Physics 343 Lecture # 6:
Bayesian methods & Fourier transforms

This week's schedule

Tonight 11:59pm: report for lab # 2 due by email (PDF please)

Monday – Thursday: hands-on sessions for lab # 3 (using ds9 and IDL to analyze archival millimeter array data) + attendance mandatory; active participation counts towards your course grade

Monday (Baker) & Thursday (Wu): regular office hours

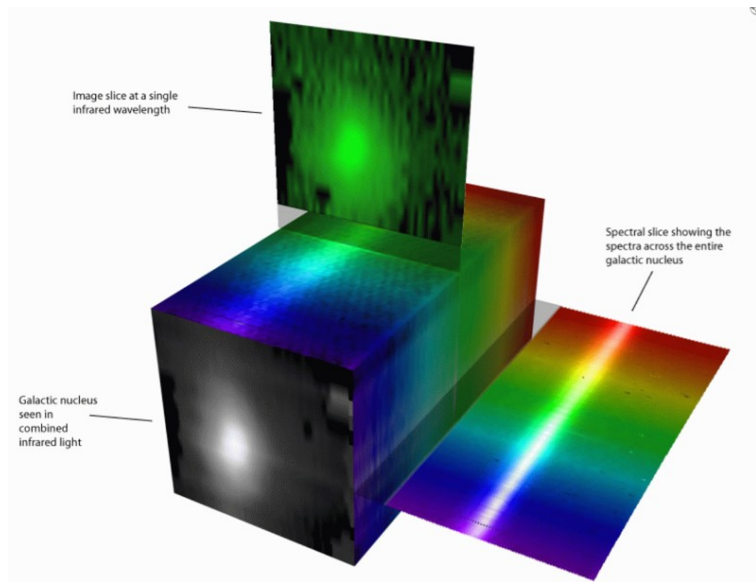**Next week: "on call" office hours for lab # 3**

NGC 1068

Nearby spiral galaxy with a powerful AGN and lots of molecular gas (traced by CO, color-coded blue here).

Image credit: ALMA (ESO/NAOJ/NRAO), S. Takano et al., NASA/ESA *Hubble Space Telescope*, A. van der Hoeven

Data for lab 3 come in the form of a *cube*

An observation with an array of radio telescopes will yield a data "cube" with two spatial dimensions and one frequency = redshift = velocity dimension.

Image slice at a single infrared wavelength

Spectral slice showing the spectra across the entire galactic nucleus

Galactic nucleus seen in combined infrared light
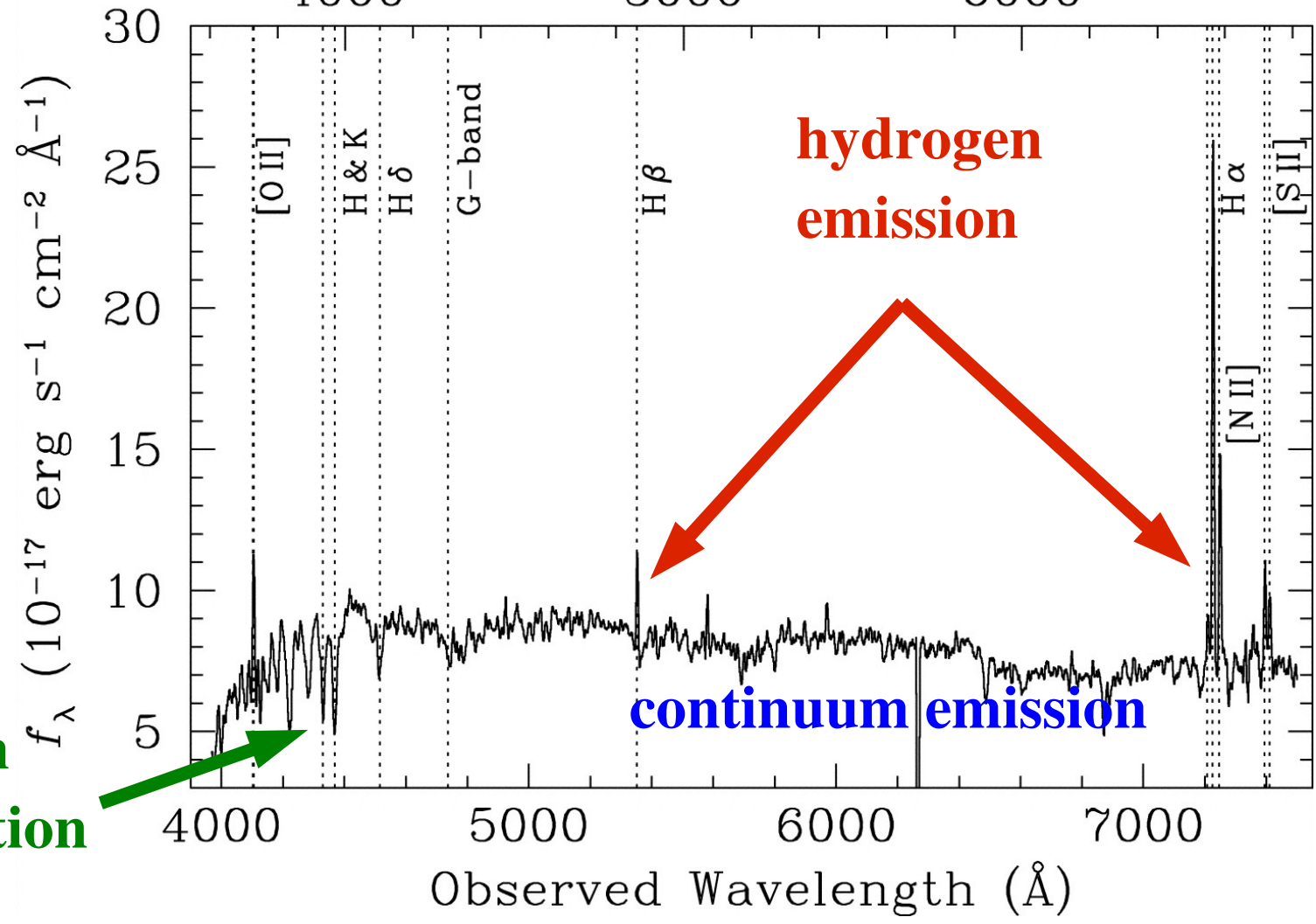
S. Todd & D. Pierce-Price

NGC1068 may have a **combination** of CO(1–0) rotational line emission (tracing molecular gas) and millimeter wavelength continuum emission (tracing free-free and/or synchrotron emission), in which case you will need to **separate** them within the data cube.

Each spatial pixel has own line+ctm spectrum

Quiz