PHOTOELECTRIC STUDY OF THE ECLIPSING SYSTEM CD ERIDANI

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Abstract. Limiting photometric solutions for the system CD Eri in B and V filters have been obtained. The secondary minimum was found to be absent.

1. Introduction

The variability of the system CD Eri (=BD $-9°0749$) was discovered by Strohmeier in 1957. Huth (1960) has reported the photographic lightcurve, period and times of minima based on the observations made by Strohmeier and Nikulina. As no further observations or study had been made on this system, it was on our observing program from 1973.

2. Observations

A total of 19 nights of observations on the 104-cm Sampurnanand telescope have been secured. An EMI 6094s photomultiplier, thermoelectrically cooled to $-20°C$, standard U, B, V filters of the Johnson and Morgan system and d.c. techniques have been used to record the observations. BD $-9°748$ and BD $-8°725$ have been observed, respectively, as the comparison and check star. A total of 334 observations in U, 341 in B and 339 in V filter have been obtained. Differential instrumental magnitudes were converted into differential standard ones by observing five standard stars on the same instrumental setup. The observations are given in Tables I(a), (b) and (c) and are plotted in Figure 1. The ranges of standard errors of our observations are:

U: $0^m.003$–$0^m.013$;

B: $0^m.003$–$0^m.010$;

V: $0^m.002$–$0^m.010$.

3. Light Curve and Period

The following times of minima have been determined from nightly observations in the U, B and V filters using the method of bisection:

Primary Min.: JD(Hel) 2442726.391
2729.268.

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TABLE I(a)

Standard differential magnitudes of CD Eri in U

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442034.1520	+0.3661	+0^{m}120	2442035.2134	+0.7351	+0^{m}115
.1523	0.3662	0.105	.2138	0.7352	0.109
.1695	0.3722	0.114	.2187	0.7369	0.103
.2065	0.3850	0.125	.2215	0.7379	0.102
.2068	0.3852	0.125	.2260	0.7394	0.131
.2213	0.3902	0.112	.2264	0.7396	0.118
.2219	0.3904	0.122	.2302	0.7409	0.127
.2318	0.3938	0.109	.2329	0.7418	0.126
.2328	0.3942	0.184	.2458	0.7463	0.136
.2404	0.3968	0.153	.2461	0.7464	0.127
.2425	0.3976	0.144	.2536	0.7490	0.127
.2487	0.3997	0.111	.2567	0.7501	0.121
.2510	0.4005	0.089	.2685	0.7542	0.131
.2613	0.4041	0.138	.2690	0.7544	0.137
.2616	0.4042	0.137	.2745	0.7563	0.110
.2705	0.4073	0.117	.2765	0.7570	0.125
.2709	0.4074	0.110	2064.0871	0.7720	0.126
.2966	0.4164	0.104	.0973	0.7756	0.160
.2994	0.4173	0.070	.1046	0.7781	0.139
.3076	0.4202	0.132	.1196	0.7834	0.164
.3081	0.4204	0.135	.1266	0.7858	0.150
.3179	0.4238	0.131	.1326	0.7879	0.125
.3186	0.4240	0.127	.1418	0.7911	0.148
.3257	0.4265	0.125	.1478	0.7932	0.143
2035.0966	0.6945	0.165	.1561	0.7960	0.134
.0983	0.6951	0.195	.1631	0.7985	0.145
.1023	0.6964	0.177	.1690	0.8005	0.140
.1039	0.6970	0.194	.1749	0.8026	0.135
.1074	0.6982	0.117	.1827	0.8053	0.136
.1076	0.6983	0.118	.1884	0.8073	0.149
.1162	0.7013	0.095	.2139	0.8161	0.142
.1195	0.7024	0.118	2066.0944	0.4698	0.074
.1261	0.7047	0.112	.1001	0.4718	0.129
.1273	0.7051	0.127	.1057	0.4738	0.177
.1378	0.7088	0.155	.1134	0.4764	0.131
.1383	0.7090	0.154	.1203	0.4788	0.127
.1793	0.7232	0.107	.1270	0.4812	0.120
.1815	0.7240	0.112	.1326	0.4831	0.133
.1868	0.7258	0.119	.1386	0.4852	0.147
.1890	0.7266	0.131	.1441	0.4871	0.136
.1936	0.7282	0.122	.1511	0.4895	0.128
.1964	0.7292	0.131	.1583	0.4920	0.152
.2014	0.7309	0.135	.1690	0.4958	0.058
.2017	0.7310	0.129	.1889	0.5027	0.156
.2064	0.7326	0.109	.1948	0.5047	0.169
.2086	0.7334	0.127	.2016	0.5071	0.161

