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8 New Variable Stars in ASAS-SN and CRTS database. Part III.

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Abstract: Eight new variable stars are presented which were found in the ASAS-SN database:

USNO-B1.0 1620-0173561, USNO-B1.0 1551-0259648, USNO-B1.0 1529-0028802, USNO-B1.0 1611-0016625, USNO-B1.0 0972-0354789, GSC 03685-01926, GSC 03708-00640, GSC 04038-00558.

Introduction and methods

I used ADQL queries to the TAP VizieR system at the CDS, Strasbourg (http://tapvizier.u-strasbg.fr/adql/, Ochsenbein et al., 2000) as an innovative method to search for new variable stars. An automatic selection of stars with B-V <0.8 (to avoid slowly variable red stars) was made in the APASS (Henden et al. 2015) data, using the tabulated V magnitude uncertainty e_Vmag>0.3 as indication of possible variability.

Three of the eight stars presented in this paper were discovered with the aid of the 200-mm Newton telescope (1:5) of a private astronomical observatory. Unfiltered observations were made using a Canon 350D digital SLR camera. The chosen exposure parameters were 30 seconds, ISO 400, and the CR2 format. The program Maxim DL decoded the frames into a fits format. All images were calibrated using a custom-made script.

To find the periods, the program CSS developed by Sergey Dubrovski was used. The period search was carried out by the method of Lafler-Kinman.

The novelty of the variables was checked against the International Variable Star Index (VSX) database operated by the AAVSO.

Results

The eight newly identified variable stars are listed in the two tables below, along with the parameters of their variability and pointers to the folded lightcurves. Coordinates are taken from the UCAC4 (UCAC5) catalog (Zacharias et al., 2017).

The folded lightcurves (phase plots) are displayed star by star after these summary tables. In all the lightcurves, black dots are data from APASS, red dots are observations from the private telescope mentioned above.

Remarks:

1) For some of the EA stars, the available data are not sufficient to completely exclude half the period listed in the table, i.e. to securely distinguish between primary and secondary minima.
2) The reason for the large proportion of outliers in the lightcurve of SERIV 122 is unknown.

Table 1: Identification of the stars

Short name	Catalogue designation
SERIV 121	USNO-B1.0 1620-0173561
SERIV 122	USNO-B1.0 1551-0259648
SERIV 123	USNO-B1.0 1529-0028802
SERIV 124	USNO-B1.0 1611-0016625
SERIV 125	USNO-B1.0 0972-0354789
SERIV 126	GSC 03685-01926
SERIV 127	GSC 03708-00640
SERIV 128	GSC 04038-00558

Table 2: Coordinates and parameters of the stars

short Name	RA2000	DEC2000	V magnitude range	Type	Epoch of min I (JD)	Period (days)	Light curve
SERIV 121	23 22 24.58	+72 04 07.42	15.35-15.80	EW	2458134.363	0.370755	Fig.1
SERIV 122	22 29 42.50	+65 09 30.91	13.90-14.25	EA	2457929.992	5.144	Fig.2
SERIV 123	00 39 02.93	+62 59 23.96	14.85->16.40	EA	2458308.04	6.38794	Fig.3
SERIV 124	01 00 39.74	+71 09 21.63	14.9 – 16.5	EA	2458023.85	2.4292	Fig.4
SERIV 125	17 25 52.41	+07 13 32.03	15.10-17.25	EA	2456097.837	5.54577	Fig.5
SERIV 126	02 00 58.8	+53 50 52.3	12.8 – 13.2	EW	2458376.405	0.372553	Fig.6
SERIV 127	02 48 58.00	+57 20 17.80	12.63 – 12.85	EA	2457695.035	2.00656	Fig.7
SERIV 128	01 24 28.38	+63 45 04.2	13.45-13.85	EA	2458452.410	1.972475	Fig.8

