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B, V, R, I LIGHT CURVES OF V743 SAGITTARII AND ERRATA FOR EH HYDRAE

During recent observing runs at Cerro Tololo Inter-American Observatory we obtained complete precision light curves of several nondegenerate very short period eclipsing binaries. For most of these southern variables, such curves will represent the first complete photometric data published in the literature. Here we present B, V, R, I light curves of the thirteenth magnitude system, V743 Sgr (HV 10263), and correct some information previously given regarding EH Hya (Samec and Charlesworth 1990) which was observed as a part of the same program.

V743 Sagittarii

This variable was discovered by Swope (1940) in her examination of plates taken of the Harvard Milky Way field #189. Photographic light curves and a large scale finding chart are included in that publication. The ephemeris given by Swope is:

$$\text{JD Hel Min. I} = 2426564.21 + 0.276636 \cdot E .$$

A more useful 10' X 10' rendering of the field surrounding V743 Sgr (var. 109) has been published by Plaut (1958). Plaut calculated the improved ephemeris:

$$\text{JD Hel Min. I} = 2428094.2852 + 0.27663633 \cdot E .$$

Times of minimum light used in this calculation were determined from photographic plates taken by H. Van Gent. Later, in a search for eclipsing binaries in O-B associations, V743 Sgr was found to be in optical coincidence with the V Sgr association (Semeniuk 1962). Since no kinematical or spectroscopic data is available on the system Semeniuk was unable to confirm its membership.

The present observations of V743 Sgr were made on 8-11 May, 1989, inclusive. The Yale 1M Ritchey-Cretien Reflector Telescope was used. The photometry was done with B,V,R,I filters of the Johnson-Cousins' system using a dry-ice-cooled Hamamatsu R943-02 Ga-As photomultiplier tube in conjunction with the Automated Single Channel Aperture Photometer. The coordinates of the check, comparison and the variable star are given in Table 1. The comparison star is labeled "c" on the finding chart by Plaut (1958). Neither the check nor the comparison star was found to have a catalog

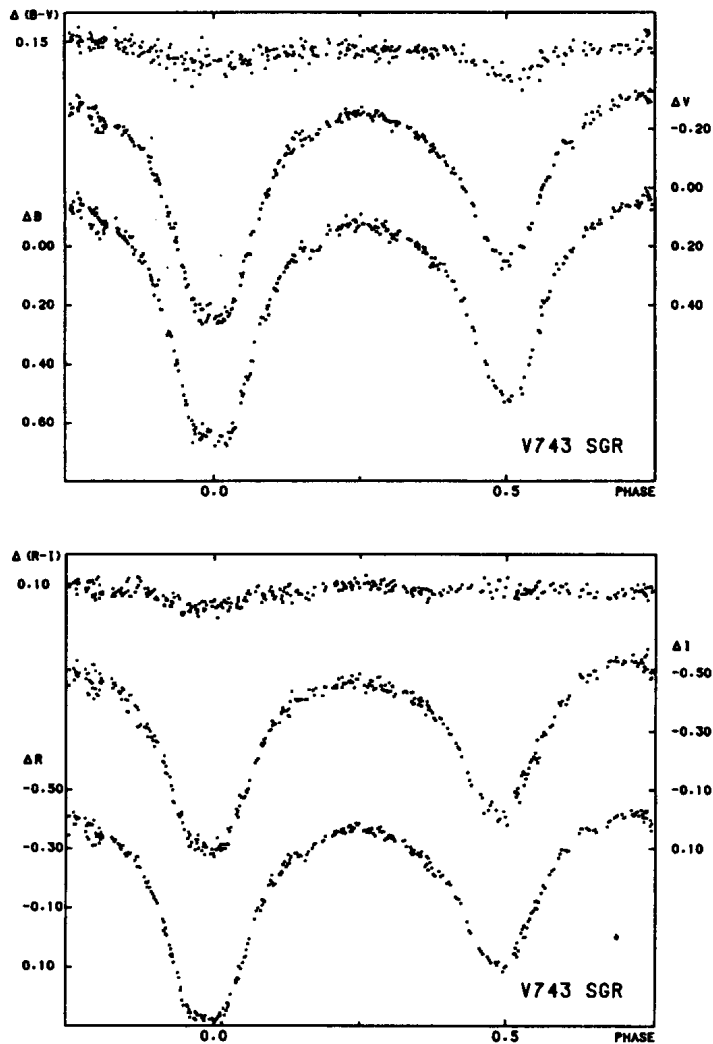


Fig. 1 - Light curves of V743 Sgr as defined by the individual observations.

TABLE 1

Star	R. A. (1900)	Dec. (1900)
V743 Sgr	$17^{\text{h}} 37^{\text{m}} 36^{\text{s}}$	$-28^{\circ} 26' 54''$
Comparison	$17^{\text{h}} 37^{\text{m}} 47^{\text{s}}$	$-28^{\circ} 27' 22''$
Check	$17^{\text{h}} 37^{\text{m}} 25^{\text{s}}$	$-28^{\circ} 28' 04''$

identification. More than 325 observations were taken at each effective wavelength.

Four mean epochs of minimum light were determined from the observations made during two primary and two secondary eclipses. An iterative technique based on the Hertzsprung method (1928) was used to determine the timings except for the latest epoch in R and I. For these two values, the bisection-of-chords method was used. The times of minimum light are given in Table 2 along with the epochs determined by Swope (1940) and Plaut (1958). Probable errors are given in parentheses. These times of minimum light were introduced into a least squares solution to obtain both a linear and a quadratic ephemeris.

They are:

$$\text{JD Hel Min. I} = 2447656.8517(5) + 0.27663567(1) \cdot E \text{ and,}$$

$$\text{JD Hel Min. I} = 2447656.8517(4) + 0.27663622(16) \cdot E - 0.00000000016(5) \cdot E^2$$

TABLE 2

JD HEL. 2400000+	Minimum	Cycles	(O-C) ₁	(O-C) ₂
26564.21	I	-76247.0	0.0000	0.0000
28094.2852	I	-70716.0	-0.0007	-0.0000
47655.8850(4)	II	-3.5	-0.0012	0.0015
47656.8517(1)	I	0.0	0.0010	-0.0000
47657.6810(1)	I	3.0	0.0009	-0.0006
47658.6489(8)	II	6.5	0.0001	-0.0009

The linear ephemeris was used to calculate the (O-C)₁ residuals in Table 2 and the phases of the present observations. The quadratic ephemeris was used to calculate the (O-C)₂ residuals, and the cycles.

The B, V, R, and I light curves of V743 Sgr defined by the individual observations are shown in Figure 1 as Δm versus phase. The analysis of the observations is underway.

EH Hydrae

The following table corrects Table 2 published earlier in IBVS No.3471 (Samec and Charlesworth 1990). The former results were in error by one JD.

TABLE 3

JD HEL. 2400000+	Minimum	Cycles	(O-C)
27870.515	II	-66640.5	0.0000
47654.6455(6)	I	-7.0	-0.0007
47655.5358(3)	I	-4.0	-0.0012
47655.6864(11)	II	-3.5	0.0010
47656.5770(8)	II	-0.5	0.0009
47656.7246(1)	I	0.0	0.0001

Also, the following improved ephemeris corrects the one given in the former publication:

$$\text{JD Hel Min. I} = 2447656.7246(3) + 0.29690968(1)d \cdot E$$

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