
Astrophysics for PARTICLES

Dan Watson

Department of Physics and Astronomy
University of Rochester

Today:

- What do astrophysicists study these days?
- How do astrophysicists learn about celestial objects?
- Where are their telescopes, and how do they look through them?
- How do I get more information about all this?

Polar-ring galaxy NGC 4650A, by the Hubble Heritage Team (STScI/NASA).

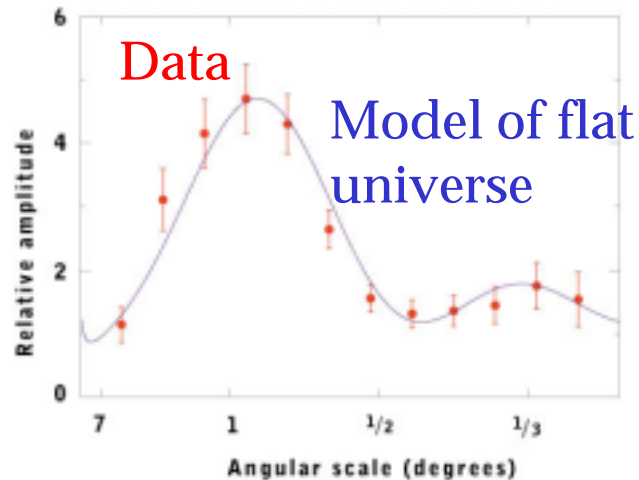
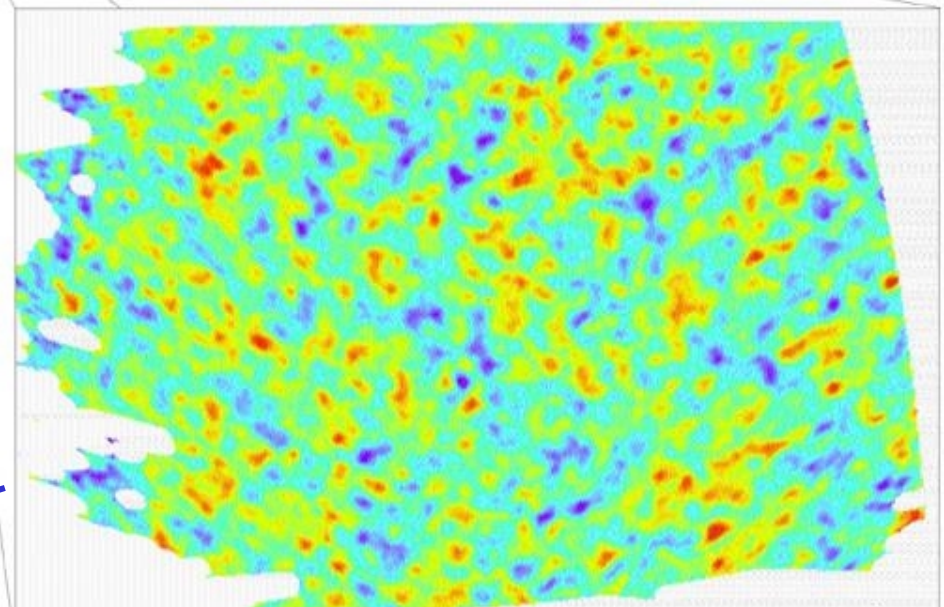
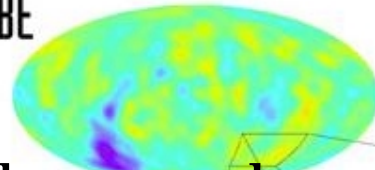


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Mainly,

- the origin and large-scale structure of the Universe,

COBE



Results from BOOMERANG: P. de Bernardis *et al.* 2000, *Nature* **404**, 955 (Caltech/ UCSB/ U. Rome/ NASA)

