UCDs for Spectral DM

- Spectral DM uses UCDs extensively
- Used to distinguish different x and y axes (flux density vs surface brightness, wavelength vs frequency)
- Also used throughout model to precisely describe a concept.

New Proposed UCDs

- phys.energyDensity
  - I had proposed “phys.energy-density” but Andrea recommended change for consistency with UCD list
  - Useful for SED of extragalactic background, CMB
- stat.fill
  - Filling factor; e.g. Dead time in instrument; could also use for density filling factor in ISM, etc.
- arith.log
  - Rejected at Pune, claim was we should handle this in units

New Proposed UCDs

- em.veloc.radio, opt, beta or spec.veloc;em.opt
  - The “radio” and “opt” refer to the method; you can (and some do) calc a radio velocity from an optical line.
- meta.entity, meta.curation, meta.human, meta.email, meta.uri
  - For curation type stuff
- src.net, src.total, src.background
  - Distinguish between net and total flux, aperture photom, etc.
  - Andrea proposes “stat.background”

New Proposed UCDs

- phot.fluxDens;instr.beam
  - Typically for radio: flux density per beam
  - Different from surface brightness
- stat.error.sys
  - We don't know the actual systematic error, but we know the systematic uncertainty: e.g., this instrument's absolute calibration is good to 5 percent, and we can add this into goodness-of-fit.

New Proposed UCDs

- time.obs or time.expo.mid
  - We have time.exp, time.expo.start,time.expo.end
  - time.exp = “Exposure time” which I interpret to mean the duration of the exposure;
  - We also have time.epoch which is explicitly JD
  - So what about the very common case of the time of the observational data point expressed as the midpoint of the exposure, but not in JD? time.expo.mid perhaps?
- Better yet, replace time.expo.start,time.expo.end by
    - time.expo;arith.bin.start and time.expo;arith.bin.end
  - Allows general solution to start/mid/end issues