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**UBVR PHOTOELECTRIC OBSERVATIONS OF THE DOUBLE-MODE  
CEPHEIDS CO Aur, TU Cas AND EW Sct**

Recently one of us (Berdnikov, 1992) has decomposed the available photoelectric observations of all double-mode Cepheids into two oscillations. It was pointed out as well that the number of existing observations is not sufficient for reliable investigation of light curve variations for the majority of these stars. Therefore we continue to carry out observations of all accessible double-mode Cepheids.

Photoelectric observations of double-mode Cepheids were carried out in summer – autumn 1994. The 60-cm reflector of the Mt. Maidanak observatory was used and 79 UBVR<sub>c</sub> measurements of CO Aur (Table 1), 121 UBVR<sub>c</sub> measurements of TU Cas (Table 2), and 85 UBVR<sub>c</sub> measurements of EW Sct (Table 3) were obtained.

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Table 1. UBVR observations of CO Aur.

JD hel 2440000+	V	U–B	B–V	V–R <sub>c</sub>	JD hel 2440000+	V	U–B	B–V	V–R <sub>c</sub>
9617.3379	-	-	.655	.369	9623.4852	7.805	.405	.616	.420
9617.3620	7.654	.319	.644	.391	9623.4996	7.787	.347	.634	.405
9620.3451	7.461	.428	.580	.355	9624.3407	7.696	.492	.699	.423
9620.3931	7.427	.452	.592	.341	9624.3685	7.748	.502	.682	.418
9620.4579	7.523	.412	.557	.383	9624.3699	7.736	.412	.667	.413
9621.3914	7.910	.415	.762	.451	9624.3866	7.758	.422	.672	.428
9621.5005	7.969	.416	.728	.451	9624.4029	7.743	.410	.691	.411
9622.4244	7.642	.474	.640	.398	9624.4240	7.764	.415	.683	.411
9622.4455	7.655	.404	.654	.398	9624.4425	7.781	.383	.682	.414
9622.4795	7.666	-	.639	.381	9624.4532	7.788	.441	.688	.424
9622.4994	7.776	.389	.584	.404	9624.4850	7.745	.407	.698	.437
9623.3030	7.824	.436	.770	.441	9624.5015	7.759	.417	.684	.452
9623.3247	7.825	.446	.719	.440	9625.3671	7.768	.436	.677	.408
9623.3502	7.807	.444	.700	.429	9625.4255	7.730	.366	.659	.410
9623.3852	7.809	.375	.728	.412	9625.4455	7.717	.384	.628	.420
9623.3985	7.802	.395	.690	.416	9625.4666	7.727	-	.634	.405
9623.4245	7.802	-	.696	.415	9625.4851	7.712	-	.625	.404
9623.4464	7.824	.394	.648	.416	9625.4963	7.727	.436	.597	.393
9623.4648	7.820	.418	.663	.415	9631.3256	7.683	.417	.691	.413
9623.4762	7.813	.374	.634	.419	9631.3575	7.661	-	.671	.393

Table 1 (cont.)

JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>	JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>
9632.3020	7.776	.384	.696	.402	9633.4483	7.754	.418	.641	.405
9632.3283	7.802	.445	.712	.435	9633.4682	7.770	-	.664	.408
9632.3497	7.813	.461	.711	.426	9633.4874	7.768	.378	.664	.404
9632.3624	7.812	.398	.699	.436	9634.3088	7.785	.460	.673	.395
9632.3665	7.808	.396	.691	.435	9634.3426	7.733	.428	.675	.410
9632.3867	7.811	.403	.681	.422	9635.3701	7.826	-	.701	.451
9632.4068	7.803	.406	.679	.425	9635.3948	7.845	-	.707	.429
9632.4353	7.806	.384	.662	.416	9635.4536	7.879	-	.725	.429
9632.4482	7.795	.365	.653	.406	9635.4684	7.878	-	.732	.429
9632.4681	7.745	-	.665	.409	9635.4777	7.889	-	.727	.437
9632.4849	7.773	.448	.687	.488	9635.4863	7.896	-	.711	.437
9632.5026	7.739	.445	.687	.481	9635.5045	7.946	-	.690	.438
9632.5236	7.713	-	.654	.414	9635.5145	7.897	-	.723	.441
9633.2856	7.634	.428	.672	.409	9640.4056	7.637	-	.633	.409
9633.3301	7.656	.436	.664	.414	9640.4702	7.650	-	.649	.410
9633.3530	7.682	.404	.663	.397	9640.5272	7.671	-	.664	.410
9633.3682	7.697	.421	.650	.420	9644.3946	7.899	-	.750	.469
9633.3894	7.706	.456	.671	.409	9644.4938	7.869	-	.724	.455
9633.4060	7.708	.419	.676	.412	9647.4171	7.601	-	.624	.400
9633.4277	7.731	.437	.669	.399					
9617.3238	8.082	-	.737	.415	9622.4310	7.127	.414	.345	.196
9617.3623	8.041	.467	.762	.419	9622.4536	7.171	.317	.365	.233
9618.3919	7.610	-	.576	.340	9622.4738	7.216	.293	.365	.232
9618.4572	7.659	.385	.580	.348	9622.5094	7.287	.340	.415	.226
9619.1962	7.941	.365	.680	.388	9623.1427	7.910	.411	.687	.416

Table 2. UBVR observations of TU Cas.

JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>	JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>
9620.3307	7.557	.331	.487	.295	9623.2952	7.886	.400	.710	.406
9620.3514	7.513	.329	.488	.290	9623.3190	7.934	.413	.734	.406
9620.3595	7.505	.326	.499	.282	9623.3308	8.048	.409	.703	.412
9620.3831	7.499	.341	.488	.281	9623.3556	7.996	.407	.731	.412
9620.4213	7.438	.321	.493	.293	9623.3837	8.001	-	.724	.422
9620.4496	7.460	.337	.465	.296	9623.4076	7.981	.440	.734	.409
9621.1741	7.811	-	.647	.368	9623.4297	7.985	.400	.726	.409
9621.3012	7.893	.405	.647	.397	9623.4516	8.017	.433	.734	.411
9621.3585	7.923	.401	.692	.401	9623.4701	8.009	.425	.729	.428
9621.3815	7.997	.419	.716	.411	9623.4819	8.026	.462	.705	.427
9621.4154	7.946	.425	.700	.386	9623.5078	8.030	.387	.724	.418
9621.4408	7.959	.459	.691	.394	9624.1577	7.780	-	.596	.336
9621.5106	7.990	-	.702	.402	9624.2802	7.647	.343	.513	.309
9622.3899	7.114	.334	.301	.205	9624.3203	7.618	.326	.509	.390

Table 2 (cont.)

JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>	JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>
9624.3607	7.589	.341	.501	.306	9632.5077	8.100	.460	.730	.420
9624.3819	7.550	.324	.496	.298	9633.1570	7.263	.302	.374	.239
9624.3987	7.546	.322	.483	.300	9633.2036	7.314	.357	.411	.260
9624.4252	7.529	.337	.495	.287	9633.2306	7.370	.276	.442	.265
9624.4439	7.540	.294	.513	.293	9633.2860	7.474	.339	.469	.273
9624.4667	7.547	.328	.488	.307	9633.3029	7.462	.328	.472	.294
9624.4780	7.552	-	.496	.306	9633.3163	7.462	.337	.489	.294
9624.4870	7.572	.335	.493	.310	9633.3362	7.483	.361	.519	.311
9624.5064	7.557	.293	.518	.291	9633.3574	7.532	.315	.511	.317
9624.5150	7.574	.307	.530	.297	9633.3723	7.553	.404	.509	.312
9625.1716	7.736	.332	.593	.361	9633.3935	7.562	.364	.545	.336
9625.2397	7.773	.327	.589	.364	9633.4102	7.564	.385	.555	.330
9625.3156	7.780	.322	.608	.364	9633.4334	7.598	.388	.568	.317
9625.3405	7.766	.353	.630	.361	9633.4526	7.624	.412	.549	.336
9625.3588	7.768	.399	.631	.367	9633.4646	7.631	.355	.586	.336
9625.3781	7.779	.371	.627	.357	9633.4953	7.657	.378	.596	.350
9625.3973	7.805	.334	.621	.375	9634.1781	7.987	.427	.709	.404
9625.4312	7.799	.356	.628	.373	9634.2131	7.997	.392	.707	.382
9625.4508	7.803	.397	.612	.386	9634.2543	7.997	.343	.716	.391
9625.4824	7.798	-	.639	.361	9634.2798	8.049	.375	.706	.394
9625.5013	7.833	.377	.638	.392	9634.2948	8.056	-	.720	.410
9625.5140	7.825	-	.642	.377	9634.3313	8.016	.485	.707	.403
9626.2044	8.046	.412	.686	.407	9634.3532	8.029	.415	.712	.411
9631.1773	7.387	.316	.448	.270	9635.3431	7.596	-	.502	.325
9631.2207	7.398	.275	.455	.267	9635.3620	7.590	-	.499	.324
9631.2999	7.412	.317	.458	.318	9635.3743	7.603	-	.525	.313
9631.3264	7.508	.286	.448	.285	9635.3894	7.603	-	.551	.325
9631.3461	7.451	-	.475	.290	9635.4025	7.604	-	.522	.313
9631.3562	7.431	-	.476	.296	9635.4124	7.584	-	.526	.305
9632.1928	8.005	.397	.719	.407	9635.4374	7.604	-	.541	.321
9632.2352	8.011	.356	.713	.396	9635.4584	7.607	-	.552	.311
9632.2980	8.086	.412	.697	.406	9635.4695	7.627	-	.550	.340
9632.3252	8.042	.393	.716	.416	9635.4789	7.623	-	.550	.340
9632.3506	7.986	.462	.741	.412	9635.4872	7.617	-	.547	.335
9632.3514	8.046	-	.730	.419	9635.5042	7.609	-	.583	.310
9632.3741	8.060	.419	.725	.410	9640.2521	7.851	-	.649	.381
9632.3911	8.074	.431	.712	.418	9640.3318	7.859	-	.663	.380
9632.3979	8.056	-	.730	.410	9640.3995	7.872	-	.657	.384
9632.4113	8.082	.436	.731	.418	9641.3461	7.896	-	.644	.373
9632.4365	8.083	.420	.736	.421	9647.3231	7.987	-	.701	.403
9632.4542	8.071	.423	.738	.418	9647.4045	8.014	-	.719	.409
9632.4787	8.101	-	.751	.420					