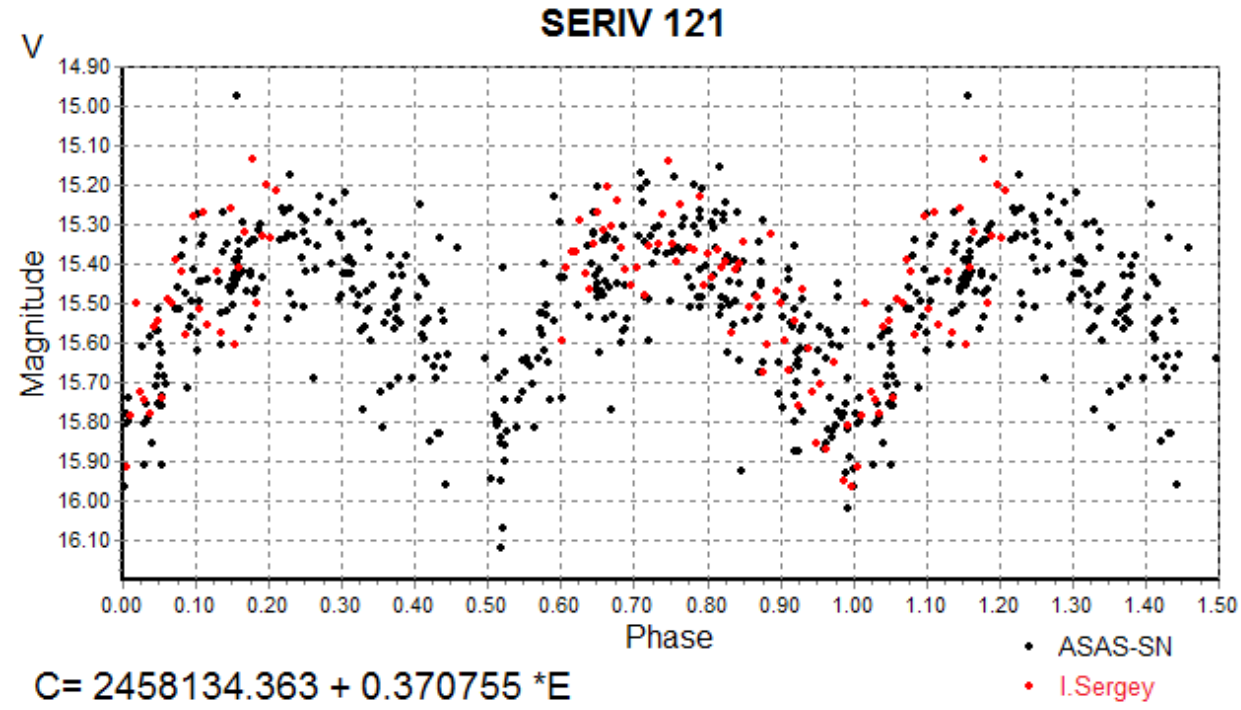

Fig.1 Phase Plot for SERIV 121

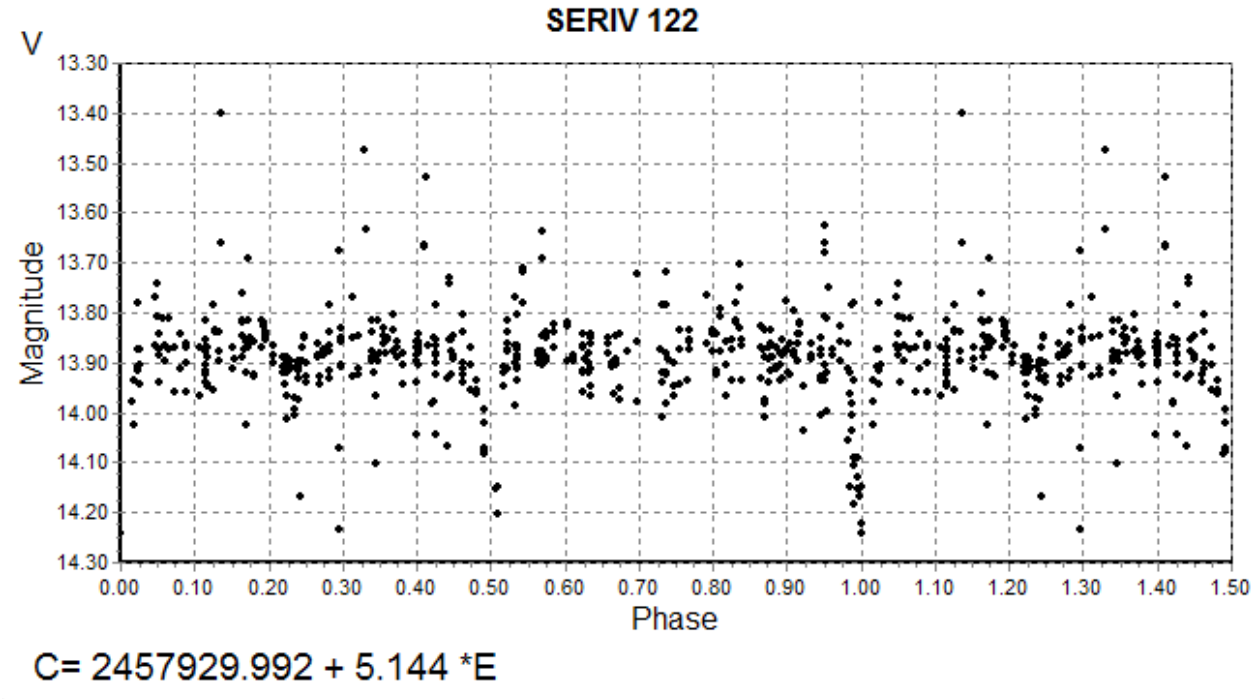

