getchelle

Getchelle reads IRAF multispec FITS files. The wavelength solution is extracted from the header. Linear, log-linear, and polynomials are considered (neither splines nor sample array dispersions).

Syntax

GETCHELLE,filename,w,f[,norder=variable][,npix=variable][,hd= array][,/plot]

Return Values

The wavelengths and fluxes are loaded into two-dimensional arrays: w and f, respectively.

Arguments

filename - (string) Input file name

Keywords

- norder - (integer) this keyword returns the number of orders (assumed to be the smaller dimension of the 2-D input data array in the FITS file)
- npix - (integer) this returns the number of pixels per order (largest dimension of the input data array)
- hd - (strarr) header
- plot - produces a plot of the spectrum

Discussion

IRAF's way of storing the wavelength solution information is to include it as part of the FITS header (see documentation by F. Valdes). Possible cases are linear solutions (lambda= a*pixel + b), log-linear, polynomials (Chebyshev or Legendre),

or splines. Wavelengths corresponding to individual pixels can also be stored in the header. The information for the different orders is streamed across as many fields (identified with the keywords WAT*) as necessary. This is very convenient for linear or log-linear solutions and single-order spectra, but it can lead to hard-to-read cumbersome headers when many orders and high-order polynomials are involved. For convenience one may be tempted to resample the spectra. Letting IRAF 'linearize' (interpolate to a constant wavelength step) the spectrum may result in a significant loss of accuracy.

Getchelle interprets the IRAF multispec headers and extracts the wavelength information, considering possible velocity shifts coded as part of the wavelength solution). Linear, log-linear, or polynomial dispersion solutions are properly handled. Neither splines nor sample array dispersions are considered.

Getchelle assumes that the smaller dimension of the data array corresponds to the number of apertures (orders).

The external function peval.pro is called to expand the polynomials.

References

F. Valdes, specwcs documentation

`http://iraf.noao.edu/iraf/ftp/iraf/docs/specwcs.ps.Z`

Example

Reading a typical .ec.fits file

```
IDL>  getchelle,'HD103095.ec.fits',w,f
```

Version History

C. Allende Prieto, UT Austin, November 2004 -only linear dispersion

I. Ramirez, UT, November 2006, modified to read from the header and apply a Doppler correction (redshift)

C. Allende Prieto, April 2007, rewritten to handle polynomial and log-linear wavelength solutions

See Also

`http://iraf.net/irafdocs/specwcs.php`

FITS specification, Hanisch, R. J., Farris, A., Greisen, E. W., Pence, W. D., Schlesinger, B. M., Teuben, P. J., Thompson, R. W., & Warnock, A., III 2001, Astronomy and Astrophysics, 376, 359