

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

Number 5550

Konkoly Observatory
Budapest
3 August 2004

HU ISSN 0374 – 0676

CCD PHOTOMETRY OF FIVE FAINT CATAclySMIC VARIABLES

HAEFNER, R.

Universitäts-Sternwarte München, Scheinerstr. 1, D-81679 München, Germany; e-mail: haefner@usm.uni-muenchen.de

Photometric observations of several faint cataclysmic variables were obtained in Aug. 1994 using the CCD camera on the 0.9m Dutch telescope at the European Southern Observatory (La Silla) to search for orbital variability and eclipses. Differential instrumental magnitudes were then derived relative to nearby comparison stars on the same CCD image. This note presents results for some of the targets for which no photometric time series exist to date and gives additional information for a recently established SU UMa variable. Table 1 lists the observing log.

Table 1: Journal of observations. The measurements were performed in integral light. Classifications and magnitudes are from the on-line data catalog by Downes et al. (2001) and literature cited therein. Start is the time for the midpoint of the first exposure.

Object	Type	Date	Start (UT)	Duration (h)	Int. Time (m)	Frames (No.)	Mag
FV Ara	UG	1994 Aug. 14	23:31	1.92	4	25	18p
NSV 13783	NL?	1994 Aug. 16	01:28	2.58	4	33	19p
NSV 14292	NL?	1994 Aug. 15	03:42	2.65	4	35	19.2p
V604 Aql	NA	1994 Aug. 13	00:35	3:30	4	42	19.6v
V1141 Aql	UGSU	1994 Aug. 11	00:29	3.07	5/7	30	19.5v

FV Ara

Based on its outburst behaviour this object has recently been suggested to be a candidate for a WZ Sge-type dwarf nova (Kato et al. 2001). Bateson (1998) reported that FV Ara may have intervals of inactivity where in active phases the outburst cycle is on the order of 15 days. During the present observations the object was quiescent. It showed no obvious variability exceeding the 0.03 mag level, i.e. the behaviour of constant nearby stars of the same brightness.

NSV 13783, NSV 14292

Both objects were tentatively classified as nova-like variables by Vogt (1989). Whereas NSV 13783 showed nearly constant behaviour with the scatter of measurements being of the same order as those of nearby stars of the same brightness, the measurements of NSV 14292 indicate some kind of flickering activity (scatter enhanced by a factor of 3 as compared to constant stars).

V604 Aql

The outburst light curve of the fast nova V604 Aql (Nova Aquilae 1905) was recorded by Walker (1923). Features of the outburst spectra were described by Moore (1906) and Cannon (1916). The object was revisited by Szkody (1994) who reports BVRJK magnitudes for the postnova. The present light curve exhibits variations with up to about 0.45 mag which might be caused by flaring events or partly by the appearance of an orbital hump (Fig. 1).

V1141 Aql

Based on the appearance of humps during a superoutburst this object has recently been classified by Olech (2003) as a member of the SU UMa class of dwarf novae. A spectrum obtained by Mason & Howell (2003) during minimum light shows large double peaked emission lines indicating a high orbital inclination. The photometric observations presented here were also performed during minimum light. They reveal the existence of pronounced orbital humps with an amplitude of about 0.4 mag and indicate an intermediate hump structure (Fig. 2). Eclipses are obviously not present. The data can be best fitted with a period of 89.31 min. Given the superhump period of 85.39 min (Olech 2003) one would expect an orbital period of the order of 84 min. But the present data set is too sparse to draw any definitive conclusion (Fig. 3). Further, it is worthwhile to note that the image of V1141 Aql is contaminated by a faint background star (Fig. 4).

