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W Cru - A PHASE DIAGRAM

Phase diagram for W Cru based on observations obtained from 1985 to 1987 at the Nigel Observatory, was published by Pazzi (1989). What is presented here is an update which includes all observations of this peculiar eclipsing binary from 1985 to 1991 (JD 2446168 to JD 2448466).

The series of photoelectric observations were started following a request for observation by Plavec (1984). Particular attention was paid to the secondary minimum, the reason for this being that a certain amount of data for the primary minimum has already been published by various investigators:
Knipe (1972), Marino et al. (1984), Menzies and Spencer Jones (1984), Marino et al. (1988), Kviz and Rufener (1988) and Kohoutek (1988).

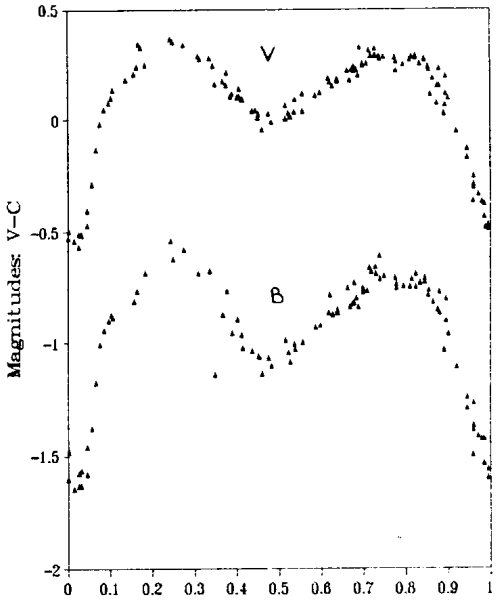

Figure 1. V−C magnitudes in B and V filters against phase for W Cru.
Phase is computed from E=2440731.6, P=198.53

Table I

Variable-Comparison "V" magnitude reduced to the UBV system, used to plot Figure 1.

