NARROW ABSORPTION COMPONENTS IN THE UV SPECTRA OF HD110432 (B1 IIIe)

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Introduction – We present high resolution *IUE* ultraviolet observations of multiple narrow absorption components seen in the SiIII, NV, SiIV, and CIV profiles of the B1 IIIe star, HD110432. Spectra taken during March 1986, spanning ~ 11 days, are modelled using line profile fits. Central velocities and column densities of the discrete features are derived.

The 11 observations obtained during March 1986 (SWP24923–28031) exhibit only minimal line profile variability, but are substantially different from the only other available *IUE* spectrum of HD110432, taken in April 1981 (**fig. 1**). This previous image reveals just a single extremely narrow (FWHM ~ 50 km/s) feature at ~ 1360 km/s.

Some examples of multiple discrete components in HD110432 are shown in **fig. 2**. The profiles are modelled assuming a constant 'underlying' P Cygni profile (derived from SWP13759), superimposed on which are the narrow features. We estimate for the stellar wind; $\dot{M} q_i$ ~ -9.67, -9.55, -9.03, -9.67 dex for SiIII, NV, SiIV, and CIV respectively ($\dot{M}$ is the mass-loss rate in $M_\odot\, yr^{-1}$, and q_i is the wind ion fraction).

The observed velocities of the narrow absorption components are illustrated in **fig. 3**. Up to 3 components may be present, though two principal features are consistently identified at ~ -400 km/s and ~ -1100 km/s.

The narrow component ion fraction is plotted in **fig. 4**, over all the spectra in March 1986, as a function of velocity. The ion ratios may be correlated with the velocities of the discrete components.

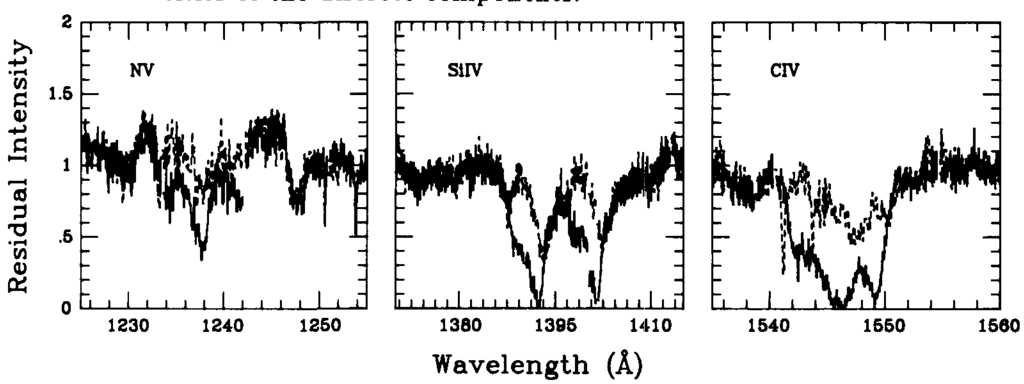

FIG. 1 – *Extensive narrow component variability is apparent between the observation in April 1981 (dotted line; SWP13759) and the typical (more enhanced) spectra of March 1986 (solid line; e.g. SWP27923).*

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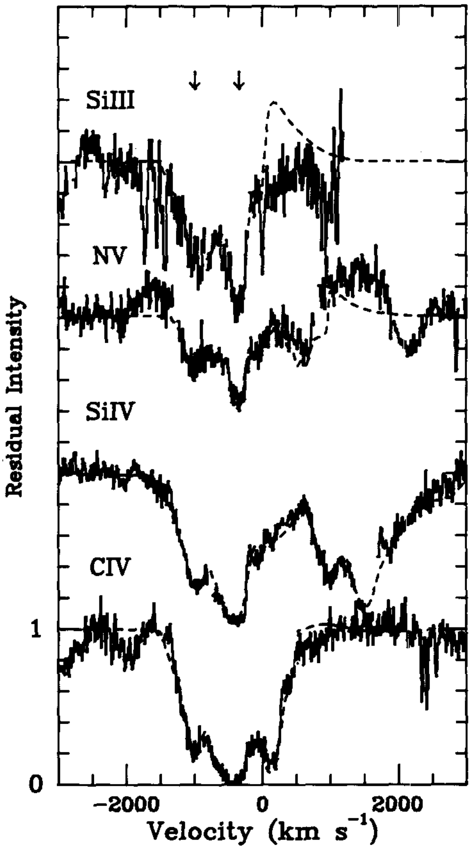

