High Energy Astrophysics Data

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Event Lists

- Each photon is precious to us; we record at least:
  - Time stamp
  - (x,y) -> (RA, Dec)
  - Energy (frequency, wavelength)
- Complications:
  - In imaging X-ray telescopes PSF varies by orders of magnitude over the FOV
  - Incident energy -> detected energy is a convolution by a function that depends on energy – no invariant band filter
  - Poisson statistics

Data Cube Properties and Use

- The ultimate sparse cube: each subcube is a single voxel
- Conceptually no different from SEDs, time series, etc.

- Usage – extract from these sparse cubes:
  - 2-D images – specified area, band, time range, resolution
  - Spectra – specified area, time range, resolution
  - Light curve (time series) – specified area, band, resolution
  - Hardness ratios (colors) – spec'd area, time range, bands
  - Event lists – specified area, band, time range

Playing Well with Others

- Increasingly involved in multi-wavelength studies:
  - Combined proposal agreements between Chandra, Hubble, Spitzer, XMM, VLA, …
  - Coordinated observations
- Speaking for Chandra, we consider it part of our responsibilities to provide access through IVOA protocols
- Some simple usage statistics:
  - Over 90% of data 8 years and older have been published
  - Annually about 2/3 of archive appears in publications