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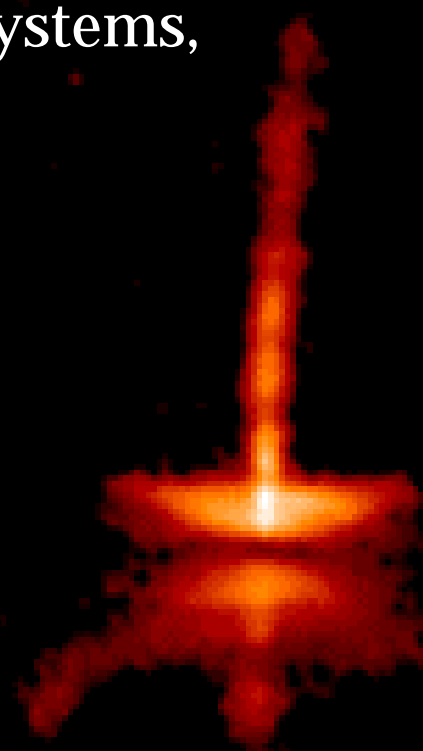
Part of the northern Hubble Deep Field (NASA/STScI)

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“Movie” of the jet and disk surrounding the young protostellar/protoplanetary system HH30, by Alan Watson with the HST (UNAM/STScI/NASA).



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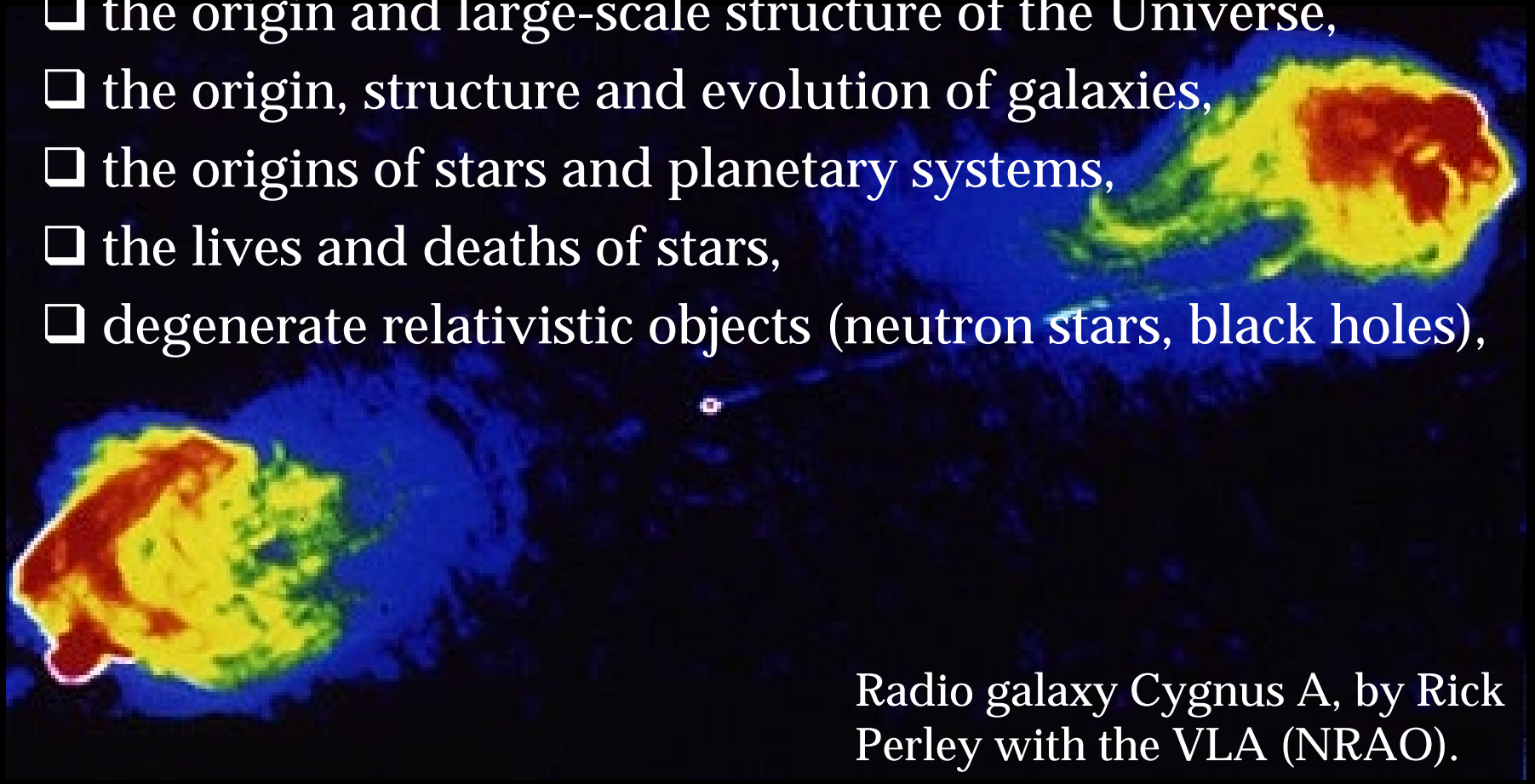
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Planetary nebula MZ3, by the Hubble Heritage Project (HST/STScI/NASA)

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- ❑ degenerate relativistic objects (neutron stars, black holes),



Radio galaxy Cygnus A, by Rick Perley with the VLA (NRAO).