Fig.2 Phase Plot for SERIV 122

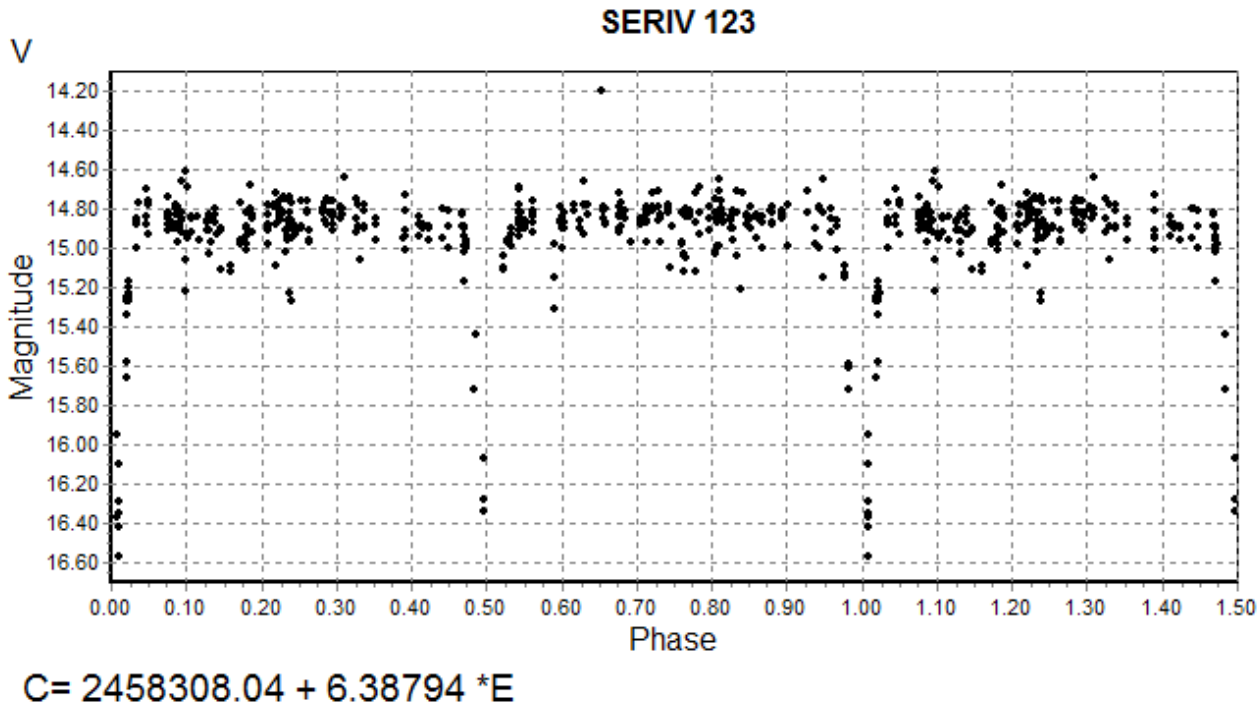

Fig.3 Phase Plot for SERIV 123