FIG. 2 — *Some examples of UV line profiles in HD110432. Dashed lines are the adopted model fits. Mean narrow component positions are indicated.*

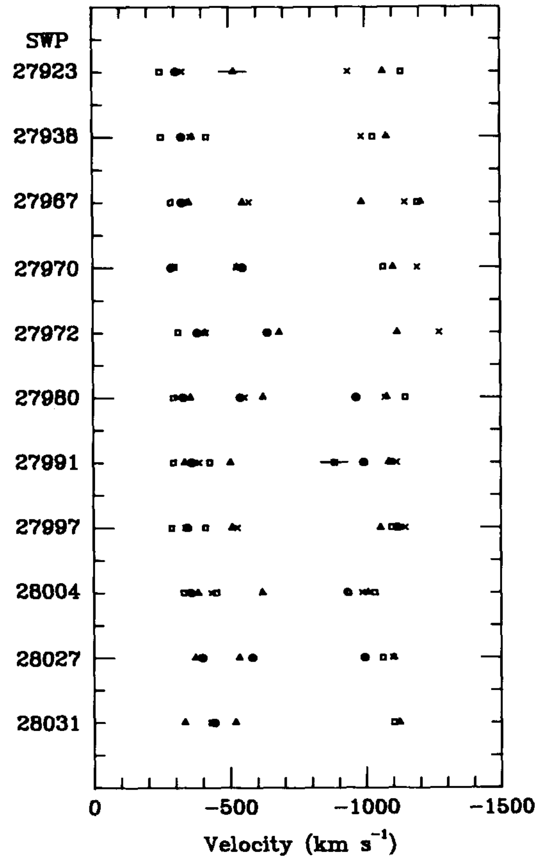

FIG. 3 — *The narrow component velocities observed in Si III (•), N V (□), Si IV (×), and C IV (Δ).*

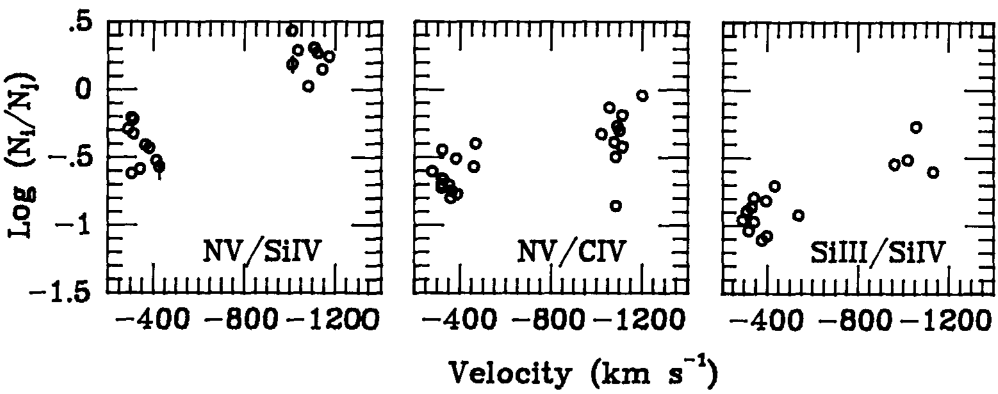

FIG. 4 — *The ion fraction ratios observed in the narrow components as a function of velocity.*

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DISCUSSION FOLLOWING PRINJA

Henrichs:

It would be interesting to see if simultaneous IR observations exist. We heard two reports earlier today on this star.

Lamers:

Your observed increase in the degree of ionization in the narrow components agrees with two facts observed in normal stars: (1) The narrow components at about 0.7 v_∞ observed in normal stars have a higher degree of ionization than the normal winds (Lamers et al., 1982). (2) I recently found evidence for blobs ejected from α Cam (09.5 Ia) which change to higher ionization as they move out (Lamers et al., 1986).

Underhill:

Did you have to introduce a large microturbulence of the order of 100 kms^{-1} to fit your discrete components?

Prinja:

No, it was not necessary.

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