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ON FOUR PULSATING VARIABLES

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Observed star(s):				
Star name	GCVS type	Coordinates (J2000) RA	Dec	Comp./check star(s)
GSC 4982-1512	HADS/SX Phe	14 18 36.76	−06 37 37.6	*
GSC 4988-707	RR Lyr	14 30 51.60	−02 44 24.6	*
GSC 6328-971	RR Lyr	20 21 59.72	−16 26 19.7	*
V1038 Oph	RR Lyr	16 32 26.04	−04 53 49.9	*

* R magnitudes of about 10 USNO-A stars in the fields

Observatory and telescope:
Les Engarouines Observatory (IAU astrometric code 164), 0.212m Newton; F.-X. Bagnoud Observatory (code 175), 0.600m Newton; Les Pérouses Observatory (hereafter LPO), 0.203m Schmidt-Cassegrain; Blauvac Observatory (code 627), 0.257m Newton; DeKalb Observatory (hereafter DKO), 0.355m Schmidt-Cassegrain.

Detector:	KAF-1600 CCD at 164 and at 175; KAF-401E CCD at LPO; KAF-400 CCD at 627; KAF-3200ME CCD at DKO.

Filter(s):	None, roughly R at 164, LPO and 627; R and V at 175; R at DKO.

Availability of the data:
Upon request

Method of data reduction:
Standard CCD-frame reduction using `IRAF` at 175, and `Prism` elsewhere.

Date(s) of the observation(s):	
GSC 4982-1512	2002−05−15, 16, 17; 2002−06−12, 13 (164)
	2002−05−17 (175)
	2002−07−17 (LPO)
GSC 4988-707	2002−05−15, 16, 17; 2002−06−12, 13, 15, 16 (164)
GSC 6328-971	2002−05−07, 08, 13, 16; 2002−08−05 (164)
	2002−08−18 (DKO)
V1038 Oph	2002−06−15; 2002−07−05, 07, 08; 2002−08−01, 02 (627)
	2002−08−07, 08, 09, 10 (KBO)

Star name	HJD of a max.	Period	Tot. var.	M–m	Type
GSC 4982-1512	2452415.6540	$0^{\rm d}.0676535$	$0^{\rm m}.39$	0.3	HADS/SX Phe (?)
	±0.0006	$\pm0^{\rm d}.0000005$	$\pm0^{\rm m}.02$		
GSC 4988-707	2452422.113	$0^{\rm d}.32313$	$0^{\rm m}.31$	0.35	RR Lyr
	±0.014	$\pm0^{\rm d}.00004$	$\pm0^{\rm m}.02$		
GSC 6328-971	2452496.7839	$0^{\rm d}.58840$	$0^{\rm m}.48$	0.2	RR Lyr
	±0.0029	$\pm0^{\rm d}.00026$	$\pm0^{\rm m}.02$		
V1038 Oph	2452470.3330	$0^{\rm d}.333066$	$0^{\rm m}.36$	0.3	RR Lyr
	±0.0021	$\pm0^{\rm d}.000012$	$\pm0^{\rm m}.02$		

Table 1. Light curve parameters from the data analysis by the CourbRot software (Behrend, 2001). The rising fraction of the light curve is denoted M–m. Uncertainties correspond to one standard-deviation.

