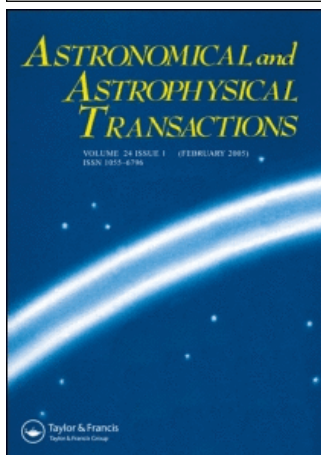


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Photoelectric observations of cepheids. IV

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PHOTOELECTRIC OBSERVATIONS OF CEPHEIDS. IV

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(30 August 1991)

353 UBV observations in the Johnson system for 40 Cepheids obtained in the 1987 season are presented.

KEY WORDS Cepheids, photometry.

The observational program was carried out in 1987 at the Mt. Maidanak Observatory of the Tashkent Astronomical Institute with a 0.6-meter reflector, equipped with a photon-counting photometer. Mainly, the “all sky” method was used. A full description of the observational technique and reduction procedure can be found in Berdnikov (1986).

The observations are listed in Table 1 in alphabetical order of the constellations. The standard deviation for every magnitude and colour in the table is $\sim 0^m.02$. The light and colour curves are shown in Figures 1–4. The light elements used were taken from the fourth edition of the General Catalogue of Variable Stars (Kholopov *et al.*, 1985a, 1985b, 1987).

These results will be discussed elsewhere.

It is a pleasure to thank Dr. V. S. Shevchenko for the considerable blocks of observing time necessary to carry out these observations.

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Table 1

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
	U Aql					V496 Aql			
6996.2535	6.150	0.591	0.882	0.782	6996.2509	7.641	0.694	1.098	0.921
6997.2764	6.099	-	0.928	0.786	6997.2738	7.561	0.781	1.101	0.920
6998.2797	6.314	0.692	1.048	0.875	6998.2781	7.669	0.802	1.144	0.962
6999.2665	6.404	0.752	1.097	0.902	6999.2646	7.784	0.876	1.215	0.984
7000.2711	6.622	0.818	1.199	0.963	7000.2687	7.872	0.879	1.245	1.012
7001.2792	6.803	0.897	1.246	0.998	7001.2776	7.972	0.910	1.266	1.024
7002.2707	6.712	0.765	1.164	0.952	7002.2686	7.808	0.783	1.180	0.973
7003.2607	6.174	0.608	0.907	0.784	7003.2589	7.632	0.713	1.081	0.920
7084.0855	6.598	0.795	1.123	0.932		EW Aur			
7087.0710	-	0.682	1.064	0.895	7082.4440	-	-	1.245	1.158
7088.0685	6.115	0.598	0.836	0.775	7083.3982	13.074	-	0.915	0.786
7091.0649	6.566	-	1.165	0.964	7084.3296	13.552	-	1.116	0.984
7098.0397	-	0.818	1.140	0.959	7085.3771	-	-	1.179	1.100
	EV Aql				7087.3986	13.619	-	1.156	1.078
6992.3374	12.252	-	1.801	1.447	7088.3904	13.791	-	1.145	1.061
6994.3973	12.295	-	1.784	1.449		GT Aur			
6995.3461	12.291	-	1.803	1.432	7084.3727	12.363	-	0.935	0.836
6996.2801	12.292	-	1.802	1.435	7085.4179	12.519	-	1.001	0.871
6997.2806	12.264	-	1.815	1.394	7087.4202	11.850	-	0.714	0.694
6998.3026	12.248	-	1.752	1.425	7088.4130	12.232	-	0.898	0.825
6999.2699	12.210	-	1.705	1.372		GV Aur			
7000.3153	12.083	-	1.637	1.334	7082.4919	12.298	-	1.345	1.202
7001.2829	12.000	-	1.546	1.322	7083.4524	12.487	-	1.377	1.188
7002.2831	11.848	-	1.494	1.252	7084.3982	11.821	-	1.072	0.971
7003.2658	11.684	-	-	1.210	7085.4395	11.737	-	1.057	0.995
7082.1601	11.556	-	1.348	1.177	7087.4408	-	-	1.309	1.145
7083.1307	11.567	-	1.326	1.164	7088.4340	12.431	-	1.347	1.196
7084.1198	11.553	-	1.366	1.174		IN Aur			
7087.1700	-	-	1.415	1.217	7087.4136	13.616	-	1.372	1.294
7088.0908	11.634	-	1.452	1.232	7088.4025	13.843	-	1.456	1.383
7091.0874	11.729	-	1.535	1.302		V335 Aur			
7098.0702	11.964	-	1.713	1.387	7082.4852	11.919	-	0.878	0.882
	V496 Aql				7083.4483	12.446	-	1.157	1.087
6995.2968	7.853	0.842	1.207	0.985	7084.3953	12.700	-	1.307	1.139

