New & Updated Gratings Analysis Threads

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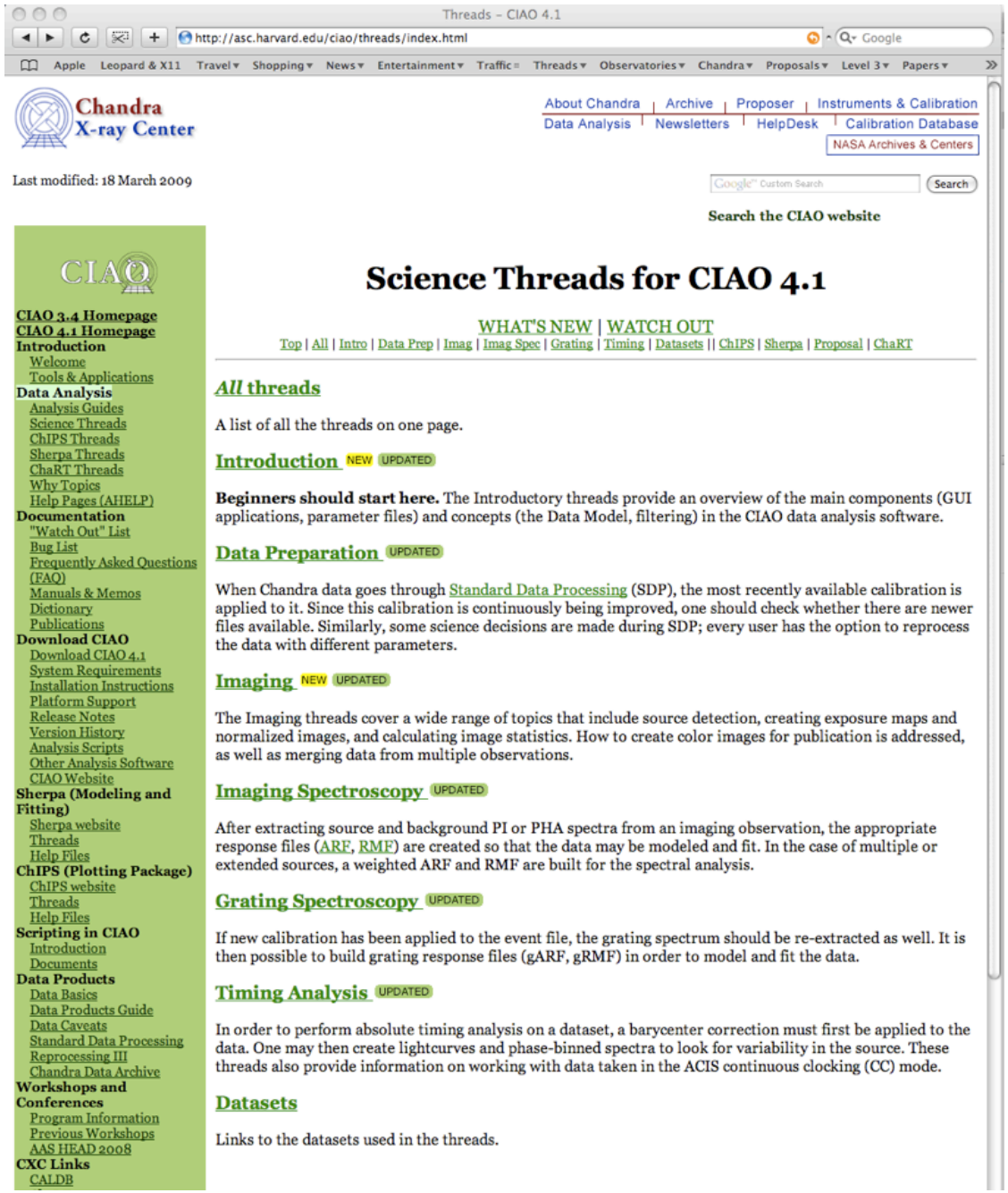
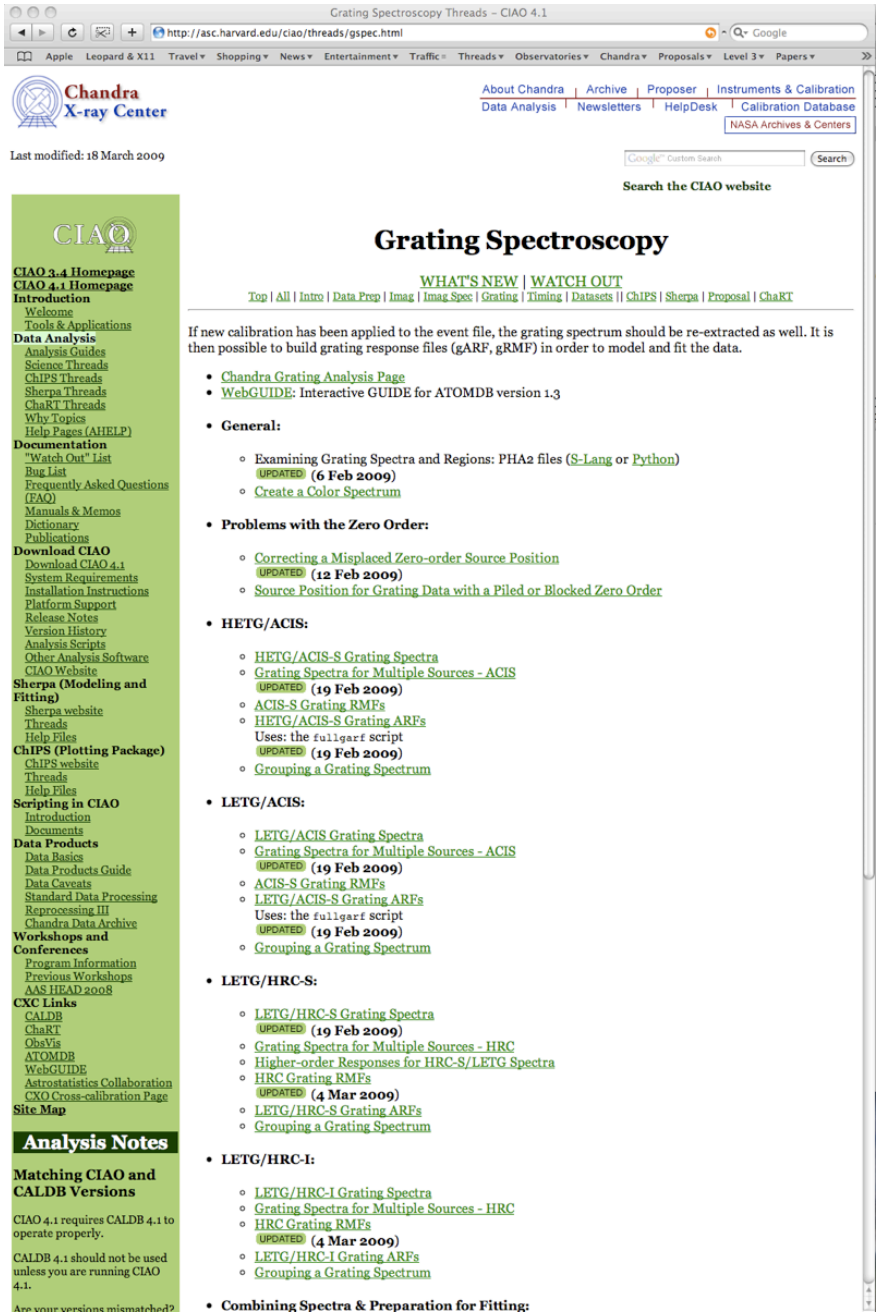
Gratings Threads



