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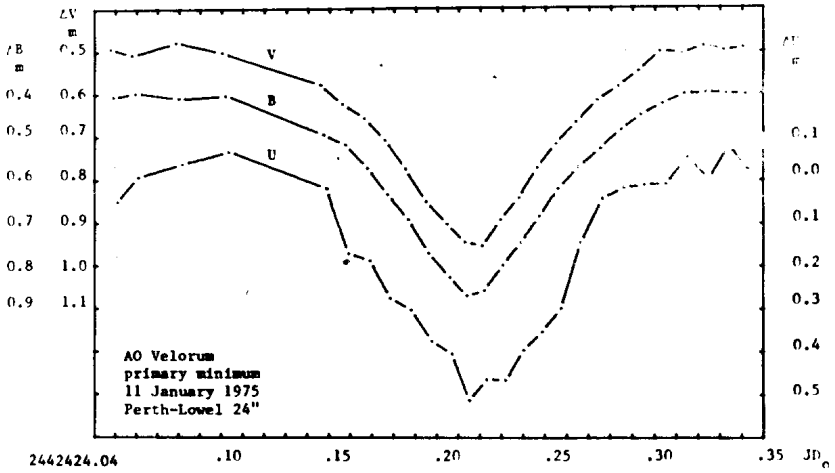
UBV PHOTOELECTRIC MINIMUM OF AO VELORUM

AO Velorum is an eclipsing variable star with large apsidal motion and it has been listed by Batten (1973) among stars deserving observational attention. AO Velorum or HD 68826 was observed during 5 nights with 60cm Lowel-Perth reflector at Perth Observatory in December 1974 and January 1975. The integrating photometer, described by Millis *et al.* (1974), was used with the standard UBV filters and EMI 6526S photomultiplier. During the observation the digital display of the photometer and digital display of universal time was written down. The standard procedure, comparison star - variable - comparison, etc., was used, the variable star being occasionally replaced by a check star. The integration time was 10 seconds and each measurement represents the average of at least 3 integrations. The time was recorded at the beginning of each set of readings and later reduced to the middle of the measuring interval (ranging from 30 to 50 seconds). The brightness of the sky background was read (3 readings) after the measurement with each filter. The flanking apertures were used for sky measurements. HD 68557 served as comparison star.

The reduced data in Table I represents time in heliocentric Julian Days and observed differential magnitudes in the sense variable star minus comparison star, linearly interpolated for the time of the measurement of the variable. The reduction of measured values was performed with the HP 1900 desk calculator (with extended memory HP 9101A) and both the measured values and the reduced data were plotted simultaneously on the HP 9125B calculator plotter. More details concerning the evaluation of the measurements may be found in a previous paper (Kvíz, 1975). Fig. 1 is direct output from the plotter.

The time of the minimum was computed according to Kwee and Van Woerden's (1956) method for the interval JD hel 2442424.15 - 2442424.28. The time of the minimum and the respective mean errors of the measurements with individual filters are in Table II.

I wish to express my appreciation of the help to the staff of Perth Observatory during my stay there. For assistance during observations I thank Mr. A Verveer and my wife J. Kvizová.



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Batten, A.H. 1973, Binary and Multiple Systems of Stars, p. 138.
Kvíz, Z. 1975, Proc. Astr. Soc. Australia 2, 351.
Kwee, K.K. and van Woerden, H. 1956, Bull. Astr. Inst. Neth. 12, 327.
Millis, R.L. *et al.* 1974, Icarus 23, 425.

