UV SPECTRAL CLASSIFICATION OF B STARS

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Previous studies of ultraviolet spectral classification have been insufficient to establish a comprehensive classification system for ultraviolet spectra of early-type stars because of inadequate spectral resolution. We have initiated a new study of ultraviolet spectral classification of B stars using high-dispersion IUE archival data. High-dispersion SWP spectra of MK standards and other B stars are retrieved from the IUE archives and numerically degraded to a uniform resolution of 0.25 or 0.50 Å. The spectra (in the form of plots or photowrites) are then visually examined with the aim of setting up a two-dimensional classification matrix. We follow the method used to create the MK classification system for visual spectra. The purpose of this work is to examine the applicability of the MK system (and in particular, the set of standard stars) in the ultraviolet, and to establish classification criteria in this spectral region.

The spectra displayed in the figure on the following two pages represent a sequence of MK-standard main sequence B stars, processed according to the methods to be used in this study. The spectra have been rebinned to 0.25 Å and normalized (not dereddened). Some prominent features, which may or may not prove to be useful as classification criteria, include Si II, 1260 Å; Si III, 1295-1300 Å; C II, 1335 Å; Si IV, 1393 and 1402 Å; and C IV, 1548 and 1550 Å. It should be emphasized that these MK standards are shown for illustrative purposes only -- they will not necessarily be standards for ultraviolet classification. We estimate that about 100 B stars from the IUE archives will be used in setting up the ultraviolet classification system. We intend to publish an atlas of IUE spectra of B stars with ultraviolet spectral types and classification criteria, so that other observers and users of archival data may visually place their objects within the grid of standard stars.

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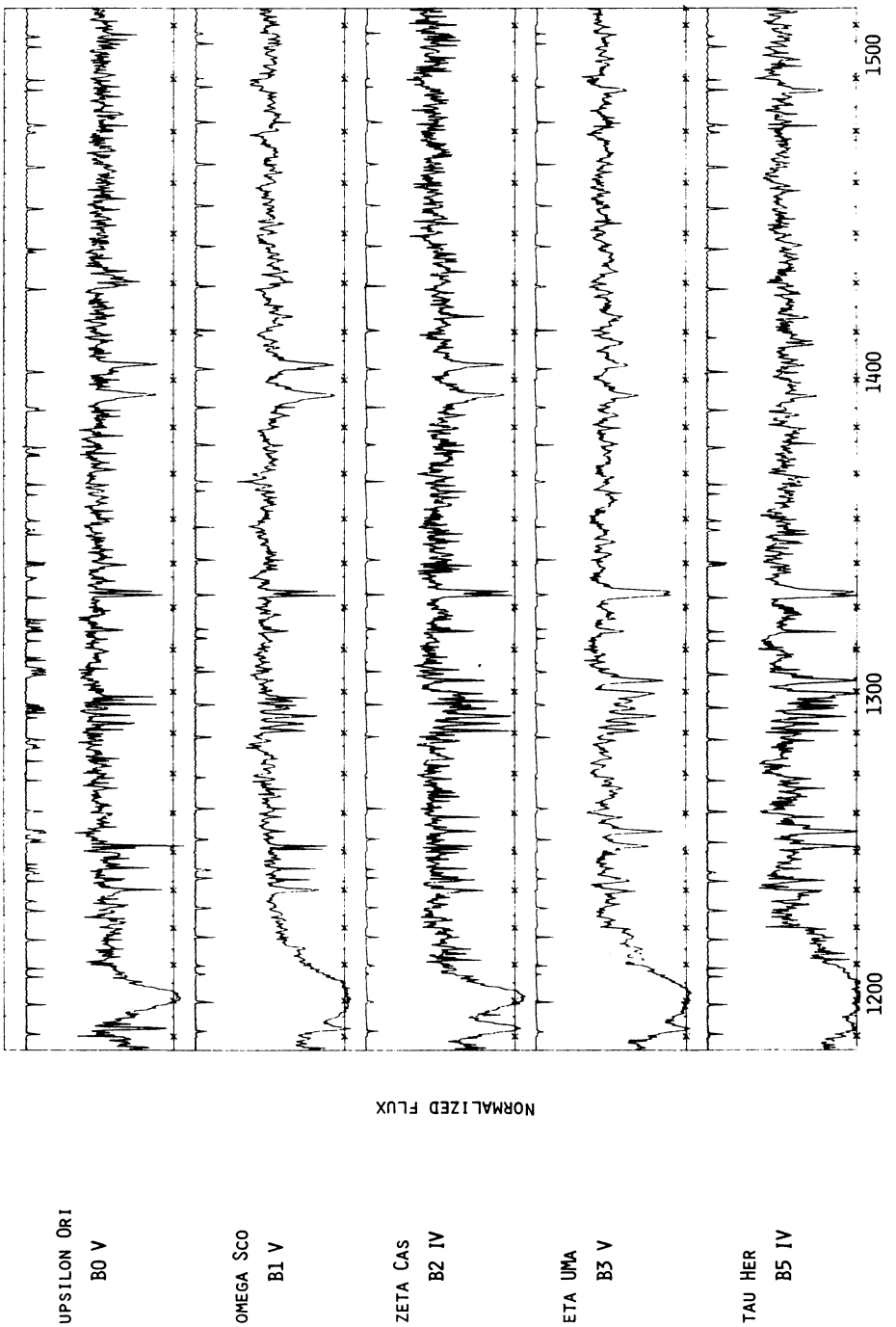