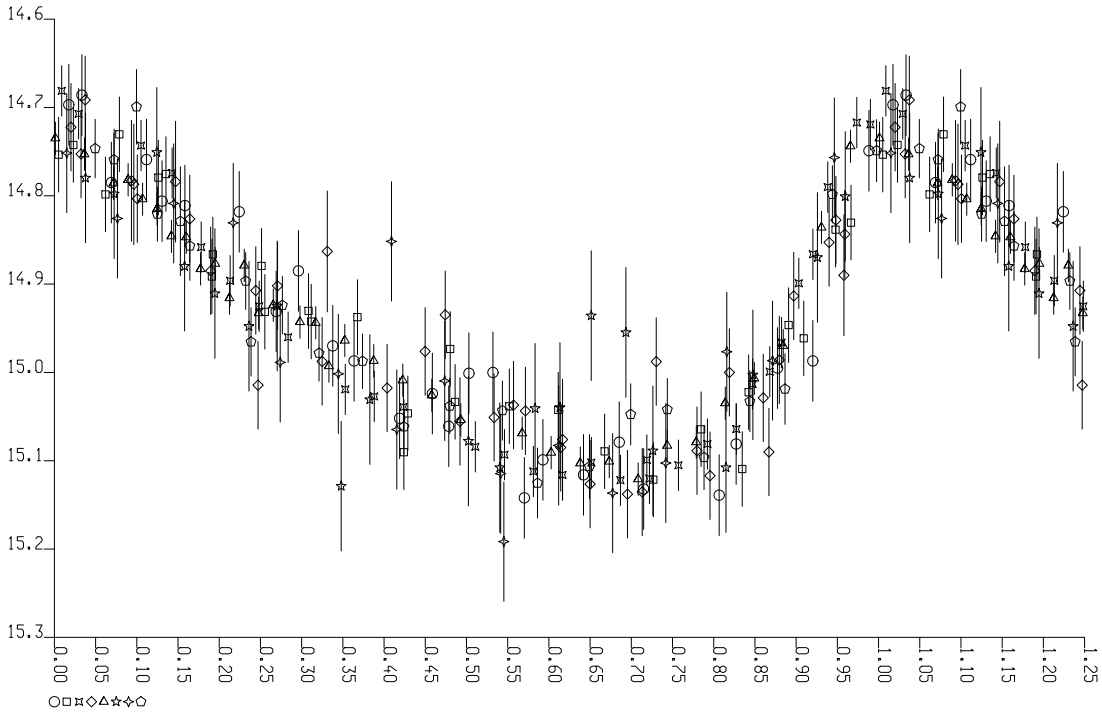

Figure 1. Unfiltered light curve of GSC 4982-1512, $P = 0^{\rm d}.0676535$. The small labels denote the chronologic order of the series of observations in Figs. 1-4.

