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SOME ADDITIONAL DATA ON THE NEW SHORT-PERIOD VARIABLE IN NGC 7142

Recently, Crinklaw & Talbert (1991; =CT) reported on results of a survey for short-period variables in the open cluster NGC 7142. Due to its apparent similarity in both age and morphology to NGC 188, NGC 7142 might have turned out to be a rewarding objective particularly with respect to W UMa stars, since NGC 188 is overabundant in such variables. However, out of 432 stars with $V \leq 18.0$, only one was found to be variable. Unfortunately, there were insufficient observations of this star to classify its variable type, although the data presented appeared to be consistent with those of an eclipse. The above authors suggested further observations of this star.

For some time past, we are engaged in research work in the neighborhood of NGC 7142 and have 5 V and 4 B Tautenburg Schmidt plates at our disposal. From these plates, by iris photometry, we determined the brightness of the star using standards close to it taken from CT. The accuracy of our data is about ± 0.05 in B and V; they are listed in Table 1 together with CT's values. The light curve, again with inclusion of CT's data, is presented in Figure 1.

On the basis of our graphical and tabular material, we can confirm that the star in question obviously is a short-period variable. See Figure 2 for a finding chart and coordinates.

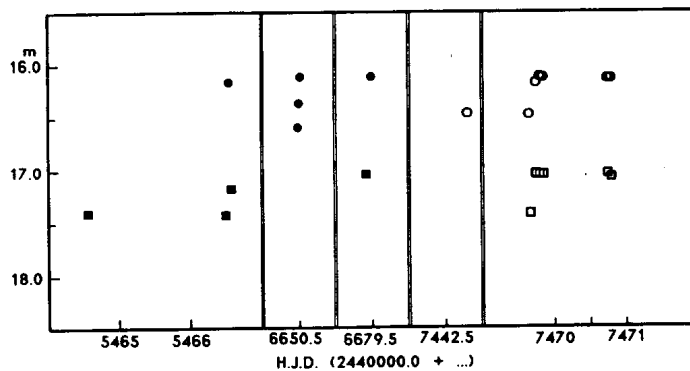


Figure 1. Light curve for the variable star. Circles indicate V-magnitude measurements, squares are B-magnitude values. Filled symbols are our data; open symbols are data taken from Crinklaw and Talbert (1991)

Table 1. Photometry of the variable star.
Above dashed line: Our data. Below:
data from Crinklaw & Talbert (1991)

| H.J.D. | V | H.J.D. | B |
|-----------|--------|-----------|--------|
| 5466.5487 | 16.16 | 5464.5570 | 17.40 |
| 6650.4841 | 16.59 | 5466.5043 | 17.42 |
| 6650.5022 | 16.36 | 5466.5865 | 17.17 |
| 6650.5216 | 16.11 | 6679.4169 | 17.04 |
| 6679.4946 | 16.11 | | |
| ----- | | | |
| 7442.8104 | 16.463 | 7469.6625 | 17.408 |
| 7469.6410 | 16.472 | 7469.7410 | 17.036 |
| 7469.7354 | 16.172 | 7469.7910 | 17.040 |
| 7469.7861 | 16.111 | 7469.8438 | 17.039 |
| 7469.8382 | 16.123 | 7470.7410 | 17.034 |
| 7470.7361 | 16.130 | 7470.7938 | 17.067 |
| 7470.7888 | 16.130 | | |

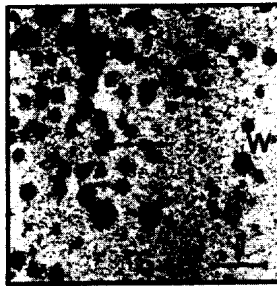


Figure 2: Finding chart for the variable (1950: $21^{\text{h}}43^{\text{m}}44^{\text{s}}$, $+65^{\circ}30'08''$; $\pm 10''$), reproduced from a red-sensitive Kiso plate

In particular, we note:

- i) our maximum brightnesses fit well with those of CT in both B and V ($17^{\text{m}}04$ and $16^{\text{m}}11$, respectively);
- ii) the faintest value is V = $16^{\text{m}}59$, lower by $0^{\text{m}}12$ than CT's minimum;
- iii) there are two sets consisting of three consecutive exposures respectively. With the - somewhat realistic - assumption that V = $16^{\text{m}}6$ represents the actual (main?) minimum value, the full duration of the minimum would be about 1.5 to 2 hours.

Obviously, some further information on variability is hidden in the paper by VandenBerg and Heeringa (1970): based on 3 V and 4 B plates, they presented the following averaged brightness data for the star (no. 127): V = $16^{\text{m}}24$, B = $17^{\text{m}}02$. Therefore, in V a minimum seems to be partly included.

Apart from the reasoning above, on a low-dispersion (2600 Å at H γ) Tautenburg Schmidt objective prism plate of moderate quality, the star appears to be of intermediate spectral type.

In short, we note that the variable might well be of W UMa type as originally suspected by CT, but a final conclusion can not be drawn unless further monitoring observations are available.

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References:

- Crinklaw, G., & Talbert, F. D. 1991, PASP, 103, 536
VandenBergh, S., & Heeringa, R. 1970, A&A, 9, 209