continued

Table I(a) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442066.2085	+0.5095	0^m.174	2442726.4064	+0.0056	−1^m.129
.2148	0.5117	0.182	.4123	0.0077	−1.116
.2321	0.5177	0.189	.4180	0.0097	−1.101
.2393	0.5202	0.146	.4247	0.0120	−1.082
.2479	0.5232	0.138	.4300	0.0138	−1.041
.2562	0.5261	0.140	.4363	0.0160	−1.020
2363.3171	0.7895	0.073	.4420	0.0180	−0.991
.3239	0.7919	0.127	.4486	0.0203	−1.003
.3315	0.7945	0.164	.4538	0.0221	−1.051
.3373	0.7966	0.085	2727.3598	0.3370	+0.031
.3428	0.7985	0.104	.3678	0.3398	0.053
.3460	0.7996	0.129	.3735	0.3418	0.048
2374.3385	0.6208	0.190	.3783	0.3435	0.044
.3481	0.6241	0.158	.3836	0.3453	0.044
.3568	0.6271	0.210	.3885	0.3470	0.054
.3697	0.6316	0.193	.3928	0.3485	0.050
.3846	0.6368	0.148	.3983	0.3504	0.054
2375.1733	0.9110	0.113	.4039	0.3524	0.046
.1888	0.9164	0.147	.4103	0.3546	0.049
.1992	0.9200	0.161	.4162	0.3560	0.060
.2097	0.9236	0.109	.4220	0.3587	0.053
.2183	0.9266	0.066	.4278	0.3607	0.072
.2736	0.9458	−0.131	.4333	0.3626	0.081
.2815	0.9486	−0.186	.4386	0.3644	0.053
.3117	0.9591	−0.411	.4458	0.3669	0.088
.3194	0.9618	−0.475	2729.1727	0.9672	−0.589
.3315	0.9660	−0.606	.1826	0.9707	−0.659
.3401	0.9689	−0.656	.2074	0.9793	−0.861
.3609	0.9762	−0.845	.2160	0.9822	−0.947
.3721	0.9801	−0.892	.2228	0.9847	−0.972
.3793	0.9826	−0.953	.2300	0.9872	−1.026
2395.3138	0.9121	+0.065	.2375	0.9898	−1.055
.3211	0.9147	0.128	.2439	0.9920	−1.078
.3282	0.9172	0.121	.2662	0.9997	−1.138
.3356	0.9197	0.125	.2742	0.0025	−1.149
.3428	0.9222	0.081	.2816	0.0051	−1.123
.3500	0.9247	0.108	.2900	0.0080	−1.080
.3581	0.9275	0.071	.2985	0.0109	−1.046
.3652	0.9300	0.025	.3047	0.0131	−1.016
2726.3448	0.9842	−0.994	.3111	0.0153	−0.971
.3525	0.9869	−1.059	.3186	0.0179	−0.934
.3615	0.9900	−1.072	.3257	0.0204	−0.902
.3677	0.9922	−1.104	.3335	0.0231	−0.829
.3731	0.9940	−1.131	.3416	0.0259	−0.780
.3803	0.9965	−1.123	.3504	0.0290	−0.722
.3866	0.9987	−1.151	.3603	0.0325	−0.619
.3942	0.0014	−1.141	.3668	0.0347	−0.585
.4001	0.0034	−1.141	.3723	0.0366	−0.551

continued

Table I(a) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442729.3808	+0.0396	−0.473	2442758.1846	+0.0523	−0.152
.3921	0.0435	−0.392	.1887	0.0537	−0.145
.4002	0.0463	−0.331	.2005	0.0578	−0.055
.4112	0.0501	−0.274	.2048	0.0593	−0.047
.4207	0.0534	−0.200	.2107	0.0614	−0.033
.4303	0.0568	−0.140	.2155	0.0630	−0.020
.4394	0.0599	−0.092	.2248	0.0662	+0.020
2739.2235	0.4610	+0.134	.2287	0.0676	0.036
.2386	0.4663	0.135	.2648	0.0802	0.068
.2471	0.4692	0.129	2761.1045	0.0673	−0.033
.2558	0.4723	0.150	.1126	0.0701	+0.018
.2939	0.4855	0.110	.1216	0.0732	0.086
.3096	0.4910	0.130	.1308	0.0764	0.114
.3214	0.4951	0.131	.1378	0.0788	0.107
.3316	0.4986	0.111	.1430	0.0806	0.110
.3732	0.5131	0.147	.1513	0.0835	0.123
.3926	0.5198	0.124	.1603	0.0867	0.113
.4123	0.5267	0.163	.1657	0.0885	0.140
.4248	0.5310	0.089	.1774	0.0926	0.137
2740.2095	0.8038	0.142	.1862	0.0957	0.102
.2278	0.8102	0.158	.1944	0.0985	0.138
.2359	0.8130	0.145	.1994	0.1002	0.118
.2450	0.8161	0.140	.2024	0.1013	0.121
.2539	0.8192	0.123	.2116	0.1045	0.122
.2619	0.8220	0.127	.2185	0.1069	0.133
.2701	0.8249	0.155	.2288	0.1105	0.138
.2803	0.8284	0.157	.2652	0.1231	0.149
.2910	0.8321	0.158	.2709	0.1251	0.138
.3006	0.8355	0.139	.2794	0.1281	0.123
.3133	0.8399	0.114	.3130	0.1397	0.140
.3594	0.8559	0.135	.3231	0.1432	0.159
.3751	0.8614	0.069	.3315	0.1462	0.107
.3852	0.8649	0.159	.3379	0.1484	0.185
.3953	0.8684	0.173	.3476	0.1518	0.219
.4060	0.8721	0.127	.3591	0.1558	0.166
.4196	0.8768	0.149	.3680	0.1589	0.030
.4317	0.8810	0.130	3453.3627	0.4033	0.131
2758.1015	0.0234	−0.763	.3632	0.4035	0.150
.1136	0.0276	−0.685	.3728	0.4068	0.129
.1192	0.0295	−0.613	.3732	0.4070	0.102
.1306	0.0335	−0.496	.3839	0.4107	−0.024
.1352	0.0351	−0.484	.3845	0.4109	+0.061
.1434	0.0380	−0.433	.3964	0.4150	0.137
.1501	0.0403	−0.382	.3969	0.4152	0.143
.1602	0.0438	−0.334	.4113	0.4202	0.121
.1650	0.0455	−0.271	.4153	0.4216	0.117
.1743	0.0487	−0.222	.4224	0.4241	0.116
.1786	0.0502	−0.151	.4262	0.4254	0.111

