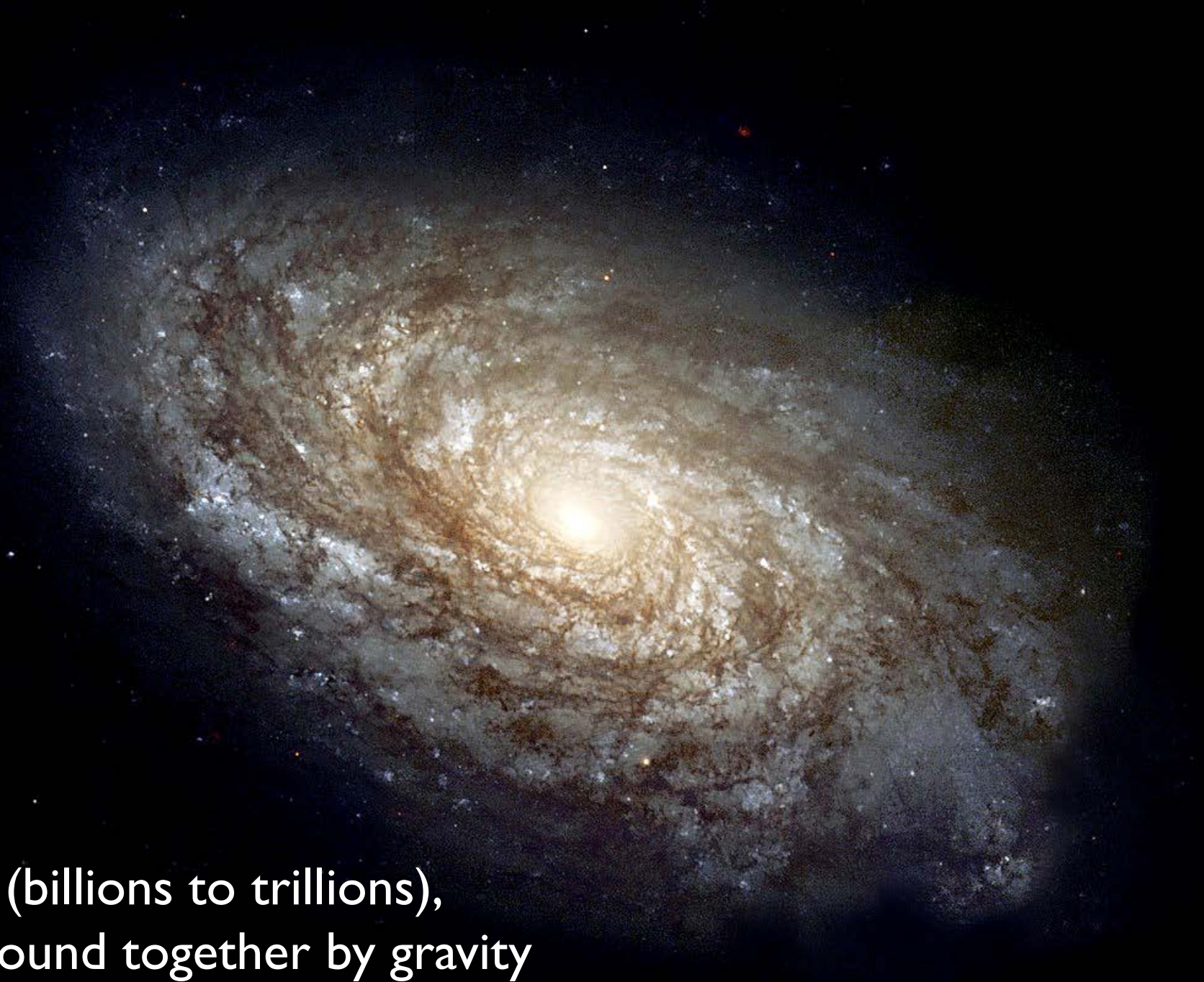


An introduction to
Galaxy Taxonomy

Zach Meisel

