The Spectral World Coordinate Systems in IRAF/NOAO

F. Valdes (NOAO/IRAF)

The world coordinate system (WCS) for dispersion calibrated spectra used in the IRAF/NOAO spectroscopy packages is described. In particular the image header keywords which define the coordinates in an "image" pixel array. These keywords appear both as part of the IRAF image structure and map directly to FITS format. The types of spectra include multidimensional images with spectral dispersion as one axis, one dimensional images, and a special "multispec" format consisting of multiple, semi-independent, one dimensional spectra in two or three dimensional images. The types of coordinate systems include multidimensional linear coordinates with individual keywords and one dimensional linear and nonlinear coordinates for the "multispec" images stored in IRAF WCS attributes. The nonlinear world coordinate systems include polynomial, spline, sampled table, and look-up table function representations.