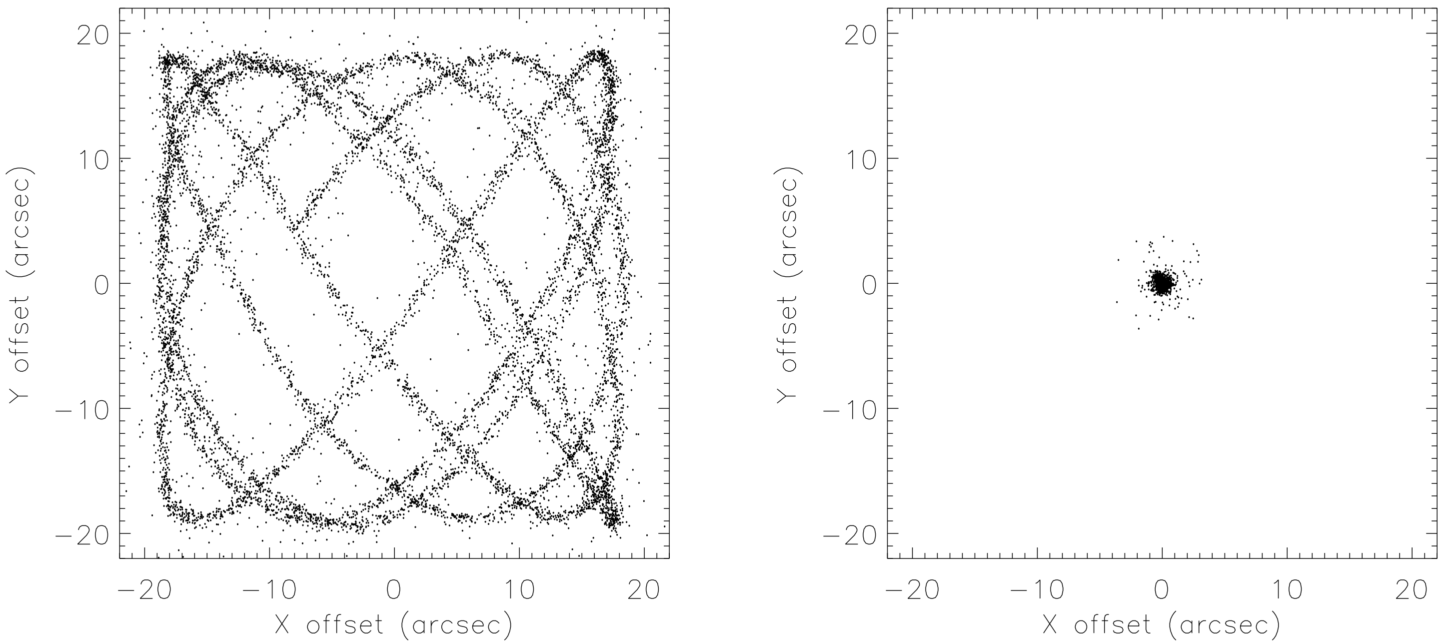
# Chandra Aspect

- Aspect solution is a time history of the exact pointing attitude and spacecraft alignment
- Allows conversion from detector pixel coordinate to sky position (RA,Dec), as well as contruction of exposure maps



# Resources

Aspect chapter of Proposers Observatory Guide – Description of hardware, aspect processing and products, and operations

Aspect Information page – http://asc.harvard.edu/mta/ASPECT/ Contains latest information on caveats, calibration, and aspect performance.

Caveats – http://asc.harvard.edu/mta/ASPECT/aspect_caveats.html

Help desk

# Calibration and Performance

- Celestial location

  (http://asc.harvard.edu/mta/ASPECT/cel_loc/cel_loc.html)