Table 1 (continued)

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
V335 Aur					HK Cas				
7085.4363	12.779	-	1.186	1.158	7002.4518	11.658	-	1.466	1.302
7087.4364	12.587	0.847	1.230	1.136	7003.4334	11.774	-	1.565	1.359
7088.4306	12.842	-	1.285	1.181	7082.2939	12.228	1.423	1.683	1.488
CE Cas					7083.3554	11.932	-	1.605	1.361
7000.4553	10.299	-	1.225	1.029	7084.2583	11.654	1.162	1.454	1.288
7002.4611	10.290	-	1.190	1.020	7085.3339	11.734	-	1.538	1.325
7003.4457	10.349	-	1.223	1.047	7086.2526	11.739	-	1.535	1.359
7082.3015	9.989	0.683	1.020	0.944	7087.3027	11.877	-	1.645	1.412
7084.2539	10.402	-	1.244	1.075	7088.1673	12.020	-	1.693	1.445
7085.3371	10.501	-	1.247	1.065	7098.2196	12.256	-	1.743	1.489
7086.2559	10.076	-	1.013	0.938	DT Cyg				
7087.3061	10.033	-	1.086	0.964	6996.4512	5.691	0.385	0.513	0.459
7088.1710	10.277	-	1.180	1.055	6997.4508	5.865	0.416	0.575	0.507
7098.2229	10.339	-	1.218	1.052	6998.4680	-	-	0.451	0.419
CF Cas					6999.4624	5.844	0.398	0.584	0.493
7002.4643	11.029	-	1.198	1.036	7000.4671	5.665	0.321	0.493	0.434
7003.4508	11.213	-	1.206	1.108	7002.4724	-	0.399	0.560	0.477
7082.3060	11.312	0.946	1.330	1.124	7003.4664	5.629	0.274	0.487	0.431
7084.2551	10.845	-	1.024	0.949	7004.1600	5.785	0.440	0.569	0.500
7085.3389	10.993	-	1.194	1.013	7005.1537	5.841	0.444	0.599	0.497
7086.2569	11.235	-	1.266	1.105	7088.0715	5.701	0.281	0.488	0.459
7087.3077	11.319	-	1.322	1.104	7091.0691	5.667	0.345	0.514	0.461
7088.1723	11.366	-	1.275	1.104	7098.0421	-	-	0.537	0.497
7098.2254	11.184	-	1.165	1.055	V383 Cyg				
CT Cas					6992.3995	10.938	-	1.599	1.405
7000.4614	12.428	-	1.520	1.258	7001.3060	11.112	-	1.660	1.467
7003.4598	12.264	-	1.374	1.220	7002.3121	10.580	-	1.459	1.309
7085.3438	12.453	-	1.333	1.214	7003.2897	10.785	-	1.593	1.400
7086.2592	11.997	-	1.199	1.129	V495 Cyg				
7087.3101	12.285	-	1.331	1.252	6992.4058	10.833	-	1.677	1.499
7088.1750	12.488	-	1.388	1.274	7001.3086	10.424	-	1.531	1.387
7098.2279	12.153	-	1.255	1.192	7002.3143	10.503	-	1.618	1.415
HK Cas					7003.2919	10.635	-	1.652	1.470
7000.4501	12.161	-	1.792	1.438	7082.2322	10.447	1.031	1.527	1.399

Table 1 (continued)