Table 3. UBVR<sub>c</sub> observations of EW Sct

JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>	JD hel 2440000+	V	U-B	B-V	V-R <sub>c</sub>
9514.3505	7.752	-	1.644	1.074	9541.3840	8.160	-	1.794	1.155
9514.4166	7.758	-	1.659	1.081	9542.2532	7.778	-	1.628	1.076
9515.3758	7.933	-	1.754	1.129	9542.3059	7.743	-	1.636	1.056
9516.3930	8.220	-	1.861	1.177	9542.3754	7.747	-	1.605	1.066
9517.3920	8.259	-	1.828	1.169	9543.2529	7.734	-	1.648	1.069
9519.4161	7.792	-	1.668	1.086	9543.3171	7.754	-	1.652	1.079
9521.3289	8.145	-	1.819	1.159	9545.2402	8.229	-	1.863	1.186
9522.3669	8.082	-	1.775	1.137	9545.2950	8.233	-	1.883	1.187
9522.4278	8.077	-	1.786	1.139	9546.2441	8.192	-	1.818	1.157
9523.3250	8.004	-	1.757	1.128	9546.3076	8.164	-	1.816	1.151
9523.4044	8.009	-	1.744	1.121	9546.3826	8.154	-	1.807	1.145
9524.3050	8.013	-	1.763	1.124	9547.2328	7.838	-	1.662	1.079
9524.3773	8.014	-	1.748	1.128	9547.2888	7.821	-	1.663	1.076
9524.4418	8.007	-	1.764	1.121	9548.3187	7.877	-	1.704	1.105
9525.3014	7.889	-	1.680	1.102	9548.3584	7.884	-	1.707	1.095
9526.2907	7.820	-	1.686	1.087	9549.2327	7.988	-	1.766	1.130
9529.2910	8.245	-	1.854	1.175	9549.3056	7.994	-	1.766	1.129
9530.2756	7.786	-	1.653	1.060	9549.3532	7.998	-	1.773	1.133
9530.3598	7.747	-	1.627	1.061	9550.3050	8.010	-	1.785	1.120
9530.4150	7.719	-	1.633	1.053	9551.3001	7.997	-	1.750	1.130
9533.2763	8.196	-	1.861	1.172	9552.2994	8.076	-	1.808	1.142
9533.3543	8.199	-	1.866	1.168	9553.2950	8.077	-	1.782	1.139
9533.4084	8.204	-	1.864	1.170	9554.3074	7.775	-	1.652	1.075
9534.2965	8.140	-	1.816	1.290	9556.2972	8.014	-	1.777	1.144
9534.3444	8.148	-	1.799	1.153	9557.2504	8.230	-	1.862	1.172
9534.4006	8.118	-	1.793	1.145	9559.2233	7.739	-	1.616	1.058
9535.2654	7.920	-	1.715	1.100	9559.3000	7.727	-	1.608	1.059
9535.3318	7.919	-	1.691	1.099	9560.2314	7.824	-	1.689	1.089
9535.4003	7.915	-	1.700	1.105	9560.3365	7.853	-	1.700	1.101
9536.2586	7.929	-	1.713	1.114	9561.3126	8.061	-	1.784	1.148
9536.3799	7.933	-	1.720	1.113	9563.3152	8.036	-	1.759	1.130
9537.2611	7.929	-	1.724	1.111	9564.2392	8.013	-	1.753	1.129
9537.3266	7.930	-	1.732	1.109	9617.0997	7.938	1.575	1.698	1.103
9537.3996	7.931	-	1.728	1.114	9620.2012	7.938	1.320	1.714	1.117
9538.2840	7.930	-	1.727	1.117	9621.1548	8.036	1.497	1.792	1.114
9538.3328	7.928	-	1.725	1.117	9624.1679	7.680	1.373	1.587	1.056
9539.2585	7.949	-	1.738	1.122	9625.1553	7.872	1.367	1.683	1.091
9539.3445	7.949	-	1.749	1.119	9626.2098	8.149	-	1.889	1.154
9539.3826	7.960	-	1.738	1.124	9631.1458	8.047	-	1.786	1.119
9540.2474	8.143	-	1.832	1.162	9632.1564	7.996	1.600	1.761	1.124
9540.3405	8.152	-	1.828	1.159	9633.1592	8.030	1.453	1.745	1.131
9541.2516	8.183	-	1.834	1.156	9634.1468	8.180	-	1.803	1.160
9541.3167	8.172	-	1.807	1.152					

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