Plan for Hands-on Session on Analysis of X-ray Image Data

Monday, July 6

1/ Mike Wise will give a general introduction about X-ray data and images with basic information related calibration files. Aneta will give the short intro on the image fitting.

M. Wise's presentation: X-Ray Imaging

2/ We need students to install the current CIAO software including the CIAO scripts and the current CALDB on their computers. For instructions and issues check the CIAO web page:

http://cxc.harvard.edu/ciao/

3/ The students will work with Chandra data and follow the CIAO threads available on the web.

http://cxc.harvard.edu/ciao/threads/imag.html

4/ We focus on the final goals: a detection of sources or modeling the images of diffuse emission to obtain the radial profiles, centroids or temperature maps.

Suggested threads:

- Estimate the source counts - 1838
http://cxc.harvard.edu/ciao/threads/source_counts/

- Measuring the Source extent - 635
http://cxc.harvard.edu/ciao/threads/srcextent/

- Create a PSF with CHART
http://cxc.harvard.edu/chart/

- Obtain and fit radial profile - 1838
http://cxc.harvard.edu/ciao/threads/radial_profile/index.py.html

5/ We will use Sherpa to do image fitting with the PSF and exposure maps. The students will follow Sherpa imaging threads (Python version) listed on this web page:

http://cxc.harvard.edu/sherpa/threads/fitting.html

The data for the Sherpa threads are available in this location:

http://cxc.harvard.edu/sherpa/threads/data/sherpa.tar.gz

and the thread describing the data and their connection to threads is here:

http://cxc.harvard.edu/sherpa/threads/gettingstarted/

We will follow the following Sherpa threads in Python:

- Radial and Elliptical Profiles of Image Data
http://cxc.harvard.edu/sherpa/threads/spatial-profile/index.py.html

- Accounting for PSF Effects in 2D Image Fitting
http://cxc.harvard.edu/sherpa/threads/2dpsf/index.py.html

The Python script for the last Sherpa thread is located at:
http://cxc.harvard.edu/sherpa/threads/2dpsf/fit.py