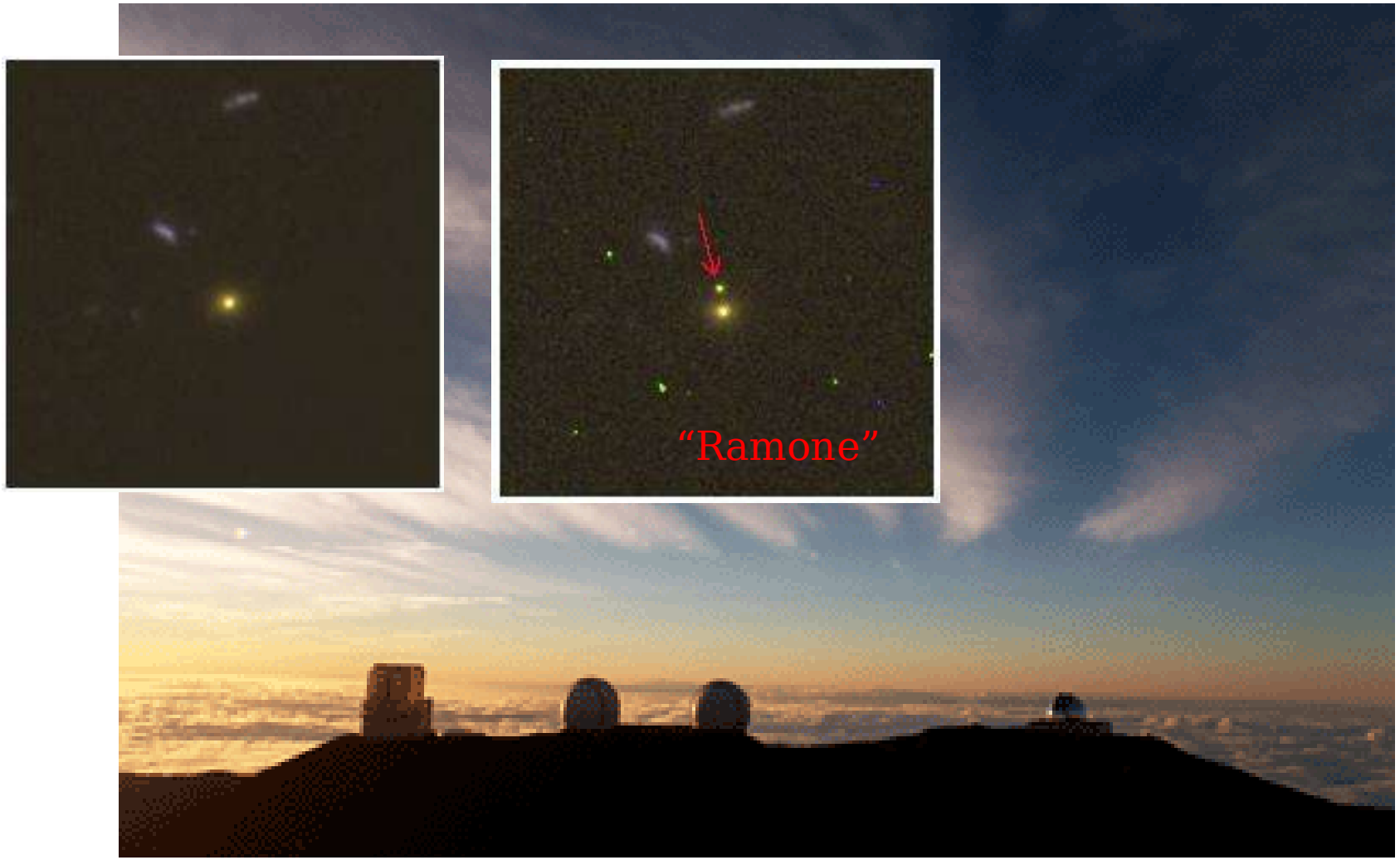


Abell 2218 (Hubble Space Telescope)

Daniel's science: faint objects from big telescopes

Mauna Kea Observatory

Daniel's science: faint objects from big telescopes



Mauna Kea Observatory

3. Who you are…

- previous astronomy courses
- previous physics courses
- highest-level math course(s) – calculus

- year (freshman/sophomore/jr./sr.)
- major (intended/declared?)