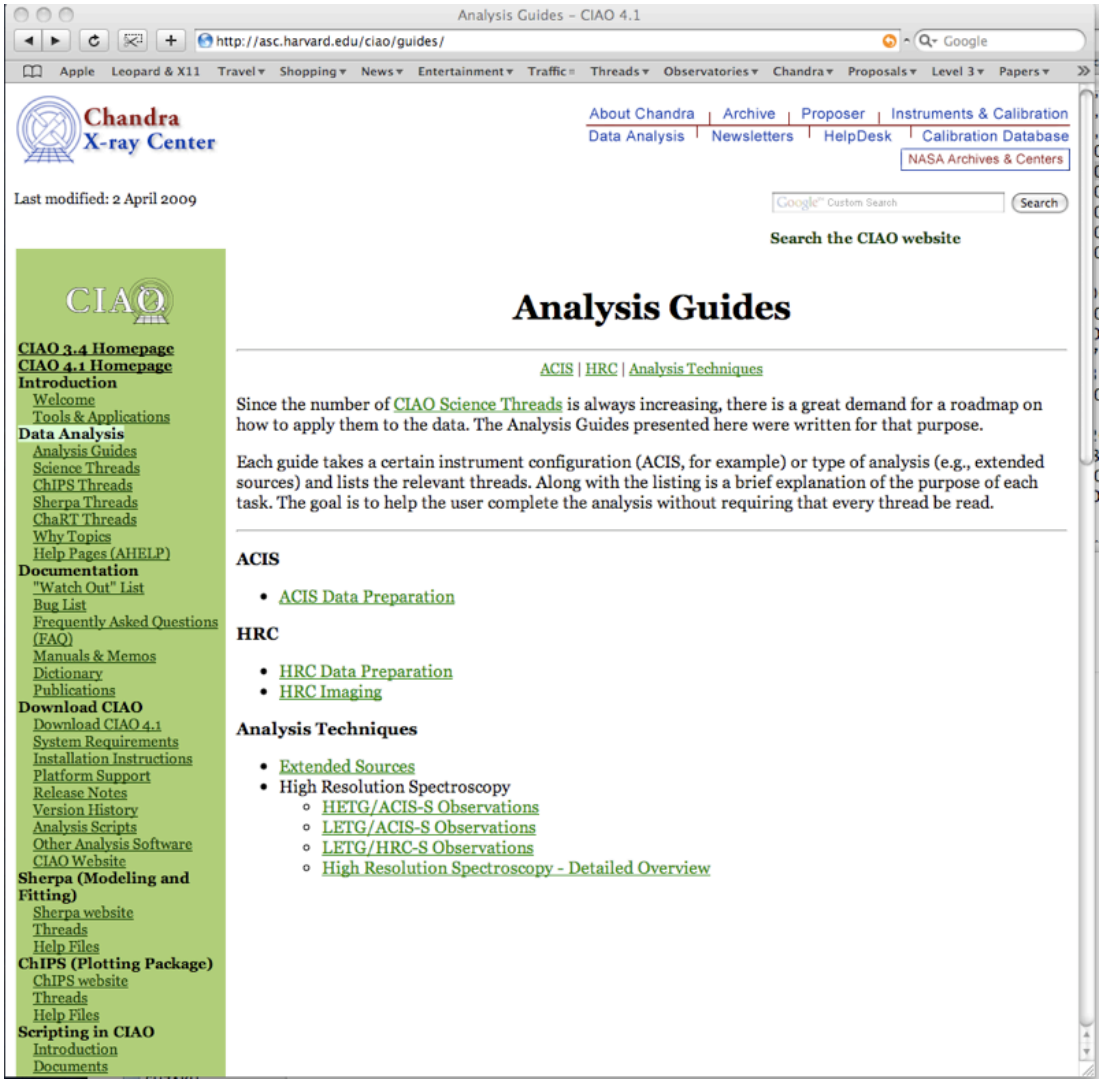
- Existing "Science Threads" already had numerous, detailed gratings threads.
- Here we've moved "Grating Spectroscopy" up a spot to be more prominent.
- Threads are reasonably complete, but might seem daunting for a novice.