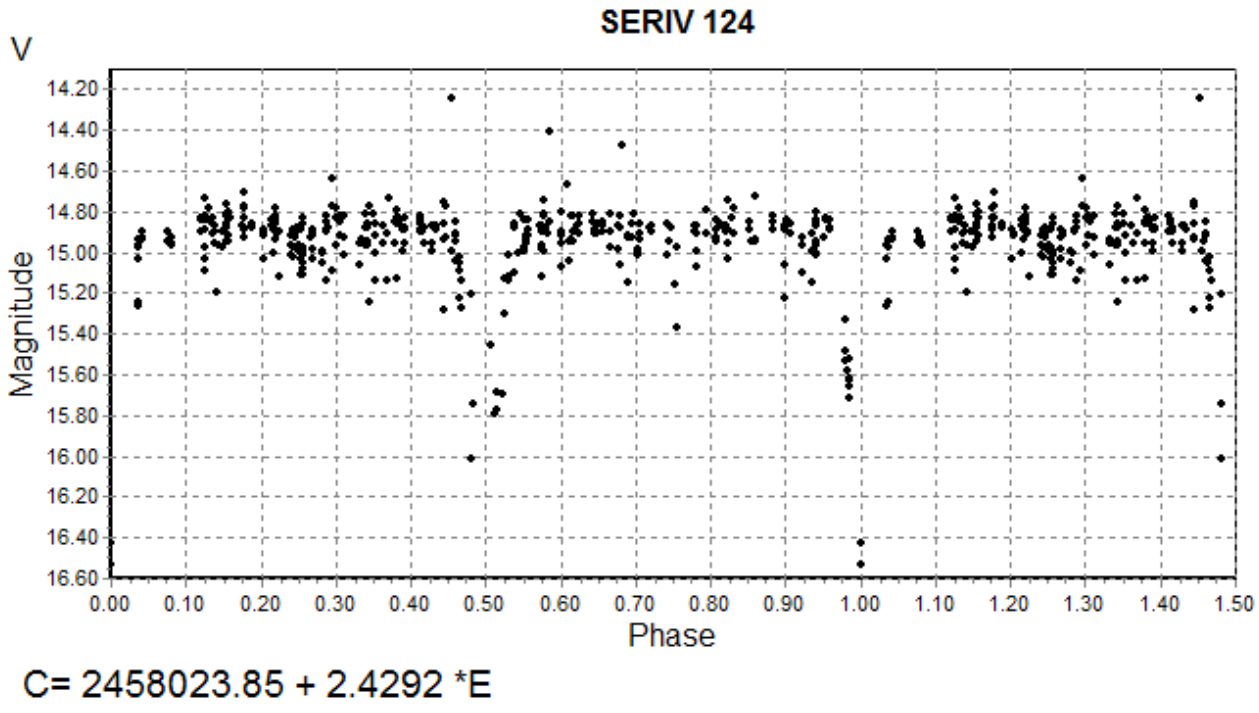

Fig.4 Phase Plot for SERIV 124

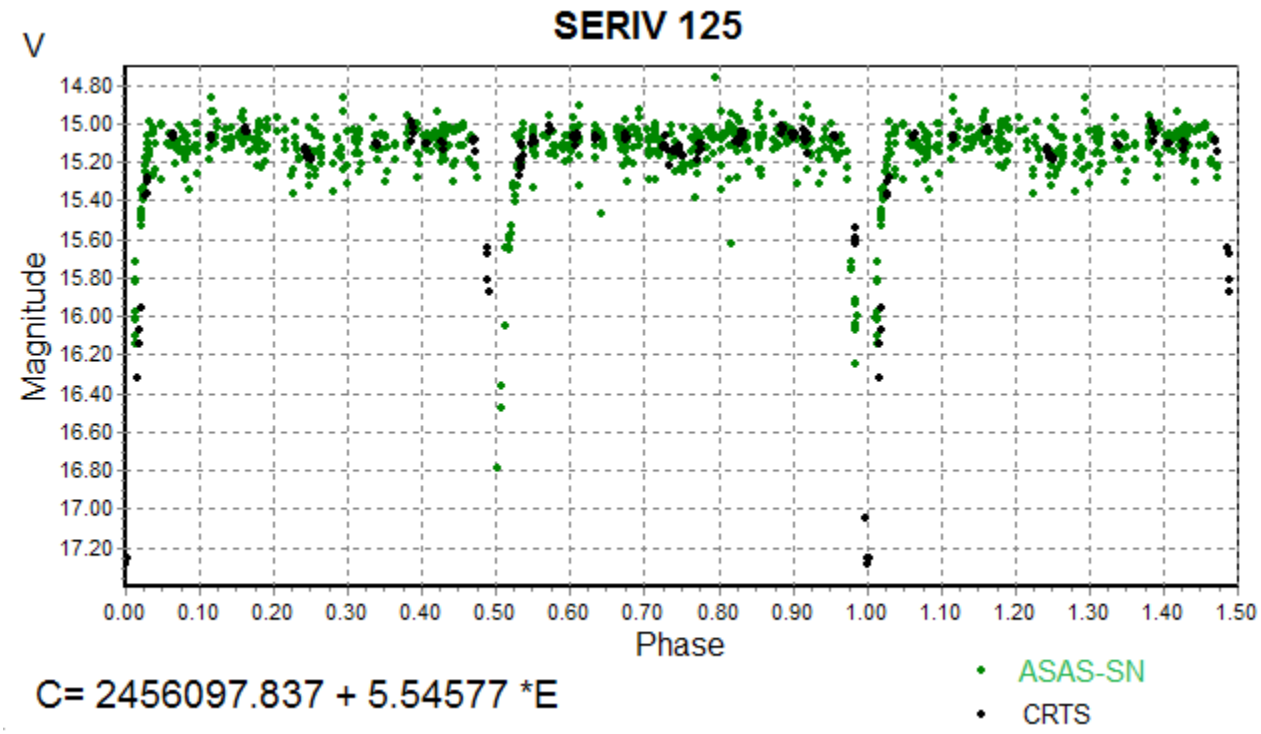

