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IS ν Her REALLY A VARIABLE STAR ?

The bright star ν Her = HR 6707 was suspected to be a variable star by two observers independently. Searching for microvariability in bright stars, Jackisch, (1963) found an amplitude of 0.06 mag in V and a period of 29 d. It must be noted, however, that Jackisch used α Lyr as comparison star, which choice does not seem very adequate. Henriksson (1976) included ν Her in a list of variable that he discovered during a survey of stars located in the Cepheid instability strip. On the basis of 39 V measures he reported an amplitude of 0.05 mag but was not able to give a period.

These two works led Hoffleit and Jaschek (1982) to mention the star as a probable δ Sct variable and Kholopov et al. (1985) to classify it as a possible SRd variable.

In order to confirm the variability, we undertook observations of ν Her in 1986, adding it to other F-G-K giant variables under spectroscopic and/or photometric investigation. ν Her was observed on 12 nights from May 31 to August 24, 1986 with the 50 cm reflector of Merate Observatory. HR 6775 (V=5.04, B-V=+0.52, U-B=-0.09, F7V) and HR 6814 (V=5.88, B-V=+0.01, U-B=+0.11, A3V) were used as comparison stars. On each night, 7-9 differential measurements were taken and grouped into normal points. The internal standard error of these normal points averages 0.003 mag in all colours, while the night-to-night standard deviation of magnitude differences between the comparison stars are 0.005, 0.006, 0.008 mag in V, B, U respectively. HR 6814=ADS 11149 is a close double star: its B component was suspected to vary more than 2 mag (Baize, 1962). However, if the mean difference in magnitude between the two components is really 2.5 mag (Baize, 1962), then our measures exclude variations of the B component during our survey greater than 0.1 mag.

The Table shows the Δm between HR 6775 and ν Her. Δm 's are in the sense comparison minus variable star. Taking observational errors into account, it is hard to find a variation larger than 0.01 mag in the data. If one assumes that ν Her is an SRd variable, then, we must admit that we have observed the star during a quiescent phase of its light variability. If we consider the star

Table I

J.D.	ΔU	ΔB	ΔV
2446582.43	+ 0.592	+ 0.801	+ 0.654
587.41	—	+ 0.791	+ 0.651
603.46	+ 0.568	+ 0.790	+ 0.646
604.45	+ 0.566	+ 0.786	+ 0.643
610.39	—	+ 0.796	+ 0.651
616.46	—	+ 0.782	+ 0.647
636.43	—	+ 0.797	+ 0.652
648.43	—	—	+ 0.646
655.44	+ 0.581	+ 0.807	+ 0.664
662.43	+ 0.586	+ 0.795	+ 0.651
663.46	—	—	+ 0.657
667.39	+ 0.573	+ 0.809	+ 0.658

to be a δ Sct variable, our results (i.e. light constancy during normal points and small peak-to-peak amplitude) are conflicting with those of Jackisch's and Henriksson's surveys. Percy, et al. (1979) found no variation larger than 0.02 mag in B and V light: this result strengthens our conclusion. Considering its spectral type and luminosity class (F2III) and the current calibrations of uvby β photometry, we may estimate that v Her is located near the blue edge or more probably outside the instability strip. From these considerations it is probable, in our opinion, that v Her is not a variable star at all.

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