Astronomical Data Analysis Software and Systems X
ASP Conference Series, Vol. 238, 2001
F. R. Harnden Jr., F. A. Primini, and H. E. Payne, eds.

Quick-look Applet Spectrum 2

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Abstract. *Spectrum 2* is a new quick-look applet for spectra. It serves as part of the ST-ECF HST archive web interface. Prior to display the ESO Fits Translation Utility[2] (FTU) is used to homogenize plots of data from HST instruments STIS, FOS and GHRS. *Spectrum 2* supports manipulations of multiple spectra. It will also be integrated within STScI's new archive browser StarView 6. A stand-alone version of *Spectrum 2* is available for download[3].

This article concentrates on the software architecture and interfaces of this java utility since it is composed of various components mainly developed by ESA-IDC and ST-ECF.

1. S/W Architecture

Figure 1 shows *Spectrum 2* in context of the ST-ECF HST archive web interface (http://archive.eso.org). On user request preview spectra are retrieved from the archive DB. The ESO Fits Translation Utility (FTU) adds special purpose FITS keywords in order to homogenize plots of spectra from HST instruments STIS, FOS, and GHRS. The resulting FITS stream is transmitted to the web client. The web browser hosts the java applet *Spectrum 2*. The applet reads the data stream using a FITS I/O package developed by McGlynn/USRA and then parses certain keywords in order to define a plot (Figure 3). Currently there exists a parser for ISO data and one for HST spectra. The ISO parsing

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[2] `http://archive.eso.org/ftu/`

[3] `http://archive.eso.org/java/sp2/`

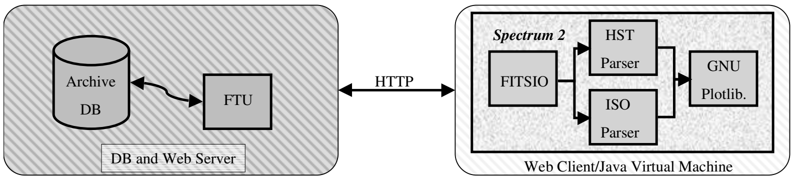

Figure 1. Software components involved in the client/server environment of *Spectrum 2*.

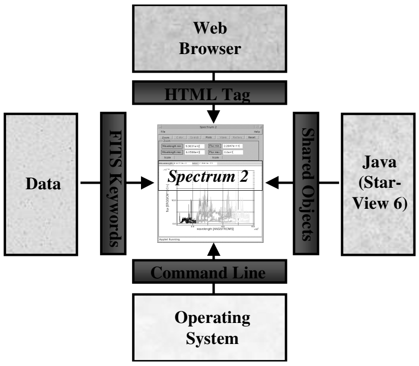

Figure 2. The various machine interfaces of *Spectrum 2*.

capability has been implemented first. This happened in cooperation with the ISO Data Centre.

For the sake of browser support the GUI is based on the Abstract Windowing Toolkit (AWT) rather than on the more powerful Swing libraries. AWT is part of the Java Virtual Machine that executes *Spectrum 2* and therefore does not require any installation on the client side. The actual plot is rendered with Brookshaw's Graph Class Library. A user does not need any knowledge about the internal data structure of HST observations to perform a quick on-line evaluation of individual or associated spectra.

2. Interfaces

Spectrum 2 provides various machine interfaces (Figure 2). It accepts parameters from the command line in application context and from the HTML <APPLET> tag in applet context. It is capable of parsing FITS headers in order to extract plot attributes and finally it can communicate with other Java components via shared objects by which means it can be hooked up to StarView 6 from STScI.

3. Future Work

- The first release will be further tailored to support the visualization and on-line analysis of associations of spectra: Binning and features for the manipulation of individual spectra within an association of spectra are desirable.

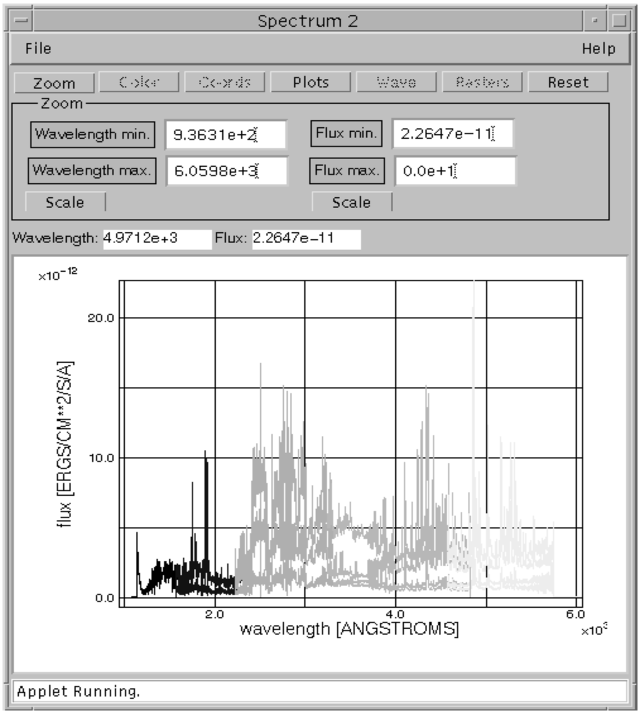

Figure 3. *Spectrum 2* displaying 16 associated FOS spectra of Eta Carinae (PI Davidson).

- *Spectrum 2* software releases will be made available for download[4].
- Integration within archive browser StarView 6: There will be a static interface comparable to the interface with image viewer JIPA (Dolensky, Mayhew, & Kennedy 1998), but it may be turned into a dynamic Bean component at a later stage.

References

Dolensky, M., Mayhew, B., & Kennedy, B. 1998, in ASP Conf. Ser., Vol. 172, Astronomical Data Analysis Software and Systems VIII, ed. David M. Mehringer, Raymond L. Plante, & Douglas A. Roberts (San Francisco: ASP), 454

[4] `http://archive.eso.org/java/sp2/`