4. Course overview

humans figuring out where they are (i.e., what the Universe is)

M31: the Andromeda Galaxy


NGC2997

M51: the Whirlpool Galaxy

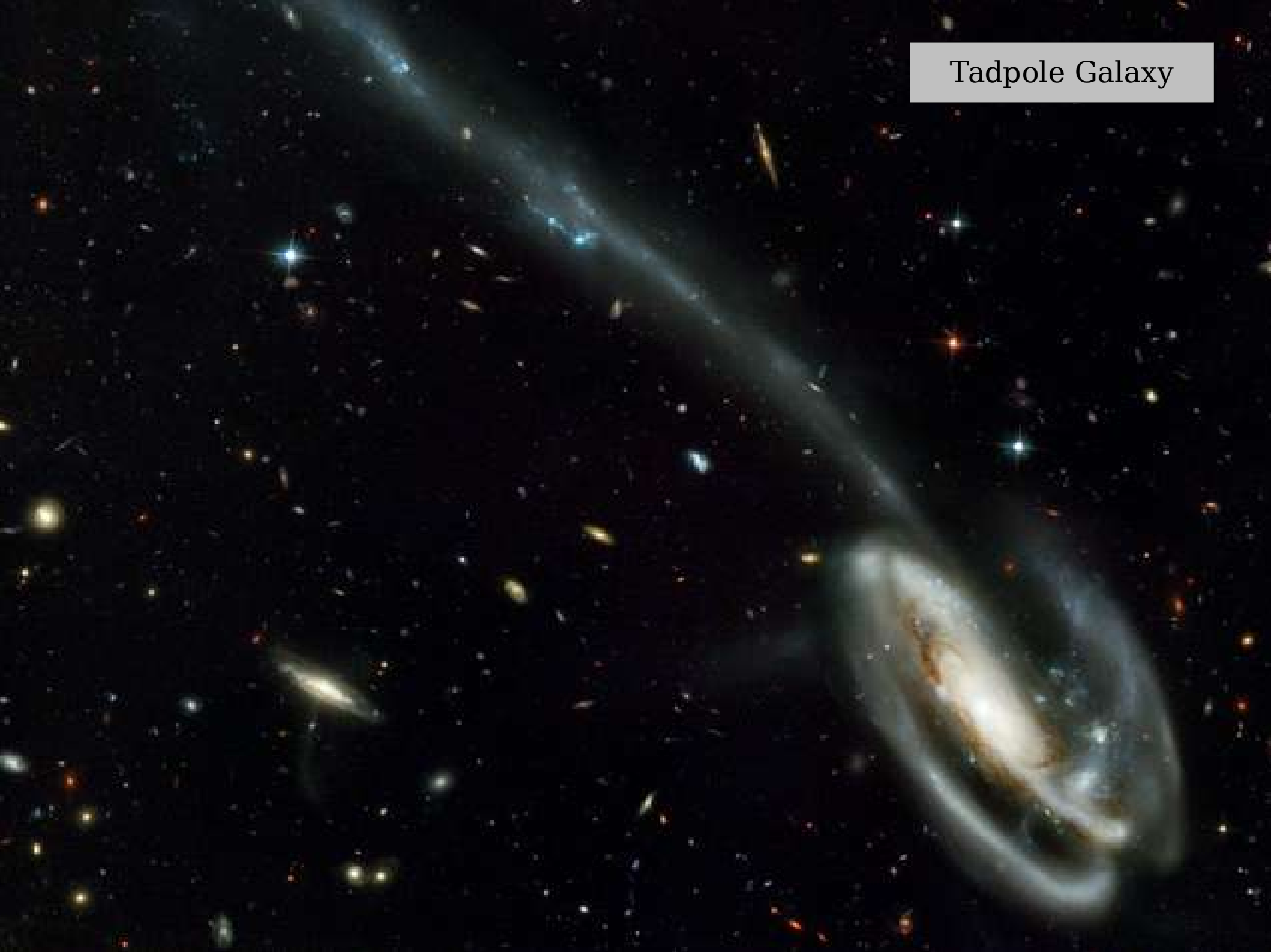
M33: the Pinwheel Galaxy