continued

Table I(a) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2443453.4317	+0.4273	+0^m.106	2443867.1002	+0.5304	+0^m.112
.4348	0.4284	0.122	.1550	0.5494	0.089
3491.2465	0.8771	0.209	.1556	0.5496	0.105
.2499	0.8783	0.197	.1698	0.5545	0.106
.2509	0.8787	0.225	.1704	0.5548	0.098
.2648	0.8835	0.219	.1838	0.5594	0.092
.2653	0.8837	0.203	.1882	0.5609	0.101
.2788	0.8884	0.203	.1999	0.5650	0.083
.2793	0.8885	0.199	.2003	0.5652	0.084
.3109	0.8994	0.205	.2121	0.5692	0.102
.3116	0.8998	0.189	.2149	0.5702	0.097
.3231	0.9038	0.148	.2263	0.5742	0.125
3817.2969	0.2179	0.135	.2268	0.5744	0.118
3818.2398	0.5456	0.120	.2596	0.5858	0.095
.2496	0.5490	0.100	.2634	0.5871	0.109
.2560	0.5512	0.147	.2766	0.5917	0.115
.2744	0.5576	0.083	.2772	0.5919	0.129
.3246	0.5751	0.081	.2905	0.5965	0.131
.3342	0.5784	0.107	.2932	0.5974	0.093
.3425	0.5813	0.105	.3092	0.6030	0.096
.3493	0.5837	0.110	.3097	0.6032	0.106
.3578	0.5866	0.101	.3240	0.6082	0.089
.3654	0.5893	0.102	.3271	0.6092	0.102
.3729	0.5919	0.086	.3496	0.6171	0.043
.3815	0.5949	0.093	.3501	0.6172	0.064
3867.0997	0.5302	0.126			

TABLE I(b)

Standard differential magnitudes of CD Eri in *B*

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442034.1517	+0.3660	+0^m.140	2442034.2610	+0.4040	+0^m.173
.1529	0.3664	0.138	.2619	0.4043	0.166
.1690	0.3720	0.130	.2701	0.4072	0.156
.2061	0.3849	0.165	.2712	0.4075	0.145
.2074	0.3854	0.165	.2974	0.4167	0.134
.2209	0.3901	0.149	.2988	0.4171	0.145
.2225	0.3906	0.150	.3071	0.4200	0.161
.2314	0.3937	0.161	.3088	0.4206	0.168
.2331	0.3943	0.152	.3172	0.4235	0.145
.2408	0.3970	0.157	.3194	0.4243	0.141
.2422	0.3975	0.167	.3263	0.4267	0.129
.2490	0.3998	0.158	.3280	0.4273	0.096
.2503	0.4003	0.165	.3386	0.4310	0.098

continued

Table I(b) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442034.3428	+0.4324	+0^{m}126	2442064.1625	+0.7983	+0^{m}140
2035.0971	0.6946	0.154	.1686	0.8004	0.139
.0980	0.6950	0.159	.1745	0.8024	0.124
.1028	0.6966	0.146	.1821	0.8051	0.115
.1036	0.6969	0.150	.1878	0.8071	0.133
.1071	0.6981	0.140	.2134	0.8160	0.126
.1098	0.6991	0.150	.2200	0.8182	0.109
.1165	0.7014	0.145	2066.0940	0.4697	0.115
.1188	0.7022	0.141	.0998	0.4717	0.126
.1264	0.7048	0.157	.1053	0.4736	0.132
.1271	0.7051	0.170	.1129	0.4763	0.123
.1375	0.7087	0.176	.1197	0.4786	0.130
.1386	0.7091	0.170	.1264	0.4810	0.116
.1801	0.7235	0.150	.1322	0.4830	0.132
.1811	0.7238	0.146	.1382	0.4851	0.137
.1873	0.7260	0.149	.1435	0.4869	0.129
.1884	0.7264	0.156	.1505	0.4893	0.106
.1942	0.7284	0.135	.1573	0.4917	0.125
.1959	0.7290	0.134	.1682	0.4955	0.125
.2008	0.7307	0.142	.1883	0.5025	0.101
.2023	0.7312	0.149	.1942	0.5045	0.136
.2070	0.7328	0.118	.1996	0.5064	0.140
.2081	0.7332	0.130	.2077	0.5092	0.145
.2128	0.7349	0.133	.2142	0.5115	0.163
.2141	0.7353	0.132	.2248	0.5152	0.154
.2193	0.7371	0.133	.2313	0.5175	0.146
.2211	0.7377	0.136	.2389	0.5201	0.145
.2256	0.7393	0.140	.2464	0.5227	0.137
.2267	0.7397	0.151	.2554	0.5258	0.127
.2310	0.7412	0.150	2363.3171	0.7895	0.103
.2322	0.7416	0.140	.3239	0.7919	0.122
.2450	0.7461	0.147	.3315	0.7945	0.145
.2467	0.7466	0.166	.3373	0.7966	0.132
.2542	0.7493	0.151	.3428	0.7985	0.137
.2560	0.7499	0.157	.3460	0.7996	0.138
.2678	0.7540	0.127	2374.3385	0.6208	0.143
.2695	0.7546	0.139	.3481	0.6241	0.141
.2751	0.7565	0.133	.3568	0.6271	0.175
.2762	0.7569	0.134	.3697	0.6316	0.147
2064.0867	0.7719	0.149	.3846	0.6368	0.148
.0957	0.7750	0.138	2375.1733	0.9110	0.158
.1041	0.7780	0.139	.1888	0.9164	0.147
.1193	0.7832	0.152	.1992	0.9200	0.136
.1261	0.7856	0.131	.2097	0.9236	0.134
.1323	0.7878	0.128	.2183	0.9266	0.110
.1412	0.7909	0.151	.2736	0.9458	−0.120
.1474	0.7930	0.134	.2815	0.9486	−0.168
.1550	0.7957	0.142	.3117	0.9591	−0.403