Fig. 1a. Spectra of MK Standard Main Sequence B Stars. (1200–1500 Å).

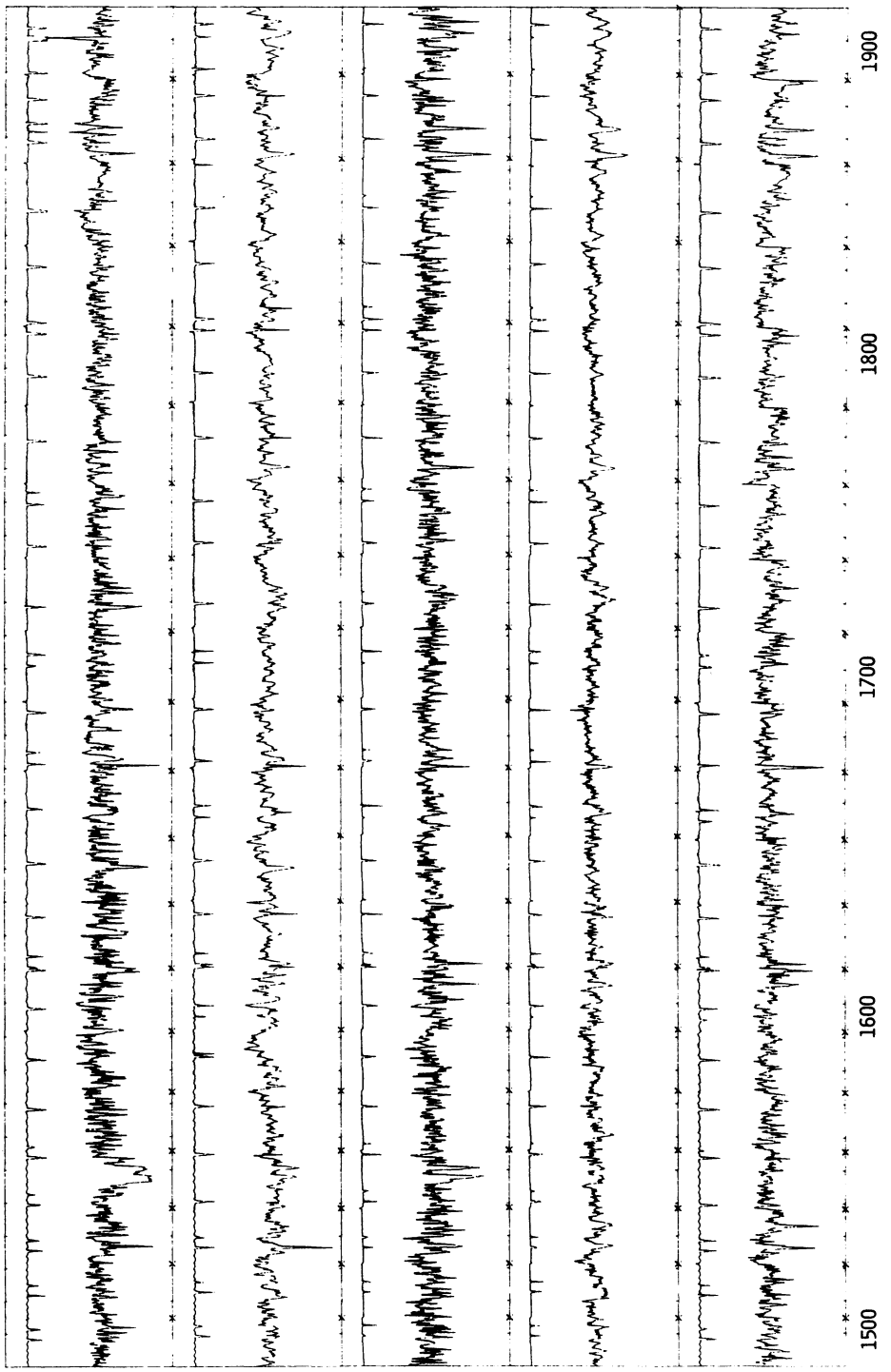

Fig. 1b. Spectra of MK Standard Main Sequence B Stars. (1500-1900 Å).