

# Chandra Source Catalog: Source Properties and Data Products

## Source Flags

Various quick-reference and warning flags

### Source Flags

| Property / Data Product           | Each band |
|-----------------------------------|-----------|
| <b>Significance</b>               |           |
| Detect significance               | ✓         |
| Flux significance                 | ✓         |
| Extent                            | ○         |
| Confusion                         | ○         |
| Variability                       | ○         |
| <b>Hardness ratio variability</b> |           |
| Streak source                     | ○         |
| Saturated source                  | ○         |
| Pile-up                           |           |
| Chip edge                         |           |
| Multi-chip                        |           |
| Dither warning                    |           |
| Manual include                    |           |
| Manual Region                     |           |
| Manual match                      |           |

○: separate values for each band only in per-observation sources

## Photometry

Photometric parameters derived from the source region apertures, as well as apertures covering 90% of the PSF

### Photometric Information

| Property Data Product     | Each band | Confidence limits | Also at 90% PSF | Background |
|---------------------------|-----------|-------------------|-----------------|------------|
| <b>Aperture</b>           | ✓         |                   | ✓               | ✓          |
| Counts in aperture        | ✓         |                   | ✓               | ✓          |
| Source counts in aperture | ✓         |                   | ✓               |            |
| Source rate in aperture   | ✓         | ✓                 | ✓               |            |
| Photon flux               | ✓         | ✓                 | ✓               |            |
| Aperture flux             | ✓         | ✓                 | ✓               |            |
| Power Law flux            | ✓         | ✓                 | ✓               |            |
| Black Body flux           | ✓         | ✓                 | ✓               |            |

### Keys

In the tables individual source items are color coded, indicating in which table they may be found, or whether they are data products.

**Red:** Properties for per-observation sources  
**Blue:** Properties for Master List sources  
**Black:** Properties in both source lists  
**Magenta:** Data product

## Space

Position and size of the source

### Spatial properties

| Property Data Product      | Each band | Error | Background |
|----------------------------|-----------|-------|------------|
| RA, Dec                    | ○         | E     |            |
| Galactic $l, b$            | ○         |       |            |
| Focal plane $\theta, \phi$ |           |       |            |
| Observed size              | ✓         | ✓     |            |
| PSF size                   | ✓         | ✓     |            |
| Deconvolved size           | ○         | ✓     |            |
| <b>Region</b>              |           |       | ✓          |
| <b>Image</b>               | ✓         |       |            |
| <b>PSF Image</b>           | ✓         |       |            |
| <b>Exposure map</b>        | ✓         |       |            |

○: separate values for each band only in per-observation sources  
 E: error ellipse

## Spectrum

Spectral fits, hardness ratios, spectral files

### Spectral Information

| Property Data Product              | Confidence limits | Also at 90% PSF |
|------------------------------------|-------------------|-----------------|
| Power Law fit                      | ✓                 |                 |
| Black Body fit                     | ✓                 |                 |
| $N_H$ (Galactic)                   |                   |                 |
| Hardness ratios                    | ✓                 |                 |
| <b>Spectrum</b>                    |                   | ✓               |
| <b>ARF (auxiliary response)</b>    |                   |                 |
| <b>RMF (redistribution matrix)</b> |                   |                 |

## Time

Variability probabilities for single and multiple observations

### Variability Information

| Property Data Product                | Each band | Error | Background |
|--------------------------------------|-----------|-------|------------|
| Intra variability index              | ✓         |       |            |
| Intra variability sigma              | ✓         |       |            |
| Intra variability mean/min/max       | ✓         |       |            |
| GL variability probability           | ✓         |       |            |
| KP variability probability           | ✓         |       |            |
| KS variability probability           | ✓         |       |            |
| <b>Inter variability index</b>       |           |       |            |
| <b>Inter variability probability</b> |           |       |            |
| <b>Inter variability sigma</b>       |           |       |            |
| <b>Light curve</b>                   | ✓         | ✓     | ✓          |

Intra: within a single observation  
 Inter: across multiple observations

## Observation

Information on the observation(s) where the source was detected

### Observation Information

| Property / Data Product | Background |
|-------------------------|------------|
| Number ACIS observation |            |
| Number HRC observation  |            |
| Exposure time ACIS      |            |
| Exposure time HRC       |            |
| ObsId                   |            |
| Observation Interval    |            |
| ...etc.                 |            |
| <b>Event List</b>       |            |
| <b>Field of view</b>    |            |
| <b>Image</b>            | ✓          |
| <b>Exposure map</b>     |            |
| <b>Sensitivity map</b>  |            |

## CSC Energy bands

ACIS: 0.5 keV < **b** < 7.0 keV  
 ACIS: 0.2 keV < **u** < 0.5 keV < **s** < 1.2 keV < **m** < 2.0 keV < **h** < 7.0 keV  
 HRC: 0.1 keV < **w** < 10.0 keV