COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1176

Konkoly Observatory
Budapest
1976 September 10

PHOTOELECTRIC DIFFERENTIAL PHOTOMETRY OF THE CONTACT BINARY AW UMa

The W UMa type contact binary AW UMa had been largely ignored until recently. Attention has been drawn to this interesting system by the excellent work of Dworak and Kurpinska (1975). We report additional observations obtained incidential to a program reported elsewhere (McMillan et al. 1976). They were obtained with the McDonald Observatory 91 cm reflector using a convencional single channel pulse counting photometer. The data of Table 1 were obtained with a dry ice refrigerated EMI 9658a together with a Strömgren y filter while Table 2 data were obtained with a dry ice refrigerated 1P21 and standard Johnson V filter. Two comparison stars (BD +30 2163, BD +33 2123) were observed in sequence with the program star and were used to correct for slow sensitivity and transparency changes. The observational and reduction techniques are described further in McMillan et al.(1976).

The data of Table 1 are of extraordinarily high precision ($1\sigma = 0^{m}.001$ formal error on the comparison stars) while those of Table 2 are of somewhat lower quality ($1\sigma = .035$). The tables list heliocentric time of observation, phase calculated from the ephemeris of Dworak and Kurpinska (1975), and our differential magnitudes with an arbitrary additive constant.

We confirm the Dworak and Kurpinska (1975) ephemeris. In addition it would be of interest to compare the accurate data of Table 1 with the Dworak and Kurpinska (1975) normal points. We have transformed our differential y magnitudes to their V system by solving for the additive constant to make our data agree with their values. Second order differences between our y and their V should be negligible since intrinsic color variations are quite small for stars of this type. Our data usually agree with their normal points to within $0^{m}.004$ although we have found potions of the light curve which had changed. In particular, our data near phase 0.075 are systematically $0^{m}.015$ brighter than their values, in agreement with the larger noise in their normal points at this phase.

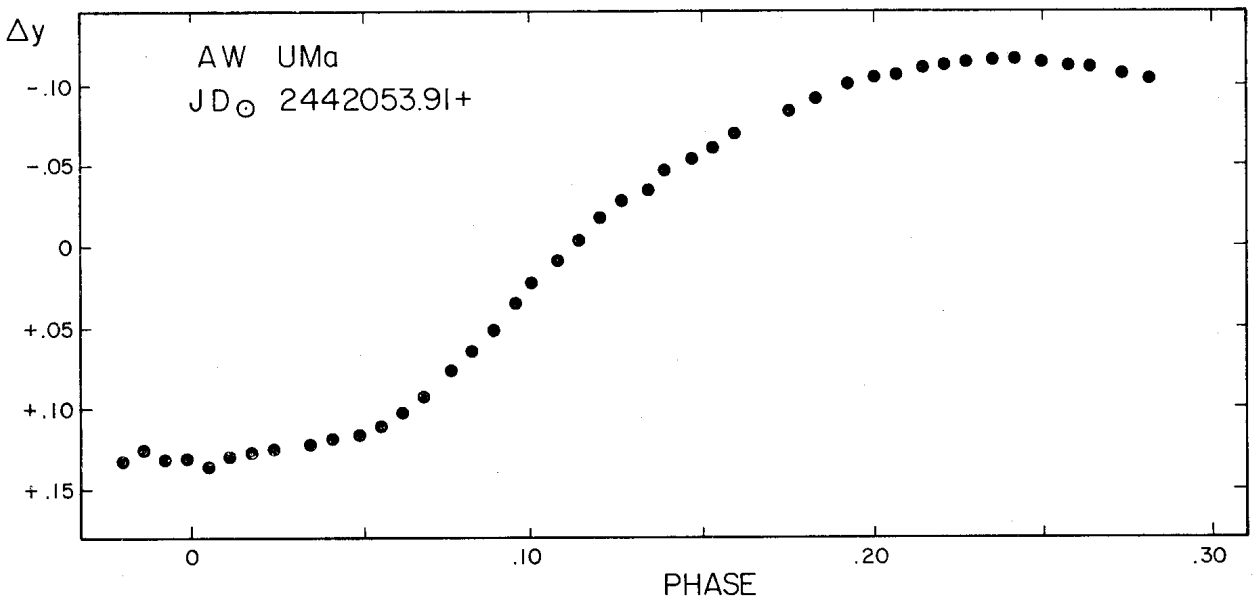
Δy
AW UMa
JD⊙ 2442053.91+
-.10
-.05
0
+.05
+.10
+.15
0
.10
.20
.30
PHASE

Table 1

JD hel 2442000+	Phase*	Δy mag.	JD hel 2442000+	Phase	Δy mag.
53.9086	.9798	-.1321	53.9732	.1270	.0290
53.9114	.9862	-.1254	53.9766	.1350	.0363
53.9141	.9925	-.1310	53.9787	.1397	.0474
53.9169	.9988	-.1306	53.9822	.1476	.0556
53.9197	.0052	-.1351	53.9850	.1540	.0625
53.9225	.0115	-.1291	53.9877	.1603	.0713
53.9252	.0178	-.1269	53.9947	.1761	.0853
53.9280	.0242	-.1244	53.9982	.1840	.0926
53.9329	.0352	-.1217	54.0023	.1935	.1019
53.9357	.0416	-.1181	54.0058	.2014	.1064
53.9391	.0495	-.1156	54.0086	.2078	.1077
53.9419	.0558	-.1102	54.0121	.2157	.1125
53.9447	.0622	-.1018	54.0148	.2220	.1140
53.9475	.0685	-.0924	54.0176	.2284	.1159
53.9509	.0764	-.0765	54.0211	.2363	.1166
53.9537	.0827	-.0640	54.0239	.2426	.1177
53.9565	.0891	-.0511	54.0273	.2505	.1155
53.9593	.0954	-.0348	54.0308	.2584	.1132
53.9614	.1001	-.0218	54.0336	.2648	.1124
53.9648	.1081	-.0075	54.0378	.2743	.1082
53.9676	.1144	.0050	54.0412	.2822	.1052
53.9704	.1207	.0184			

Table 2

JD hel 2442000+	Phase	ΔV	JD hel 2442000+	Phase	ΔV
205.6522	.8482	.1522	205.6988	.9543	-.0391
205.6550	.8546	.1228	205.7029	.9638	-.0233
205.6578	.8609	.1146	205.7071	.9733	-.0527
205.6613	.8688	.1466	205.7099	.9796	-.0792
205.6640	.8751	.1040	205.7126	.9859	-.0520
205.6668	.8815	.0891	205.7154	.9923	-.0562
205.6703	.8894	.0514	205.7182	.9986	-.0317
205.6731	.8957	.0440	205.7210	.0049	-.0687
205.6751	.9005	.0295	205.7231	.0097	-.0429
205.6786	.9084	.0147	205.7258	.0160	-.0537
205.6821	.9163	-.0016	205.7286	.0223	-.0561
205.6849	.9226	-.0203	205.7321	.0302	-.0539
205.6876	.9289	-.0201	205.7349	.0366	-.0196
205.6918	.9385	-.0447	205.7383	.0445	-.0158
205.6960	.9479	-.0295	205.7439	.0572	-.0189

*From JD hel Min I = 2438044.7812 + 0.4387334·E.

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References:

Dworak, T.Z. and Kurpinska, M., Acta Astr. 25, No.4, 417
McMillan, R.S.,Breger,M.,Ferland,G.J, and Loumos,G.L.,1976, P.A.S.P. in press