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PHOTOMETRY OF HR 6384 - AN 80 DAY ELLIPSOIDAL BINARY ?

Ake and Parsons (1985), in I.B.V.S. Number 2686, drew attention to IUE spectra of the bright southern star HR 6384 which show the characteristics of a close binary system containing substantial circumstellar gas. They suggest that in order to have substantial interaction between the binary components the binary period is probably several hundred days. HR 6384 is not known as a variable star.

In Auckland we have made three colour UBV sets of photoelectric measures on thirteen nights during May - July 1985, as a start to a continuing programme to monitor light and colour variations of the system and identify periodic features if they exist.

The equipment used was the Mark 1 photoelectric system on the Edith Winstone Blackwell 50cm Cassegrain telescope, which has been described previously, (Walker and Marino, 1978).

HR 6438, ( $V = 5.88$ ,  $B-V = +1.07$ ,  $U-B = +0.86$ ), from Hoffleit (1982) was used as the primary comparison star and the results have been reduced from these values. Observations were also made of the seventh magnitude star 6 arc minutes north of the programme star, and of HR 6442, as a check of non-variability of the comparison star. Mean V magnitude, colour, and standard deviations for the three stars are:

<u>star</u>	<u>V</u>	<u>S.D.</u>	<u>B-V</u>	<u>S.D.</u>	<u>U-B</u>	<u>S.D.</u>
HR 6438	6.153	0.026	+1.787	0.010	+1.340	0.010
star 6 min north	7.016	0.006	0.429	0.006	0.120	0.010
HR 6442	5.805	0.003	0.978	0.003	0.773	0.014

The results for HR 6384 are listed in Table I and plotted in Figure 1.

Table 1  
Three colour UB<sub>V</sub> observations of HR 6384

J.D.	2446000+	V	B-V	U-B	comments
189.9651		6.152	+1.779	+1.334	
191.9546		6.146	1.781	1.347	
205.9227		6.141	1.801	1.348	
211.9071		6.152	1.798	1.343	
218.9015		6.195	1.795	1.341	
225.9161		6.193	1.783	1.323	
233.0030		6.146	1.798	1.345	
242.8638		6.118	1.795	1.332	
243.9270		6.120	1.788	1.358	
245.8010		6.122	1.790	1.347	
252.8869		6.148	1.785	1.336	
258.9429		6.179	1.775	1.345	poor conditions
265.8754		6.180	1.768	1.322	

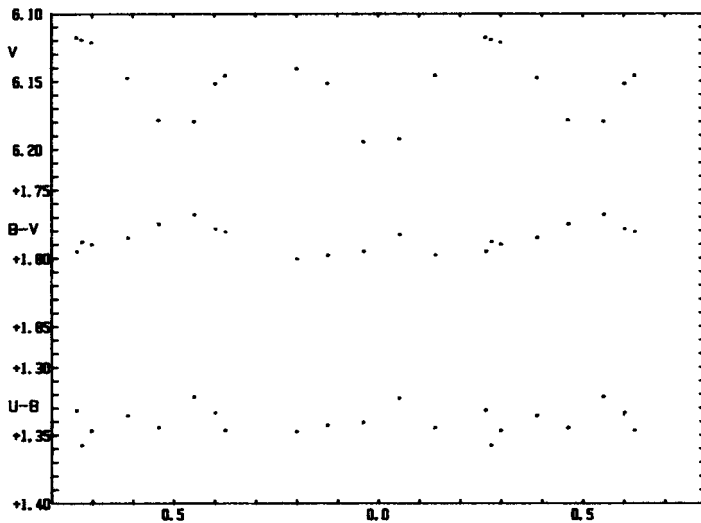


Figure 1 UB<sub>V</sub> Observations of HR 6384 (HD 155341) during the period JD 2446189 - 265 using the ephemeris JD 2446142 + 80 days

The programme star is clearly variable ranging from 6.118 to 6.195 (V) during the observing interval. Maxima and minima appear to recur at approximately 40 day intervals with the B-V curve being modulated to the V variations. On the assumption derived from the IUE spectra that the system is a binary with associated circumstellar matter, the light and colour curves appear consistent with an ellipsoidal binary having an orbital period of approximately 80 days.

Photoelectric photometry is continuing during the current observing season.

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