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
V495 Cyg					V1467 Cyg				
7083.1769	10.542	1.055	1.592	1.419	7087.1578	13.225	-	2.483	2.123
7084.1663	10.679	1.100	1.647	1.459	7088.1072	13.243	-	2.414	2.138
7087.1722	10.627	-	1.601	1.429	7091.0970	13.307	-	2.537	2.180
7088.1129	10.438	1.025	1.515	1.396	7098.0868	13.495	-	2.606	2.258
7091.1035	10.709	-	1.701	1.489	T Mon				
7098.0929	10.754	-	1.677	1.486	7082.5129	-	0.695	0.897	0.759
V1334 Cyg					7083.4698	5.811	0.656	0.937	0.791
6996.4550	5.764	0.251	0.435	0.445	7084.4073	5.847	0.711	0.989	0.817
6997.4495	5.860	0.287	0.486	0.466	7085.4553	5.919	0.821	1.047	-
6998.4627	5.911	0.241	0.483	0.483	7087.4453	-	0.978	1.186	0.902
6999.4605	5.795	0.265	0.461	0.433	7088.4388	-	1.052	1.228	0.923
7000.4713	5.807	0.220	0.467	0.447	WW Mon				
7002.4709	5.810	0.284	0.462	0.431	7084.4790	12.084	-	0.907	0.888
7003.4644	5.734	0.286	0.432	0.416	7085.4974	12.405	-	1.109	1.023
7004.1646	5.868	0.304	0.500	0.484	7087.4956	12.834	-	1.337	1.110
7005.1573	5.962	0.288	0.529	0.493	7088.4562	12.502	-	1.036	1.005
7088.0730	5.973	0.170	0.515	0.503	BE Mon				
7091.0705	5.932	0.228	0.529	0.497	7084.4924	10.738	-	1.230	1.044
7098.0431	-	-	0.546	0.526	7085.5067	10.361	-	0.980	0.893
V1467 Cyg					7087.5109	10.753	-	1.223	1.048
6992.3894	13.281	-	2.487	2.163	7088.4661	10.383	-	0.983	0.934
6994.4079	13.363	-	2.546	2.211	CS Mon				
6995.3248	13.309	-	2.633	2.211	7083.5182	10.810	0.720	1.068	0.960
6996.2628	13.321	-	2.640	2.195	7084.4592	10.904	-	1.153	0.987
6997.2940	13.382	-	2.686	2.229	7085.4865	11.104	-	1.227	1.006
6998.2890	13.422	-	2.586	2.264	7087.4845	11.233	-	1.291	1.089
6999.2904	13.445	-	2.637	2.244	7088.4598	11.100	-	1.097	1.022
7000.3003	13.478	-	2.653	2.292	CU Mon				
7001.2991	13.549	-	2.751	2.285	7084.4698	13.905	-	1.530	1.330
7002.2996	13.545	-	2.740	2.299	7085.4910	13.359	-	1.215	1.147
7003.2849	13.496	-	2.807	2.241	7087.4890	13.607	-	1.414	1.287
7082.2219	13.121	-	2.253	2.066	CV Mon				
7083.1578	13.130	-	2.252	2.082	7084.4882	10.510	-	1.477	1.287
7084.1468	13.128	-	2.292	2.052	7085.5046	10.634	-	1.470	1.294

Table 1 (continued)

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
CV Mon					S Sge				
7087.5076	10.031	-	1.243	1.161	7084.0808	5.970	-	0.956	0.759
Y Oph					7087.0665	-	0.436	0.742	0.624
6994.2654	5.882	0.935	1.271	1.136	7088.0645	5.357	0.417	0.633	0.579
6995.2282	5.879	1.001	1.279	1.143	7091.0608	5.679	0.652	0.901	0.719
6996.1989	5.873	0.980	1.308	1.153	GY Sge				
6997.2123	5.932	1.049	1.366	1.178	6992.3195	10.279	-	2.483	2.046
6998.2371	6.005	1.063	1.385	1.192	6994.3735	10.333	-	2.492	2.056
6999.2235	6.084	1.083	1.432	1.221	6995.3432	10.338	-	2.491	2.056
7000.2233	6.149	1.082	1.471	1.242	6996.2769	10.351	-	2.509	2.049
7001.2244	6.219	1.156	1.507	1.265	6997.3073	10.352	-	-	2.046
7002.2265	6.257	1.192	1.519	1.298	6998.2998	10.385	-	2.518	2.064
7003.2093	6.331	1.208	1.537	1.295	6999.2749	10.427	-	2.520	2.061
7004.1804	6.320	1.286	1.542	1.302	7000.3113	10.421	-	2.521	2.053
7005.1786	6.397	1.245	1.553	1.288	7001.2867	10.463	-	2.517	2.070
BF Oph					7002.2866	10.491	-	2.530	2.068
6994.2625	7.102	0.408	0.778	0.662	7003.2702	10.490	-	2.558	2.066
6995.2253	7.484	0.693	0.980	0.815	7083.1412	10.020	-	2.254	1.915
6996.1966	7.585	0.666	1.035	0.826	7084.1275	10.031	-	2.277	1.925
6997.2098	7.361	0.613	0.876	0.770	7087.1672	10.100	-	2.364	1.955
6998.2343	7.100	0.512	0.797	0.663	7088.0929	10.088	-	2.351	1.951
6999.2220	7.403	0.624	0.976	0.782	7091.0896	10.205	-	2.400	2.022
7000.2209	7.603	0.636	1.051	0.842	7098.0742	10.346	-	-	2.038
7001.2170	7.498	-	0.936	0.776	VY Sgr				
7002.2229	7.075	0.518	0.758	0.715	6994.3043	11.844	1.733	2.366	1.902
7003.2071	7.431	0.630	0.974	0.796	6995.2627	11.998	-	2.389	1.916
7004.1786	7.589	-	1.055	0.846	6996.2255	11.969	-	2.325	1.897
7005.1766	7.523	0.695	0.897	0.761	7001.2423	11.027	-	1.825	1.653
S Sge					7002.2391	11.126	-	1.888	1.722
6992.2991	5.924	0.806	1.030	0.766	7003.2212	11.295	-	2.011	1.761
7001.1563	5.977	0.791	1.031	0.763	AP Sgr				
7002.1680	5.879	0.657	0.925	0.720	6994.3126	7.270	0.684	1.003	0.805
7003.1564	5.487	-	0.718	0.600	6995.2675	7.098	0.540	0.848	0.740
7004.1490	5.335	-	0.649	0.599	6996.2300	6.556	0.439	0.649	0.572
7005.1447	5.454	-	0.726	0.648	6997.2510	6.849	-	-	-

