

acis_process_events (Glenn Allen)

Description:

- The -120°C CTI gain and response are calibrated for Feb. – Apr. 2000
- Yet CTI has continued to increase
- This increase causes an “apparent gain” shift

Gain Adjustment:

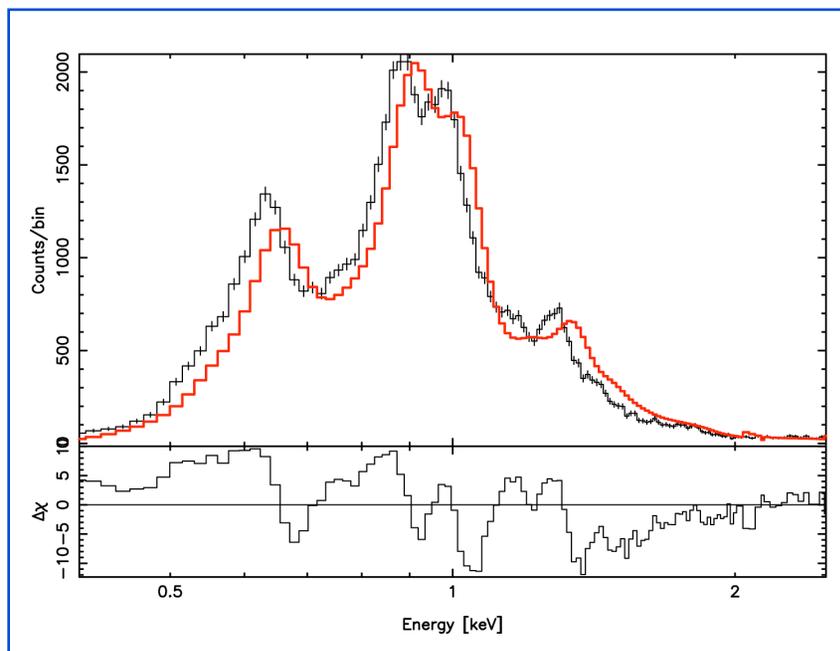
- To compensate, a time-dependent adjustment is applied to the PHA values
- The adjustment is included in `acis_process_events`:

```
acis_process_events in.fits out.fits apply_tgain=yes .....
```

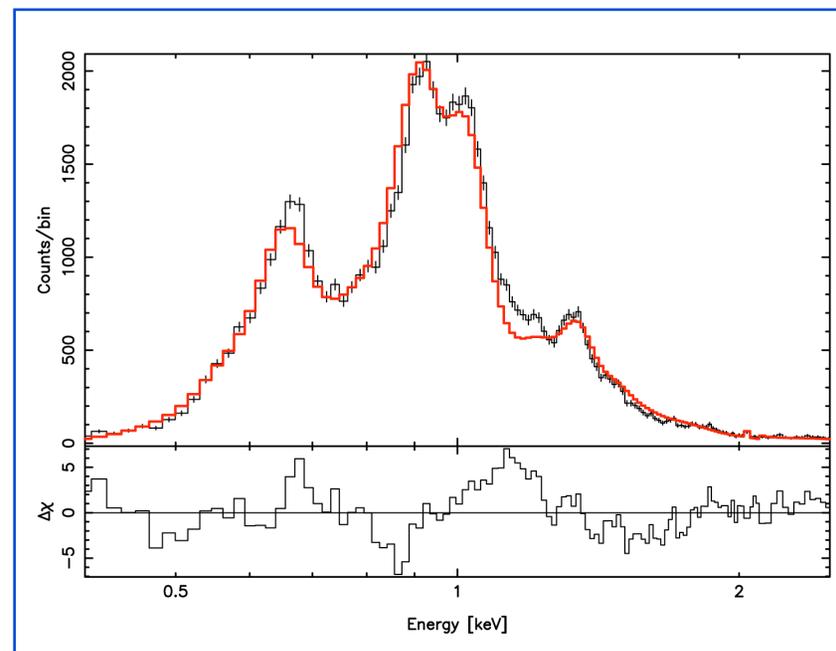
- Will be applied as part of pipeline
- Archive data will be reprocessed
- After adjustment, data are consistent with gain at reference time



