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**A PERIOD FOR THE NEW ECLIPSING BINARY DHK 29 - BD +33°4070**

Kaiser (1992) reported that the star BD +33°4070 - SAO 70629 is an eclipsing binary, which he designated DHK 29 in his discovery list. His patrol photos show the star near minimum on two nights. Following discovery, Baldwin began regular visual monitoring. Another minimum was soon detected, and on the same night Kaiser was able to obtain a few photoelectric measures of the final portion of the eclipse light curve. The star varies from 8.9-9.5: V, and the eclipses are 5 hours in duration.

To determine the period, Kaiser examined the variable on 320 Harvard patrol plates from the years 1918-1952 and 1968-1989 and found 16 additional minima. Table I lists all 18 photographic minima and the estimated times of two minima from Baldwin's visual observations.

TABLE I.

HJD 2400000+	E	O-C		HJD 2400000+	E	O-C	
21859.604	-14221	-0 <sup>o</sup> 058	H	31750.606	-9021	-0 <sup>o</sup> 025	H
22228.626	-14027	-0.046	H	41951.657	-3658	+0.014	H
22698.590	-13780	+0.097	H	42693.517	-3268	+0.052	H
26479.827	-11792	-0.059	H	45525.690	-1779	-0.016	H
26559.799	-11750	+0.025	H	45563.724	-1759	-0.024	H
28366.778	-10800	0.000	H	45645.573	-1716	+0.034	H
28448.554	-10757	-0.015	H	47081.596	- 961	-0.036	K
29456.711	-10227	+0.024	H	48479.683	- 226	+0.001	K
30173.805	-9850	+0.023	H	48909.547	0	-0.012	B
30605.588	-9623	+0.027	H	48924.768	+ 8	-0.008	B

H - Harvard ptg., K - Kaiser ptg., B - Baldwin visual.

The following light elements result when these minima times are introduced into a least squares solution:

$$\text{Min.} = \text{HJD } 2\ 448\ 909.558 + 1^{\text{d}}9021093\ \text{E} \quad (1)$$

$$\qquad \qquad \qquad \pm 15 \qquad \qquad \qquad \pm 17$$

The cycle numbers and O-C residuals in Table I are calculated from Equation 1. After this ephemeris was derived, Baldwin was able to confirm it by observing a predicted minimum (E = 8) visually.

The interval 1.9 days between eclipses is probably half of the orbital period. A photoelectric measure at phase 0.52 of Equation 1 shows no decrease from maximum light. The spectral type is F8 (AGK3, 1975), so it is quite likely that the two components of the binary system are similar in spectral type and produce primary and secondary eclipses of nearly equal depth. Our visual and photographic estimates are not precise enough to distinguish between primary and secondary minima of similar depth. Photoelectric observations in B and V are continuing and will eventually establish precise values for the depths of the alternate minima.

We wish to thank Dr. Martha Hazen, curator of astronomical photographs at Harvard College Observatory, for use of the Harvard patrol plates. We are also grateful to Dr. Dorrit Hoffleit of the Yale University Department of Astronomy for checking the literature on this star's spectral type.

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Hamburg-Bergedorf.  
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