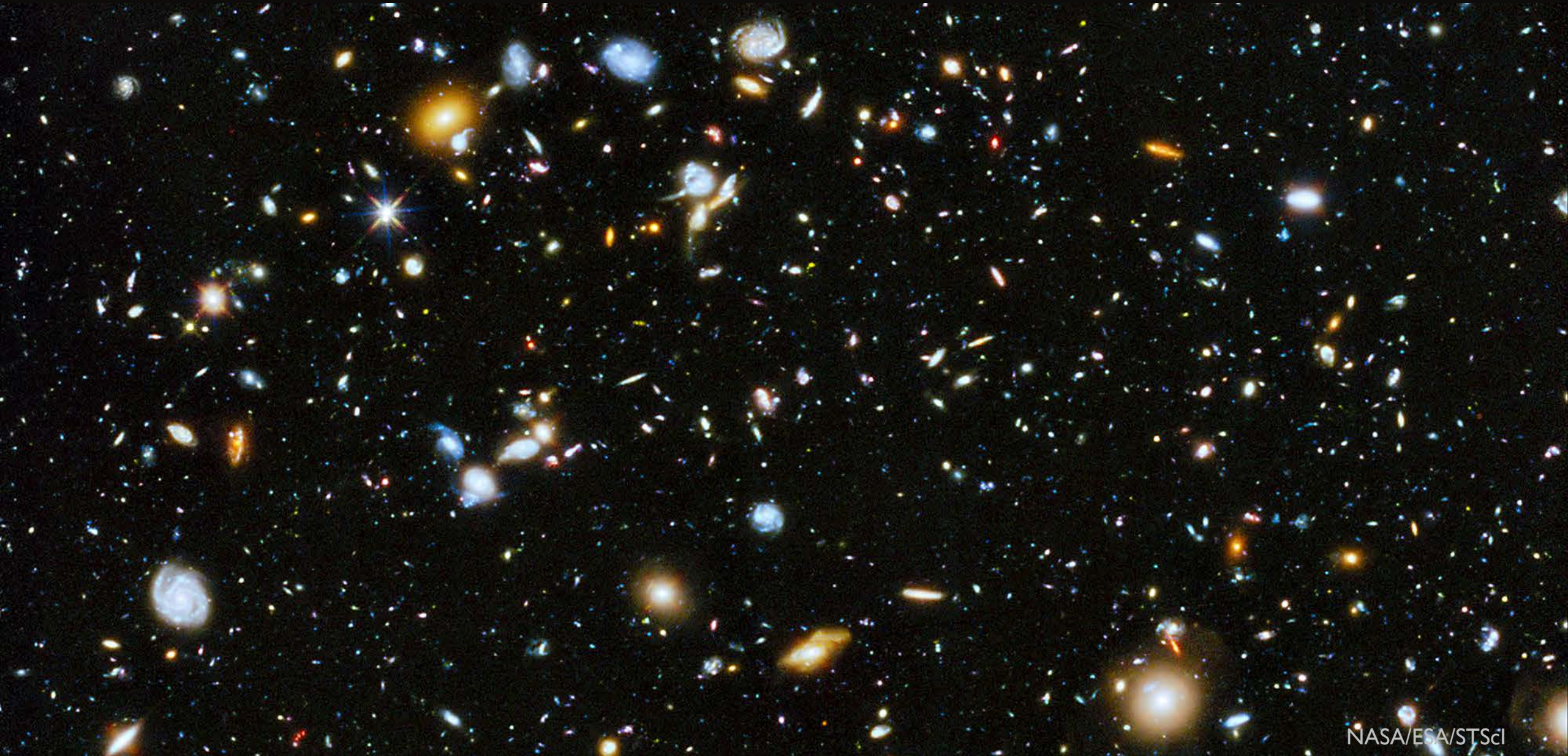
Ohio University - ASTR1000

This is a galaxy

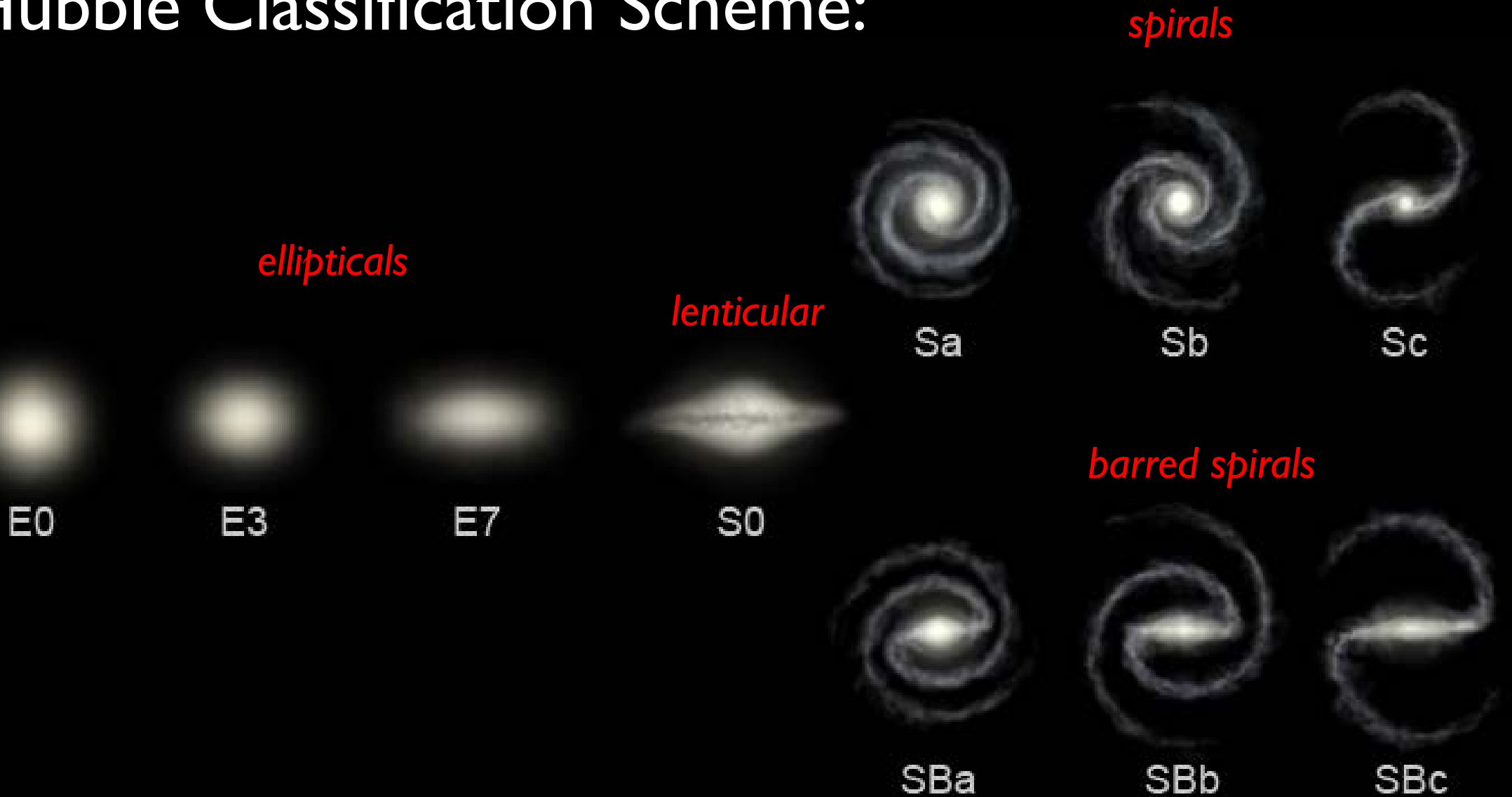


A galaxy is a bunch of stars (billions to trillions),
gas, dust, and dark matter bound together by gravity