Table 1 (continued)

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
AP Sgr					EW Sct				
6998.2566	7.108	0.671	0.944	0.782	6999.2502	8.033	1.410	1.780	1.620
6999.2431	7.294	0.721	1.009	0.811	7000.2543	8.024	1.380	1.764	1.613
7000.2450	7.132	0.499	0.877	0.750	7001.2617	8.091	1.423	1.792	1.630
7001.2472	6.617	0.403	0.666	0.589	7002.2506	8.133	1.445	1.813	1.643
7002.2419	6.837	0.558	0.800	0.710	CR Ser				
7003.2250	7.146	0.668	0.965	0.789	6994.2974	10.923	1.243	1.713	1.498
AV Sgr					6995.2562	11.172	-	1.796	1.562
6994.2792	11.074	-	2.107	1.895	6996.2208	11.238	-	1.791	1.553
6996.2024	11.327	-	2.265	1.912	6998.2504	10.584	-	1.541	1.362
6997.2161	11.424	1.786	2.393	1.955	6999.2361	10.843	-	1.707	1.456
6998.2399	11.593	-	2.377	1.975	7000.2371	11.022	-	1.760	1.517
6999.2271	11.732	-	2.447	1.979	7001.2347	11.211	-	1.835	1.528
7000.2259	11.827	-	2.470	1.994	7002.2366	-	-	1.622	1.443
7001.2268	11.877	-	2.446	1.975	7003.2193	10.537	-	1.480	1.340
7002.2286	11.794	-	2.334	1.997	AE Tau				
7003.2113	11.707	-	2.240	1.958	7083.4174	11.547	-	1.000	0.984
7004.2257	11.617	-	2.180	1.916	7084.3652	11.770	-	1.181	1.038
BB Sgr					7085.4137	11.919	-	1.230	1.048
6994.3299	7.009	0.741	1.110	0.885	7087.4177	11.505	-	1.060	0.969
6995.2806	7.194	0.890	1.178	0.923	7088.4094	11.796	-	1.194	1.057
6996.2402	7.197	0.769	1.138	0.904	AV Tau				
6997.2629	6.802	0.673	0.941	0.796	7082.4809	12.241	-	-	1.227
6998.2683	6.673	0.586	0.860	0.758	7083.4423	12.589	-	1.449	1.259
6999.2534	6.848	0.699	0.977	0.822	7084.3881	12.563	-	1.394	1.276
7000.2565	6.918	0.685	1.051	0.864	7085.4314	12.029	-	1.266	1.170
7001.2645	7.111	0.789	1.125	0.906	7088.4227	11.901	-	1.190	1.110
7002.2529	7.235	0.893	1.157	0.946	EF Tau				
7003.2412	7.139	-	1.053	0.885	7083.4341	12.795	-	0.776	0.826
EW Sct					7084.3800	13.107	-	0.918	0.882
6994.3261	8.229	1.466	1.843	1.672	7085.4240	13.293	-	0.981	0.966
6995.2780	8.268	1.519	1.862	1.686	7087.4226	12.950	-	0.865	0.896
6996.2374	7.960	1.357	1.725	1.590	7088.4158	13.207	-	1.005	0.907
6997.2613	7.809	1.386	1.698	1.555	S Vul				
6998.2665	7.956	1.386	1.744	1.599	6992.2605	9.090	-	2.061	1.611

Table 1 (continued)

