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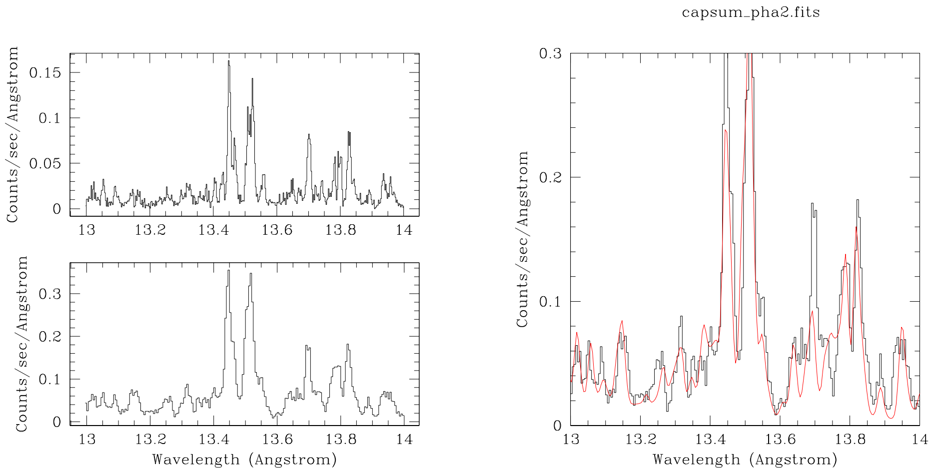
CIAO Sherpa Demo

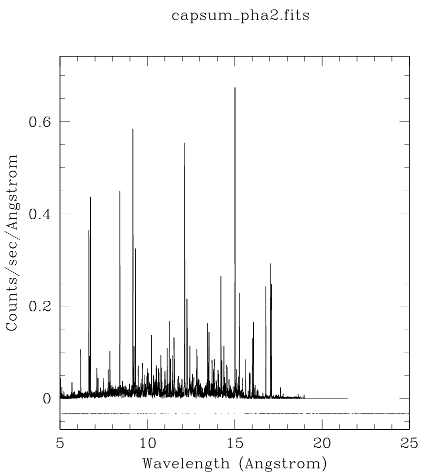
Note: keywait is a 5-line SLang script to pause the demo.

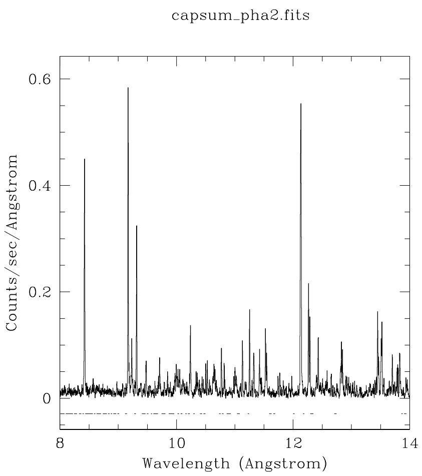
```
**************************
keywait("Hit enter to start");

% set up plotting features
paramprompt off
sherpa.dataplot.y_errorbars = 0
sherpa.dataplot.curvestyle = "histo"
sherpa.dataplot.symbolstyle = "none"
sherpa.dataplot.curvecolor = "default"
sherpa.fitplot.y_errorbars = 0
sherpa.fitplot.symbolstyle = "none"
sherpa.fitplot.curvestyle = "histo"
sherpa.fitplot.curvecolor = "default"
sherpa.fitplot.fit_symbolstyle = "none"
sherpa.fitplot.fit_curvestyle = "simpleline"
sherpa.fitplot.fit_curvecolor = "red"
sherpa.resplot.y_errorbars = 0
sherpa.resplot.symbolstyle = "square"

% load data
data "capsum_pha2.fits"

% load responses
rsp[hegm1]
rsp[megm1]

hegm1.arf = heg_m1.arf
megm1.arf = meg_m1.arf
hegm1.rmf = heg_m1.rmf
megm1.rmf = meg_m1.rmf

instrument 3 = hegm1
```

```
instrument 9 = megm1

% set up the problem, measure flux of line  above continuum

ignore allsets all
notice 3,9 wave 13:14
lp 2 data 3 data 9

keywait("Hit enter to continue. First do the usual global fit");

ignore allsets all
notice 3 wave 5.:18.
notice 9 wave 5.:25.

xsapec[a1]
source 3,9 = a1

a1.kT = 0.613376
a1.norm = .020154

% look at meg
lp fit 9

limits x 13 14
limits y 0 0.3
redraw

keywait("Note we used pre-fit values to avoid taking time to do
        the fit. Hit enter to continue.");
```

