

COMMISSIONS 27 AND 42 OF THE IAU  
INFORMATION BULLETIN ON VARIABLE STARS

Number 4289

Konkoly Observatory  
Budapest

17 January 1996

*HU ISSN 0374 – 0676*

**HD 116475: A NEW LATE-TYPE VARIABLE IN CANES VENATICI**

HD 116475 (SAO 44590, BD +47°2053) is a poorly observed sixth magnitude star of spectral type M4III. The main interest in the star has been as a comparison for visual observations of nearby variables. It appears as star 69 on the BAA chart for Y, TU and V CVn (1984 Apr 12) and has been suspected of variability for a number of years by several observers but no coherent behaviour has emerged (West, 1996). It is also an IRAS source, 13209+4715, and the infrared spectra suggest that it is a first red-giant branch star (Volk et al., 1991).

HD 116475 has been observed photoelectrically over the past two years as part of a programme to monitor known and suspected red variables. The observations were made using an SSP3 photometer and nominal V filter on a 20-cm Newtonian reflector. The comparison stars used were HD 116172 ( $V = 7.0$ ,  $B - V = 1.1$ , K0 ) and HD 116957 ( $V = 5.88$ ,  $B - V = 0.97$ , K0III). Each observation consisted of usually 2, but up to 8 sets of  $3 \times 10$  second integrations of the variable and HD 116172, while HD 116957 was observed about half as frequently. The mean  $\Delta m$  between the two comparison stars is 1.09 with  $\sigma = 0.02$  mag, giving  $V = 6.97$  for HD 116172. Further details of the procedures are given by West (1996).

The magnitude of HD 116475 relative to HD 116172 is given in Table 1 and the light curve is plotted in Figure 1.

Table 1. Relative V mag HD 116475 – HD 116172

JD	$\Delta V$	JD	$\Delta V$	JD	$\Delta V$	JD	$\Delta V$
2449482	-0.24	2449783	-0.21	2449818	-0.20	2449904	-0.13
2449503	-0.12	2449785	-0.21	2449821	-0.19	2449906	-0.13
2449531	-0.50	2449789	-0.21	2449827	-0.15	2449913	-0.08
2449538	-0.53	2449792	-0.16	2449828	-0.15	2449918	-0.08
2449545	-0.48	2449796	-0.19	2449840	-0.09	2449927	-0.06
2449582	-0.32	2449797	-0.20	2449842	-0.07	2449934	-0.05
2449588	-0.34	2449799	-0.19	2449857	-0.05	2449939	-0.03
2449593	-0.34	2449800	-0.24	2449861	-0.04	2449951	-0.07
2449630	-0.25	2449802	-0.25	2449869	-0.08	2449964	-0.31
2449634	-0.27	2449804	-0.23	2449887	-0.14	2449980	-0.29
2449770	-0.22	2449806	-0.25	2449890	-0.13	2449984	-0.22
2449775	-0.25	2449812	-0.28	2449894	-0.13	2449989	-0.19
2449778	-0.23	2449814	-0.24	2449897	-0.13	2450001	-0.19
2449782	-0.22	2449815	-0.24	2449898	-0.14	2450021	-0.24

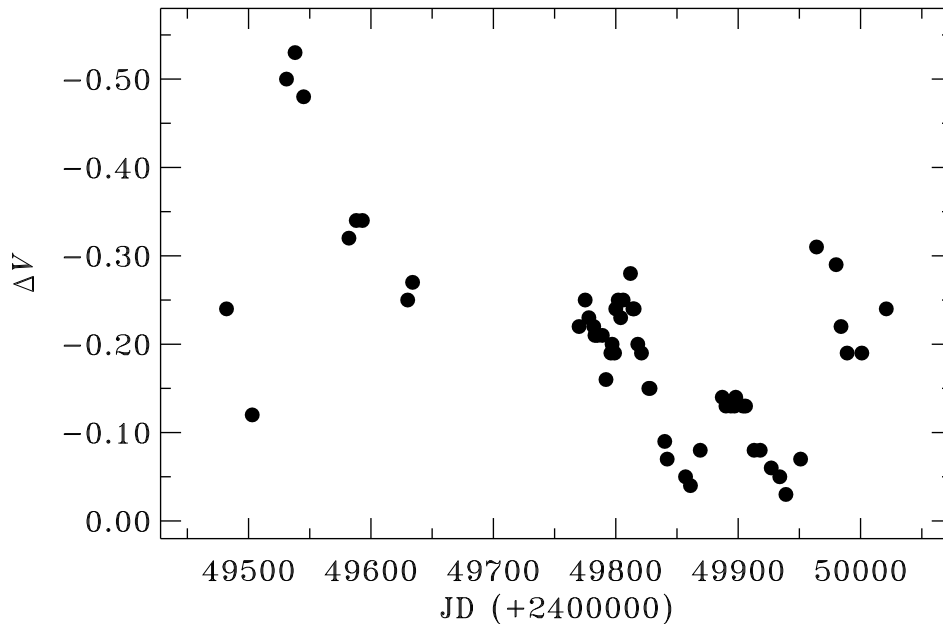


Figure 1. Light curve of HD 116475 relative to HD 116172.

During the first season the star brightened rapidly and faded progressively by  $\sim 0.4$  mag but was only sparsely observed. Coverage in the second season was much better but the activity was not as high. Nevertheless the behaviour of the star is much more clearly defined. The characteristic time scale of the variation seems to lie in the 50 – 100 day range; the best period is  $\sim 87$  days, but the amplitude is clearly variable and there may be long term trends superimposed. There is also some indication of coherent shorter-term activity around JD 2449800 and on two occasions the variations are quite rapid,  $\sim 0.2$  mag in 10 days.

On the basis of the spectral type, the time scale and general character of the variation the star should most likely be classified as an SRb. It is probably a rather extreme example of the small amplitude variables that are found among the red giants and shares some similarities with BQ Gem (Percy et al., 1994). Its brightness and level of activity make it an ideal candidate for studying the behaviour of these stars but good coverage will be required to follow the variation.

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