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PHOTOMETRIC OBSERVATIONS OF ACTIVE CHROMOSPHERE STARS:

II Peg, HD 175 742, HD 199 178

Photometric observations of three active chromosphere stars were carried out between August 17 and September 4, 1984 at the Ostrowik Station of the Warsaw University Observatory. Single channel photometer equipped with an uncooled EMI 6256A photomultiplier, attached to the 60cm reflector, was used. Differential observations were reduced to the standard UBV system.

1) II Peg

This often observed object belongs to RS CVn group. BD +28°4667 served as a comparison star. It was measured four times relative to BD +27°4648. Assuming for this star $V=9.39$ and $B-V=1.02$ (Bohusz and Udalski 1981) I obtained for BD +28°4667 $V=8.24 \pm 0.01$ and $B-V=0.76 \pm 0.01$. The differential observations, in the sense II Peg minus comparison star, are listed in Table I. The

Table I

JD 2445+	Phase	ΔV	$\Delta(B-V)$
935.5688	0.590	-0.780	-0.269
935.5736	0.591	-0.757	-0.268
936.4611	0.723	-0.711	-0.268
936.4632	0.723	-0.696	-0.276
936.5396	0.735	-0.683	-0.287
937.4826	0.875	-0.636	-0.266
937.4875	0.876	-0.631	-0.269
937.5653	0.887	-0.649	-0.244
939.4590	0.169	-0.682	-0.321
939.5736	0.186	-0.683	-0.285
939.5771	0.186	-0.681	-0.293
940.3882	0.307	-0.688	-0.284
940.3951	0.308	-0.691	-0.286
940.3139	0.296	-0.696	-0.271
941.4701	0.468	-0.749	-0.260
941.4750	0.469	-0.755	-0.273
941.5514	0.480	-0.764	-0.233
948.5549	0.521	-0.757	-0.262
948.5618	0.523	-0.759	-0.249
948.5667	0.523	-0.761	-0.277
948.5701	0.524	-0.762	-0.256

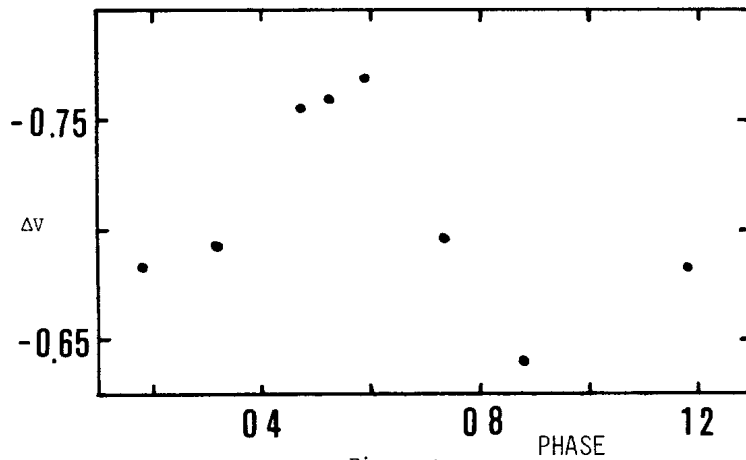


Figure 1

phases were calculated with the spectroscopic ephemeris (Vogt 1980): $\phi = \text{JD } 244\ 3033.47 + 6.72422E$. 7 nightly means in V are plotted in Figure 1. Although the light curve is not well covered, it is visible that the amplitude is about 0.12 mag. and the minimum is roughly near the phase 0.0.

2) HD 175 742

This star is classified as a BY Dra variable. It exhibits pronounced variations of light curve on a time scale of weeks (Bopp et al. 1984). The differential observations made relative to BD +24°3586 are given in Table II. The phases were calculated according to the ephemeris (Bopp et al. 1984): $\phi = \text{JD } 244\ 4338.94 + 2.900E$. 6 nightly normal points are plotted in Figure 2.

Table II

JD 2445+	Phase	ΔV	$\Delta(B-V)$
932.3424	0.449	-0.752	-0.193
932.3514	0.452	-0.759	-0.186
936.3271	0.823	-0.636	-0.175
937.3326	0.170	-0.682	-0.219
937.3431	0.173	-0.688	-0.208
939.3340	0.860	-0.618	-0.205
939.3424	0.863	-0.622	-0.211
940.3 49	0.195	-0.698	-0.203
940.3104	0.197	-0.702	-0.210
941.3208	0.545	-0.741	-0.181
941.3250	0.547	-0.733	-0.188