continued

Table I(b) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442375.3194	+0.9618	−0^m.458	2442729.1734	+0.9605	−0^m.492
.3315	0.9660	−0.573	.1840	0.9712	−0.569
.3401	0.9689	−0.631	.2067	0.9791	−0.731
.3609	0.9762	−0.808	.2156	0.9822	−0.797
.3721	0.9801	−0.884	.2223	0.9845	−0.862
.3793	0.9826	−0.921	.2294	0.9870	−0.883
2395.3138	0.9121	+0.136	.2370	0.9896	−0.928
.3211	0.9147	0.115	.2444	0.9922	−0.954
.3282	0.9172	0.107	.2669	0.0000	−1.008
.3356	0.9197	0.106	.2748	0.0027	−0.987
.3428	0.9222	0.090	.2810	0.0049	−0.973
.3500	0.9247	0.093	.2895	0.0078	−0.951
.3581	0.9275	0.077	.2976	0.0106	−0.901
.3652	0.9300	0.050	.3043	0.0130	−0.894
2726.3447	0.9842	−0.850	.3105	0.0151	−0.850
.3539	0.9874	−0.908	.3181	0.0178	−0.810
.3608	0.9898	−0.928	.3253	0.0203	−0.764
.3669	0.9919	−0.971	.3331	0.0230	−0.706
.3724	0.9938	−0.971	.3408	0.0256	−0.647
.3797	0.9963	−1.002	.3496	0.0287	−0.589
.3861	0.9986	−1.016	.3598	0.0322	−0.516
.3934	0.0011	−1.004	.3661	0.0344	−0.468
.3993	0.0032	−1.001	.3731	0.0369	−0.405
.4055	0.0053	−0.998	.3819	0.0399	−0.350
.4116	0.0074	−0.976	.3928	0.0437	−0.274
.4171	0.0094	−0.962	.4010	0.0466	−0.219
.4241	0.0118	−0.912	.4119	0.0504	−0.160
.4292	0.0136	−0.896	.4215	0.0537	−0.090
.4356	0.0158	−0.856	.4296	0.0565	−0.040
.4412	0.0177	−0.836	.4387	0.0597	+0.007
.4479	0.0201	−0.808	2739.2235	0.4610	0.116
.4531	0.0219	−0.780	.2386	0.4663	0.136
2727.3610	0.3375	+0.161	.2471	0.4692	0.140
.3684	0.3400	0.167	.2558	0.4723	0.138
.3742	0.3420	0.167	.2939	0.4855	0.108
.3789	0.3437	0.168	.3096	0.4910	0.119
.3842	0.3455	0.149	.3214	0.4951	0.140
.3891	0.3472	0.156	.3316	0.4986	0.130
.3934	0.3487	0.144	.3732	0.5131	0.138
.3989	0.3506	0.156	.3926	0.5198	0.138
.4047	0.3526	0.150	.4123	0.5267	0.112
.4111	0.3549	0.155	.4248	0.5310	0.144
.4169	0.3569	0.150	2740.2095	0.8038	0.142
.4229	0.3590	0.144	.2278	0.8102	0.156
.4287	0.3610	0.160	.2359	0.8130	0.156
.4337	0.3627	0.151	.2450	0.8161	0.152
.4392	0.3648	0.127	.2539	0.8192	0.146
.4463	0.3671	0.160	.2619	0.8220	0.145

