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GSC 4832.400: A NEW ECLIPSING BINARY SYSTEM

MERCHÁN-BENÍTEZ, P.; JURADO-VARGAS, M.

Departamento de Física, Facultad de Ciencias, Universidad de Extremadura, Avda de Elvas s/n, 06071, Badajoz, Spain, e-mail: pedromer@unex.es, mjv@unex.es

Name of the object:
GSC 4832.400

Equatorial coordinates:	**Equinox:**
R.A.$= 07^{\rm h}50^{\rm m}45\overset{\rm s}{.}4$ **DEC.**$= -00°00'10\overset{''}{.}9$	2000.0

Observatory and telescope:
Observatorio del Departamento de Física de la Universidad de Extremadura, Reflector Newton 0.4-m $f/4.5$

Detector:	Starlight Xpress CCD Camera (based in the chip SONY ICX027BL 6.4×4.35 mm^2, 500×256 pixels)

Filter(s):	V (Kron–Cousins system)

Comparison star(s):	GSC 4832.2073

Check star(s):	GSC 4832.912

Transformed to a standard system:	No

Availability of the data:
Upon request

Type of variability:	EW

Table 1

Min HJD 2451000+	Type	Epoch	$O-C$
1242.3875	Secondary	0.5	0.0008
1243.3266	Secondary	3.5	0.0005
1244.4210	Primary	7	−0.0012
1254.4450	Primary	39	0.0020
1256.3233	Primary	45	0.0014

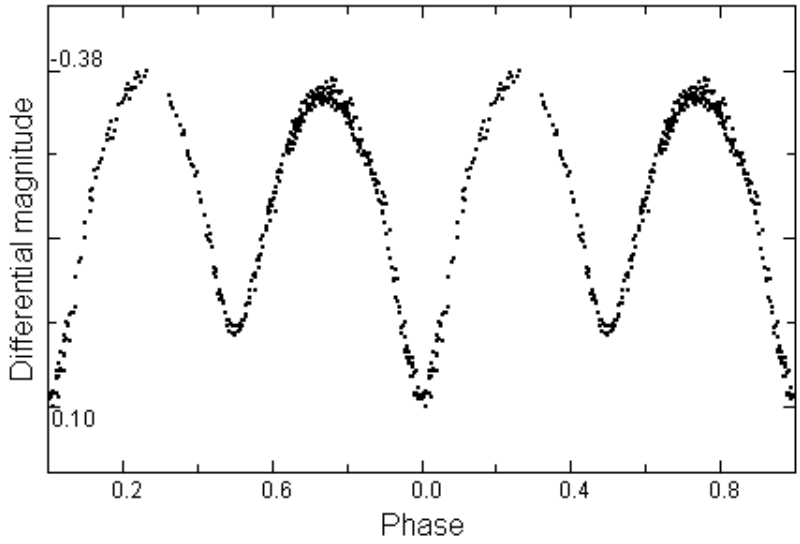

Figure 1. The V light curve obtained for GSC 4832.400. Magnitude differences (variable minus comparison) are plotted versus phase, where the phases are computed using the ephemeris calculated in this work.

Remarks:

The result of this surveillance program showed that GSC 4832.400 is an eclipsing binary system with a period very close to 7.5 hours. Figure 1 shows the differential light curve obtained in the V band. This light curve suggests that GSC 4832.400 could be a near contact binary system. The primary minimum shows $0\overset{\mathrm{m}}{.}43$ average depth, and the secondary minimum $0\overset{\mathrm{m}}{.}37$. The light curve in the V band also seems to show an O'Connell effect (O'Connell 1951), that amounts to Δm = Max. I − Max. II = −0.035 magnitudes, where Max. I is at phase 0.25 and Max. II at phase 0.75.

Five moments of minima (two secondaries and three primaries) were obtained from our observations according to the Kwee–Van Woerden (1956) method. The following ephemeris was derived for the minimum I:

$$\text{Min. I} = \text{HJD } 2451242.23011 + 0\overset{\mathrm{d}}{.}31315 \times E.$$
$$\pm\, 0.00067 \pm 0.00001$$

The times of minima are presented in Table 1. The number of cycles elapsed (E) and $O - C$ residual values are also listed, determined using the ephemeris given above.

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References:

Kwee, K.K., Van Woerden, H., 1956, *BAN*, **12**, 327
O'Connell, D.J.K., 1951, *Pub. Riverview Coll. Obs.*, **2**, 85