Gratings Threads



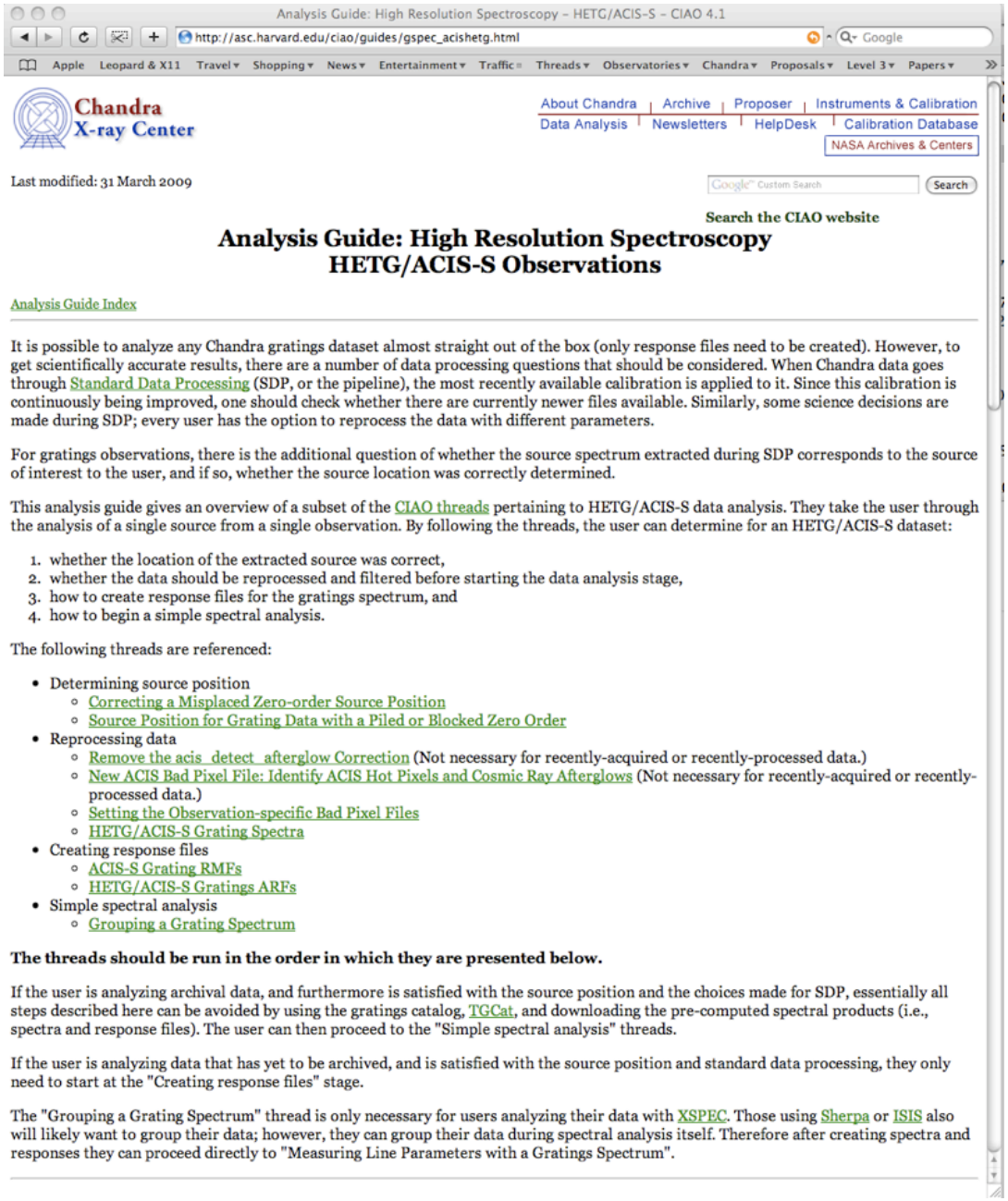
- Following these threads, a user should be able to complete a gratings analysis from start to finish.
- But this list is rather long, and does not transparently indicate what is the "bare bones", minimal path through them.
- We added a gratings analysis thread guide, modeled after the existing successful CCD spectra and imaging guides.