continued

Table I(b) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442740.2701	+0.8249	+0^{m}144	2442761.2296	+0.1108	+0^{m}136
.2803	0.8284	0.152	.2646	0.1229	0.135
.2910	0.8321	0.137	.2714	0.1253	0.145
.3006	0.8355	0.132	.2800	0.1283	0.131
.3133	0.8399	0.157	.3156	0.1406	0.123
.3594	0.8559	0.150	.3227	0.1431	0.155
.3751	0.8614	0.128	.3308	0.1459	0.122
.3852	0.8649	0.165	.3383	0.1485	0.151
.3953	0.8684	0.147	.3483	0.1520	0.153
.4060	0.8721	0.106	.3572	0.1551	0.123
.4196	0.8768	0.121	.3672	0.1586	0.107
.4317	0.8810	0.100	3453.3618	0.4030	0.098
2758.1003	0.0230	−0.775	.3638	0.4037	0.117
.1143	0.0278	−0.580	.3718	0.4065	0.112
.1210	0.0302	−0.583	.3739	0.4072	−0.021
.1288	0.0329	−0.525	.3826	0.4102	−0.009
.1335	0.0345	−0.503	.3853	0.4112	+0.135
.1446	0.0384	−0.401	.3957	0.4148	0.118
.1522	0.0410	−0.351	.3977	0.4155	0.114
.1611	0.0441	−0.280	.4119	0.4204	0.103
.1657	0.0457	−0.233	.4147	0.4214	0.096
.1734	0.0484	−0.204	.4230	0.4243	0.126
.1779	0.0500	−0.175	.4252	0.4250	0.126
.1855	0.0526	−0.107	.4323	0.4275	0.020
.1898	0.0541	−0.101	.4340	0.4281	0.108
.1996	0.0575	−0.037	3491.2473	0.8774	0.095
.2041	0.0591	−0.022	.2491	0.8780	0.096
.2115	0.0616	−0.009	.2514	0.8788	0.151
.2162	0.0633	+0.014	.2641	0.8833	0.134
.2240	0.0660	0.054	.2660	0.8839	0.144
.2281	0.0674	0.062	.2783	0.8882	0.172
.2655	0.0804	0.132	.2798	0.8887	0.186
2761.1039	0.0671	0.057	.3097	0.8991	0.191
.1120	0.0699	0.052	.3124	0.9000	0.179
.1208	0.0729	0.102	.3219	0.9034	0.150
.1304	0.0763	0.113	3817.2979	0.2182	0.138
.1372	0.0786	0.124	.3162	0.2248	0.135
.1434	0.0808	0.116	3818.2406	0.5459	0.122
.1500	0.0831	0.129	.2490	0.5488	0.091
.1597	0.0864	0.128	.2552	0.5510	0.130
.1664	0.0888	0.129	.2729	0.5571	0.104
.1782	0.0929	0.129	.3238	0.5748	0.104
.1857	0.0955	0.126	.3325	0.5778	0.114
.1935	0.0982	0.121	.3412	0.5809	0.108
.1999	0.1004	0.132	.3483	0.5833	0.112
.2030	0.1015	0.125	.3566	0.5862	0.101
.2110	0.1043	0.134	.3640	0.5888	0.106
.2191	0.1071	0.137	.3717	0.5915	0.095

continued

Table I(b) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2443818.3807	+0.5946	+0^m.103	2443867.2273	+0.5745	+0^m.134
3867.0990	0.5299	0.124	.2604	0.5860	0.117
.1010	0.5306	0.110	.2624	0.5867	0.120
.1543	0.5492	0.111	.2761	0.5915	0.124
.1562	0.5498	0.106	.2777	0.5921	0.116
.1692	0.5543	0.110	.2912	0.5968	0.174
.1710	0.5550	0.116	.2926	0.5972	0.118
.1850	0.5598	0.115	.3085	0.6028	0.123
.1874	0.5603	0.117	.3103	0.6034	0.123
.1993	0.5648	0.099	.3247	0.6084	0.118
.2009	0.5654	0.106	.3264	0.6090	0.110
.2127	0.5695	0.112	.3490	0.6168	0.108
.2142	0.5700	0.106	.3506	0.6174	0.108
.2257	0.5740	0.129			

TABLE I(c)

Standard differential magnitudes on CD Eri in V

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442034.1514	+0.3659	+0^m.220	2442034.3351	+0.4298	+0^m.233
.1532	0.3665	0.223	.3403	0.4316	0.172
.1684	0.3718	0.233	2035.0974	0.6947	0.231
.2053	0.3846	0.269	.0977	0.6948	0.240
.2079	0.3855	0.247	.1030	0.6967	0.228
.2205	0.3899	0.229	.1033	0.6968	0.231
.2230	0.3908	0.248	.1066	0.6979	0.231
.2306	0.3934	0.249	.1100	0.6991	0.259
.2335	0.3944	0.232	.1168	0.7015	0.233
.2411	0.3971	0.266	.1178	0.7018	0.251
.2419	0.3974	0.258	.1267	0.7049	0.259
.2494	0.4000	0.194	.1269	0.7050	0.271
.2500	0.4002	0.187	.1372	0.7086	0.287
.2608	0.4039	0.178	.1389	0.7092	0.281
.2622	0.4044	0.166	.1805	0.7236	0.247
.2698	0.4071	0.254	.1808	0.7237	0.248
.2715	0.4076	0.241	.1877	0.7261	0.254
.2980	0.4169	0.222	.1880	0.7262	0.261
.2983	0.4170	0.235	.1948	0.7286	0.247
.3064	0.4198	0.243	.1953	0.7288	0.237
.3092	0.4208	0.249	.2004	0.7306	0.239
.3164	0.4233	0.223	.2027	0.7314	0.254
.3198	0.4244	0.236	.2074	0.7330	0.244
.3267	0.4268	0.205	.2078	0.7331	0.240
.3273	0.4270	0.229	.2123	0.7347	0.245