JD hel 2440000+	V	U-B	B-V	V-R	JD hel 2440000+	V	U-B	B-V	V-R
S Vul					SV Vul				
6994.3552	9.141	1.886	2.081	1.625	6992.2683	7.746	1.646	1.762	1.316
6995.3347	9.121	1.887	2.078	1.608	6994.3691	7.796	1.597	1.754	1.319
6996.2727	9.133	2.006	2.087	1.618	6995.3398	7.769	1.533	1.730	1.298
6997.3027	9.140	1.933	2.115	1.611	6996.2690	7.747	1.513	1.704	1.292
6998.2982	9.168	1.886	2.095	1.626	6997.3005	7.680	1.452	1.678	1.259
6999.2785	9.200	1.958	2.105	1.619	6998.2957	7.587	1.301	1.593	1.234
7000.3068	9.192	1.914	2.110	1.615	6999.2824	7.444	1.194	1.503	1.171
7001.2903	9.238	1.954	2.081	1.627	7000.3044	7.190	0.986	1.373	1.094
7002.2908	9.238	1.956	2.113	1.622	7001.2920	6.973	0.920	1.229	1.031
7003.2754	9.242	1.898	2.123	1.619	7002.2941	6.796	0.854	1.168	0.970
7082.1702	-	1.775	1.951	1.545	7003.2783	6.720	0.833	1.143	0.955
7082.2156	9.173	1.807	1.955	1.541	7082.2174	7.735	1.653	1.726	1.298
7083.1480	9.167	1.689	1.937	1.552	7083.1509	7.773	1.610	1.702	1.298
7084.1340	9.131	1.646	1.910	1.531	7084.1364	7.775	1.569	1.712	1.281
7087.1650	8.964	1.559	1.834	1.468	7087.1629	7.710	1.456	1.641	1.255
7088.0979	8.924	-	1.818	1.486	7088.1009	7.617	1.380	1.579	1.235
7091.0910	8.807	1.468	1.757	1.439	7091.0928	7.023	0.981	1.271	1.052
7098.0771	8.724	1.404	1.724	1.421	7098.0787	-	0.973	1.235	1.031
T Vul									
6992.2821	5.363	-	0.463	0.417					
7000.1537	5.865	0.534	0.720	0.645					
7001.1504	5.383	0.390	0.458	0.417					
7002.1633	5.671	0.430	0.638	0.561					
7003.1535	5.911	0.524	0.756	0.620					
7004.1566	6.044	0.594	0.786	0.643					
7005.1503	5.517	0.466	0.523	0.452					
7088.0694	6.031	-	0.768	0.648					
7091.0676	5.745	0.424	0.695	0.576					
7098.0415	-	-	0.621	0.565					
U Vul									
7084.0882	7.230	1.014	1.358	1.163					
7091.0669	6.970	0.931	1.275	1.111					
7098.0408	6.965	0.879	1.229	1.073					

