1. The high-resolution spectra

1.1. The 1300-1350 Å region

A Copernicus U1 scan of Vega covering the region from 1300 to 1350 Å was made during September 1974 by R. Kurucz. The resolution is approximately 0.05 Å. The scan consists of 24 spectral segments, which are listed in table 1.

The wavelength sampling is of about 0.02 Å. For each wavelength, counts for both stellar flux and background are given. Background counts were subtracted from the stellar counts. To obtain an unique spectrum, the counts were merged in the overlapping regions; when the same wavelength occurred in two successive segments, the second one was dropped. In spite of some noise was added in the overlapping regions by this manipulation, this noise does not appear much larger than that observed in the other parts of the spectrum.

The red wing of Lyman α, which extends to this region, is source of additional opacity overimposed to the opacity of the continuum. We assumed the Lyman α wing as pseudo-continuum and normalized the spectrum to this continuum.

The interactive code NORMA written by Bonifacio (1989) was used to drawn a smooth interpolated stable curve through the selected points. It was obtained by means of Hermite spline functions (subroutine INTEP by Hill, (1982)).

1.2. The 2000-3187 Å region

The V1 Copernicus Atlas, published and extensively described by Rogerson (1989), was made available to us on magnetic tape by the National Space Science Data Center at the Goddard Space Flight Center in Greenbelt. Nowadays, it is available at http://archive.stsci.edu/copernicus/vega.html The spectrum has a nominal resolution of about 0.1 Å. Both unsmoothed and smoothed unnormalized counts are stored on the tape.

Rogerson (1989) smoothed the spectrum by means of an optimum filter (Brault & White,1971) and normalized the smoothed spectrum by using an envelope obtained by connecting the local maxima with straight line segments. The continuum values can be found both in the Rogerson paper and on the tape, so that, at first, we used the smoothed spectrum with the Rogerson (1989) normalization, namely we used the spectrum as displayed in Rogerson's paper.

However, after comparison with the synthetic spectrum, we preferred to renormalize the unsmoothed spectrum by using the NORMA code. Owing to the non negligible noise of the unsmoothed spectrum, we drawn the continuum by cutting the highest points in the 2000-3000 Å region, which is affected by a so large number of lines that any selection of continuum windows is not possible. In the 3000-3180 Å region, where the lines are less numerous, we have drawn the continuum through the noise affecting the continuum windows. In general, our continuum is lower than that adopted by Rogerson, mostly for regions with large noise, as those between 2000 and 2200 Å and between 3000 and 3180 Å. The continuum was further adjusted when the observed and computed spectra were plotted together.

The normalized spectrum was smoothed by using a gaussian profile with a full-width at half maximum equal to twice of the wavelength sampling, which ranges about from 0.05 Å at 2000 Å to 0.04 Å at 3180 Å. In this way, we obtained a spectrum less smoothed than that displayed by Rogerson (1989), which keeps some trace of the level of the noise.

Table 1. Wavelenght boundaries of the spectral segments of the U1 scans

Segment	λ_{start}(nm)	λ_{end}(nm)
1	129.9977	130.1961
2	130.1721	130.3990
3	130.3752	130.6020
4	130.5784	130.8336
5	130.8105	131.1233
6	131.1005	131.4131
7	131.3903	131.5579
8	131.5595	131.7028
9	131.6799	131.9922
10	131.9694	132.2815
11	132.2587	132.5706
12	132.5479	132.8596
13	132.8347	132.8909
14	132.8658	133.0349
15	133.0103	133.0952
16	133.0680	133.1228
17	133.1242	133.2365
18	133.2124	133.4095
19	133.3857	133.6110
20	133.5878	133.9279
21	133.9052	134.2161
22	134.1936	134.5043
23	134.4818	134.7925
24	134.7700	135.0211

References

Bonifacio, P., "NORMA: a Program for the Normalisation of spectra", Dipartimento di Astronomia, Universita' di Trieste, Rapporto Interno 20-IV-1989

Brault, J. W., & White, O. R. 1971, A&A, 13, 169

Hill, G. 1982, Publications of the Dominion Astrophysical Observatory Victoria, 16, 67

Rogerson, J. B., Jr. 1989, ApJS, 71, 1011