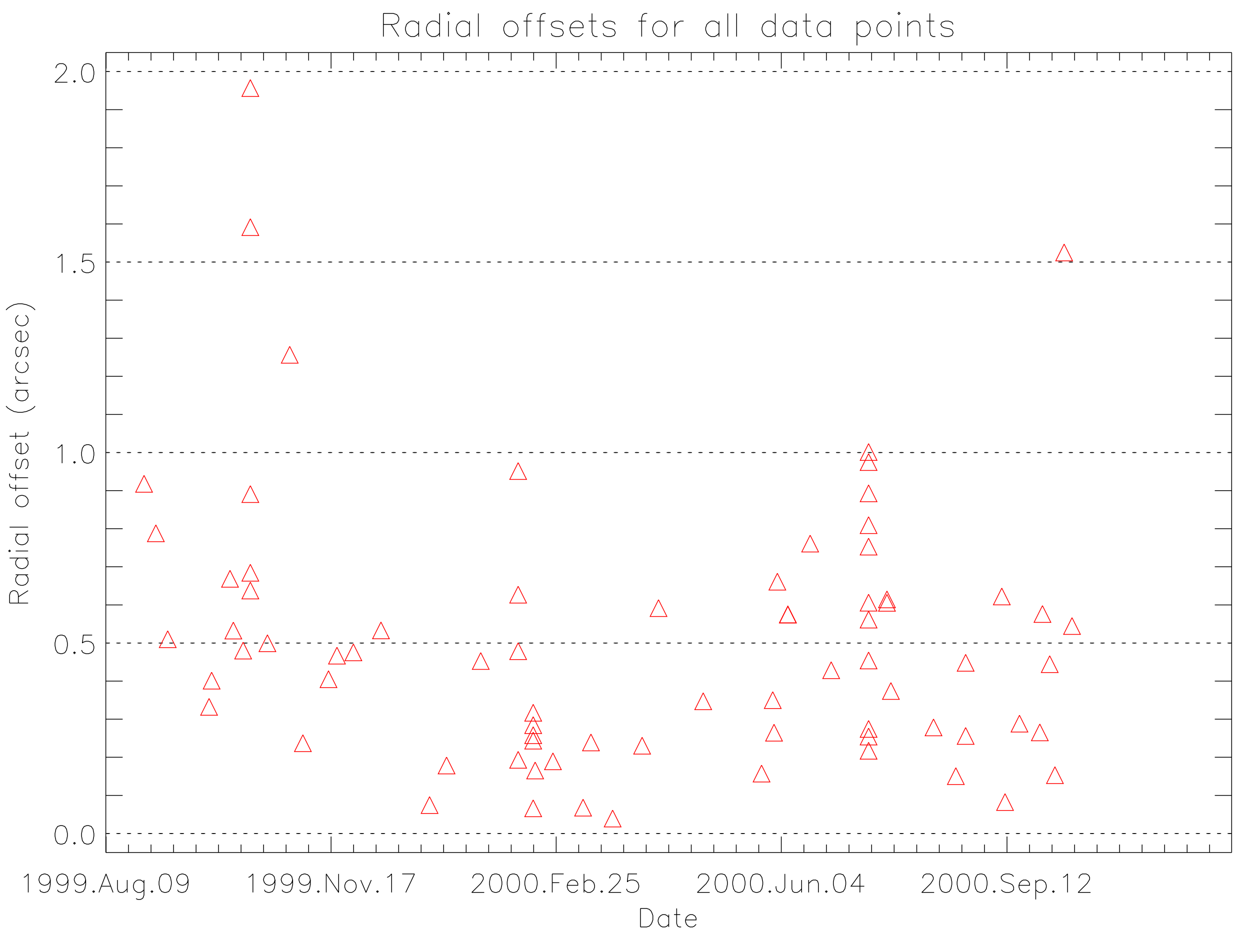
  Measures absolute accuracy of Chandra X-ray source locations. Based on observations of point sources with accurately known coordinates, the source location error circle (1-$\sigma$) has a radius of 0.6 arcsec.

  CAVEAT: About 30 HRC-S observations have a 2 arcsec offset. See Aspect Caveats.