Gratings Threads

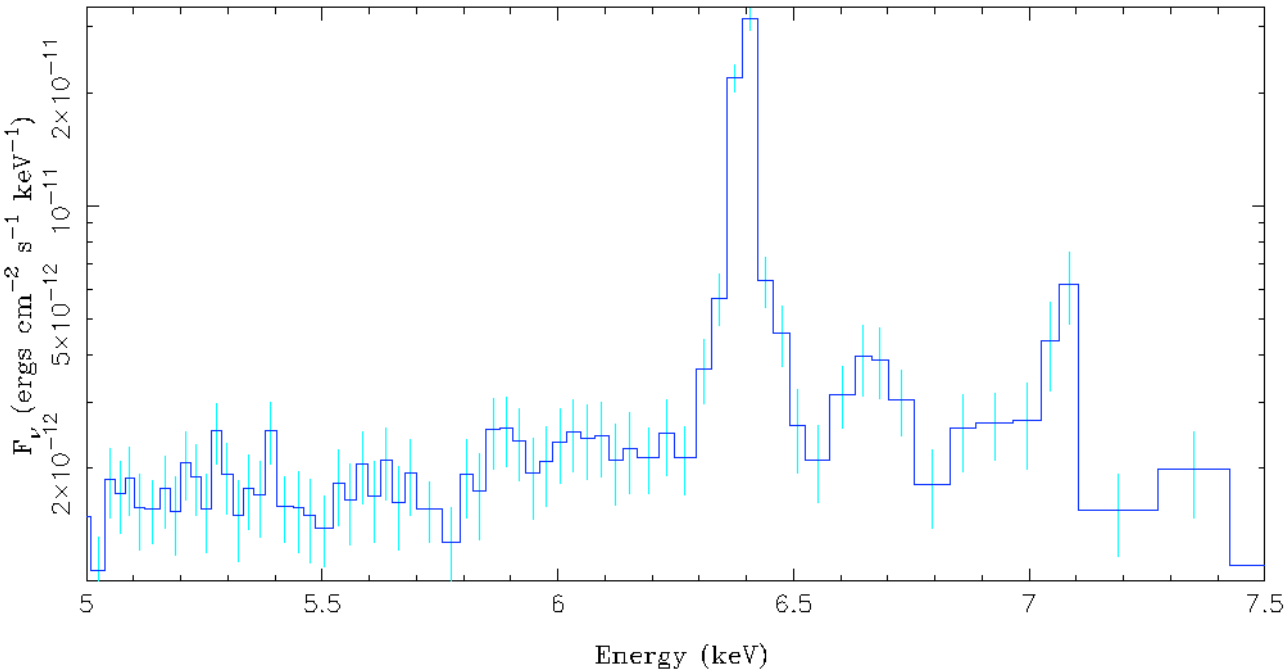


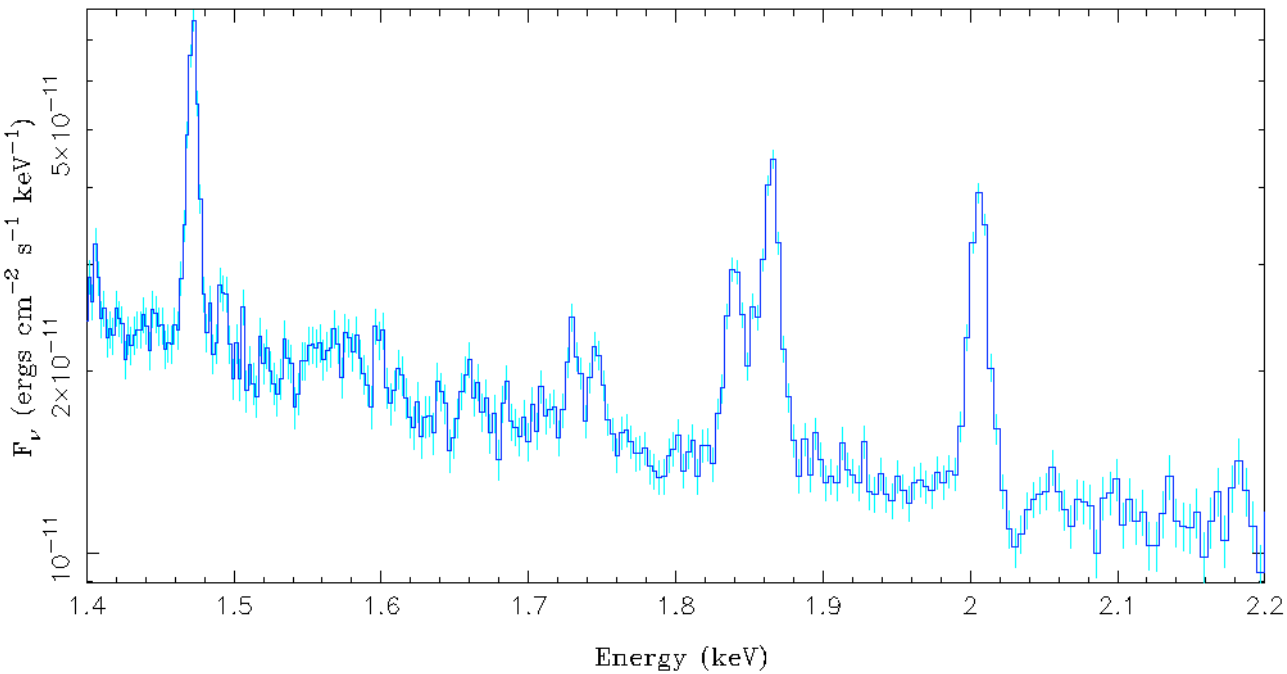
- Analysis Guides now broken up into Data Preparation (e.g., ACIS/HRC), and Analysis Techniques (e.g., extended sources, gratings spectra).
- Gratings guides are broken up into separate guides for specific combinations of gratings and detector.
- Pointer to (older), detailed overview remains. We plan to update this with new references to TGCat tools and scripts.

Gratings Threads



- Minimum set of threads required to construct & analyze gratings spectra.
- Comments on most likely scenarios. E.g., reprocessing is not required for recent data, grouping is only required for XSPEC (not Sherpa or ISIS).
- Pointers to TGCat with notes that those data can be analyzed with zero processing.
- New threads outlining simple analysis scenarios: HETG/ACIS & LETG/ACIS.