Fig.5 Phase Plot for SERIV 125

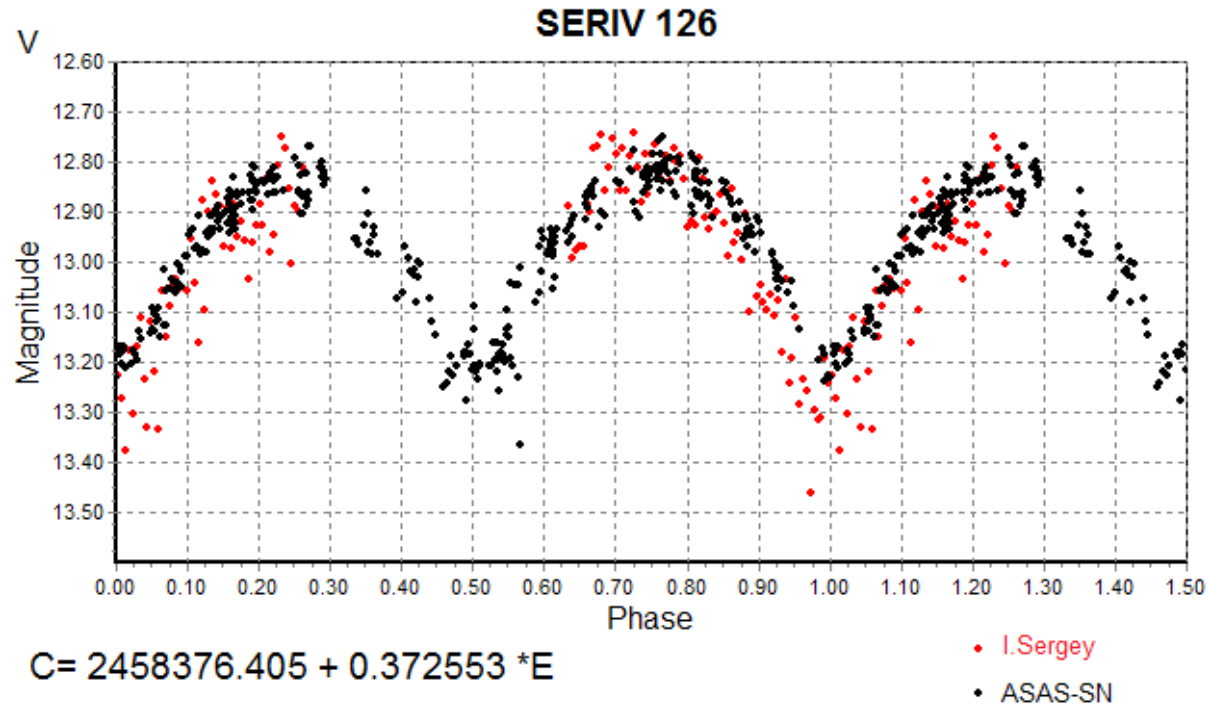

Fig.6 Phase Plot for SERIV 126