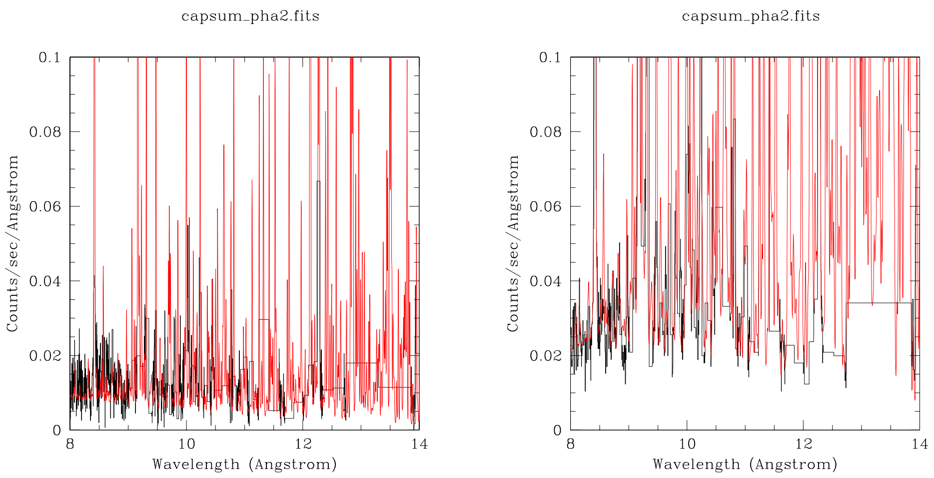



```
% Load  linefree regions script

() = evalfile("linefree.sl");

% linefree is a contributed SLang script to find line-free regions
lf = linefree(0.4,20.0,1.0,25.0,3.0e-18,NULL,0.02,0.02);

keywait("Examine input and output. Hit enter to continue");

% plotlinefree is a contributed SLang script which wraps the plot commands
plotlinefree(3,5,25,lf);

keywait("Hit enter to continue");

plotlinefree(3,8,14,lf);
```






```
keywait("Hit enter to continue");

ignore allsets all
% noticelinefree is a contributed SLang script which wraps the notice commands
noticelinefree(3,lf);
fit

% examine the continuum fit
lp fit 3
limits x 8 14
limits y 0 0.1
redraw

keywait("Here is APEC fit to line-free regions only for HEG. Hit enter
         to continue");

noticelinefree(9,lf);

lp fit 9
limits x 8 14
limits y 0 0.1
redraw

keywait("This is the MEG fit. Hit enter to continue");
```




```
% We have pre-fit a polynomial to the continuum model derived from
% line-free regions, just for the demo near 13.8 Angstroms

% APEC doesnt do great in detail for crowded regions
% This is why it's hard to tell where the continuum really is
ignore allsets all
notice 3,9 wave 13.4:13.6
source 3,9 = a1

lp 2 fit 3 fit 9

keywait("Look again at the APEC fit. Hit enter to continue");

poly[p1]
source 3,9 = p1
p1.c0=.0012

lp 2 fit 3 fit 9

keywait("An interpolation of the continuum fit under the lines. Hit
```

```
        enter  to end");
% now it's straightforward to start adding lines to the model and you
% know where to put the continuum
% We are working on separating the continuum and line models to give
% more flexibility (then we can skip the polynomial fudge step
  altogether).
************************
```