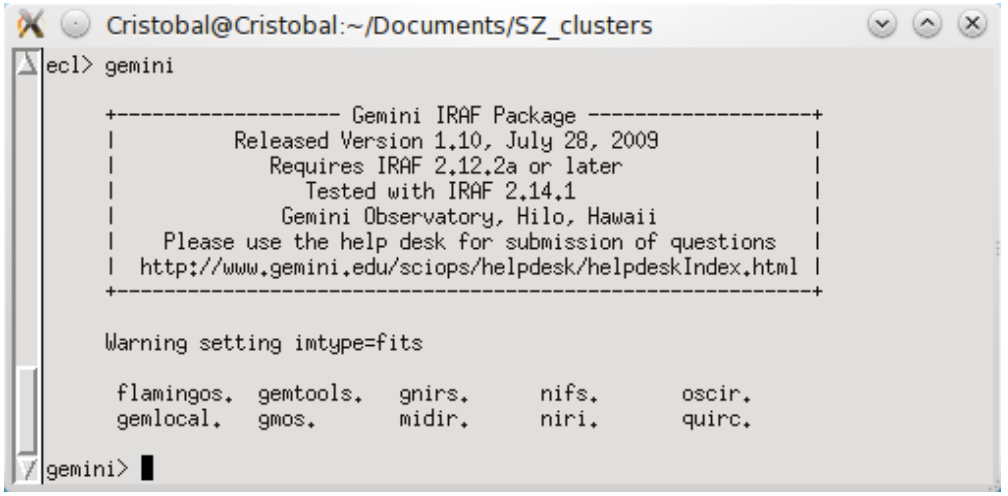
GMOS Data reduction with the IRAF-Gemini Package