An Example: SNR 1E0102.2-7219

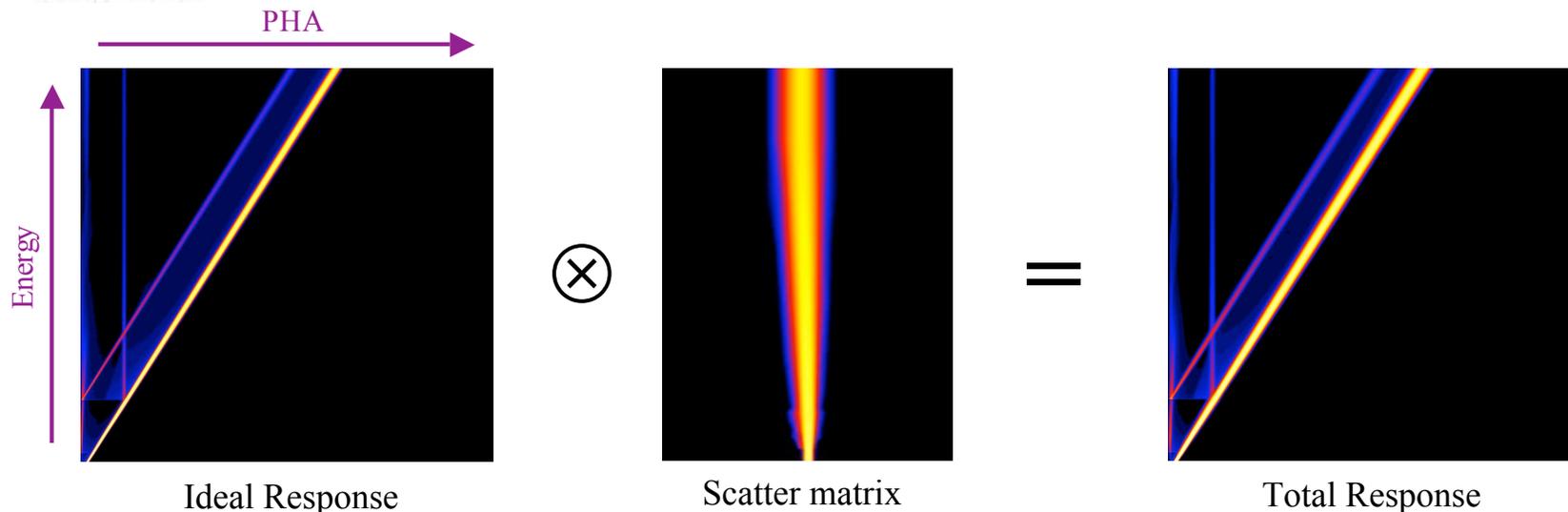


Without TGAIN correction



With TGAIN correction

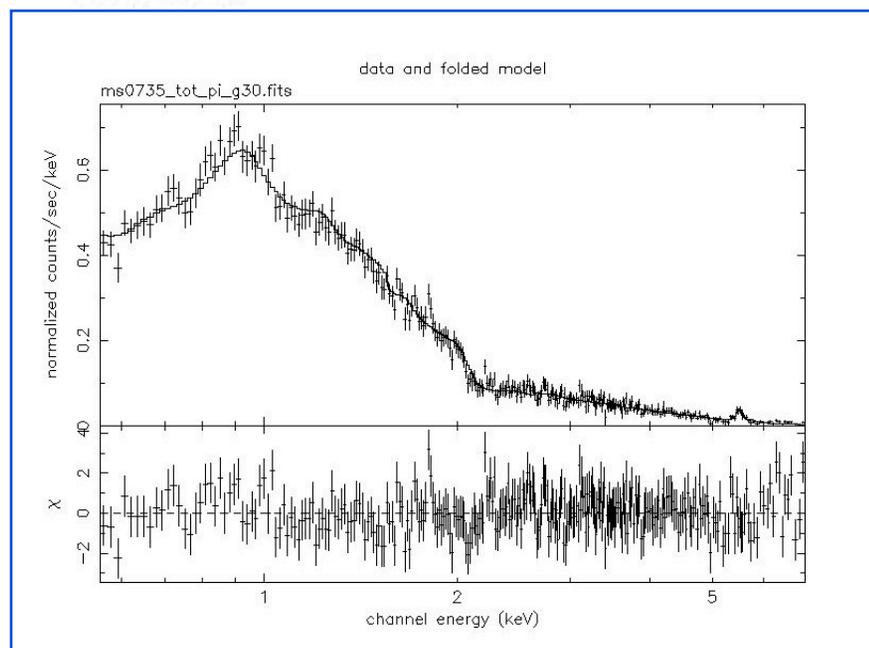
— Jan. 2000
— Jan. 2004



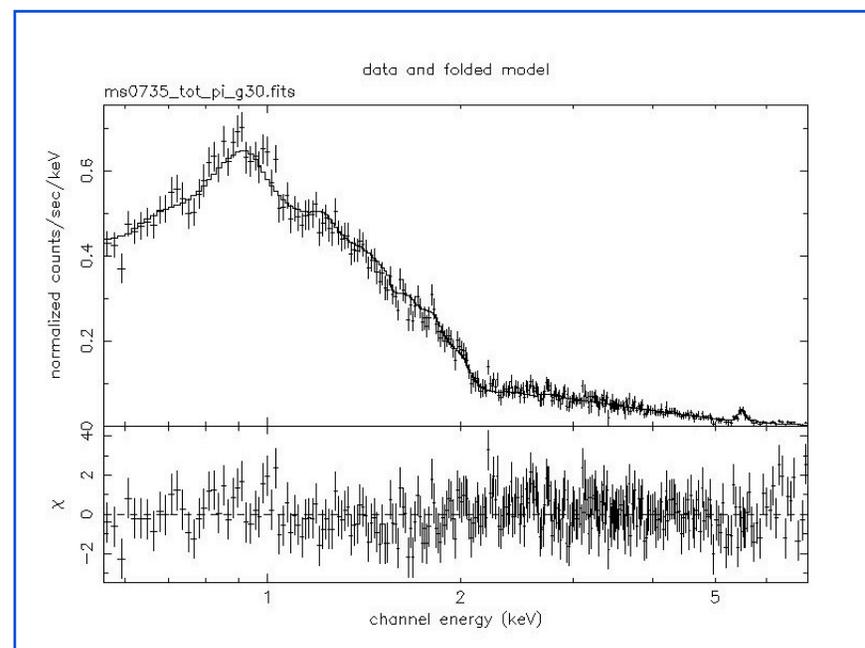
mkacisrmf

- New tool in CIAO 3.1 to support changing ACIS calibration (bakeout)
- Implements algorithm of A. Vikhlinin (`calcrmf2`)
- Separates RMF calculation into position dependent and independent pieces
- “Ideal” response computed at readout prior to the effects of CTI (one per CCD)
- Scatter matrix computed automatically from simulations including CTI
- Faster execution, better interpolation, and retains all existing `mkrmf` functionality

```
mkacisrmf infile=acisD2000-01-29p2_respn0001.fits outfile=source_pi.wrmf \
  energy=0.1:10.0:0.05 channel=1:1024:1 chantype=pi \
  wmap=spectrum_pi.fits gain=acisD2000-01-29p2_gain_ctiN0001.fits
```



Released mkrmf RMF



New mkacisrmf RMF

- New RMFs provide small improvements over released products
- Differences much smaller than TGAIN corrections
- Currently available *only* for -120 C, CTI-corrected data (Jan. 2000)
- Post-bakeout, only mkacisrmf Cal. products will be produced