PHOTOGRAPHIC OBSERVATIONS OF THE DWARF NOVA V792 CYGNI

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The photographic observations of V 792 Cyg on the SAI archive plates have been analyzed. The seasonal outburst cycle length drastically changed from $25-29^d$ to $\approx 39^d$ between 1967 and 1973 years possibly indicating mass transfer variations at a time scale of few years.

According to the General Catalogue of Variable Stars (Kholopov *et al.*, 1985), V792 Cyg belongs to the UGSS subtype of dwarf novae with an outburst cycle length 26^d:. The star was measured on the archive plates of the Sternberg State Astronomical Institute (Moscow). The table of observations was published by Andronov *et al.* (1993). Then all the data except "fainter than", altogether 219 estimates (JD 2437118 – 46624) were analyzed. The parts of the curve which are most dense covered by observations are shown in Fig. 1.

For smoothing, we have used the method of "running parabolae" (Andronov, 1990). For the determination of the free parameter – the filter half-width Δt – the scalegram was computed, as proposed by Andronov (1997). The unbiased estimate of the standard deviation of the signal from the smoothing function σ_{O-C} as a function of the filter half–width Δt has a plateau at $\Delta t < 18^d$. After this value, the systematic deviations of observations from a smoothing curve drastically increase. The smoothing curve for $\Delta t = 18^d$ is shown in Fig. 1.

From a series of observations we have chosen the intervals with a duration of few cycles, similar to the algorithm of study of another dwarf nova EM Cyg (Andronov & Chinarova, 1996). Results of the periodogram analysis for 5 seasons obtained by a harmonic least squares fit (FOUR program, Andronov, 1994) are presented in the following table:

Table 1: Parameters of seasonal sine fits

Season	T_{start}	T_{end}	n	P	S	r	a
1	37118	37194	11	25.2±0.8	0.86	1.05±0.17	15.80±0.13
2	38876	39034	29	25.5±0.5	0.56	0.80±0.16	15.91±0.12
3	39262	39406	19	29.5±0.7	0.49	0.71±0.19	15.48±0.16
4	41801	41932	24	39.7±2.1	0.41	0.83±0.22	16.11±0.19
5	42507	42684	26	38.6±1.0	0.47	0.56±0.13	15.94±0.09

One may note significant season–to–season variability not only of the effective period P (mean cycle length), but also of the semiamplitude r and phase–averaged mean value a. Besides the periodogram analysis using equal weights of observations, we have applied the wavelet analysis of the data in these seasons. The mean wavelet periodogram was computed by using the algorithm proposed by Andronov (1998). The mean periods obtained by the wavelet analysis in the seasons 4 and 5 (most densely covered by the data) coincide with that of the periodogram analysis, within ~ 0.1 day.

The error estimate listed in Table 1 is overestimated, as the light curve is not harmonic, and an essential contribution to residuals is owed to systematic deviations of the true curve from a sinusoid. This is confirmed also by rather small values of the test – function S. Unfortunately, the small number of seasons does not allow to check up a presence of correlations between the characteristics of seasonal fits similarly to EM Cyg (Andronov and Chinarova, 1996).

A very interesting result is that in two last seasons the cycle duration of 39^d is much larger than in previous seasons. Such drastic changes of the cycle length are usually explained by variations of the accretion rate caused by, *e.g.*, magnetic activity of the red dwarf (Bianchini, 1990; Andronov and Shakun, 1990). It would be desirable to make a more detailed study of this system.

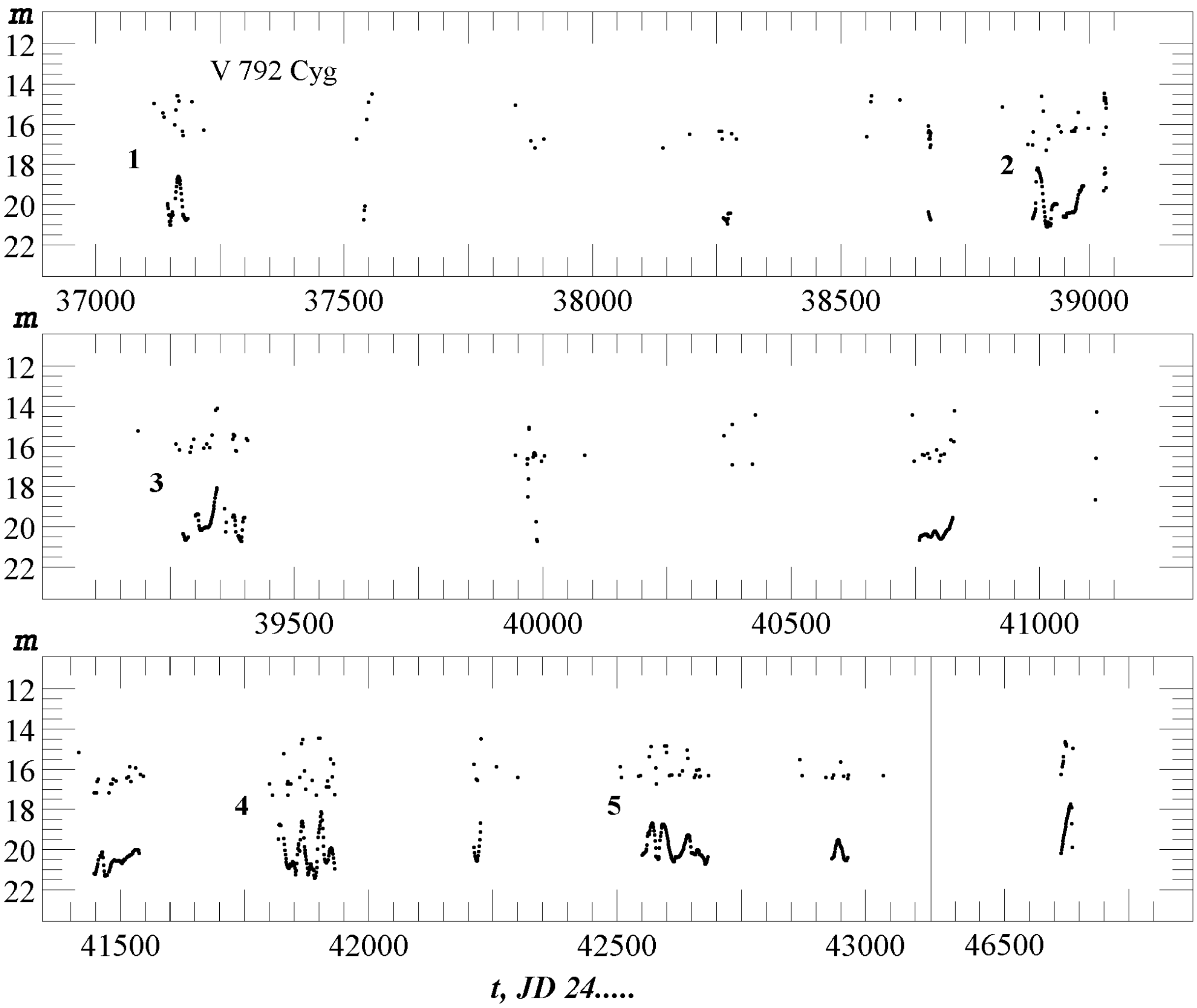

Figure 1: The light curve of V 792 Cyg and its approximation by "running parabolae" with a filter half–width $\Delta t = 18^d$ (shifted by 4^m). The numbers mark the seasons used for the periodogram analysis

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