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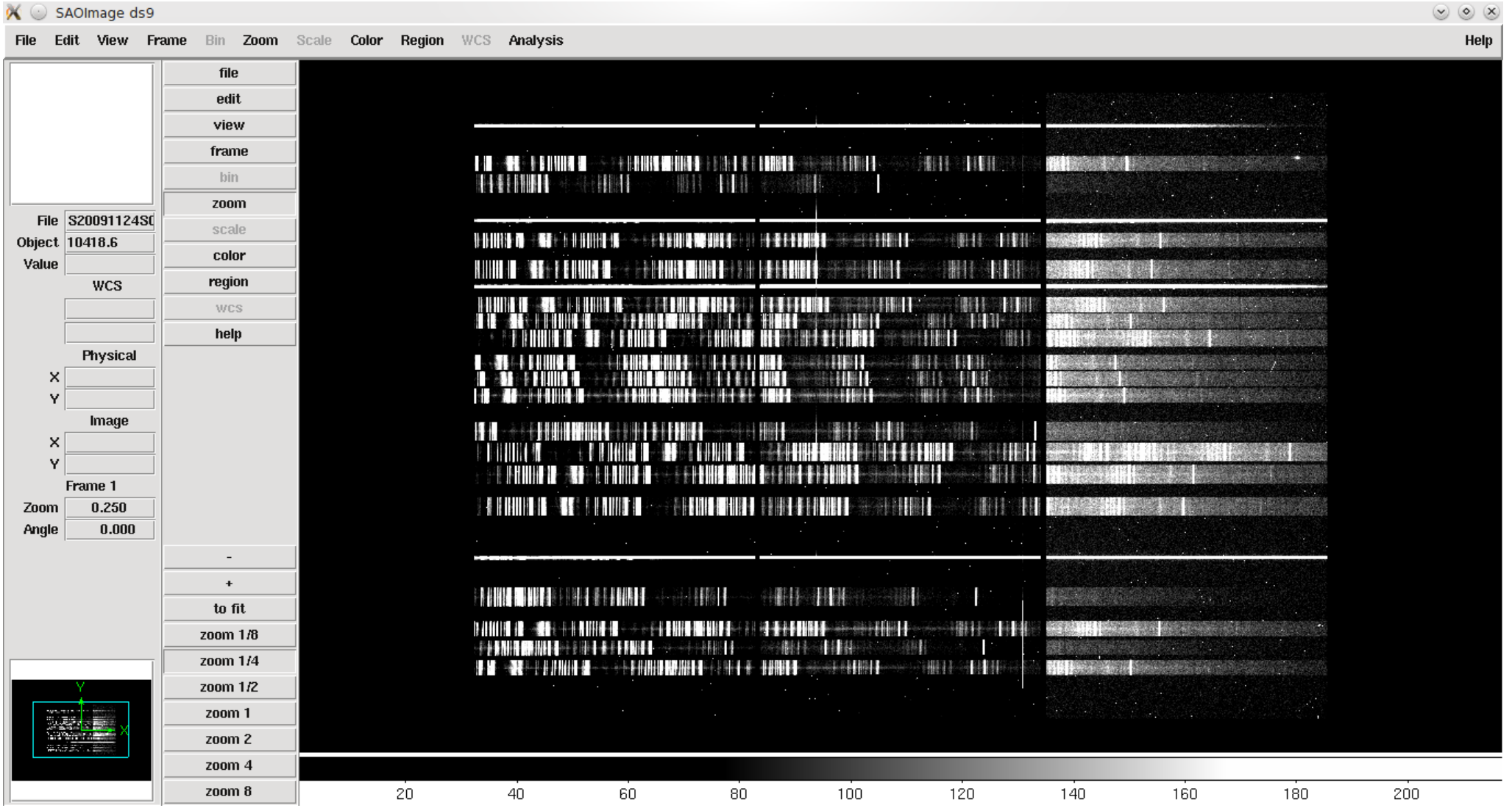
Raw Image