References:

- Bateson, F.M., 1998, *PVSS*, **23**, 46
Cannon, A.J., 1916, *Harvard Annals*, **76**, No. 3
Downes, R.A., Webbink, R.F., Shara, M.M., Ritter, H., Kolb, U., Duerbeck, H.W., 2001, *PASP*, **113**, 764
Kato, T., Sekine, Y., Hirata, R., 2001, *PASJ*, **53**, 1191
Mason, E., Howell, S.B., 2003, *A&A*, **403**, 699
Moore, J.H., 1906, *ApJ*, **23**, 261
Olech, A., 2003, *Acta Astron.*, **53**, 85
Szkody, P., 1994, *AJ*, **108**, 639
Vogt, N., 1989, in: *Classical Novae*, ed. M.F. Bode and A. Evans, p. 225
Walker, A.D., 1923, *Harvard Annals*, **84**, No. 7

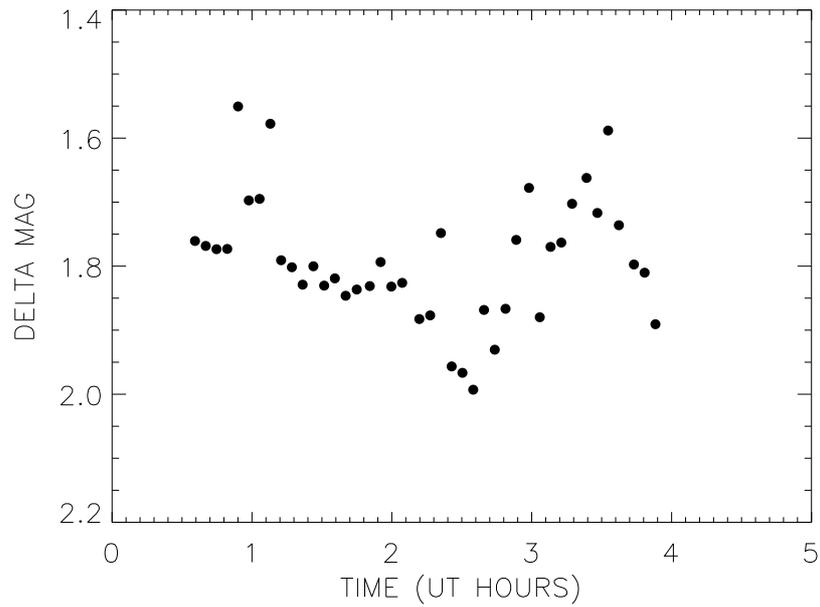


Figure 1. Differential photometry of V604 Aql obtained in integral light on 1994 Aug. 13. Flaring events as well as a possible hump structure are recognizable.

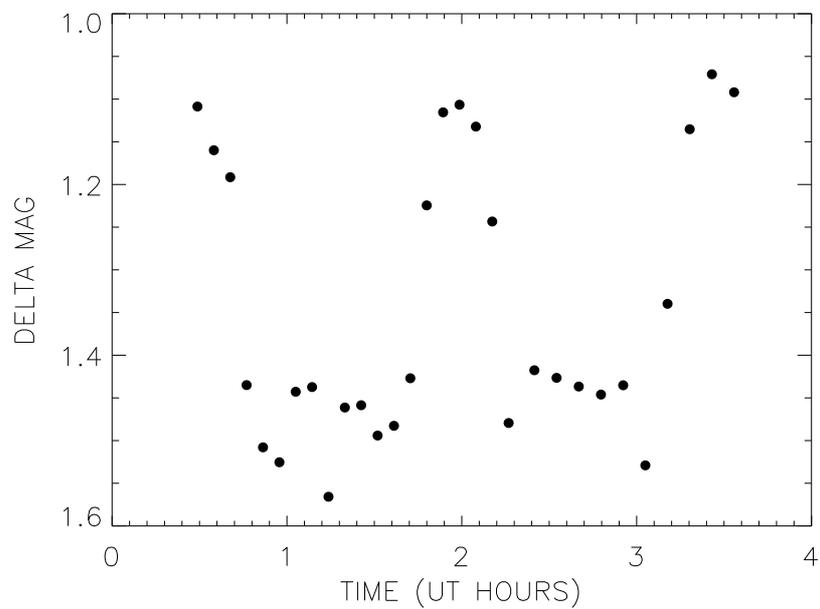


Figure 2. Differential photometry of V1141 Aql obtained in integral light on 1994 Aug. 11. The system is at minimum light and shows pronounced orbital humps. At 2:21 UT the integration time of 5 min was changed to 7 min.