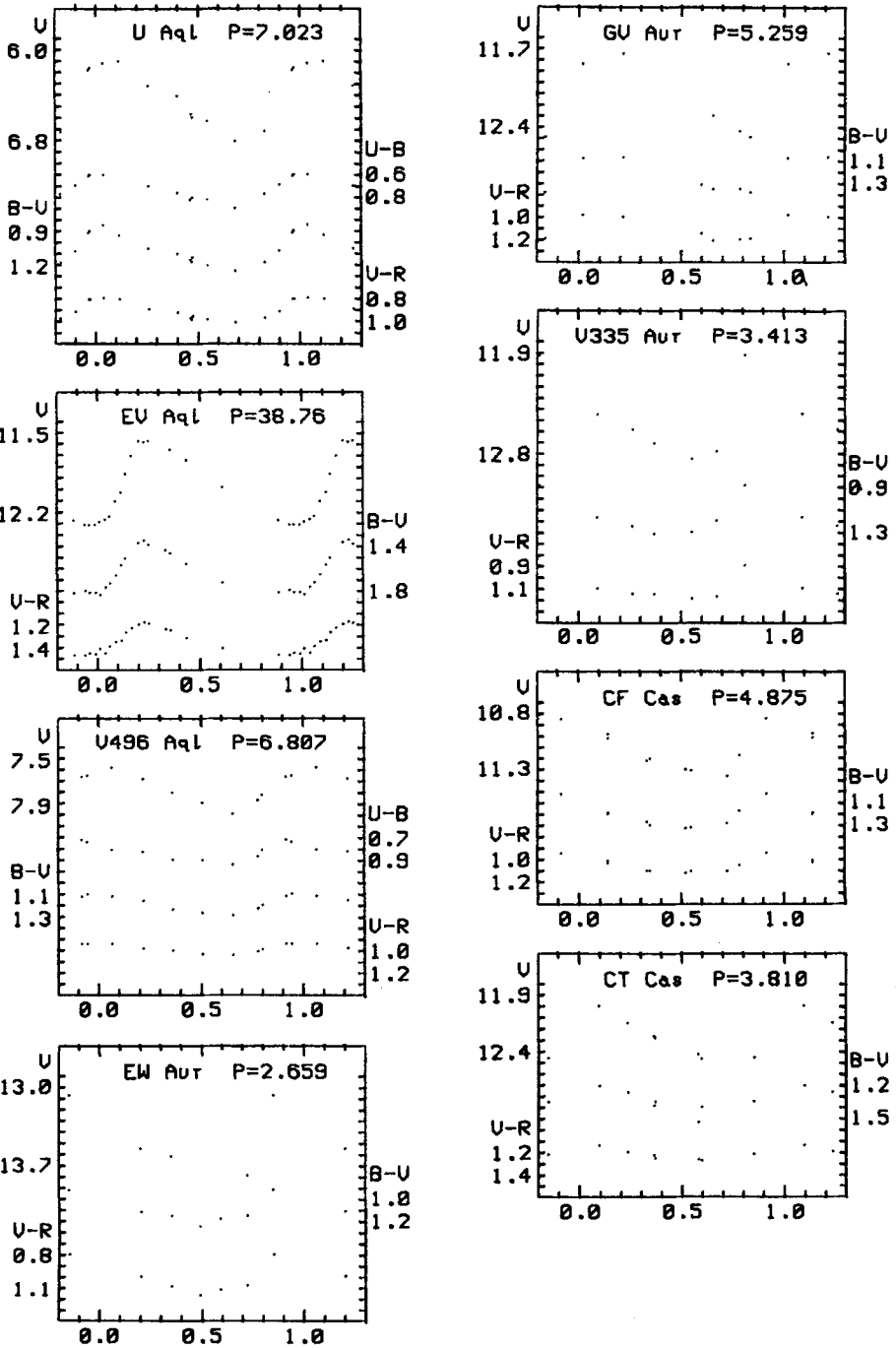


Figure 1 The light and colour curves for U Aql, EV Aql, V496 Aql, EW Aur, GV Aur, V335 Aur, CF Cas and CT Cas.