SAOImage ds9
File Edit View Frame Bin Zoom Scale Color Region WCS Analysis Help
file
edit
view
frame
bin
zoom
scale
color
region
wcs
help
File S20091124S0
Object 10418.6
Value
WCS
Physical
X
Y
Image
X
Y
Frame 1
Zoom 0.250
Angle 0.000
-
+
to fit
zoom 1/8
zoom 1/4
zoom 1/2
zoom 1
zoom 2
zoom 4
zoom 8
20 40 60 80 100 120 140 160 180 200

Where to start

- Raw image: S20091124S0136.fits
- cl > gemini > gmos Loads the GMOS reduction packages
- !ds9 & Opens ds9 from the GMOS interface
- set stdimage=imtgmos Sets the right display format
- display S20091124S0136[1] Display chip 1
- gdisplay S20091124S0136 Displays the 3 chips in one image

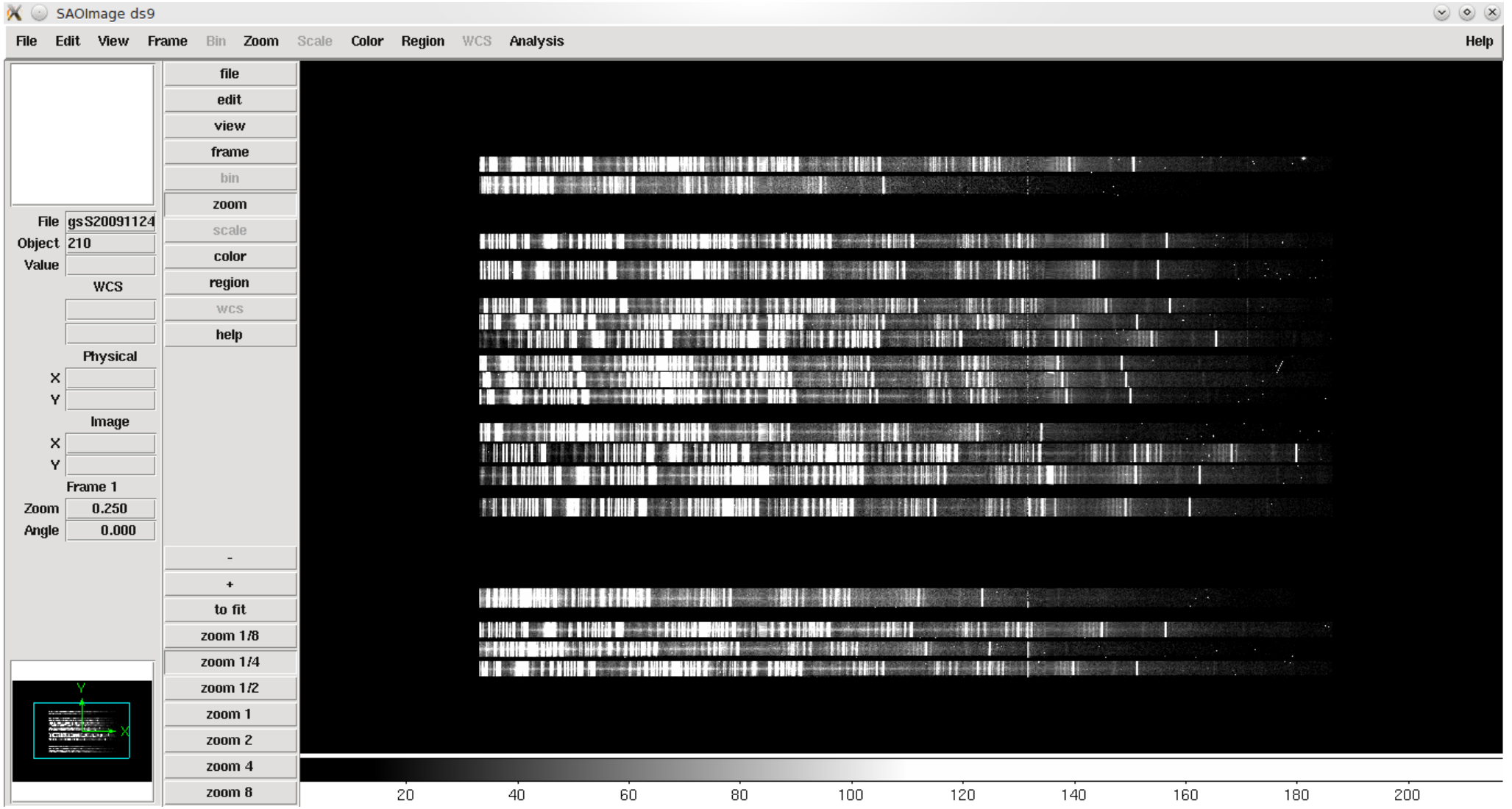
Where to start

- gsflat Combines individual flat images
- gbias Combines individual bias images
- gsreduce Leaves the spectra ready to work with them
  - gireduce Calibrates for bias and flat field
  - gmosaic Mosaics the 3 chips into a single-extension image
  - gscut Cuts the spectra into individual science extensions
  - Outputs:
    - gS20091124S0136.fits Bias & flat corrected, unmosaiced
    - gsS20091124S0136.fits Mosaiced & slits cut

Where to start

- From this point on, the images can be displayed in two ways:
  - `display gsS20091124S0136[SCI, 1]` Displays spectrum 1
  - `gdisplay gsS20091124S0136` Displays all spectra as they are ordered in the chips
- It should be noted that the order of the slits within the chips is not the order of their numbers in the science extension!!