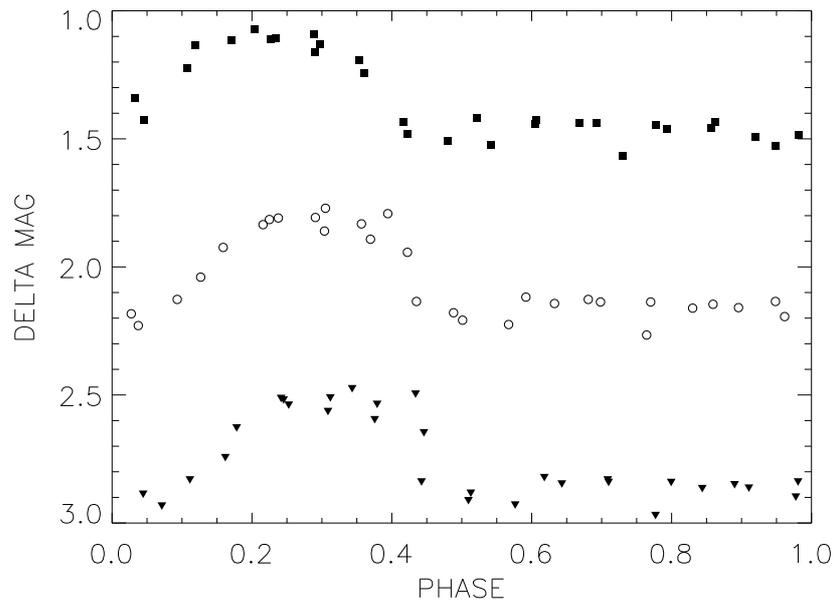


Figure 3. The photometric measurements of V1141 Aql folded with different periods: (1) 89.31 min as suggested by a periodogram analysis (top), (2) 85.39 min as given by Olech (2003) for the superhump period (middle), (3) 84.0 min as suggested by Olech (2003) for the orbital period (bottom). Phase zero is arbitrary.

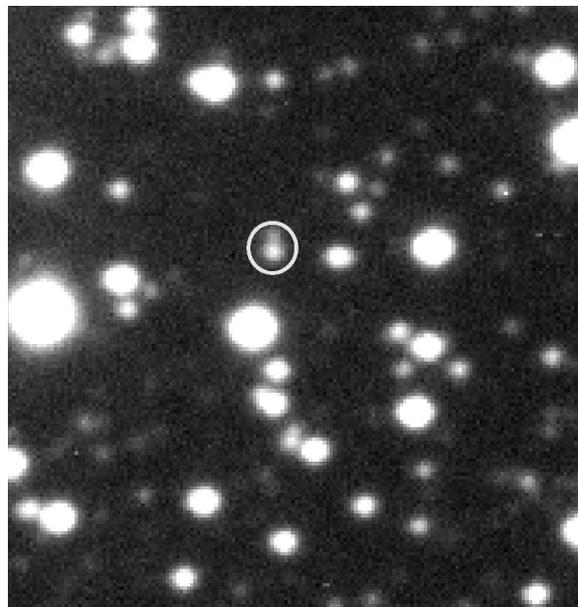


Figure 4. The field around V1141 Aql (N is at top, E to the left) during the 1994 observations. The variable (marked by a circle) is estimated to be at about 19 mag, i.e. at minimum brightness. During Olech's measurements its brightness was comparable to that of the 15 mag star to the SSE of V1141 Aql. Note that the image of V1141 Aql is contaminated by a faint background star which was previously not known.