Table 1

UBV Photoelectric measurements of AO Velorum

	ΔV		ΔB		ΔU
JD_o 2440000. +					
2408.1017	+0.495	2408.1030	+0.400	2408.1043	-0.030
1114	+0.484	1126	+0.392	1142	-0.096
1298	+0.504	1310	+0.416	1321	-0.029
1389	+0.504	1402	+0.391	1415	-0.090
1487	+0.500	1500	+0.402	1511	-0.039
1578	+0.486	1590	+0.406	1602	-0.036
1683	+0.505	1695	+0.384	1708	-0.027
1776	+0.481	1790	+0.388	1803	-0.009
1897	+0.486	1908	+0.396	1920	-0.063
1992	+0.533	2007	+0.406	2020	-0.020
2102	+0.490	2116	+0.398	2129	-0.112
2207	+0.490	2223	+0.404	2236	-0.034
2310	+0.495	2322	+0.403	2334	-0.093
2407	+0.485	2419	+0.401	2435	-0.067
2507	+0.498	2521	+0.398	2533	-0.035
2606	+0.496	2620	+0.409	2632	+0.008
2711	+0.501	2727	+0.406	2740	+0.014
2814	+0.513	2829	+0.420	2842	-0.008
2918	+0.538	2932	+0.445	2948	+0.059
3032	+0.571	3045	+0.494	3057	+0.057
3140	+0.624	3154	+0.544	3166	+0.125
3239	+0.666	3252	+0.593	3262	+0.162
3335	+0.730	3346	+0.649	3357	+0.256
2410.0475	+0.498	2410.0489	+0.415	2410.0502	+0.038
0563	+0.494	0576	+0.413	0589	-0.024
0652	+0.496	0666	+0.411	0679	-0.034
0834	+0.504	0848	+0.407	0860	-0.057
0921	+0.505	0932	+0.412	0945	-0.061
2416.0270	+0.487	2416.0283	+0.395	2416.0297	-0.036
0365	+0.529	0376	+0.392	0389	-0.043
0544	+0.503	0555	+0.400	0566	-0.017
0627	+0.488	0639	+0.400	0650	-0.020
2423.1892	+0.485	2423.1909	+0.382	2423.1926	-0.114
2027	+0.498	2043	+0.390	2057	+0.020
2147	+0.477	2161	+0.394	2177	-0.042
2273	+0.498	2286	+0.408	2303	-0.020
2415	+0.498	2430	+0.400	2444	+0.052
2528	+0.488	2541	+0.396	2554	-0.097
2654	+0.510	2668	+0.404	2683	-0.082
2782	+0.500	2800	+0.399	2817	0.000
2918	+0.501	2933	+0.406	2946	+0.016
3033	+0.507	3050	+0.403	3064	-0.011
3153	+0.510	3167	+0.403	3183	-0.018
3269	+0.505	3284	+0.402	3301	+0.043

Primary Minimum

ΔV		ΔB		ΔU	
2424.0475	+0.492	2424.0489	+0.405	2424.0509	+0.050
0580	+0.508	0595	+0.396	0610	-0.009
0787	+0.477	0801	+0.410	0817	-0.040
1004	+0.502	1021	+0.401	1036	-0.068
1461	+0.578	1475	+0.495	1488	+0.019
1564	+0.624	1577	+0.519	1590	+0.171
1666	+0.657	1679	+0.573	1691	+0.188
1759	+0.707	1771	+0.634	1786	+0.276
1855	+0.775	1869	+0.692	1882	+0.304
1950	+0.850	1962	+0.771	1976	+0.376
2048	+0.903	2059	+0.827	2071	+0.406
2131	+0.945	2141	+0.871	2152	+0.514
2211	+0.954	2221	+0.857	2232	+0.464
2296	+0.892	2307	+0.797	2319	+0.468
2380	+0.841	2391	+0.745	2402	+0.395
2465	+0.771	2476	+0.684	2488	+0.352
2549	+0.715	2562	+0.619	2575	+0.299
2643	+0.665	2653	+0.570	2664	+0.146
2741	+0.615	2754	+0.527	2766	+0.044
2838	+0.582	2850	+0.483	2862	+0.018
2927	+0.546	2940	+0.448	2955	+0.011
3026	+0.500	3038	+0.422	3053	+0.011
3124	+0.506	3138	+0.400	3152	-0.053
3223	+0.488	3235	+0.397	3250	0.000
3317	+0.499	3329	+0.399	3341	-0.078
3405	+0.491	3416	+0.402	3428	-0.025

Table II

Time of Minimum

Filter	T min	σ
V	2424.2159	± .0003
B	.2162	± .0003
U	.217	± .002