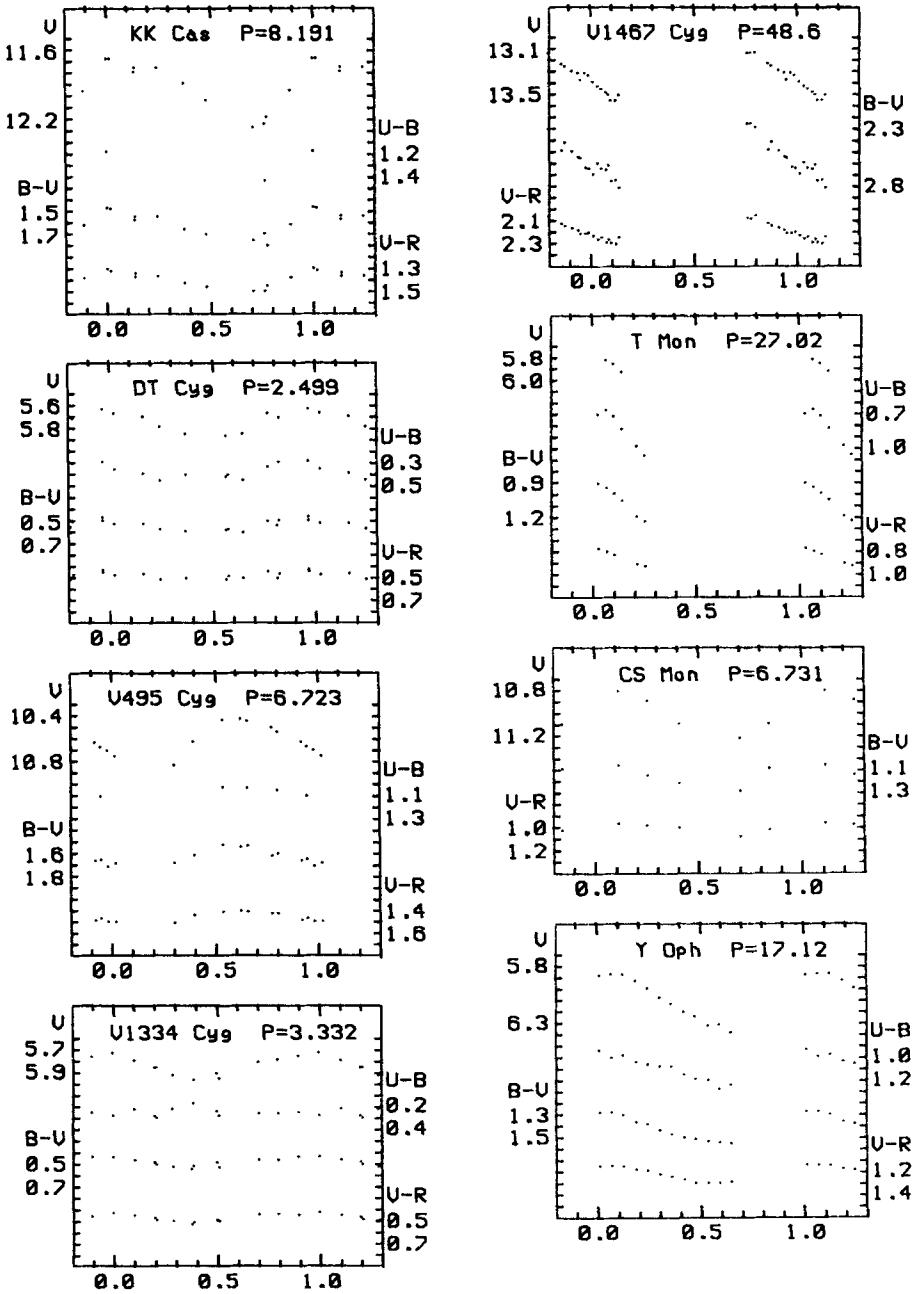


Figure 2 The light and colour curves for KK Cas, DT Cyg, V495 Cyg, V1334 Cyg, V1467 Cyg, T Mon, CS Mon and Y Oph.