continued

Table I(c) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442035.2144	+0.7354	+0^{m}248	2442066.2242	+0.5150	+0^{m}238
.2199	0.7373	0.244	.2308	0.5173	0.216
.2206	0.7376	0.244	.2384	0.5199	0.218
.2252	0.7392	0.257	.2458	0.5225	0.207
.2270	0.7398	0.263	.2548	0.5256	0.208
.2315	0.7414	0.244	2363.3171	0.7895	0.262
.2318	0.7415	0.237	.3239	0.7919	0.269
.2447	0.7460	0.238	.3315	0.7945	0.255
.2473	0.7468	0.265	.3373	0.7966	0.237
.2549	0.7495	0.255	.3428	0.7985	0.239
.2555	0.7497	0.262	.3460	0.7996	0.272
.2672	0.7538	0.236	2374.3385	0.6208	0.245
.2699	0.7547	0.254	.3481	0.6241	0.259
.2756	0.7567	0.254	.3568	0.6271	0.304
.2759	0.7568	0.252	.3697	0.6316	0.253
2064.0861	0.7717	0.254	.3846	0.6368	0.257
.0953	0.7749	0.249	2375.1733	0.9110	0.262
.1035	0.7778	0.251	.1888	0.9164	0.251
.1189	0.7831	0.247	.1992	0.9200	0.241
.1256	0.7854	0.241	.2097	0.9236	0.247
.1317	0.7876	0.218	.2183	0.9266	0.233
.1404	0.7906	0.228	.2736	0.9458	−0.024
.1470	0.7929	0.231	.2815	0.9486	−0.081
.1548	0.7956	0.231	.3117	0.9591	−0.253
.1617	0.7980	0.227	.3194	0.9618	−0.306
.1681	0.8002	0.240	.3315	0.9660	−0.377
.1742	0.8023	0.227	.3401	0.9689	−0.429
.1814	0.8048	0.223	.3609	0.9762	−0.586
.1872	0.8069	0.239	.3721	0.9801	−0.647
.2126	0.8157	0.222	.3793	0.9826	−0.664
.2193	0.8180	0.214	2395.3138	0.9121	+0.214
2066.0936	0.4696	0.196	.3211	0.9147	0.192
.0993	0.4715	0.220	.3282	0.9172	0.185
.1050	0.4736	0.214	.3356	0.9197	0.174
.1123	0.4761	0.213	.3428	0.9222	0.195
.1191	0.4784	0.225	.3500	0.9247	0.164
.1260	0.4808	0.213	.3581	0.9275	0.171
.1316	0.4828	0.205	.3652	0.9300	0.152
.1376	0.4849	0.210	2726.3462	0.9847	−0.642
.1430	0.4867	0.210	.3545	0.9876	−0.691
.1501	0.4892	0.269	.3602	0.9896	−0.703
.1565	0.4914	0.210	.3665	0.9918	−0.728
.1676	0.4953	0.213	.3719	0.9936	−0.739
.1877	0.5023	0.222	.3791	0.9961	−0.753
.1936	0.5043	0.220	.3856	0.9984	−0.760
.1992	0.5063	0.222	.3927	0.0009	−0.755
.2071	0.5090	0.222	.3987	0.0030	−0.750
.2137	0.5194	0.226	.4048	0.0051	−0.742

continued

Table I(c) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442726.4106	+0.0071	−0.733	2442729.3935	+0.0440	−0.138
.4164	0.0091	−0.709	.4019	0.0469	−0.085
.4234	0.0115	−0.668	.4125	0.0506	−0.038
.4285	0.0133	−0.657	.4221	0.0539	+0.018
.4348	0.0155	−0.640	.4289	0.0563	0.046
.4405	0.0175	−0.604	.4380	0.0594	0.098
.4470	0.0197	−0.592	2739.2235	0.4610	0.220
.4525	0.0216	−0.551	.2386	0.4663	0.233
2727.3616	0.3377	+0.240	.2471	0.4692	0.229
.3690	0.3402	0.246	.2558	0.4723	0.235
.3748	0.3423	0.250	.3096	0.4910	0.228
.3794	0.3439	0.253	.3214	0.4951	0.231
.3846	0.3457	0.261	.3316	0.4986	0.207
.3895	0.3474	0.257	.3732	0.5131	0.214
.3938	0.3489	0.243	.3926	0.5198	0.252
.3994	0.3508	0.241	.4123	0.5267	0.237
.4053	0.3529	0.234	.4248	0.5310	0.241
.4117	0.3551	0.244	2740.2095	0.8038	0.251
.4176	0.3571	0.238	.2278	0.8102	0.258
.4236	0.3592	0.235	.2359	0.8130	0.249
.4293	0.3612	0.236	.2450	0.8161	0.241
.4343	0.3629	0.242	.2539	0.8192	0.238
.4405	0.3651	0.215	.2619	0.8220	0.237
.4467	0.3673	0.248	.2701	0.8249	0.236
2729.1741	0.9677	−0.331	.2803	0.8284	0.237
.1857	0.9718	−0.390	.2910	0.8321	0.237
.2062	0.9789	−0.537	.3006	0.8355	0.224
.2147	0.9818	−0.578	.3133	0.8399	0.253
.2218	0.9843	−0.591	.3594	0.8559	0.244
.2289	0.9868	−0.649	.3751	0.8614	0.243
.2364	0.9894	−0.688	.3852	0.8649	0.248
.2449	0.9923	−0.707	.3953	0.8684	0.232
.2674	0.0001	−0.744	.4060	0.8721	0.174
.2755	0.0030	−0.745	.4196	0.8768	0.259
.2806	0.0047	−0.747	.4317	0.8810	0.297
.2888	0.0076	−0.706	2758.1009	0.0232	−0.589
.2969	0.0104	−0.687	.1150	0.0281	−0.511
.3039	0.0128	−0.676	.1202	0.0299	−0.418
.3102	0.0150	−0.634	.1297	0.0332	−0.359
.3175	0.0176	−0.613	.1342	0.0348	−0.341
.3246	0.0200	−0.574	.1460	0.0389	−0.255
.3324	0.0227	−0.544	.1515	0.0408	−0.210
.3401	0.0254	−0.480	.1619	0.0444	−0.143
.3488	0.0284	−0.433	.1665	0.0460	−0.114
.3591	0.0320	−0.363	.1727	0.0481	−0.080
.3654	0.0342	−0.323	.1772	0.0497	−0.055
.3737	0.0371	−0.260	.1860	0.0528	+0.017
.3829	0.0403	−0.203	.1908	0.0544	0.014

continued

Table 1(c) (Continued)