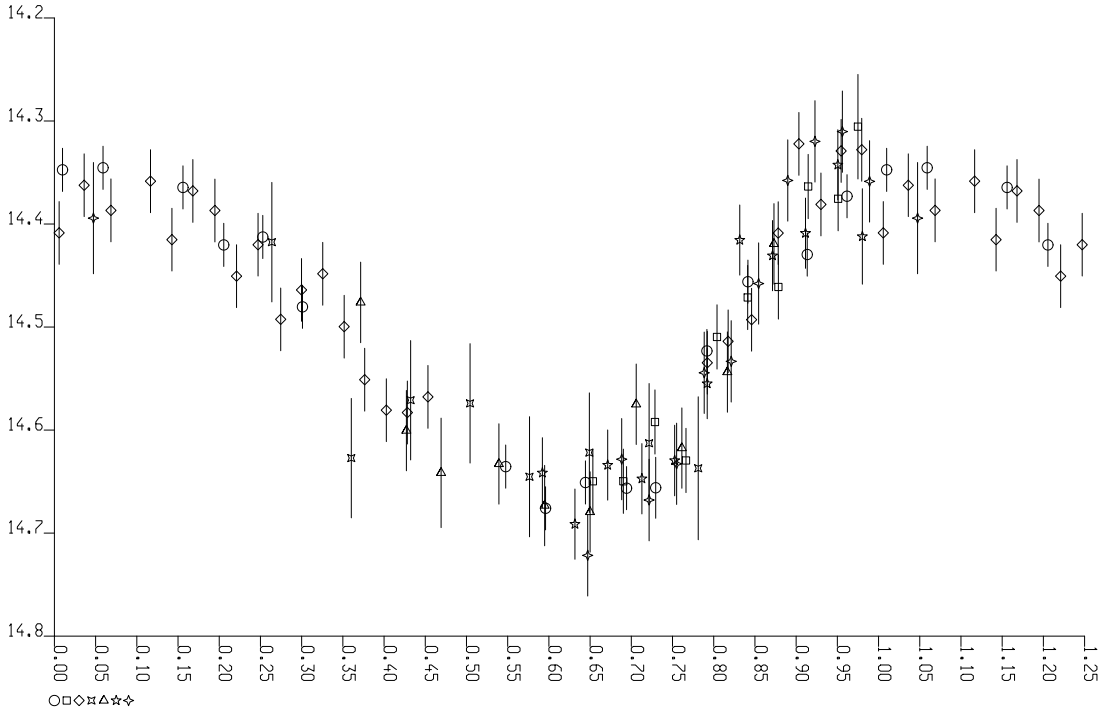

Figure 2. Unfiltered light curve of GSC 4988-707, $P = 0^{\mathrm{d}}.32313$.

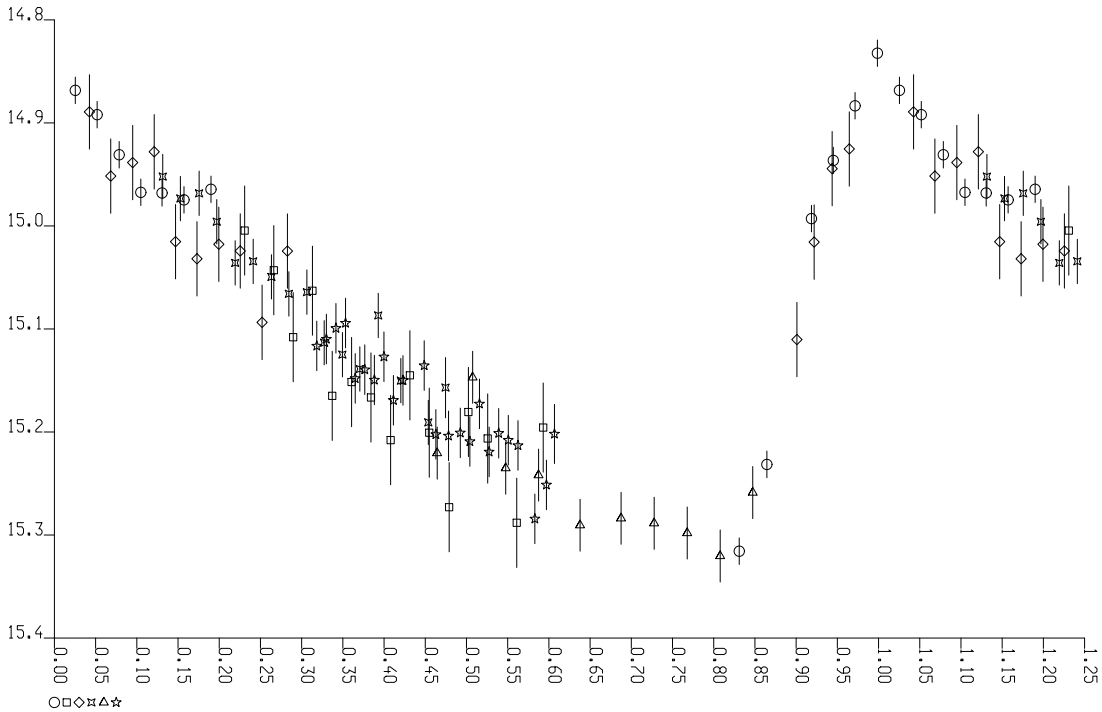

Figure 3. Unfiltered light curve of GSC 6328-971, $P = 0^{\mathrm{d}}.58840$.

