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THE ULTRAVIOLET SPECTRUM OF β LYRAE OBSERVED WITH THE IUE

We have obtained several sets of exposures of the interacting binary system β Lyrae with the IUE satellite observatory. The observations were made in 1978 June and September at the high resolution mode ($\lambda/\Delta\lambda \sim 10^4$) in the far-ultraviolet (1200-2000 Å) and the mid-ultraviolet (1900-3200 Å) regions.

The spectral region between about 1500 and 2100 Å was not covered in the previous Copernicus high resolution (0.2 and 0.4 Å) observations of this binary reported by Hack et al. (1975, 1976 and 1977). In addition, signal-to-noise ratio in the mid-ultraviolet region of the current IUE data is superior to that attained by the Copernicus V2 spectrometer. The spectral range between about 1500 and 2100 Å was also observed at much lower resolution with TD1 S2/68 spectrometer (Hack 1974) and Skylab S019 sky survey camera (Kondo et al. 1976). The resolution of the S2/68 spectrometer was about 35 Å in this range; the S019 camera had resolutions of 2 Å, 12 Å and 42 Å at 1400 Å, 2000 Å and 2800 Å, respectively.

Hundreds of lines have been observed with the IUE. These observational results are being prepared for publication in a full journal article. We wish to report here the following preliminary findings from the IUE data.

The strong spectral features reported by Hack (1974) near 2000 Å and Kondo et al. (1976) in the 1500-2100 Å range appear to be in reasonable accord with the current results, except that a number of new lines were observed at the higher resolution of the IUE. One notable revision of the Skylab results is the identification of the feature near 1910 Å, for which C III]

intercombination line was tentatively suggested. From the IUE spectra, it is now clearly identified as one of the three Fe III multiplet (No. 34) lines. All of the multiplet have been observed as P Cygni features at 1895, 1914 and 1926 A.

We shall now attempt to draw a broad-brush picture of the IUE results: In the 1100-1600 A region, numerous emission lines dominate over P Cygni features. In the 1600-2200 A range, strong P Cygni lines are dominant; weak and moderate absorption lines of Fe II, Fe III and other ionized metals observed in this regime do not appear to be entirely photospheric. Between 2200 and 2400 A, very weak absorption lines are seen; identification of these lines is underway. In the 2400-3000 A region, absorption lines observed can largely be attributed to Fe II and Fe III photospheric lines except the resonance lines of Fe II and Mg II. The Fe II line at 2599 A shows strong shortward-shifted absorption indicative of mass flow. The Mg II resonance doublet at 2795 and 2802 A are seen as P Cygni features as previously reported by Kondo et al. (1972) and Hack et al. (1977).

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