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PHOTOELECTRIC BVI$_C$ OBSERVATIONS AND NEW ELEMENTS FOR THE CEPHEID CU ORIONIS

L. N. BERDNIKOV[1], D. G. TURNER[2]

[1] Sternberg Astronomical Institute, 13 Universitetskij prosp., Moscow 119899, Russia
e-mail: berdnik@sai.msu.su

[2] Saint Mary's University, Halifax, Nova Scotia, B3H 3C3, Canada

CU Ori is listed in the GCVS-IV as a classical Cepheid with a period of 2.15993 days. We included the star in our program of photoelectric observations for Cepheids because only 10 VR_c observations of the star were published previously (Schmidt *et al.* 1995). CU Ori was observed at Cerro Tololo Inter-American Observatory during September-November 1996 using the 1.0-m reflector, and at the South African Astronomical Observatory during the period December 1997 to January 1998 using the 0.5-m reflector. A total of 35 observations were obtained in BVI_c (Table 1), the accuracy of the individual data being near $\pm 0\overset{m}{.}01$ in all filters.

Table 1

JD hel 2450000+	Phase	V	B–V	V–I_c	JD hel 2450000+	Phase	V	B–V	V–I_c
355.8716	.557	13.700	1.167	1.435	393.7030	.854	13.592	1.068	1.399
358.8562	.158	13.271	1.057	1.269	394.6983	.388	13.597	1.106	1.425
361.8696	.775	13.731	1.131	1.437	808.3986	.347	13.542	-	1.392
362.8693	.312	13.533	1.063	1.385	809.3141	.838	13.661	-	1.381
363.8658	.846	13.603	1.057	1.391	810.3160	.376	13.602	-	1.391
379.7357	.361	13.563	1.103	1.369	810.4641	.455	13.688	-	1.437
380.7240	.891	13.485	1.009	1.340	811.3424	.926	13.394	-	1.285
381.7240	.427	13.647	1.168	1.430	811.5289	.026	13.309	-	1.276
382.7284	.966	13.376	1.068	1.302	812.3132	.447	13.654	-	1.410
383.7261	.502	13.735	1.093	1.469	812.4479	.519	13.724	-	1.442
384.7212	.035	13.307	0.960	1.300	813.3067	.980	13.329	-	1.253
386.7188	.107	13.269	0.956	1.289	814.4576	.598	13.773	-	1.469
387.7222	.646	13.915	1.162	1.543	815.3903	.098	13.352	-	1.289
388.7491	.197	13.403	0.990	1.337	815.4902	.152	13.318	-	1.272
389.7454	.731	13.780	1.154	1.485	816.3347	.605	13.742	-	1.435
390.7410	.265	13.484	1.066	1.370	816.4850	.685	13.795	-	1.461
391.7190	.790	13.737	1.114	1.437	817.3639	.157	13.378	-	1.311
392.7099	.322	13.532	1.044	1.400					

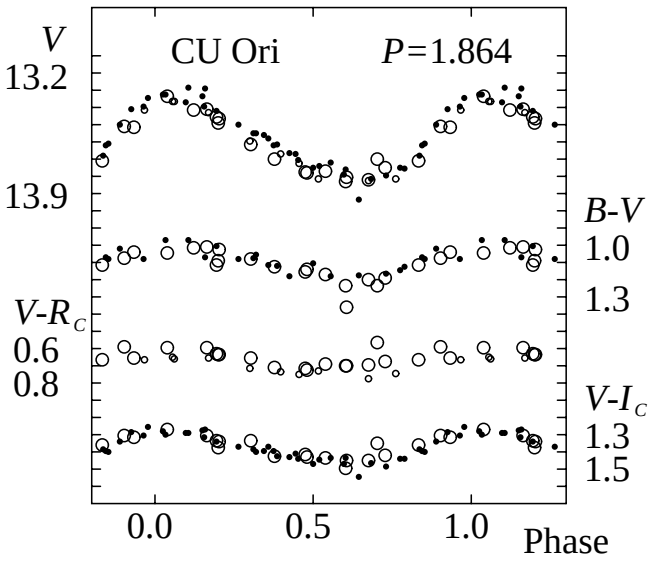

Figure 1.

After our observations of CU Ori began, Henden (1996) published $BV(RI)_c$ measurements of the Cepheid and noted that its period is 1.863832 days. We therefore analysed all existing observations by Hertzsprung's method; the derived epochs of light maximum are given in Table 2.

Table 2

Max JD hel 2400000+	Uncertainty	E	$O-C$	Number of observations	Reference
48574.9533	±0.0116	−600	−0.0006	10	Schmidt et al. (1995)
49003.6425	±0.0104	−370	0.0001	17	Henden, 1996
50381.0391	±0.0064	369	0.0020	18	This paper
50813.4517	±0.0117	601	−0.0017	15	This paper

The times of light maximum were introduced into a linear least-squares program that resulted in the following improved ephemeris:

$$\text{Max JD}_{hel} = 2449693.2717 + 1.8638630 \times \text{E.}$$
$$\pm\ 0.0009 \pm 0.0000019$$

This ephemeris was used to calculate the phases in Table 1 and the $O-C$ values in Table 2, as well as for plotting the light and colour curves in Figure 1, where dots represent our observations, small circles represent observations by Schmidt *et al.* (1995), and large circles represent observations by Henden (1996).

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