JD (Hel)	Phase	Δm	JD (Hel)	Phase	Δm
2442758.1985	+0.0571	+0.m060	2443491.2486	+0.8779	+0.m162
.2035	0.0588	0.078	.2639	0.8832	0.215
.2121	0.0618	0.111	.2665	0.8841	0.208
.2196	0.0644	0.139	.2779	0.8880	0.166
.2233	0.0657	0.168	.2803	0.8889	0.168
.2274	0.0672	0.157	.3084	0.8986	0.176
.2663	0.0807	0.193	.3129	0.9002	0.187
2761.1029	0.0667	0.113	.3213	0.9031	0.165
.1114	0.0697	0.171	3817.2990	0.2186	0.260
.1204	0.0728	0.197	.3156	0.2244	0.244
.1297	0.0760	0.230	3818.2414	0.5462	0.203
.1368	0.0785	0.234	.2484	0.5486	0.217
.1438	0.0809	0.232	.2545	0.5507	0.220
.1488	0.0827	0.217	.2709	0.5564	0.214
.1590	0.0862	0.223	.3230	0.5745	0.215
.1667	0.0889	0.225	.3309	0.5773	0.228
.1787	0.0931	0.225	.3402	0.5805	0.213
.1846	0.0952	0.237	.3475	0.5830	0.225
.1930	0.0980	0.212	.3556	0.5859	0.211
.2005	0.1006	0.254	.3630	0.5884	0.216
.2035	0.1017	0.255	.3709	0.5912	0.202
.2104	0.1041	0.252	.3788	0.5939	0.207
.2196	0.1073	0.232	3867.0984	0.5297	0.197
.2302	0.1110	0.233	.1015	0.5308	0.201
.2640	0.1227	0.229	.1537	0.5490	0.208
.2719	0.1255	0.234	.1569	0.5501	0.208
.2805	0.1300	0.200	.1687	0.5542	0.199
.3163	0.1409	0.226	.1714	0.5551	0.205
.3223	0.1430	0.231	.1858	0.5601	0.211
.3301	0.1457	0.215	.1867	0.5604	0.216
.3388	0.1487	0.244	.1989	0.5647	0.203
.3488	0.1522	0.245	.2014	0.5655	0.204
.3561	0.1547	0.258	.2133	0.5697	0.242
.3663	0.1583	0.237	.2137	0.5698	0.246
3453.3612	0.4028	0.222	.2253	0.5738	0.220
.3644	0.4039	0.235	.2278	0.5747	0.229
.3713	0.4063	0.223	.2610	0.5862	0.225
.3747	0.4075	0.203	.2617	0.5866	0.218
.3820	0.4100	0.180	.2757	0.5914	0.219
.3861	0.4115	−0.021	.2784	0.5923	0.212
.3952	0.4146	0.229	.2916	0.5969	0.203
.3981	0.4156	0.225	.2921	0.5971	0.210
.4125	0.4206	0.216	.3081	0.6026	0.217
.4143	0.4213	0.219	.3108	0.6036	0.221
.4234	0.4244	0.212	.3253	0.6086	0.213
.4238	0.4246	0.220	.3258	0.6088	0.227
.4327	0.4277	0.203	.3482	0.6166	0.190
.4335	0.4280	0.206	.3511	0.6176	0.200
3491.2479	0.8776	0.161			

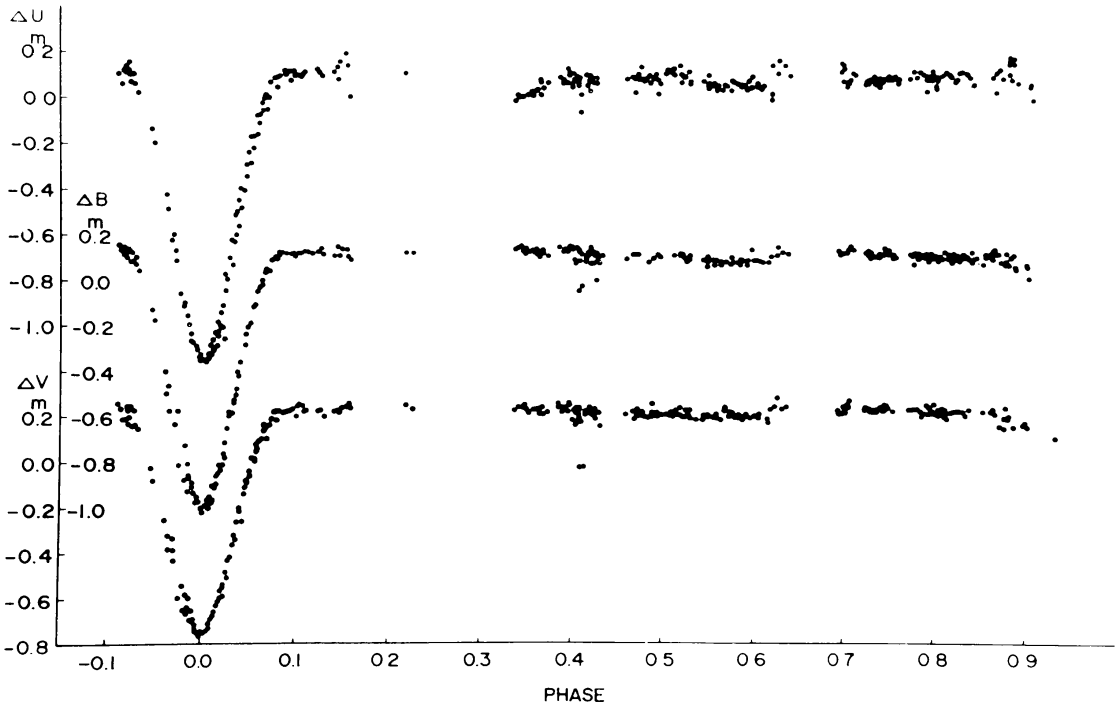

Fig. 1. Light curves of CD Eri.

