
cspec

Michael D Koppelman, University of Minnesota

Revision 1.0

Revision History
06 Dec 2003

Table of Contents

Introduction	1
Installation	1
Using cspec	1
Equivalent Width	3
FWHM	4
Command Summary	5

Introduction

cspec is a program for working with spectra. It can open text files with columnar data or binary files in unifspecc format. It was developed specifically for use on the HST Treasury Program on Eta Carinae for HST STIS data. It is general enough though that it can be used with any continuous data in the form $y=f(x)$.

cspec can be used to view, print and analyze spectra. It currently supports equivalent width and full width at half-max (FWHM) calculations. Plots can be exported in JPEG, PNG or EPS format. It also support printing of plots.

cspec is written using GTK+ [<http://www.gtk.org/>] and should in theory work on any machine that can compile and run GTK+ applications. It has been tested on Linux and Sun Solaris.

You'll want to check out the Section , "Installation" and the Section , "Using cspec".

Installation

To use cspec first download, compile and install libuni. Then download, compile and install cspec.

To build and install libuni: `./configure; make; make install;`

To build and install cspec: `./autogen.sh; make; make install;`

GTK+ programs have a lot of prerequisites but, for example, your average Linux install will most likely have most or all of it already installed. Be prepared to install a lot of software if not.

Using cspec

Once you have successfully built and installed cspec and provided you are running under a windowing systems such as X-Windows or Gnome, you can launch cspec and get started by typing:

```
cspec
```

This brings up the main window.

After you launch cspec you can open an ASCII text file with X values in the first column and Y values in the second

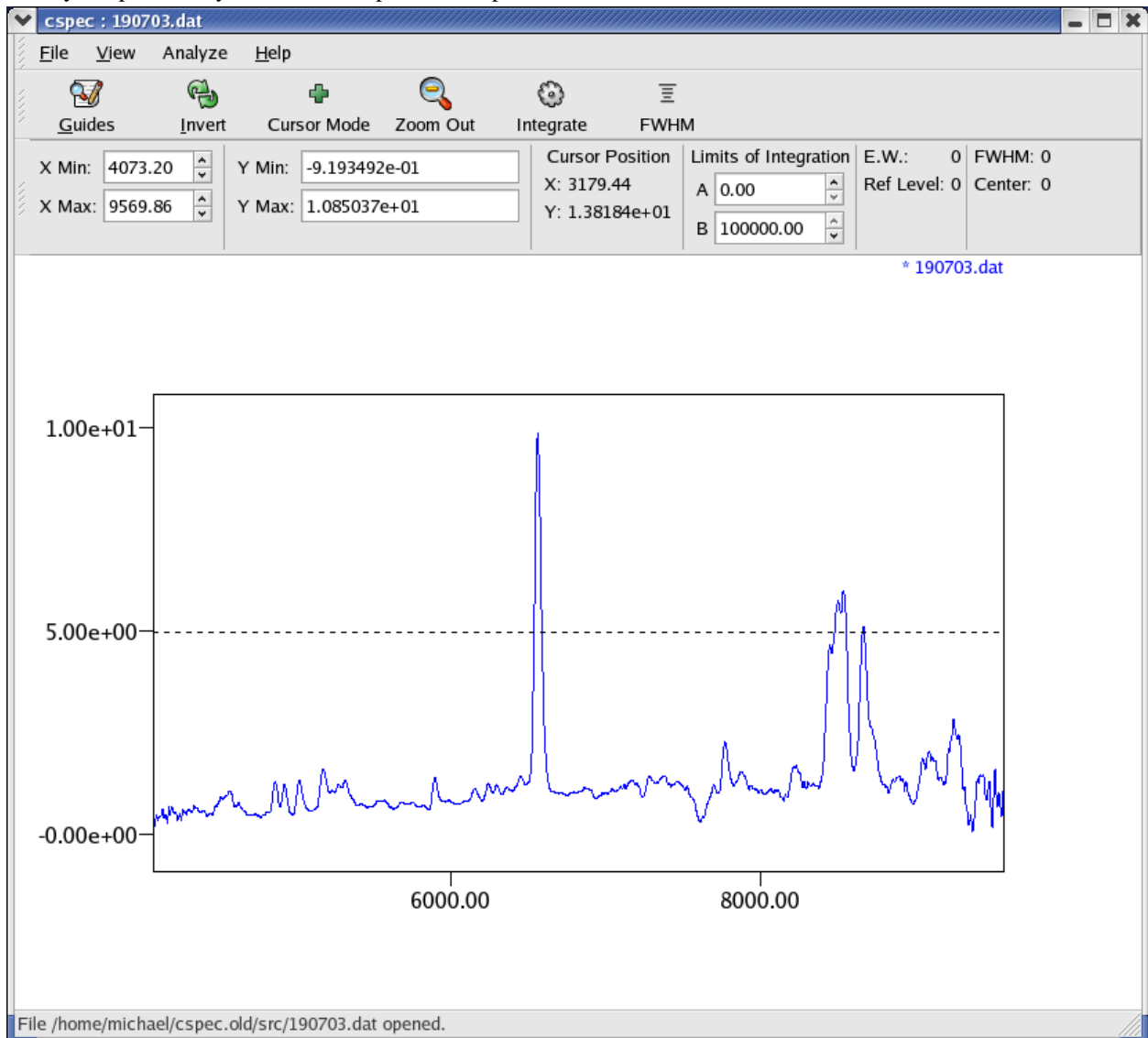
column. This might look something like this:

```

9361.910      .441218203037526
9370.027      7.54761855261939E-02
9378.143      .175197398779006
9386.259      .55574663922709
9394.375      1.02412516528673
9402.491      1.34931284279343
9410.608      1.24309477991783
9418.724      1.43857453910264
...

