Be STARS IN THE ULTRAVIOLET SPECTRAL CLASSIFICATION SYSTEM

JANET ROUNTREE
Science Applications International Corporation, Tucson Arizona

and

GEORGE SONNEBORN
NASA Goddard Space Flight Center, Greenbelt Maryland

Rountree and Sonneborn (1991) developed a system for the classification of ultraviolet B-star spectra, using MK standards drawn from the optical region. The observational material consisted of high-dispersion spectra obtained with the Short Wavelength Prime (SWP) camera on the International Ultraviolet Explorer (IUE) spacecraft. The classification criteria were based exclusively on photospheric absorption lines, primarily lines of C III, Si II, and Si III. The stellar wind lines of Si IV, C IV, and N V were not used in the classification.

Once the spectral type and luminosity of a program star were determined from the photospheric lines, the wind lines were compared with those in the appropriate standard star. If the program star appeared to have anomalous wind lines (usually stronger than in the standard), a suffix "w" was appended to its ultraviolet spectral type.

All of the program stars were known to have well-determined optical MK types in the range B0 - B8 III - V. Stars with a suffix "e," "n," "nn," or "p" in their MK types were explicitly excluded from the observing list. Therefore, it may be assumed that none of the program stars exhibited emission at Hβ, at least at the epoch of their MK classification. However, an investigation of the literature concerning those stars which had been given a "w" suffix in the ultraviolet classification system revealed that many of them had a history of reported emission at Hα. Two such stars are HD 180968 (2 Vul, B1 IVw) and HD 192685 (B2.5 Vw), which were studied by Grady, Bjorkman and Snow (1987). Several examples of this phenomenon are shown in the ultraviolet spectral atlas of Rountree and Sonneborn (1993).

In conclusion, it appears that the extended atmosphere effects that manifest themselves as a Be spectrum in the optical region can also be recognized as anomalies in the ultraviolet stellar wind lines. There is not a one-to-one correspondence, but an enhanced stellar wind may be an "early warning" or a residual sign of hydrogen-line emission.

L. A. Balona et al. (eds.), Pulsation, Rotation and Mass Loss in Early-Type Stars, 275–276.

https://doi.org/10.1017/S0074180900215064 Published online by Cambridge University Press

References

Grady, C. A., Bjorkman, K. S., and Snow, T. P.: 1987, *Astrophysical Journal* **320**, 376
Rountree, J., and Sonneborn, G.: 1991, *Astrophysical Journal* **369**, 515
Rountree, J., and Sonneborn, G.: 1993, *"Spectral Classification with the International Ultraviolet Explorer: An Atlas of B-Type Spectra" (NASA Reference Publication)* ,

https://doi.org/10.1017/S0074180900215064 Published online by Cambridge University Press