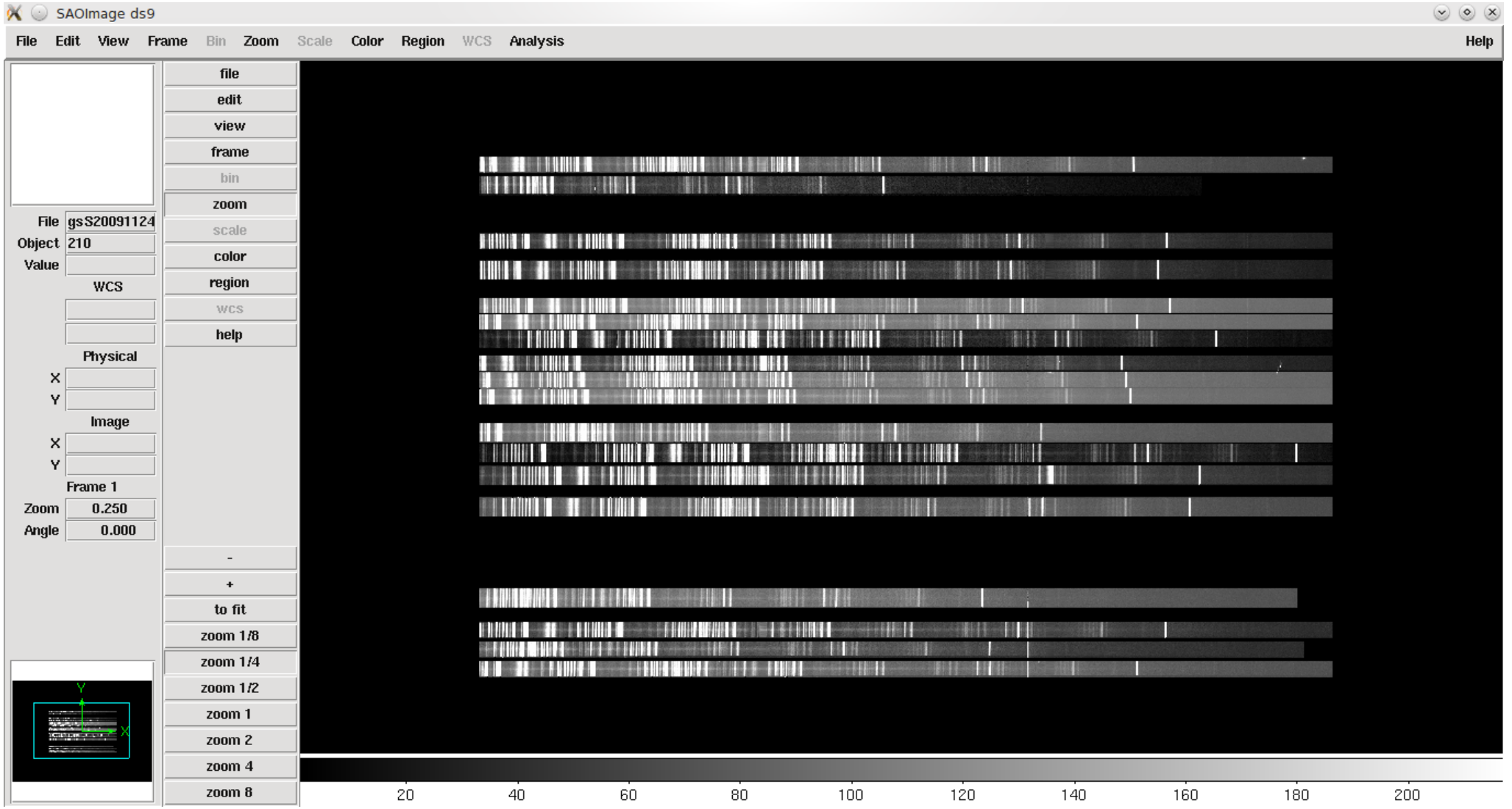
gsreduced Image



Spectra Reduction

- lacos_spec Cosmic-ray subtraction (van Dokkum, 2001)
- gswavelength Establish pixel-to-wavelength transformations using calibration lamps
  - Interactive
  - Creates a database folder with all the information
- gstransform Transforms pixel scale to wavelength
  - Can be done every N pixels in the spatial direction
  - Output:
    - tgsS20091124S0136.fits
  - Spectral direction inverted

