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CSV 1855 = HENIZE 782

Lee (IBVS No. 813, 1973) has drawn attention to the suspected variable CSV 1855, listed by Wackerling (Mem.R.A.S. 73, 153, 1970) as the Be star Henize 782. Lee found emission lines of hydrogen ($H\alpha$ - $H\delta$) and Fe II, and drew comparison with Merrill's iron star, XX Oph.

Photometry of Hen 782 at the near-infrared wavelengths of $1.25 \mu\text{m}$ (\underline{J}), $1.65 \mu\text{m}$ (\underline{H}), $2.2 \mu\text{m}$ (\underline{K}) and $3.5 \mu\text{m}$ (\underline{L}) was secured on 1974 May 3.82 with the 1-metre Elizabeth II telescope of the South African Astronomical Observatory; \underline{V} was estimated at 12 at the time of the observation:

$$\underline{K} = 4.70 \pm .05 \quad \underline{J}-\underline{K} = 2.32 \pm .07 \quad \underline{H}-\underline{K} = 1.16 \pm .07 \quad \underline{K}-\underline{L} = 1.39 \pm .08$$

The infrared observations indicate the presence of circumstellar dust emission at a colour temperature of a little under 1300°K . The star provides most of the flux at \underline{J} but under half that at \underline{H} . Thus $\underline{V}-\underline{J} \sim 5$ magnitudes, a value appropriate to an unreddened M star or to an early-type star with $A_{\underline{V}} \sim 6$.

140 \AA /mm Carnegie image-tube plates of Hen 782 were taken on May 15 and 16 with the 1.9 metre Radcliffe telescope. The two spectrograms are very similar and show the following features:
Emission lines: The Balmer series is present as far as H_8 . There are more than 40 lines of Fe II and, as is often the case, multiplet 42 is somewhat enhanced. Weak lines of He I may be present and there is marginal evidence for $[\text{Fe II}]$ and $[\text{O I}]$. The emission lines are rather broad and there appears to be a weak violet component to H_γ displaced from the principal line by several hundred km/sec.

Absorption lines: Ca II (H and K), Na I (D lines, not resolved) and a few TiO bands characterise the absorption spectrum which resembles that of an M star. Higher resolution is necessary to accurately spectral type Hen 782 or to ascertain whether a velocity difference exists between the absorption and emission lines.

Hen 782 is unusual in combining a low-excitation (Be-type) emission-line spectrum, prominent late-type absorption features in the visible, and circumstellar dust radiation in the 2 μ m region. To classify this star is difficult: it appears to be intermediate between the VV Cephei stars, which show no dust radiation, and the forbidden-line stars, for which the underlying visible spectrum is continuous.

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