Since the observed primary minima were found to occur $0^d.168$ earlier than the ones computed from the period $2^d.876766$ (Huth, 1960), a revised ephemeris

$$\text{Primary Min.} = \text{JD (Hel) } 2429910.567 + 2^d.876728E \pm 0.0000004$$

has been obtained.

The depths of the primary minima are

U: $1^m.29$, B: $1^m.14$ and V: $0^m.98$.

The secondary minimum is not noticeable in our observations, as was the case also with the light curve obtained by Huth, though the scatter there was much larger. The magnitude, colour and the inferred spectral type of the comparison and the variable stars are given in Table II.

TABLE II

Magnitude, colours and approximate spectral types

Star	V	$B-V$	$U-B$	Spectral type
CD Eri	$9^m.7$	$0^m.26$	$0^m.16$	A8
BD $-9°0748$	9.9	0.18	0.17	A6
BD $-8°0725$	9.3	0.01	0.07	A1

TABLE III

Photometric Elements of CD Eri

	Assumed depth of secondary minimum $(1 - \lambda)$ sec					
	$0^m.00$			$0^m.02$		
Element	*V*	*B*	Mean	*V*	*B*	Mean
x (assumed)	0.6	0.6	0.6	0.6	0.6	0.6
α^{oc}	0.595	0.650	0.622	0.681	0.728	0.704
k	0.45	0.45	0.45	0.47	0.49	0.48
p_0	−0.204	−0.285	−0.244	−0.334	−0.408	−0.387
θ_e	28°.6	28°.3	28°.4	28°.7	28°.6	28°.6
i	69°.0	70°.4	69°.7	71°.4	73°.0	72°.2
r_g	0.395	0.385	0.390	0.378	0.364	0.371
r_s	0.178	0.173	0.176	0.178	0.178	0.178
L_g	0.000	0.000	0.000	0.126	0.107	0.116
L_s	1.000	1.000	1.000	0.874	0.893	0.884

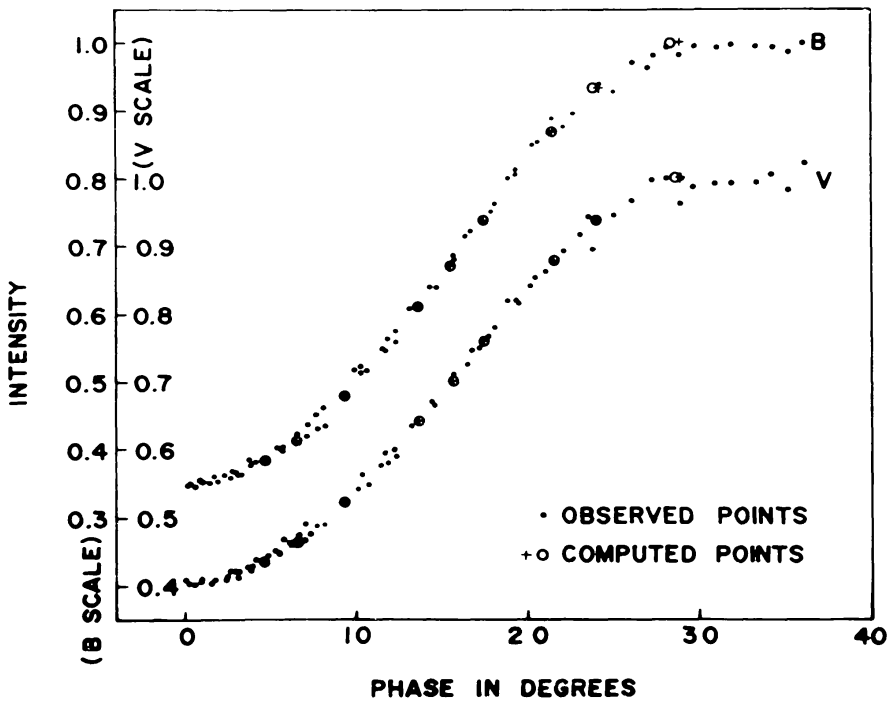

Fig. 2. Primary minima of CD Eri. (+) and (○) represent computed points assuming the depths of sec. min. as $0^m.02$ and $0^m.00$ respectively.

4. Orbital Elements

The elements have been determined for observations in B and V filters only. In case of U filter, the observations on the two nights during the eclipse period fall along two distinct curves. The mean of these would give an inaccurate solution. Owing to the absence of the secondary minimum the solution from the primary alone is indeterminate. Therefore, limiting solutions have been obtained by assuming the depth of the secondary minimum as $0^{m}.00$ and $0^{m}.02$, the latter being the amount of maximum scatter in the present observations. The nomographic method (Russell and Merrill, 1952) indicated that the intersection of the depth curve and the χ curve was possible for the case of occultation eclipse only. The elements given in Table III have been obtained with the help of Merrill's (1950) tables, and the computed points using these elements are plotted in Figure 2.

Since the secondary minimum is not noticeable and the primary minimum is deep, the system is most likely a semidetached one.

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