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- ❑ degenerate relativistic objects (neutron stars, black holes),
- ❑ planets, moons and comets, in our solar system and others.

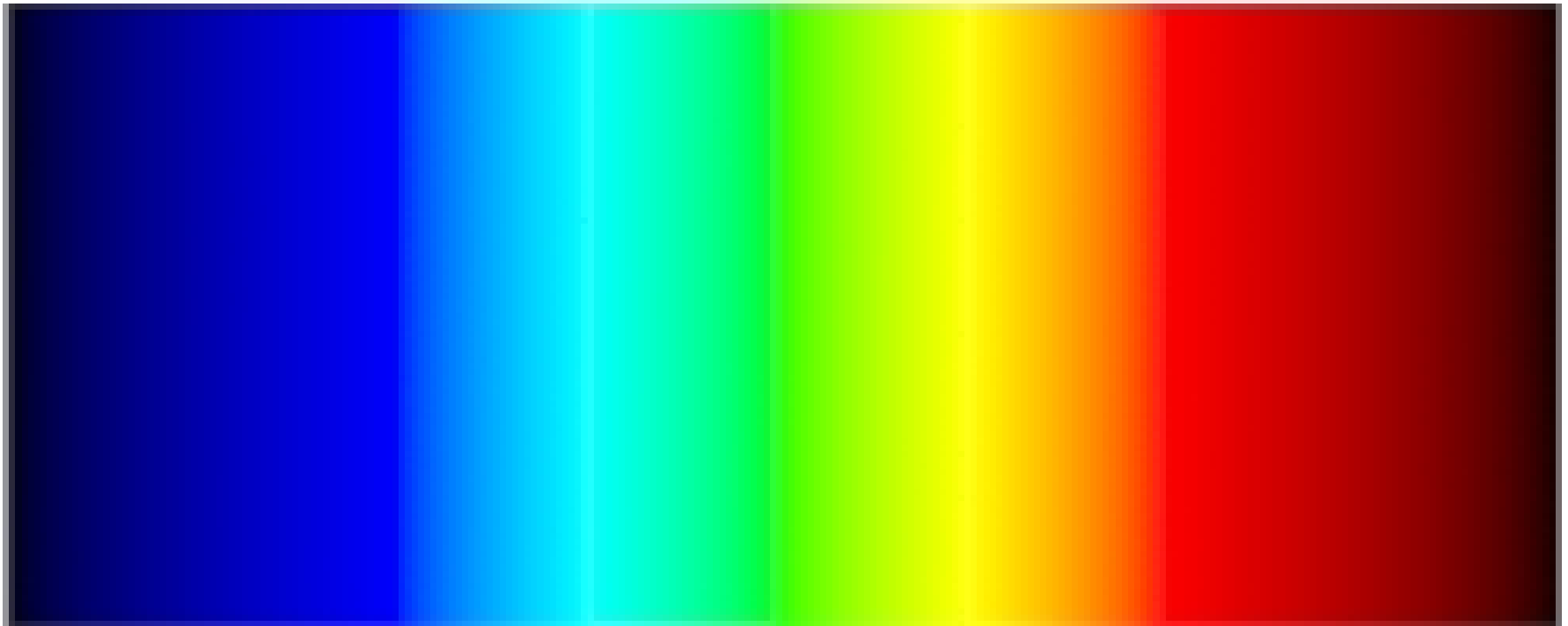
All as applications of physics, chemistry and maybe even biology!

Closeup of Jupiter with its moon Io in the foreground, by the *Cassini* probe (JPL/NASA)

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By observations of the light they emit:

- brightness and color are a good start...



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- but generally one needs to observe at lots of wavelengths besides those of visible light...