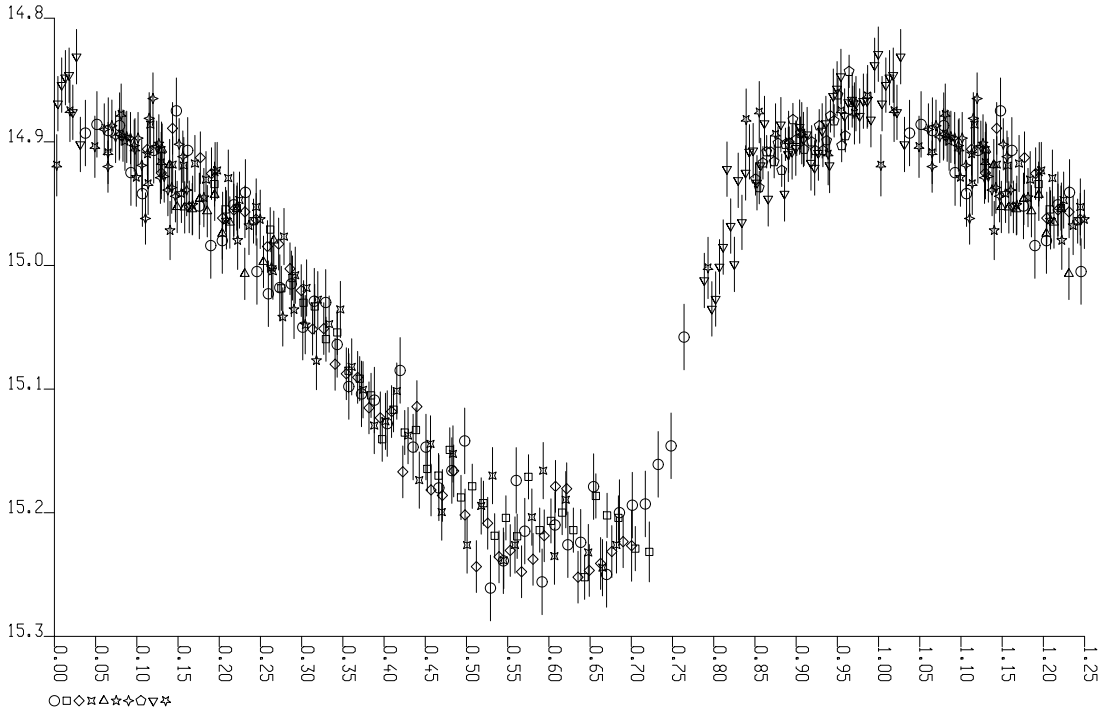

Figure 4. Unfiltered light curve of V1038 Oph, $P = 0^{\rm d}.333066$.

The variability of GSC 4988-707, GSC 4982-1512 and GSC 6328-971 were found by Bernasconi in the course of asteroidal light curve determination.

V1038 Oph: Roy has found on his frames V1038 Oph to be at 15″ South of the position reported in the SIMBAD database. Kinman, Wirtanen and Janes (1965 - hereafter KWJ) reported a period very near $6^{\rm h}.00$ for V1038 Oph. The complete set of observations clearly showed an incompatibility with the period in KWJ, a new period was determined to be near $8^{\rm h}.00$ - see Fig. 4, and numerical results in Table 1. As a check, the data in KWJ were reduced with this new value as an indication of the period; the obtained periodicity is $0^{\rm d}.33315 \pm 0^{\rm d}.00013$ and the light curve's shape is more typical for a RR Lyr than the one from the original paper. This illustrates the difficulty to obtain alias-free solutions, from a single station, for objects with periods very near 1/4 and 1/3 of a day.

Acknowledgements: These researches used the Simbad database, operated by the CDS at Strasbourg, France.

References:

Behrend, R., 2001, *Orion*, **304**, 12
Kinman, T. D., Wirtanen, C. A., Janes, K. A., 1965, *ApJS*, **11**, 223 (labeled KWJ)

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The coordinates of GSC 4988-707 and GSC 6328-971 were in error; the correct values are:

GSC 4988-707	14 30 56.52	-03 11 09.2
GSC 6328-971	20 21 53.99	-16 27 03.6

R. Behrend