```

After you open a file you will see the plot of the spectra:



As you move the cursor over the plot window the display will show you the X and Y coordinates of the current cursor position. You zoom in an area by holding down the left mouse button and dragging. Unzoom by clicking the zoom out button in the toolbar.

Most of the standard features are self-explanatory, in regards to opening, closing and exporting the plot image.

There is a help window which shows the available commands.

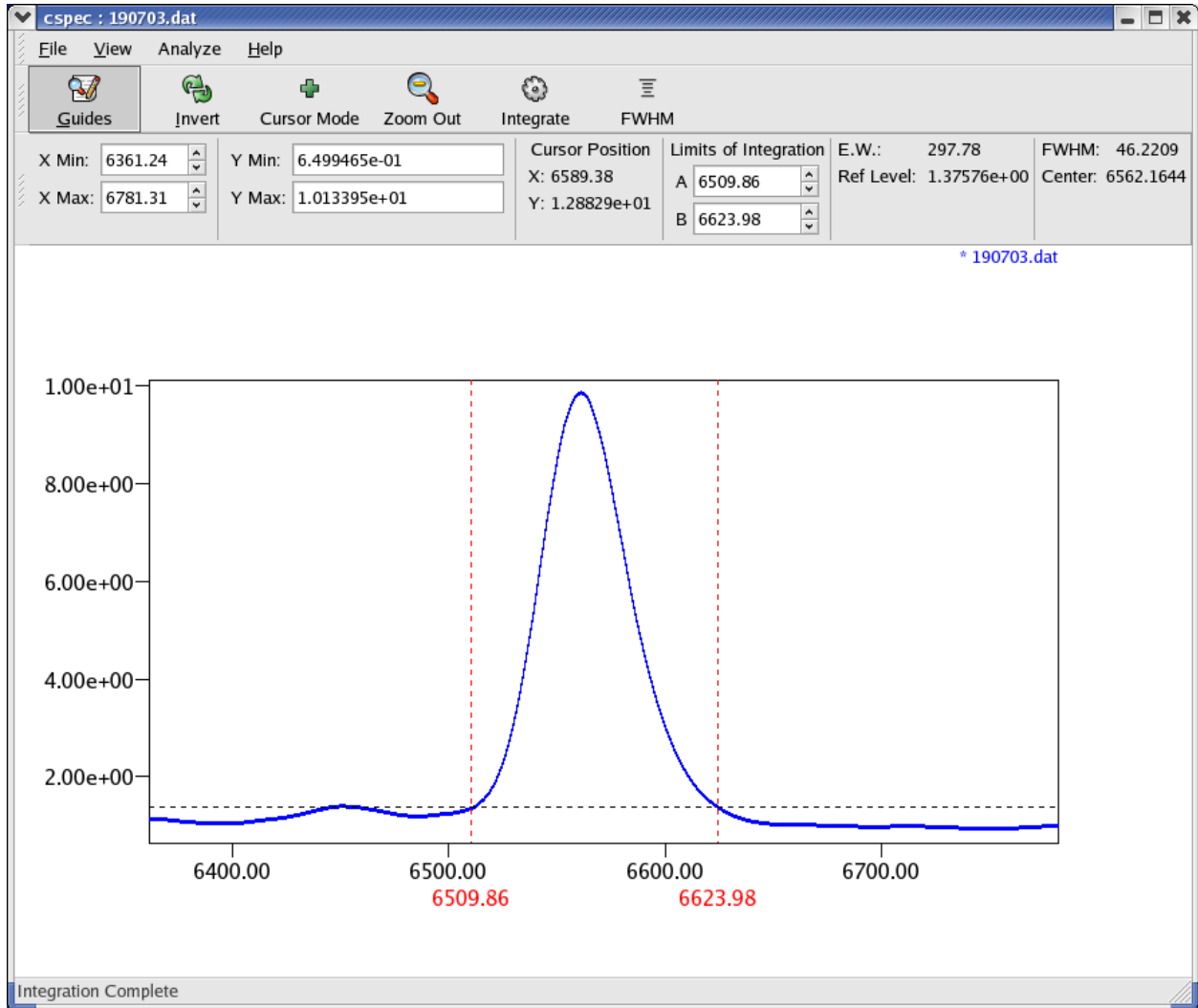
When you start the program a log file is created and/or appended to called log.txt. This file is in the current working directory where you launch the program.