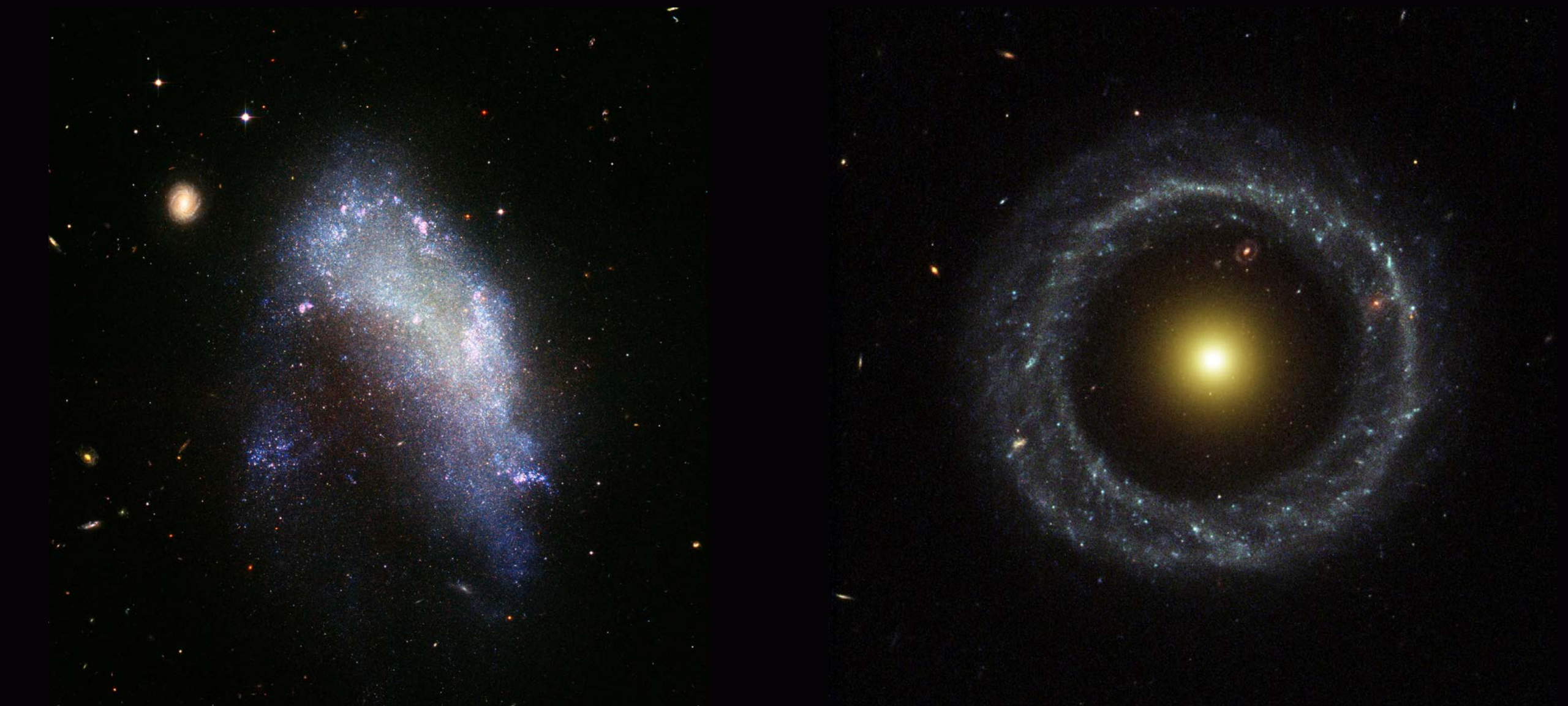
Looking out into the universe, we see lots of galaxy types



Galaxy taxonomy can be described with the Hubble Classification Scheme:



But of course there's a lot of weird stuff

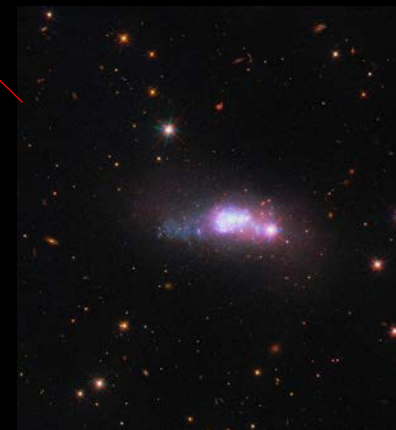
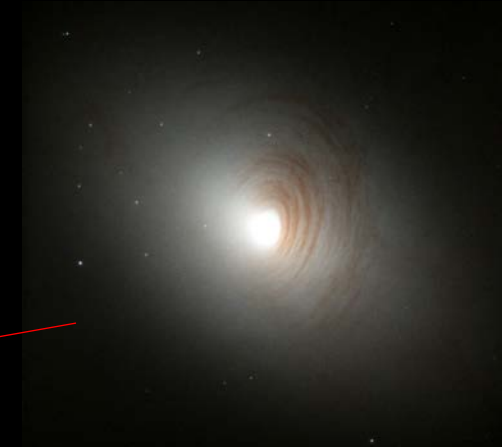
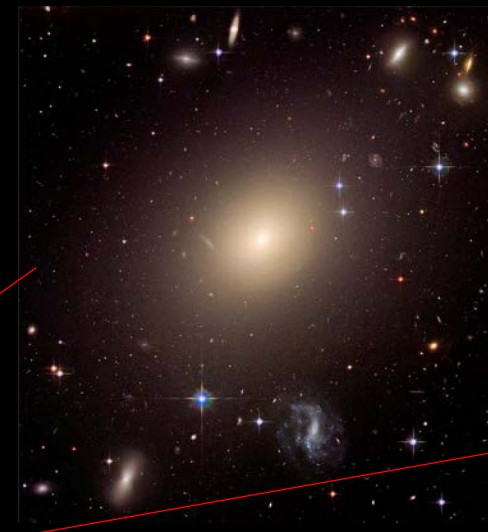