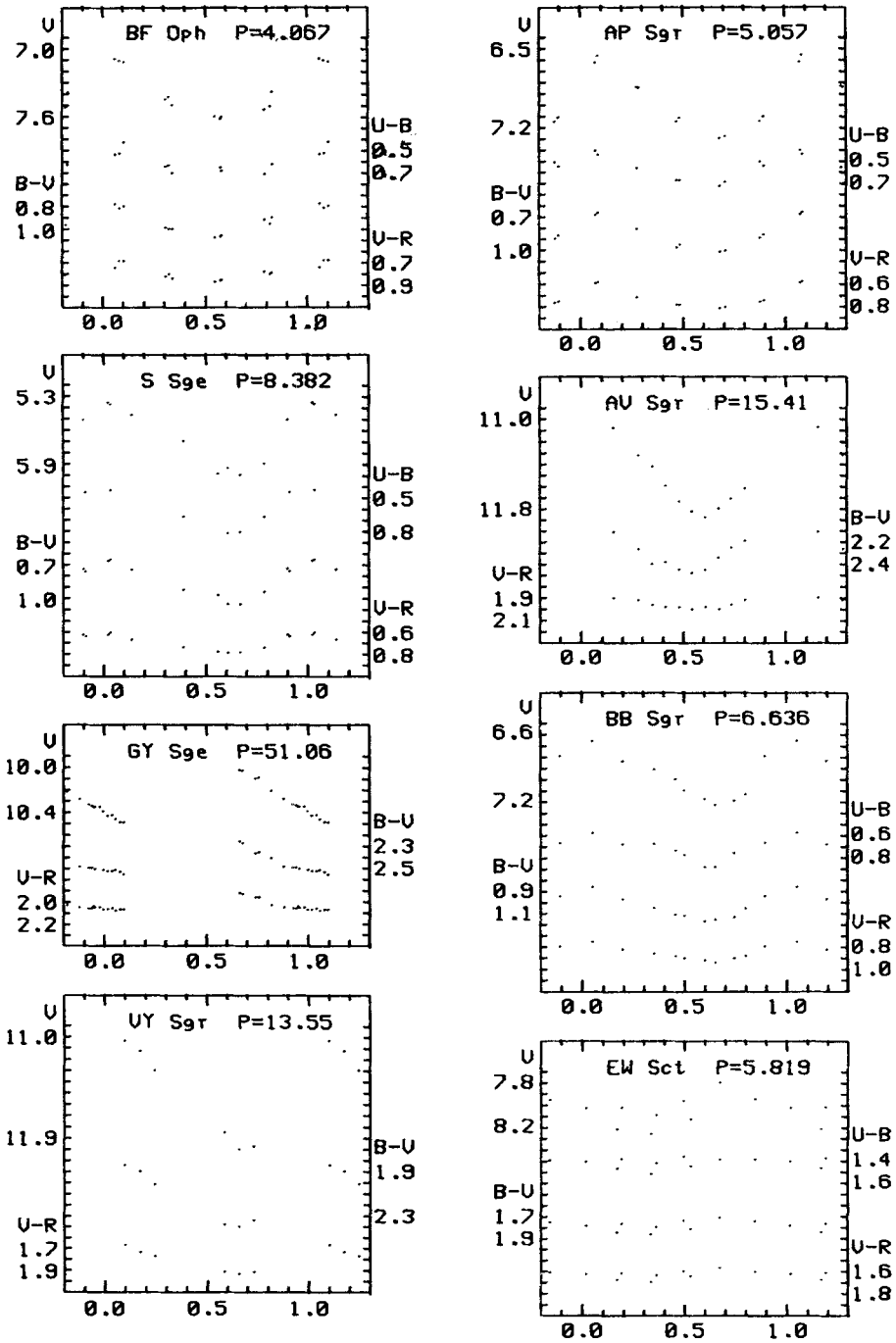


Figure 3 The light and colour curves for BF Oph, S Sge, GY Sge, VY Sgr, AP Sgr, AV Sgr, BB Sgr and EW Sct.

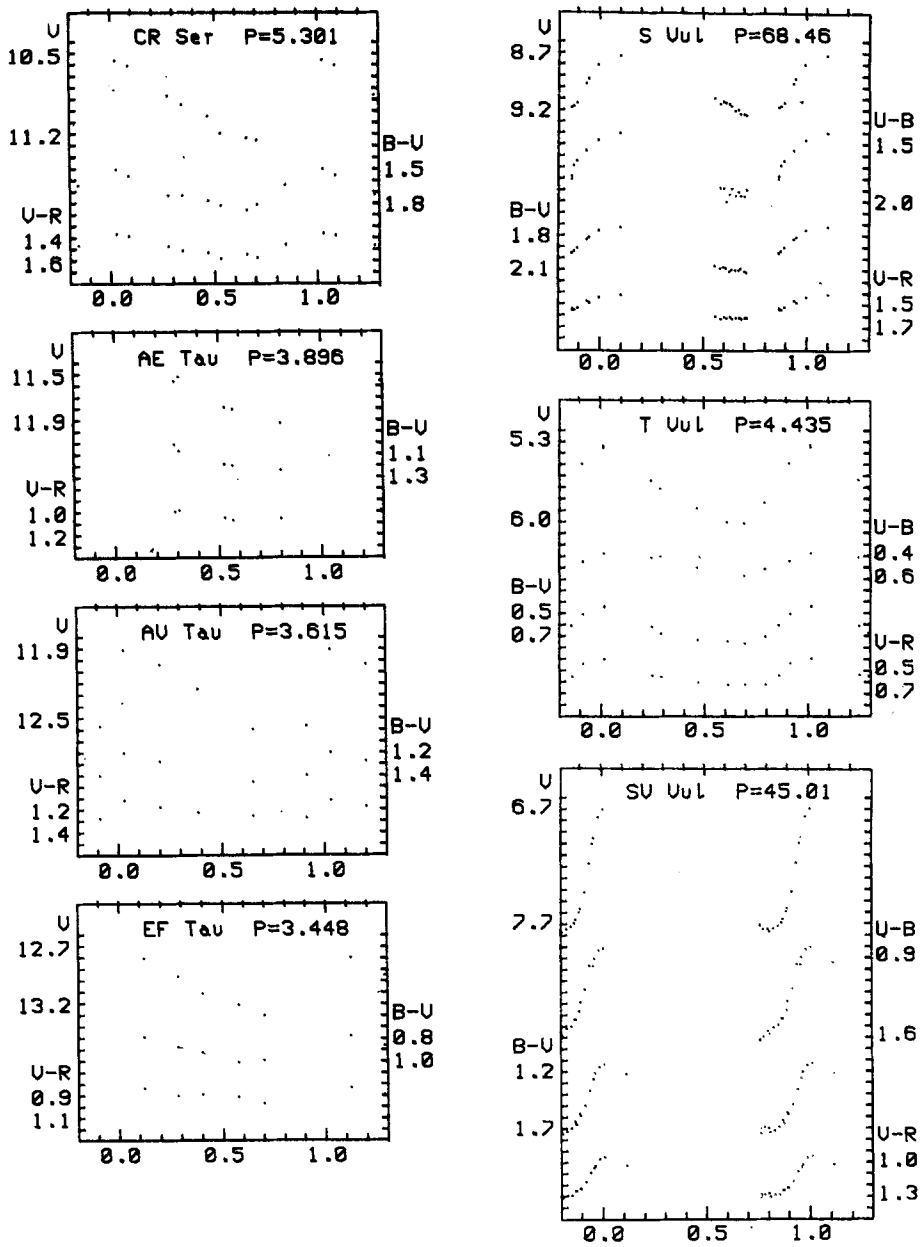


Figure 4 The light and colour curves for CR Ser, AE Tau, AV Tau, EF Tau, S Vul, T Vul and SV Vul.