JD	HEL.CORR.	F	V-C	JD	HEL.CORR.	F	V-C
2446168.3081	0.0021	V	-0.1030	2447635.3181	0.0018	V	-0.2748
2446172.3009	0.0019	V	-0.1036	2447649.2891	0.0010	V	-0.2661
2446180.3256	0.0015	V	-0.0369	2447656.2741	0.0006	V	-0.2274
2446194.2813	0.0007	V	-0.0009	2447659.2902	0.0005	V	-0.1949
2446202.2384	0.0002	V	-0.1137	2447669.3152	-0.0001	V	0.1329
2446229.2850	-0.0013	V	-0.3246	2447672.3077	-0.0003	V	0.3054
2446236.3207	-0.0017	V	-0.3222	2447677.3180	-0.0006	V	0.4372
2446262.2706	-0.0029	V	-0.1114	2447679.3052	-0.0007	V	0.4933
2446265.2325	-0.0030	V	-0.0702	2447683.2837	-0.0010	V	0.5453
2446269.2259	-0.0031	V	-0.0596	2447686.2868	-0.0011	V	0.5150
2446288.2315	0.0035	V	0.4894	2447689.2834	-0.0013	V	0.4769
2446522.2932	0.0026	V	-0.3408	2447945.3699	0.0035	V	-0.2728
2446523.2868	0.0025	V	-0.3235	2447951.3619	0.0035	V	-0.1686
2446551.3290	0.0012	V	-0.2686	2447974.3920	0.0029	V	0.0125
2446557.3090	0.0008	V	-0.2398	2447982.3456	0.0026	V	-0.0260
2446563.2875	0.0005	V	-0.1518	2447997.3175	0.0020	V	-0.1164
2446569.3337	0.0001	V	-0.1365	2448001.3090	0.0018	V	-0.1847
2446578.2861	-0.0004	V	-0.0045	2448003.2996	0.0017	V	-0.1492
2446580.2872	-0.0005	V	0.0495	2448005.3185	0.0015	V	-0.1704
2446583.2931	-0.0007	V	-0.0215	2448011.2853	0.0012	V	-0.1733
2446591.2928	-0.0012	V	-0.0579	2448013.3108	0.0011	V	-0.2176
2446595.3355	-0.0014	V	-0.0306	2448015.2662	0.0010	V	-0.1987
2446599.2920	-0.0016	V	-0.0342	2448017.2634	0.0009	V	-0.2415
2446612.2750	-0.0023	V	-0.1665	2448019.2681	0.0008	V	-0.2485
2446620.2910	-0.0026	V	-0.2214	2448025.2676	0.0004	V	-0.2684
2446623.2348	-0.0027	V	-0.2376	2448033.3398	-0.0001	V	-0.2182
2446635.2300	-0.0031	V	-0.2891	2448036.3500	-0.0002	V	-0.2462
2446862.3545	0.0033	V	-0.1475	2448040.3290	-0.0005	V	-0.2771
2446864.3336	0.0033	V	-0.0207	2448042.3142	-0.0060	V	-0.2863
2446883.3450	0.0028	V	0.3840	2448046.3241	-0.0008	V	-0.2690
2446886.3151	0.0026	V	0.5006	2448048.3010	-0.0009	V	-0.2224
2446891.3323	0.0024	V	0.5147	2448050.3160	-0.0011	V	-0.1862
2446905.2895	0.0018	V	-0.0778	2448052.3173	-0.0012	V	-0.1488
2446907.2751	0.0017	V	-0.1305	2448056.3124	-0.0014	V	-0.1123
2446913.3226	0.0013	V	-0.1832	2448061.3273	-0.0017	V	0.0589
2446934.3267	0.0001	V	-0.3638	2448066.2761	-0.0019	V	0.1782
2446940.3341	-0.0002	V	-0.3367	2448069.2701	-0.0020	V	0.2937
2446947.3245	-0.0006	V	-0.2874	2448308.3797	0.0035	V	-0.2385
2446955.3133	-0.0011	V	-0.1583	2448312.3712	0.0035	V	-0.2463
2446963.2991	-0.0015	V	-0.1127	2448325.3889	0.0033	V	-0.3516
2446968.2893	-0.0018	V	-0.0889	2448350.3475	0.0025	V	-0.2129
2447263.3145	0.0021	V	-0.0934	2448355.3299	0.0023	V	-0.0968
2447275.2997	0.0015	V	0.2621	2448357.3350	0.0022	V	-0.0901
2447277.2881	0.0014	V	0.3374	2448362.3301	0.0020	V	-0.0360
2447279.2887	0.0013	V	0.3761	2448365.3320	0.0018	V	-0.0197
2447282.2823	0.0011	V	0.4770	2448380.2673	0.0010	V	-0.0132
2447283.2750	0.0011	V	0.5288	2448392.3308	0.0003	V	-0.1053
2447288.2641	0.0008	V	0.5713	2448402.3348	-0.0003	V	-0.1812
2447289.2753	0.0007	V	0.5172	2448409.3311	-0.0007	V	-0.2243
2447292.3084	0.0006	V	0.4092	2448411.3270	-0.0008	V	-0.2247
2447294.3425	0.0004	V	0.2912	2448414.3187	-0.0010	V	-0.2500
2447296.3294	0.0003	V	0.1340	2448418.3297	-0.0012	V	-0.2886
2447298.3270	0.0002	V	0.0224	2448420.2885	-0.0013	V	-0.2917
2447300.3403	0.0001	V	-0.0423	2448430.2579	-0.0018	V	-0.2578
2447303.3600	-0.0001	V	-0.0979	2448436.2873	-0.0021	V	-0.2645
2447314.3039	-0.0007	V	-0.2065	2448439.2666	-0.0023	V	-0.2726
2447588.3575	0.0034	V	-0.0888	2448441.2651	-0.0024	V	-0.2511
2447623.3079	0.0024	V	-0.3107	2448445.2837	-0.0025	V	-0.2384
2447626.3191	0.0022	V	-0.2861	2448466.2246	-0.0032	V	0.3715
2447630.3074	0.0020	V	-0.2839				

Table II

Variable-Comparison "B" magnitudes reduced to the UBV system, used to plot in Figure 1.