Cosmic ray-removed Image



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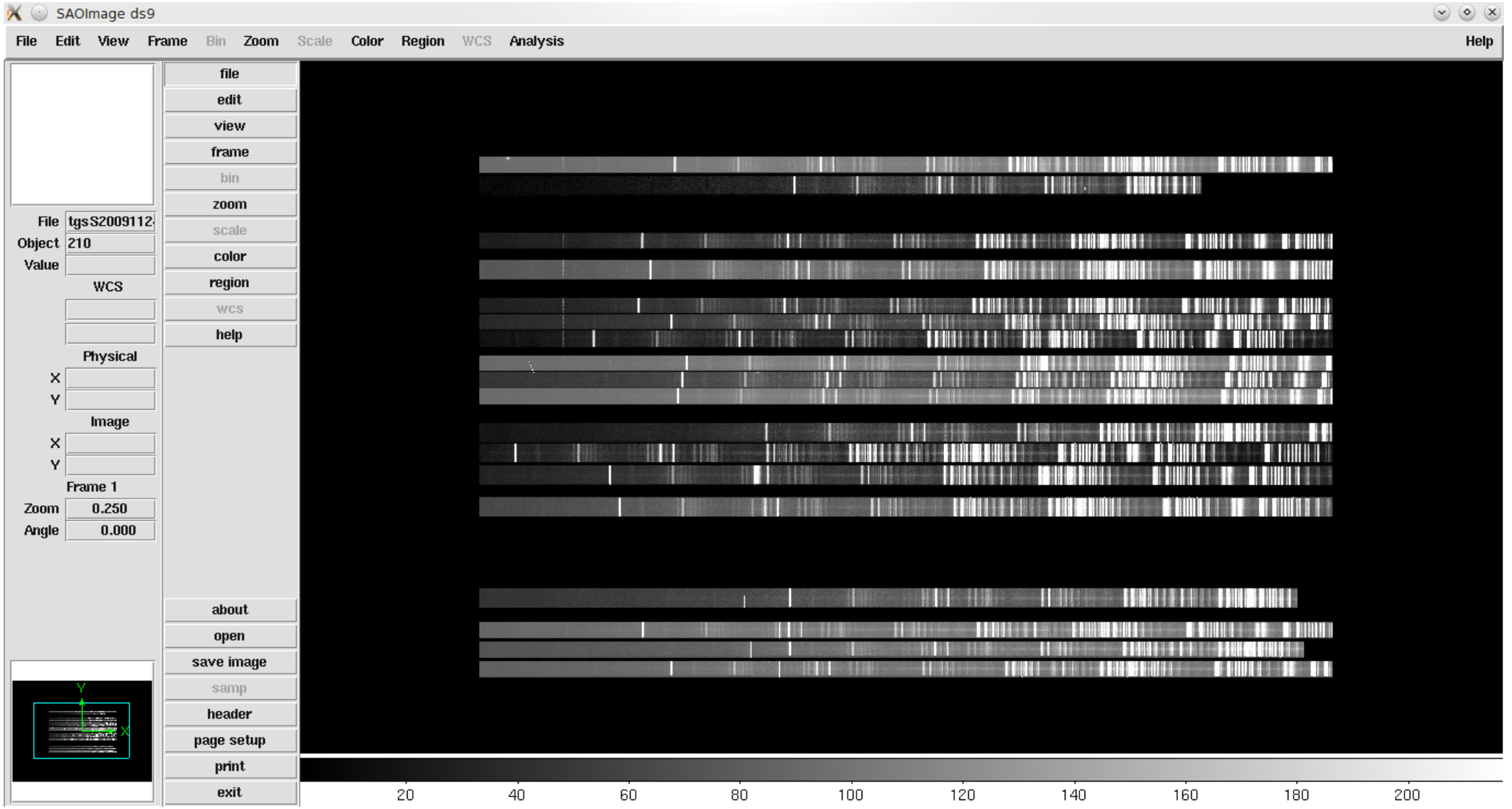
Wavelength-transformed Image