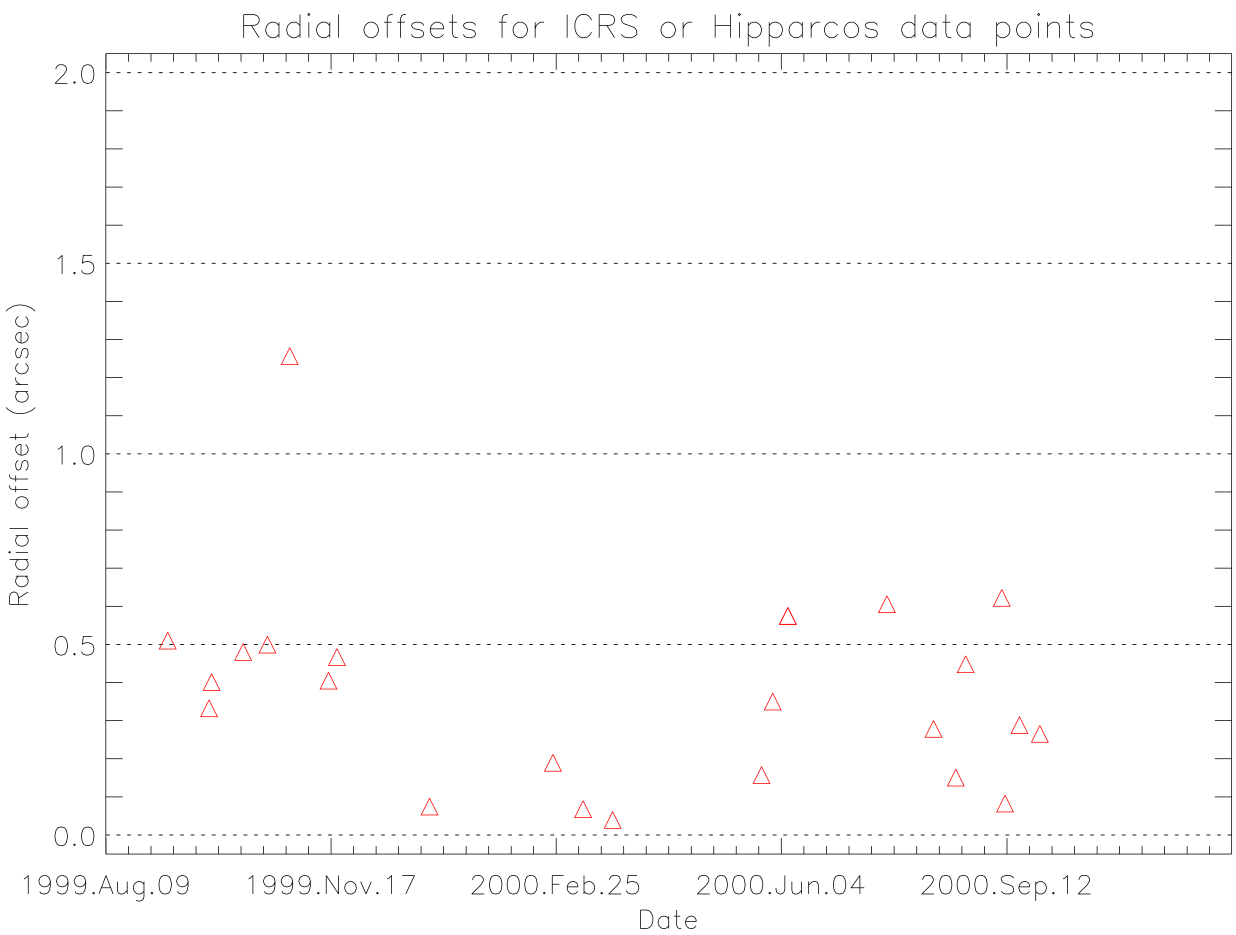
- Image reconstruction

  (http://asc.harvard.edu/mta/ASPECT/img_recon/report.html)

  Measures the effective blurring of the X-ray PSF due to aspect reconstruction. Latest analysis shows aspect reconstruction introduces an almost negligible blurring, equivalent to a gaussian sigma of less than 0.07 arcsec.



Radial offsets for all data points
Radial offset (arcsec)
0.0
0.5
1.0
1.5
2.0
1999.Aug.09
1999.Nov.17
2000.Feb.25
2000.Jun.04
2000.Sep.12
Date

Radial offsets for ICRS or Hipparcos data points
Radial offset (arcsec)
0.0
0.5
1.0
1.5
2.0
1999.Aug.09
1999.Nov.17
2000.Feb.25
2000.Jun.04
2000.Sep.12
Date

## Improving absolute astrometry

- Improved celestial location precision is possible for some observations by cross-correlating detected X-ray sources with high-precision optical, IR, or radio catalogs.
- This technique has been used to achieve absolute astrometry accurate to +/-0.3 arcsec (90% confidence, Sgr A* field), +/-0.15 arcsec (Hubble Deep Field), and +/-0.1 arcsec (Orion Nebula cluster).
- Details available:

  http://asc.harvard.edu/mta/ASPECT/improve_astrometry.html

  http://asc.harvard.edu/ciao/threads/arcsec_correction.thread.html