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UBV OBSERVATIONS OF A PRIMARY ECLIPSE OF θ^1 Ori A

Photoelectric UBV photometry of θ^1 Ori A = ADS 4186A relative to component C was carried out on the night of 1977, March 6/7 with an area-scanning photometer (Franz 1970) on the 72-inch (1.8-m) Perkins telescope at the Lowell Observatory. A refrigerated EMI 9526 photomultiplier was used in conjunction with standard UBV filters. The scanning aperture was a slit of 5-mm (32-arcsec) length and 100- μ (0.64-arcsec) width. Proper choice of the effective scan length (25 arcsec), scan direction (approximately N to S), and placement of the slit permitted simultaneous, separate measurement of components A, B, C, and E, while excluding stars D and F from the record.

The observations, consisting of 10-scan integrations in each color made at a sweep-speed of one scan per second, yielded one set of UBV data every three minutes. Three-point averages of the resulting UBV magnitude differences for θ^1 Ori (A-C) and the corresponding times of observation (U.T.) are listed in Table 1 and plotted in Figure 1. Since θ^1 Ori A was still at full light when observation began, these measures cover a portion of the light curve, including the point of first contact which appears to have occurred at $3^h 25^m \pm 3^m$ (s.e.) U.T., that had not been previously defined by (published) photoelectric data. By folding these new observations

onto the mean light curve published by Lohsen (1976), one finds a period $P = 65.4325 \pm 0.0002$ days, in excellent agreement with the 65.43-day period recently determined by Baldwin (1976).

Interestingly enough, while θ^1 Ori A was entering eclipse, θ^1 Ori B = BM Ori was exiting from eclipse, undergoing a brightness increase of 0.6 and 0.7 mag in V and B, respectively, during the 3.8-hour interval of observation. The photometric data for BM Ori will be published separately in the near future.

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OTTO G. FRANZ
Lowell Observatory
Flagstaff, Arizona 86002
U.S.A.

References:

- Baldwin, M. 1976, IAU Circ. No. 3004
Franz, O. G. 1970, Lowell Obs. Bull. No. 154
Lohsen, E. 1976, IBVS No. 1129

Table 1.
 UBV Magnitude Differences θ^1 Ori (A-C)
 1977, March 13

U.T.	ΔV	ΔB	ΔU	U.T.	ΔV	ΔB	ΔU
02 ^h 31 ^m	1.637	1.626	1.725	05 ^h 05 ^m	1.704	1.725	1.799
39	1.637	1.631	1.701	13	1.731	1.723	1.822
47	1.628	1.637	1.710	21	1.738	1.758	1.827
55	1.646	1.636	1.712	29	1.746	1.772	1.852
03 04	1.629	1.632	1.722	39	1.774	1.772	1.855
11	1.640	1.630	1.735	48	1.766	1.770	1.898
18	1.641	1.639	1.708	56	1.804	1.801	1.862
26	1.636	1.647	1.708	06 05	1.810	1.814	1.921
36	1.652	1.638	1.721	13	1.836	1.823	1.989
43	1.646	1.636	1.727				
49	1.661	1.650	1.725				
57	1.646	1.645	1.719				
04 06	1.656	1.644	1.739				
14	1.658	1.657	1.739				
22	1.684	1.666	1.750				
30	1.682	1.678	1.760				
40	1.697	1.686	1.788				
49	1.702	1.701	1.784				
57	1.718	1.708	1.785				

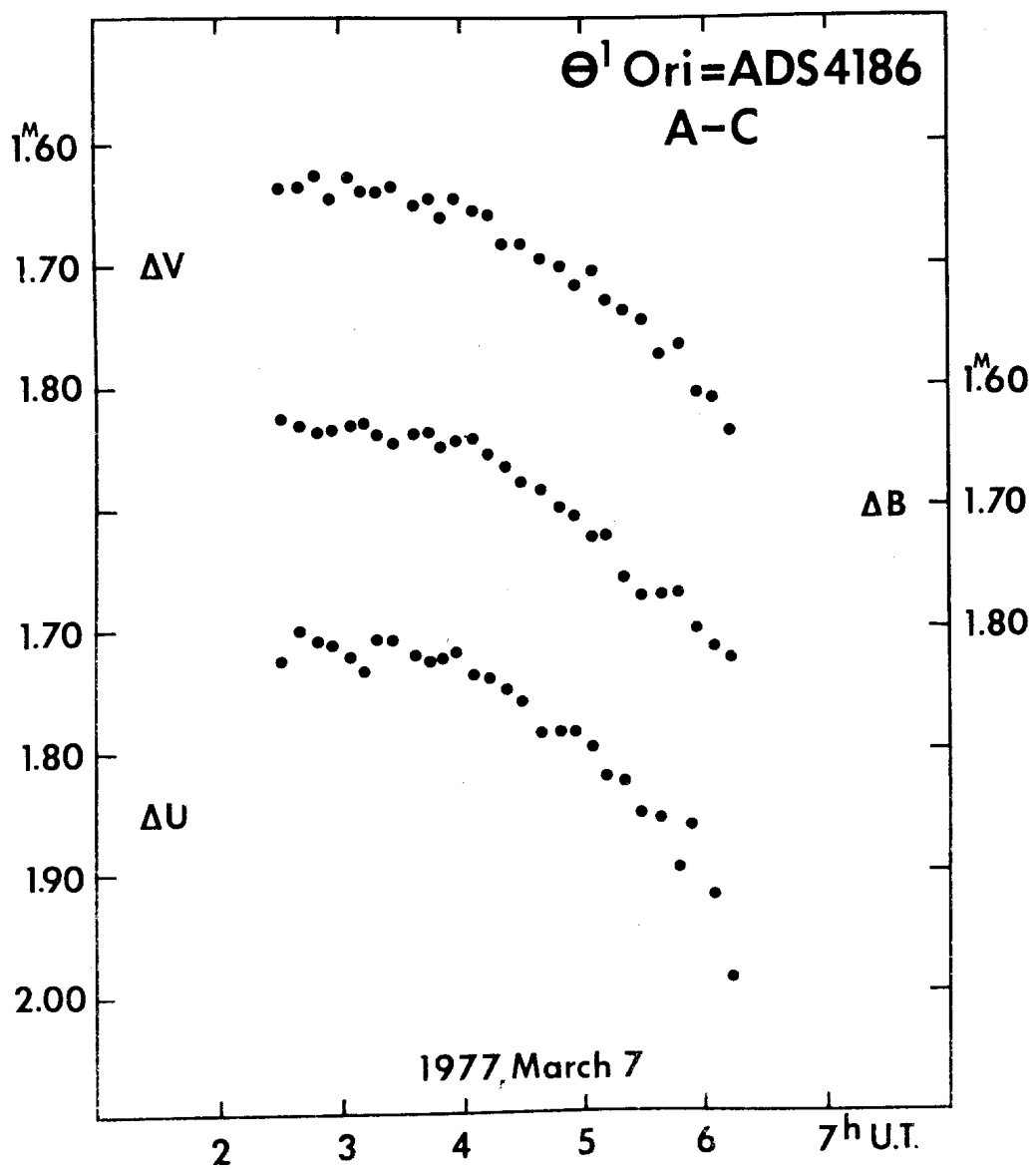


Figure 1. UBV magnitude differences Θ^1 Ori (A-C).