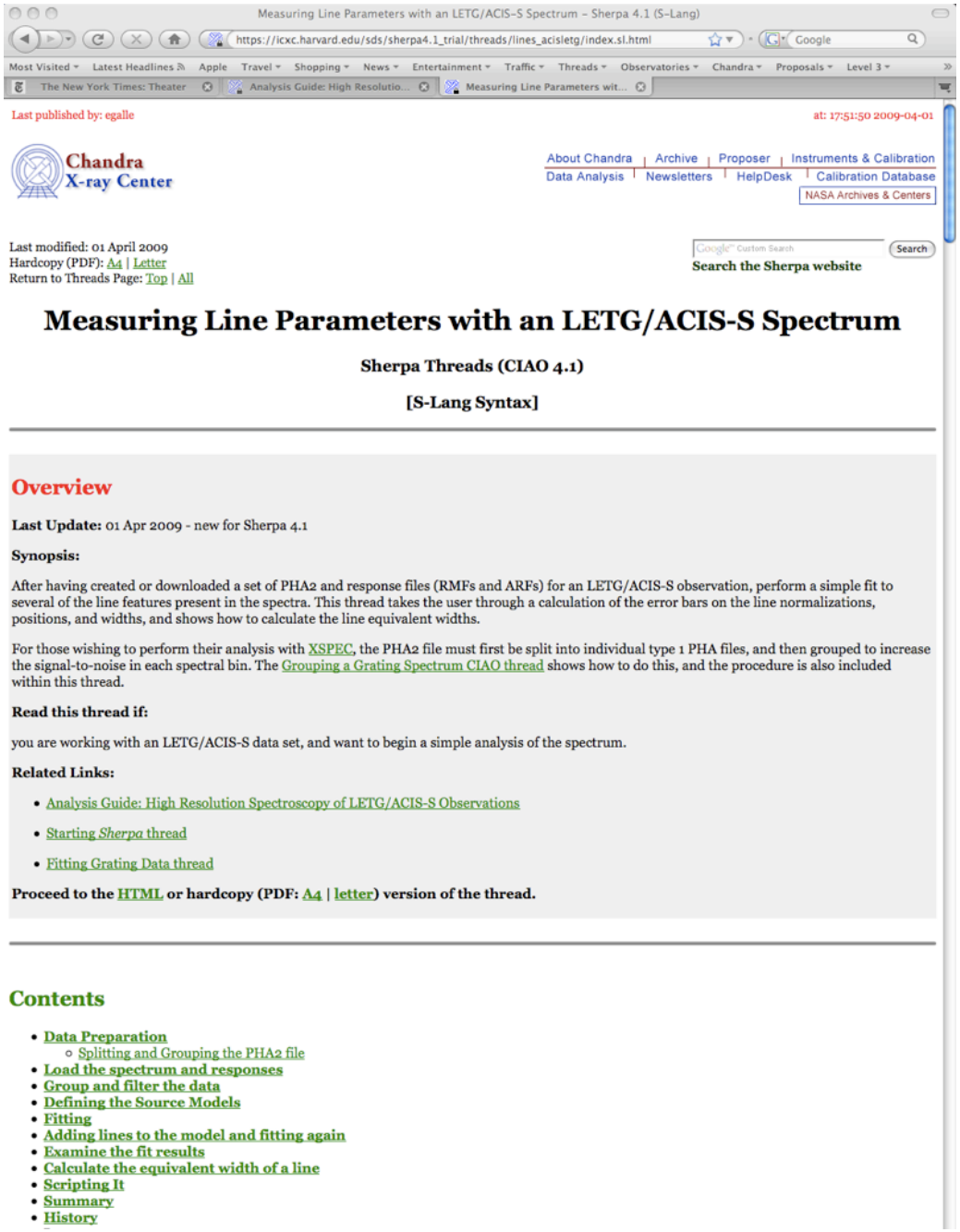




TGCat Spectra:

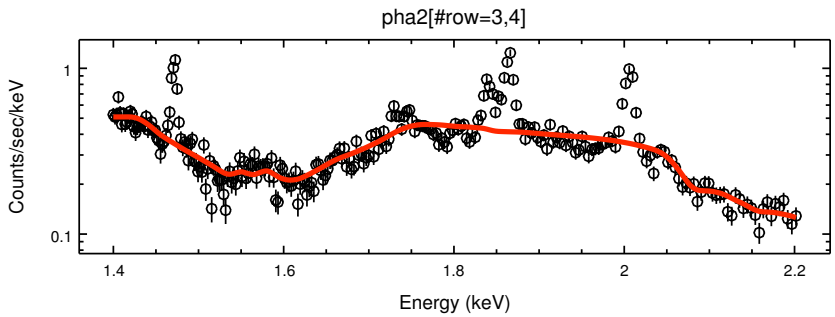
- HETG/ACIS: Vela X-1
- LETG/ACIS: Sigma Gem