If you have more than one spectra open, the currently active spectra is marked with an asterisks (*). You can change which spectra is active by repeatedly pressing the Tab key.

Equivalent Width

To measure equivalent width you need to set the min and max wavelength and the level of the continuum (or reference level). This is done as follows:

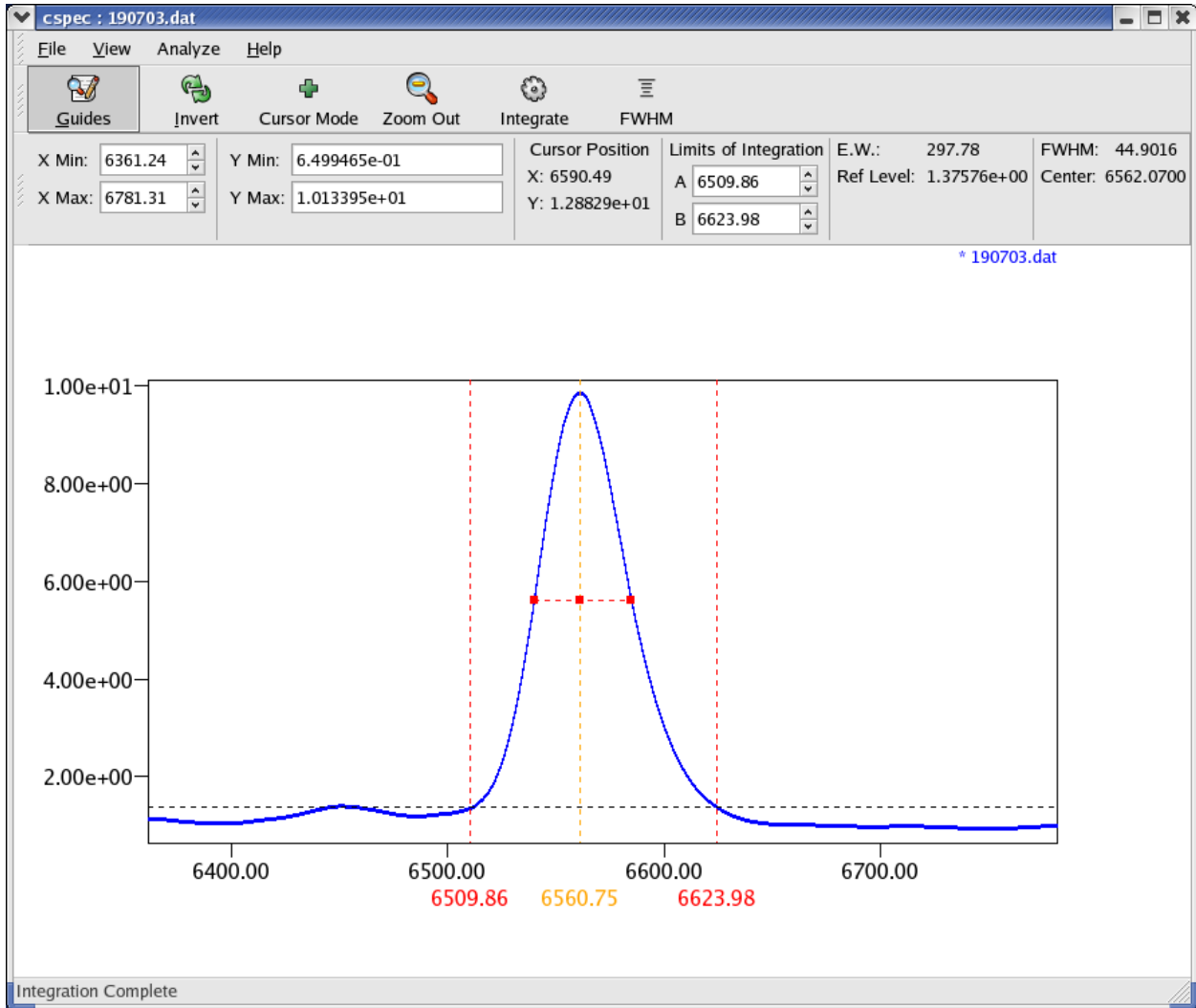
1. Make sure the spectra you want to analyze is the currently active spectra by pressing the Tab key until the file name is preceded by an asterisk. Position the cursor at the minimum wavelength and press the A key
2. Position the cursor at the maximum wavelength and press the B key
3. Position the cursor at the level of the continuum and press the right mouse button
4. Click the Integrate button in the toolbar. The results are displayed on the screen near the toolbar as well as written to the log file.



FWHM

To measure the full-width at half-maximum (FWHM) do the following:

1. Make sure the spectra you want to analyze is the currently active spectra by pressing the Tab key until the file name is preceded by an asterisk. Position the cursor at the level of the continuum and press the right mouse button. This is the minimum level which the maximum will be calculated against.
2. Position the cursor near the middle of the feature to be measured and press the M key. This will place the mark at that position.
3. Click the FWHM button in the toolbar. The results are displayed on the screen and written to the log file.



Command Summary