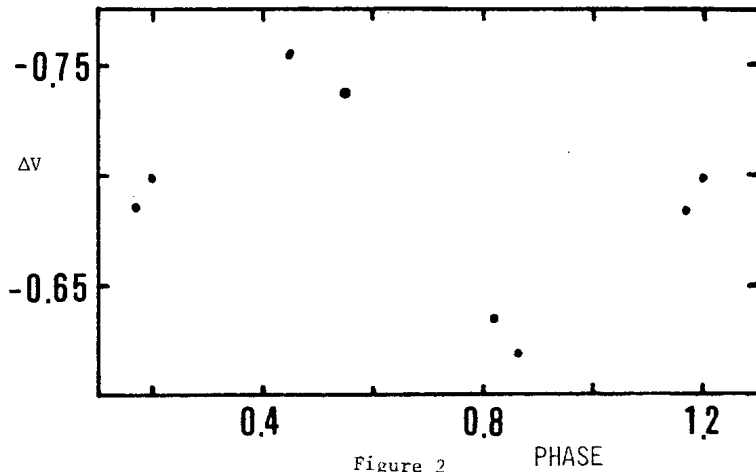


Figure 2

3) HD 199 178

According to Bopp and Stencel(1981) this star is a member of FK Comae class. Its photometric and spectroscopic observations were recently published by Bopp et al.(1984). The differential observations made relative to BD+43°3780 are given in Table III. The accuracy of individual observations is about 0.006, 0.008 and 0.018 mag. in V, B-V and U-B, respectively. These estimates are based on 7 observations of secondary comparison star, BD+42°3913. The U-B colour can be slightly affected by read leak which was not taken into account. The phases were calculated with the ephemeris (Bopp et al. 1984): $\phi = \text{JD } 244 \ 4395.70 + 3.337E$. The normal points in V based on two or more (with one exception)

Table III

JD 2445+	Phase	ΔV	$\Delta(B-V)$	$\Delta(U-B)$
930.3563	0.891	0.540	-0.306	
931.4285	0.212	0.620	-0.292	
931.4340	0.214	0.604	-0.274	-0.610
931.4458	0.217	0.604	-0.295	-0.577
932.3167	0.478	0.589	-0.290	-0.603
932.3264	0.481	0.565	-0.273	-0.621
935.3062	0.374	0.627	-0.289	-0.601
935.3125	0.376	0.607	-0.287	-0.606
935.3208	0.380	0.605	-0.288	-0.586
935.3868	0.398	0.602	-0.292	-0.596
935.3951	0.401	0.607	-0.305	-0.595
935.4007	0.403	0.579	-0.291	-0.618
935.5514	0.448	0.584	-0.297	-0.628
935.5590	0.450	0.618	-0.298	-0.606

Table III /cont./

J.D.2445+	Phase	ΔV	$\Delta(B-V)$	$\Delta(U-B)$
937.3236	0.979	0.577	-0.301	-0.571
937.4646	0.021	0.581	-0.281	-0.616
937.5535	0.048	0.576	-0.286	-0.572
936.3090	0.675	0.600	-0.307	-0.600
936.3167	0.677	0.577	-0.277	-0.619
936.4264	0.710	0.584	-0.291	-0.617
936.4903	0.730	0.573	-0.299	-0.614
939.3132	0.574	0.595	-0.290	-0.596
939.3222	0.578	0.588	-0.283	-0.607
939.4174	0.606	0.607	-0.304	-0.601
939.4910	0.628	0.591	-0.292	-0.593
940.3160	0.876	0.566	-0.305	-0.607
940.3236	0.878	0.560	-0.297	-0.580
940.4951	0.929	0.541	-0.288	-0.597
941.4479	0.215	0.605	-0.286	
941.5368	0.241	0.603	-0.286	
941.5403	0.243	0.593	-0.268	
941.5431	0.244	0.600	-0.279	

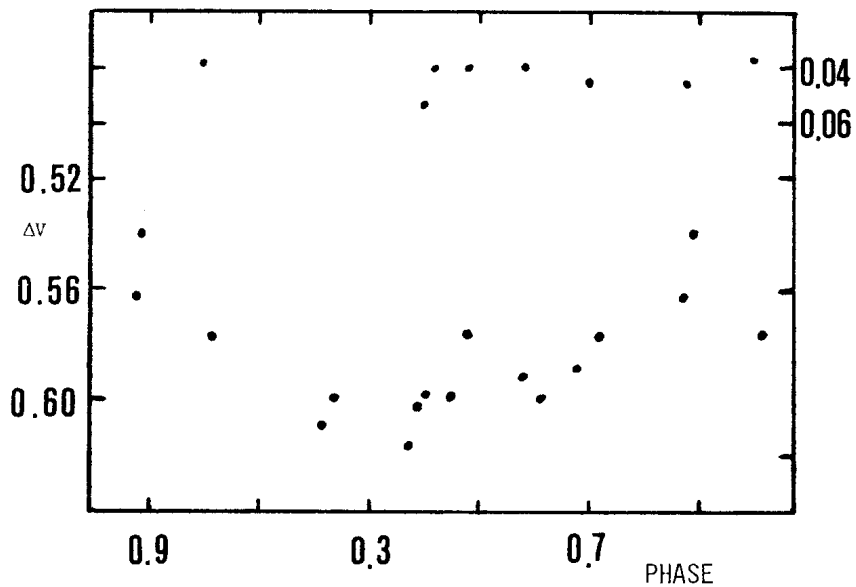


Figure 3

individual measurements are plotted in Figure 3. The upper pannel of this figure shows the individual differential observations of the secondary comparison in the sense c_2-c_1 . One can see that V light curve of HD 199 178 has an amplitude about 0.06 mag.. The minimum is wide and seems to be located

between phases 0.1 and 0.5. Inspection of Table III reveals that colour B-V is, on the average, bluer by about 0.02 mag. in the phase interval 0.5-1.1 than in the phase interval 0.1-0.5. Several authors reported flares of FK Com itself, best visible in U filter (Ruciński 1981; Morris and Milone 1983; Holtzman and Nations 1984). It seems that no flare with an amplitude larger than about 0.02 mag., was detected during the present observing run.

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