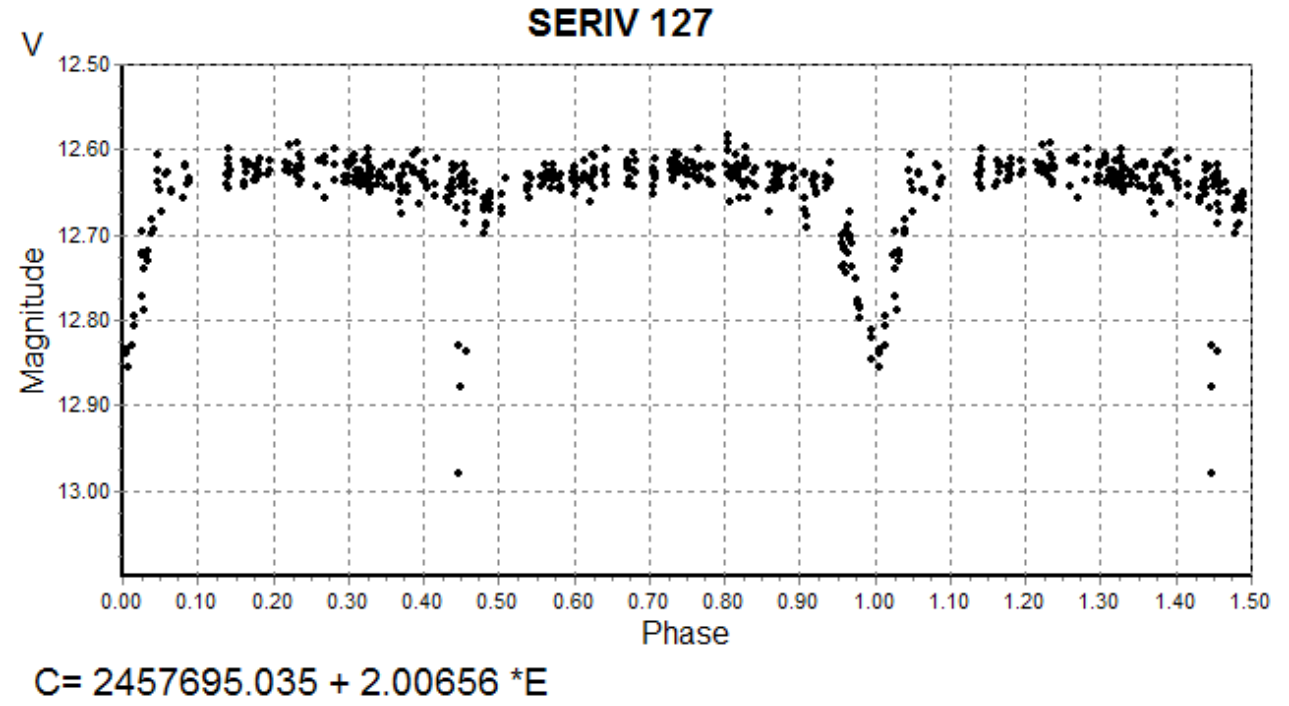

Fig.7 Phase Plot for SERIV 127