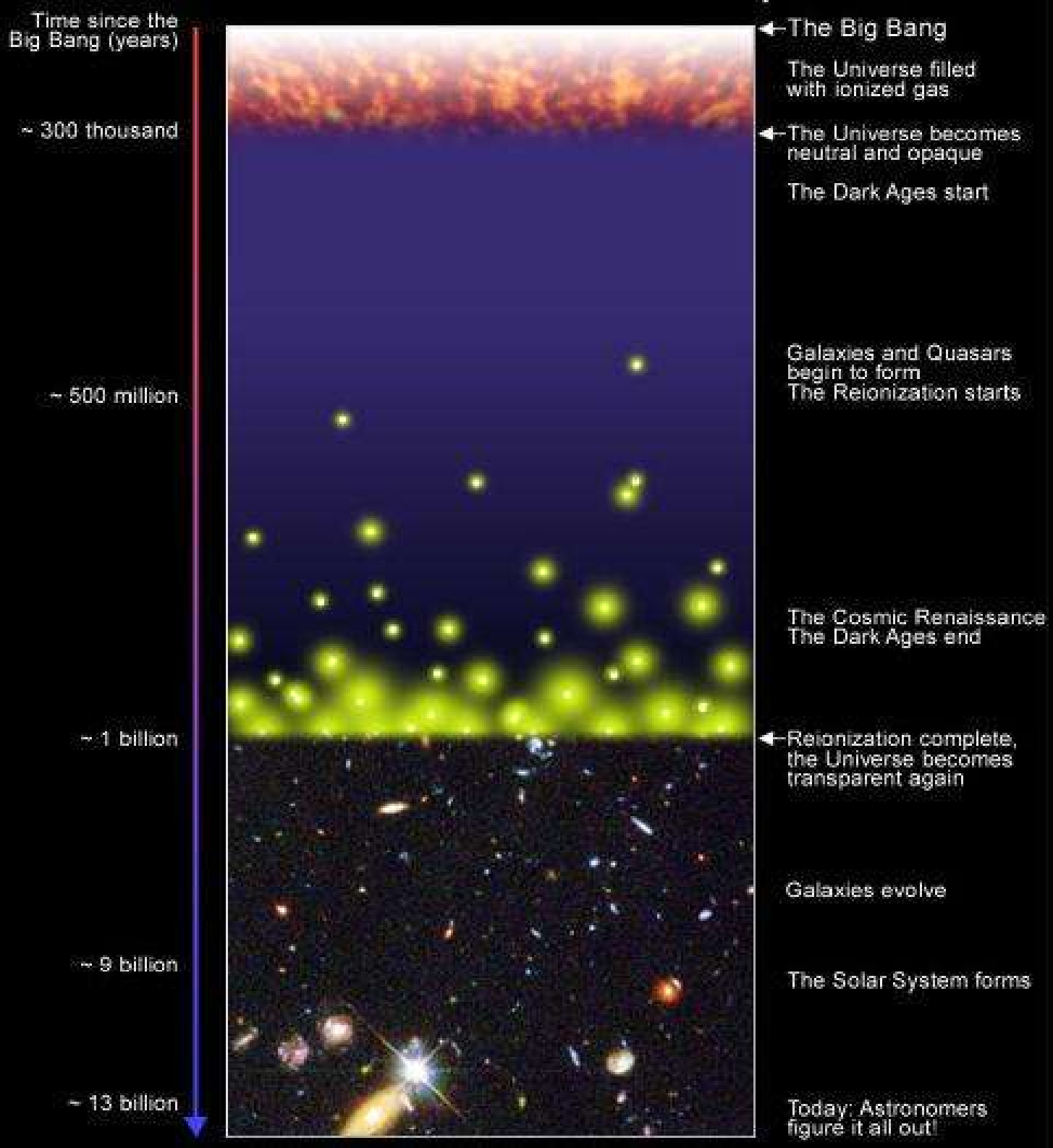
M81: Bode's Galaxy

M104: the Sombrero Galaxy


M87

Small Magellanic Cloud


Tadpole Galaxy



schematic history of the Universe (circa 2001)

Djorgovski, Castro, **Stern**, & Mahabal (2001)