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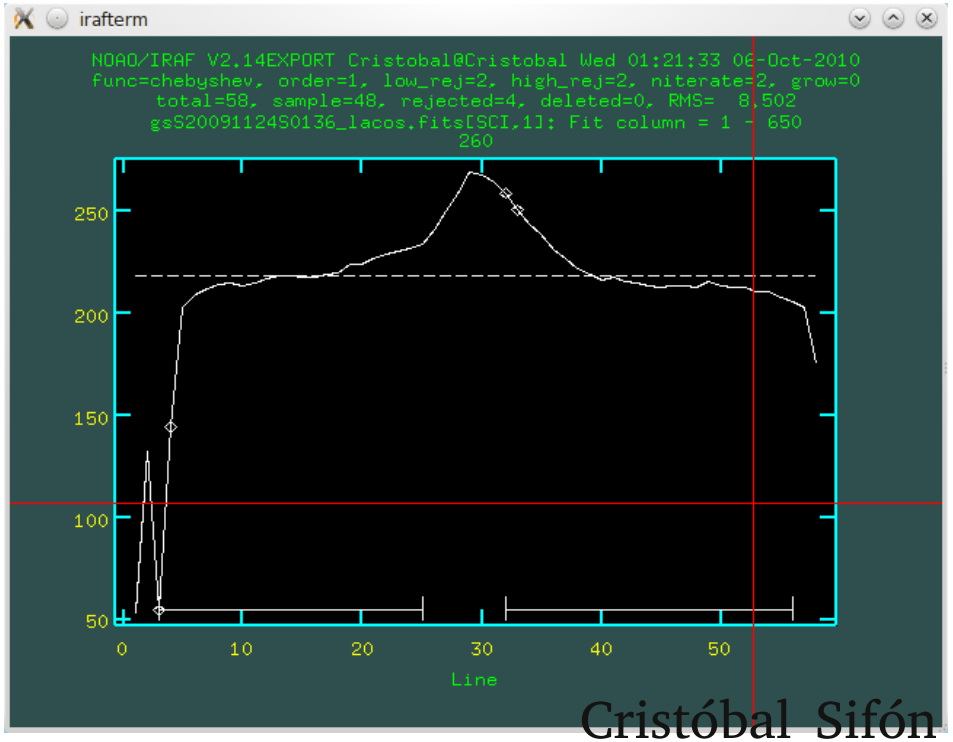