Table 1. Summary of Commands

Command Name	Command Description
Open	Open a file in text or unifspec format. You may open up to 6 files at once.
Close	Close any of the open files.
Export	Export the plot as a JPEG, PNG or EPS (bitmap) format.
Print	Print the plot to the default printer using lp
Quit	Quit the program.
Guides	Toggle display of the integration limits, mark and reference lines.
Invert	Toggle inversion of the display colors.
Cursor Mode	Toggle the cursor between crosshair and lines.
Left-Click and Drag	Zoom In
Right Click	Move the reference line to the position clicked.

Command Name	Command Description
Zoom Out	Zoom all the way back out.
FWHM	Calculate the full-width half-max of the currently marked feature.
Integrate	Calculate the equivalent width.
Scale To...	Scale the active spectrum to another spectrum..
a	Set the A integration limit to the current cursor position. NOTE: You cannot set the A limit greater than the B limit.
b	Set the B integration limit to the current cursor position. NOTE: You cannot set the B limit less than the A limit.
c	Mark the cenrowoid of the current feature. The cursor position is used as the initial guess of the centroid.
m	Mark the current position of the cursor.
Space	Reset the reference line to horizontal and in the center of the screen
Tab	Cycle the active spectrum to the next open spectrum.
Home	Move the reference line up.
End	Move the reference line down.
Insert/Page Down	Rotate the reference line clockwise.
Delete/Page Up	Rotate the reference line counter-clockwise.