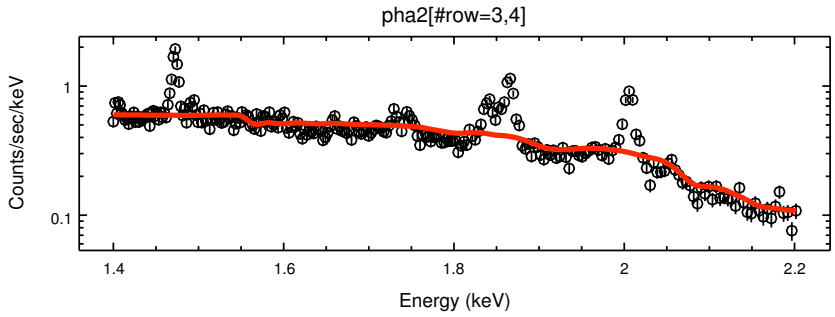
Gratings Threads



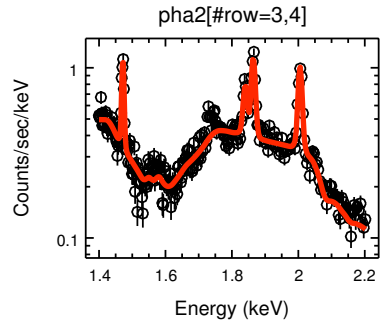
- Both threads can be begun directly from the TGCat downloaded spectra.
- Further processing (splitting into type 1 PHA & grouping) only required with XSPEC.
- Covers the basics: fit a continuum, add lines, measure parameters, calculate equivalent widths.
- Goal is to show that is just the usual, familiar PHA + response paradigm.

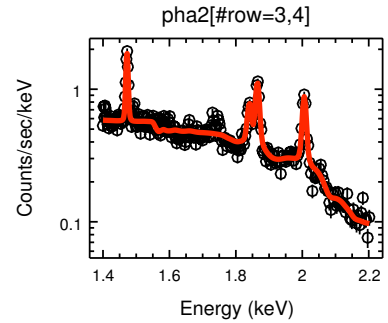
1. Fit Continuum

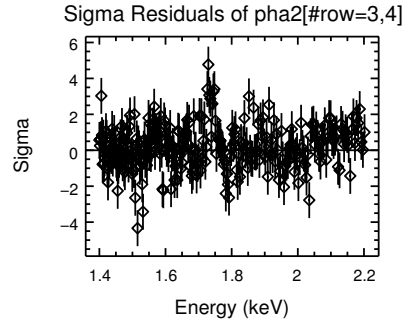


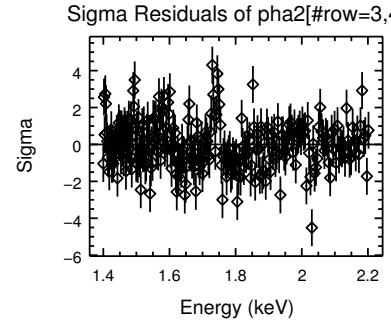


2. Add Lines

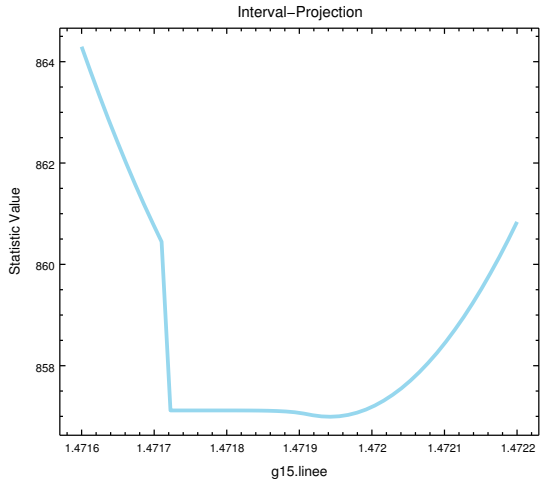








3. Look at Error Bars



4. Calculate Equivalent Widths
5. Calculate flux of line & continuum to verify equivalent width (HETG only)

Thread Plans:

- Revise the existing detailed overview.
  - ✳ Take advantage of TGCat tools and scripts.
  - ✳ Simple break points for more complex analyses:
    - Non-standard extraction windows, time slices
- Include a simple analysis example for LETG/HRC
- Additional analysis scenarios?
  - ✳ Combined data. Gratings + other instruments. Gratings + zeroth order.