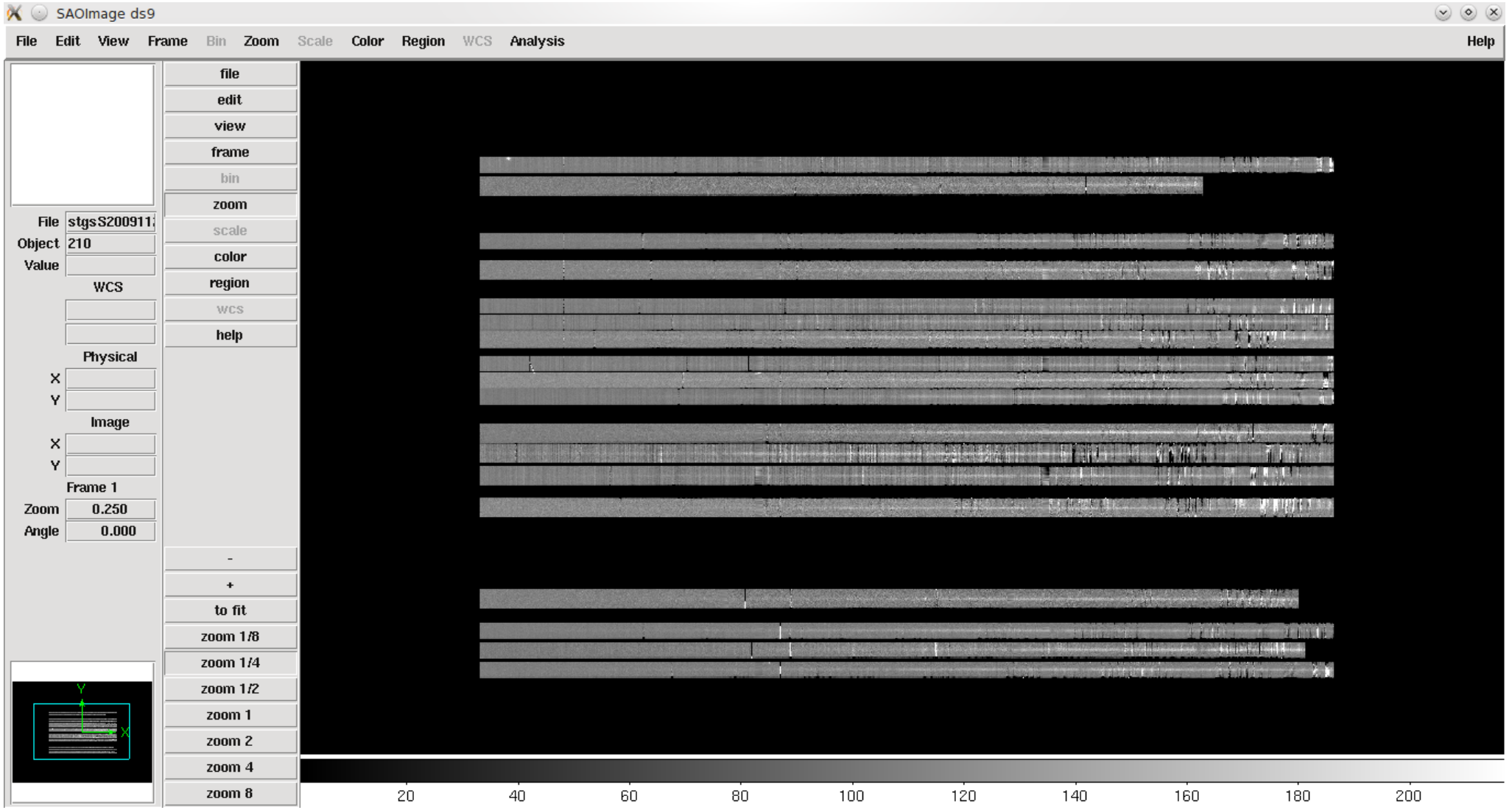
Spectra Reduction