JD	HEL.CORR.	F	V-C	JD	HEL.CORR.	F	V-C
2446580.2876	-0.0005	B	1.1366	2447686.2874	-0.0011	B	1.6378
2446583.2935	-0.0007	B	1.0663	2447689.2844	-0.0013	B	1.5855
2446591.2931	-0.0012	B	0.9907	2447945.3699	0.0035	B	0.6832
2446595.3358	-0.0014	B	1.0086	2447951.3619	0.0035	B	0.8762
2446599.2925	-0.0016	B	1.0002	2447974.3920	0.0029	B	1.1047
2446612.2753	-0.0023	B	0.7877	2447982.3456	0.0026	B	1.0399
2446620.2914	-0.0026	B	0.7554	2447997.3175	0.0020	B	0.9231
2446623.2352	-0.0027	B	0.7333	2448001.3090	0.0018	B	0.8635
2446635.2305	-0.0031	B	0.6161	2448003.2996	0.0017	B	0.8768
2446862.3554	0.0033	B	0.8640	2448005.3185	0.0015	B	0.8494
2446864.3346	0.0033	B	1.0311	2448011.2853	0.0012	B	0.8389
2446883.3455	0.0028	B	1.4291	2448013.3108	0.0011	B	0.8222
2446886.3154	0.0026	B	1.4840	2448015.2662	0.0010	B	0.8383
2446891.3328	0.0024	B	1.5786	2448017.2634	0.0009	B	0.7701
2446905.2900	0.0018	B	0.9087	2448019.2681	0.0008	B	0.7674
2446907.2764	0.0017	B	0.8884	2448025.2676	0.0004	B	0.7147
2446934.3274	0.0001	B	0.5431	2448033.3398	-0.0001	B	0.7379
2446940.3347	-0.0002	B	0.5850	2448036.3500	-0.0002	B	0.7475
2446947.3258	-0.0006	B	0.6912	2448040.3290	-0.0005	B	0.7162
2446955.3138	-0.0011	B	1.1411	2448042.3142	-0.0060	B	0.6957
2446963.2997	-0.0015	B	0.9572	2448046.3241	-0.0008	B	0.7284
2446968.2899	-0.0018	B	1.0232	2448048.3010	-0.0009	B	0.7626
2447263.3149	0.0021	B	0.9607	2448050.3160	-0.0011	B	0.8185
2447275.3000	0.0015	B	1.2683	2448052.3173	-0.0012	B	0.8530
2447277.2885	0.0014	B	1.4147	2448056.3124	-0.0014	B	0.9037
2447279.2891	0.0013	B	1.4298	2448061.3273	-0.0017	B	1.1078
2447282.2828	0.0011	B	1.6031	2448066.2761	-0.0019	B	1.2419
2447283.2755	0.0011	B	1.6072	2448069.2701	-0.0020	B	1.3657
2447288.2644	0.0008	B	1.6399	2448308.3797	0.0035	B	0.7689
2447289.2758	0.0007	B	1.5687	2448312.3712	0.0035	B	0.6917
2447292.3094	0.0006	B	1.4615	2448325.3889	0.0033	B	0.6263
2447294.3428	0.0004	B	1.3776	2448350.3475	0.0025	B	0.7671
2447296.3298	0.0003	B	1.1748	2448355.3299	0.0023	B	0.8996
2447298.3276	0.0002	B	1.0062	2448357.3350	0.0022	B	0.9632
2447300.3415	0.0001	B	0.9431	2448362.3301	0.0020	B	1.0382
2447303.3705	-0.0001	B	0.8751	2448365.3320	0.0018	B	1.0576
2447314.3045	-0.0007	B	0.8149	2448380.2673	0.0010	B	1.0844
2447588.3587	0.0034	B	1.0276	2448392.3308	0.0003	B	0.9324
2447623.3082	0.0024	B	0.6656	2448402.3348	-0.0003	B	0.8638
2447626.3195	0.0022	B	0.6943	2448409.3311	-0.0007	B	0.8254
2447630.3079	0.0020	B	0.7050	2448411.3270	-0.0008	B	0.8005
2447635.3185	0.0018	B	0.7138	2448414.3187	-0.0010	B	0.7522
2447649.2897	0.0010	B	0.7122	2448418.3297	-0.0012	B	0.6854
2447656.2745	0.0006	B	0.7696	2448420.2885	-0.0013	B	0.6602
2447659.2912	0.0005	B	0.8051	2448430.2579	-0.0018	B	0.7524
2447669.3158	-0.0001	B	1.2903	2448436.2873	-0.0021	B	0.7481
2447672.3084	-0.0003	B	1.3812	2448439.2666	-0.0023	B	0.7518
2447677.3184	-0.0006	B	1.5378	2448441.2651	-0.0024	B	0.7334
2447679.3072	-0.0007	B	1.5653	2448445.2837	-0.0025	B	0.7878
2447683.2841	-0.0010	B	1.6533	2448466.2246	-0.0032	B	1.4953

Very little, however, is available concerning the secondary minimum. The phase diagram in Figure 1 is presented here in the form of V−C which is felt may be of more use than the original form of relative magnitude. The magnitude differences in V and B colours are listed in Tables I and II respectively.

For detail of equipment, observation and reduction techniques the reader should refer to the original paper.

L. PAZZI
Nigel Observatory
P.O. Box 211
Nigel 1490
South Africa

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