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THE SPECTRUM VARIABLE HR 7817=HD 194783

This star has been classified as a B9 Mercury Manganese star by Anderson and Nordström (1977) who also remarked that this object is a probable spectrum variable. We have begun an observational programme to monitor peculiar stars that are most likely to be spectrum variables. The choice of the stars is basically dependent on the remarks for these stars given in the Bright Star Catalogue (Hoffleit and Jaschek 1982).

During the period 28 October to 2 November 1988, five spectra of HR7817 at a dispersion of 31 Å per millimeter were obtained with the Zeiss spectrograph at the Cassegrain focus of the one meter telescope of the Vainu Bappu Observatory at Kavalur. Visual inspection of the spectra indicated that Mg II 4481, Si II 4128-31, Mn II 4137, Hg II 3984 and Ca II 3933 are all variable.

Figure 1, shows the density tracings near K, Hg II, Si II and Mn II. The intensities of all these lines were estimated and they indicate a period of about six days for the variability. There is a possible phase shift between Mg II variation and the variation due to other lines. The Mg II 4481 line on 28 October is observed to have a sharp red edge; a suggestion of faint emission in the red wing. The relative strengths of 4128 and 4131 are also found to vary. This Mercury-Manganese star has extremely weak Hg, Mn lines at some phases! Variable faint features at 4077 Å and 4206 Å are also noticed.

The lines are all sharp and the projected rotational velocity $v \cdot \sin i$ is not likely to exceed 30km/sec. This is consistent with a rotational period of about six days observed for this star. Periods less than a day can be ruled out since we should then expect the lines to be much broader than what is observed. If the elements are concentrated in spots and the period of variation is that due to rotation, then one should expect in analogy with other spectrum variables, that HR 7817 is likely to show a measurable magnetic field even though it is generally believed that Hg Mn stars are non-magnetic.

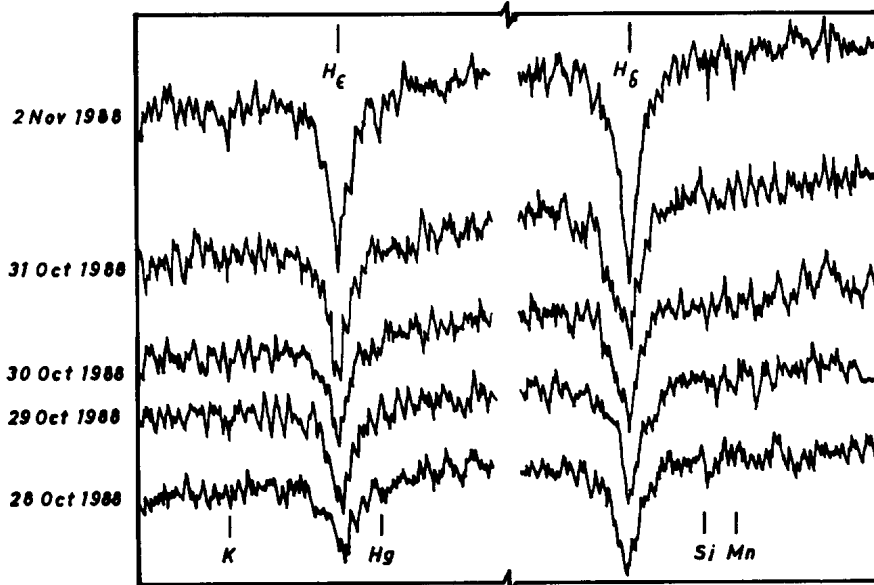


Figure 1

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R.RAJAMOHAN and A.PARANJPYE
 Indian Institute of Astrophysics,
 Bangalore - 560 034,
 India

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