IUE OBSERVATIONS OF WHITE DWARFS and HOT SUBDWARFS

J. B. Oke

Hale Observatories
California Institute of Technology

The International Ultraviolet Explorer (IUE) has been used by Greenstein and Oke to obtain low resolution spectra from 1150 to 3200 Å of a selection of white dwarfs and hot subdwarfs.

The observations can be converted to absolute fluxes so that, by including energy distributions measured with the multichannel spectrometer on the Hale telescope, fluxes can be derived between 1150 and 11000 Å. The IUE absolute fluxes show erratic level shifts of up to 20 percent and probably also smaller changes in the slope. These shifts are probably associated with the level of the radiation induced background coupled with uncertainties in the calibration of the non-linear detectors. In many cases, these anomalies in the fluxes are obvious, but they do decrease the accuracy with which temperatures and gravities can be determined.

Observations, in nearly every case covering the range from 1150 to 3200 Å, have been obtained for (a) 8 DA-type white dwarfs, (b) 3 DB's, including HZ 29, (c) 2 DO's, (d) Ross 640 (DF) and VMa 2 (DG), (e) a few peculiar white dwarfs, and (f) 8 hot sdO subdwarfs. In general, for the normal white dwarfs and hot subdwarfs, the low resolution spectra show the features one would expect to see. For example, the DA's show only Lα while the hot subdwarfs show Lα (or HeII 1216), the other expected HeII lines, and sometimes lines of CIV, SiIV, or NV.

A comparison of the continuous energy distributions with model atmospheres or black body functions yield effective temperatures which are very close to those which have been determined using only visual data. The very hot subdwarfs tend to have lower temperatures than the ground based data suggested; the maximum temperatures are 45000 to 60000° K. (Ground based observations of objects at such temperatures are not very sensitive to temperature).

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Suitable model atmosphere grids, particularly models with low hydrogen content, do not yet exist for many of the stars which have been observed. These models, when calculated, should include line profiles for Lα and at least equivalent widths for the various HeII lines seen in the uv. Attention should also be paid to uv lines of SiIV, CIV, NV, etc.

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