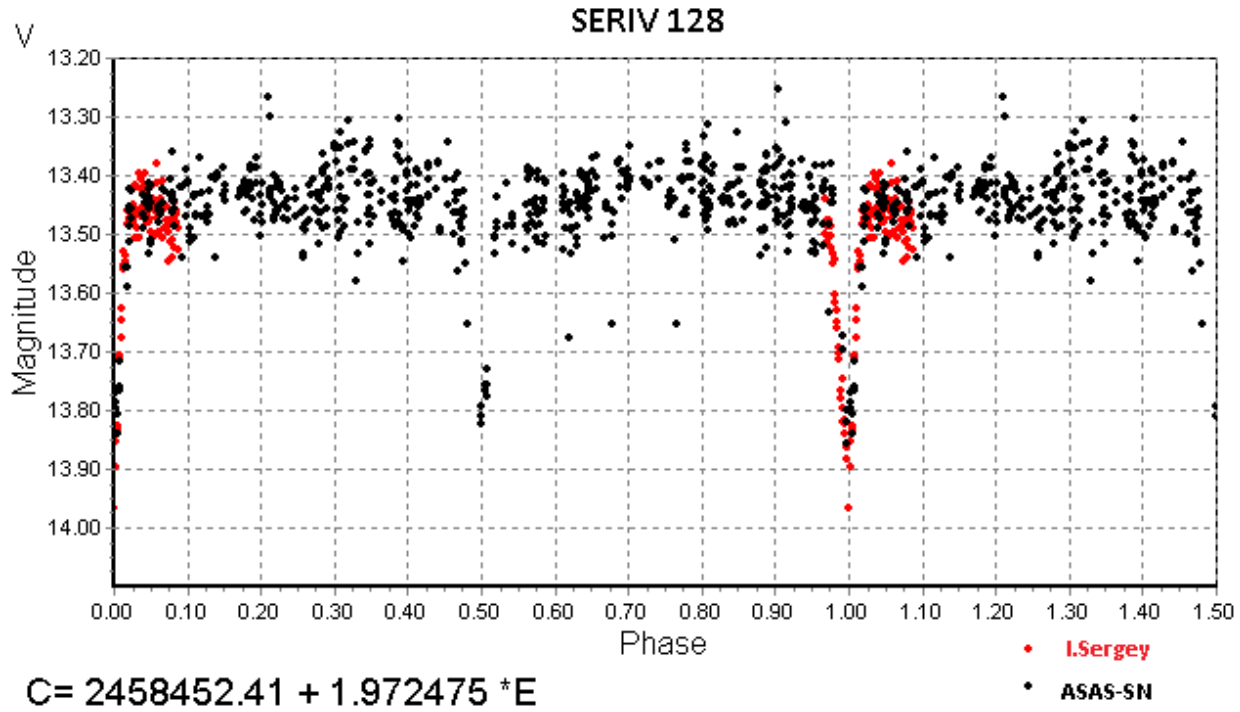

Fig.8 Phase Plot for SERIV 128

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