- gsskysub tgsS20091124S0136 fl_ans+ fl_int+ Sky subtraction
  - Interactive, column-by-column subtraction (if necessary)
  - Output:
    - stgsS20091124S0136.fits



Sky-subtracted Image



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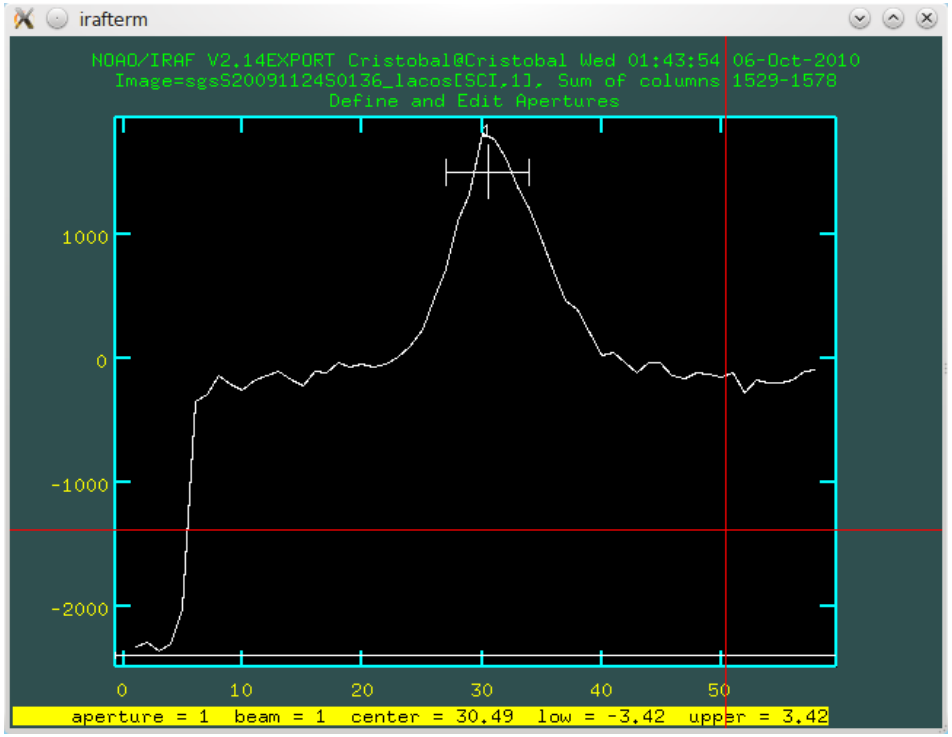
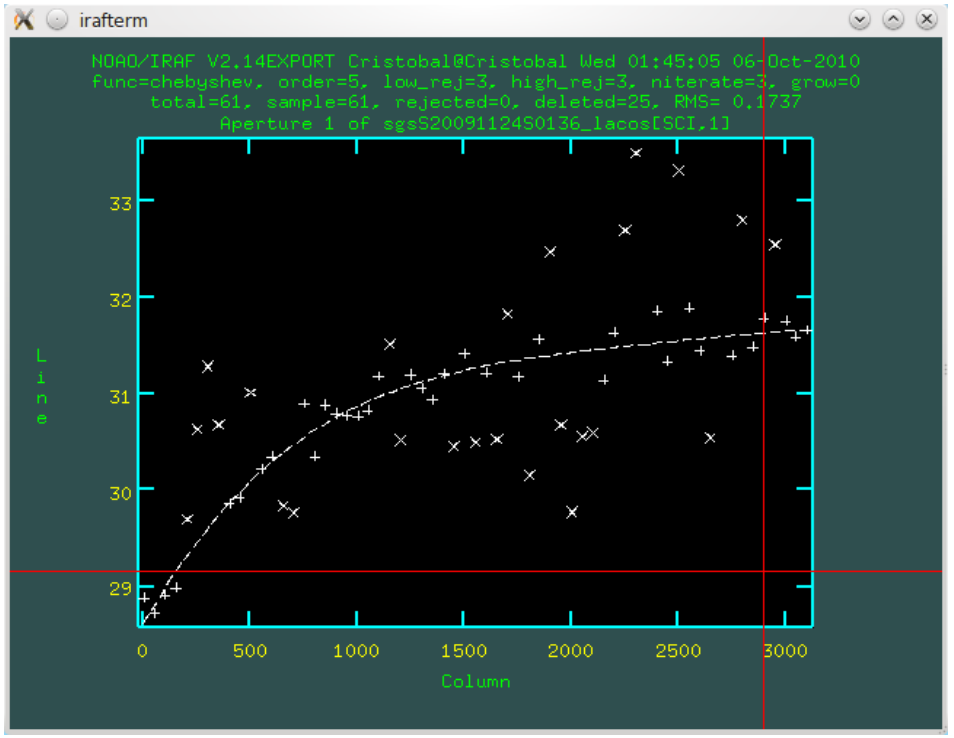
1d Spectra Extraction

- gsextract Extract 1d spectra
  - Interactive
  - Output: estgsS20091124S0136.fits





Voilà

- splot estgsS20091124S0136[SCI,17] Display 17th spectrum