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NEW TIMES OF MINIMA AND LIGHT ELEMENTS OF KR CYGNI

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Name of the object:	
KR Cyg = BD +30°3915 = HD 333645	
Equatorial coordinates:	Equinox:
R.A. = 20 ^h 09 ^m 05 ^s .60 DEC. = +30°33'01".3	2000
Observatory and telescope:	
Ege University Observatory, 48-cm Cassegrain telescope	
Detector:	Hamamatsu, R 4457 (PMT)
Filter(s):	Johnson <i>B</i> and <i>V</i>
Comparison star(s):	BD +29°3910 = HD 191398
Check star(s):	BD +29°3915 = HD 333664
Transformed to a standard system:	No

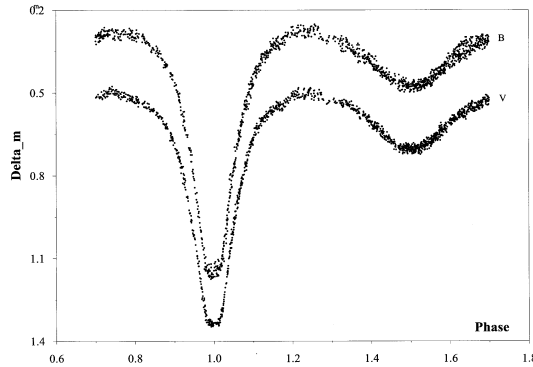


Figure 1. Differential *B* and *V* light curves of KR Cyg. The value of 0^m.3 was added to *V* magnitudes in order to plot the curves detached

Availability of the data:

Upon request

Type of variability: EB**Remarks:**

KR Cyg is an EB type eclipsing binary which was discovered by Schneller (1931). The spectral type of the system is given as A2V by Kholopov et al. (1985). Vetesnik (1965) observed the system photoelectrically and obtained its light curves in *B* and *V* filters. Wilson and Rafert (1980) modelled the light curves and obtained the geometric and physical parameters of the system. The star was observed photoelectrically at Ege University Observatory on 21 nights during the observational seasons of 1999 and 2000. During the observations four primary and four secondary minima were obtained. The times of minima calculated with the method of Kwee and van Woerden (1956) are given in Table 1, together with their minimum types, filters and observers.

Table 1

Min HJD (2400000 +)	Type	Filter	Observer(s)
51363.4866	I	BV	Es, De
51429.4095	I	BV	Es
51454.3437	II	BV	Es, De
51691.4093	I	BV	Es, De
51718.4518	I	BV	Es, Boy
51721.4147	II	BV	Es, De
51726.4804	II	BV	Es, Va, Boy
51737.4680	II	BV	Es, Va

Es: Esin Sipahi, Va: Varol Keskin,
De: Ahmet Devlen, Boy: Bülent Yaşarsoy

The new light elements are:

$$\text{Min I} = \text{JD}_{\text{Hel}} 2451363.4875 + 0^{\text{d}}8451572 \times E.$$

$$\pm 4 \qquad \qquad \pm 13$$

In these light elements, the epoch was chosen as the best time of minimum obtained and the period was taken from Kholopov et al. (1985). The new light curves of KR Cygni are shown in Figure 1. The phases in Figure 1 were calculated with the new light elements. The light curves of KR Cyg show a deep primary and shallower secondary minimum. Their amplitudes are about 0.877, 0.830 at the primary, 0.196, 0.195 at the secondary minimum in *B* and *V* light, respectively. The system is redder at the primary minimum which implies that the spectral type of the secondary is later than the primary.

Acknowledgements:

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References:

- Kholopov, P.N., et al., 1985, General Catalogue of Variable Stars, 4th edition, "Nauka" Publishing House, Moscow (GCVS4)
 Kwee, K.K., and van Woerden, H., 1956, *BAN*, **12**, 327
 Schneller, H., 1931, *AN*, **242**, 180
 Vetesnik, M., 1965, *BAC*, **16**, No. 6
 Wilson, R.E., and Rafert, J.B., 1980, *ApSS*, **42**, 195