Demographics of nearby galaxies

“APM Bright Galaxy Catalogue”

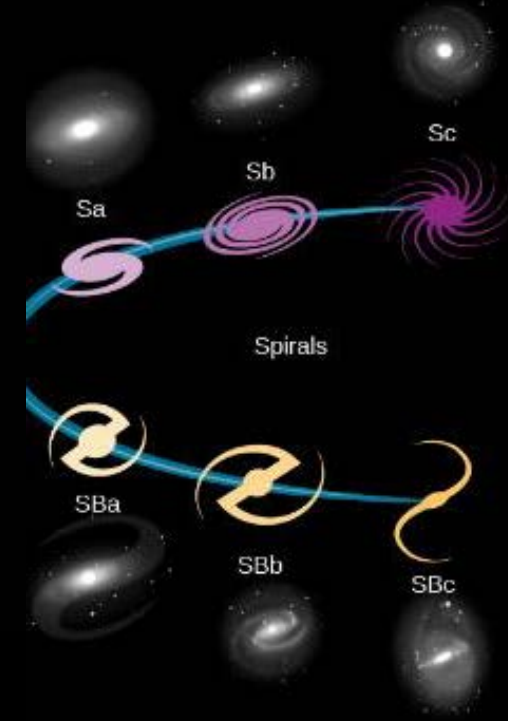
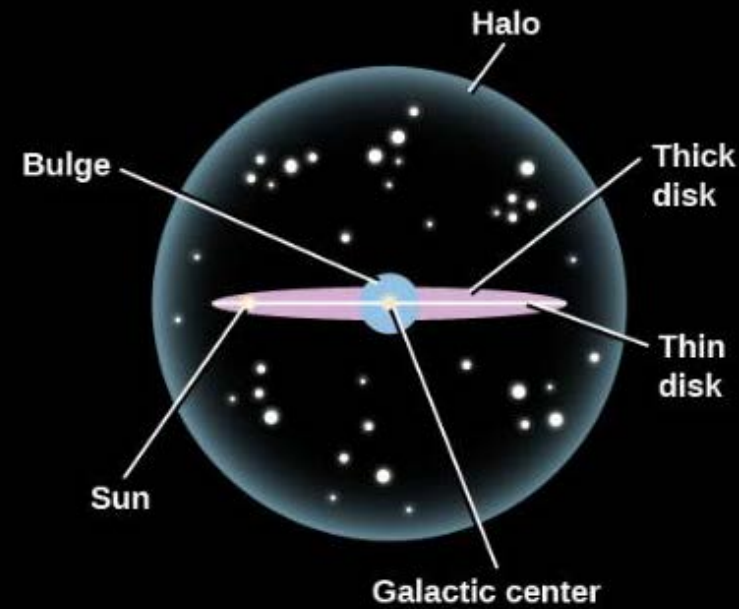
Galaxy Type	Number	%
Elliptical	1791	12.2
lenticular	2648	18.0
Spiral	8217	56.0
Irregular/Peculiar	627	4.3
Unsure	164	1.1
Merged with star	975	6.6
Multiple	259	1.8
Total	14681	100.0

J. Loveday MNRAS 1996



Spiral galaxies

- Mixture of $\sim 10^9$ - 10^{12} young & old stars, $\sim 20,000$ - $100,000$ ly wide
- Rotate in the way they look like they would
- Lots of gas & dust
- $\sim 2/3$ are barred,
- suggesting this is a long-lived structure & perhaps spirals evolve into barred spirals
- Thought to evolve toward lenticular shape once star formation ceases, no longer supporting the spiral arms



openstax



AURA/STScI/NASA/ESA

Elliptical galaxies

- $\sim 10^5$ - 10^{13} mostly old stars,
 $\sim 3,000$ - $700,000$ ly wide
- Stars orbit in many different directions,
so no (or not much) bulk rotation
- Not much gas & dust
- Some are thought to be a result of spiral
galaxy mergers

