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## MULTICOLOUR OBSERVATIONS OF 4 DRA

The variable star 4 Dra=CQ Dra=BS 4765=HD 108907 ( $V \approx 5^m$ ) is known as a unique triple system containing an M3 giant (4 Dra A) and a cataclysmic binary (4 Dra B), the latter being probably of magnetic type. Orbital period for a wide pair (A+B) is found to be 1703 days, while IUE observations reveal a photometric period  $3^h 58^m .5$  for a cataclysmic binary (Reimers et al., 1988). As argued by Reimers (1985), the M giant spectrum dominates the spectrum of 4 Dra at  $\lambda \geq 3200 \text{ \AA}$ . However, UVB observations by Skopal et al. (1990), Urban & Hric (1990) and Hric et al. (1991) have given the first optical detection of the orbital motion within the wide pair of 4 Dra system. Besides the long-term trends in U and B colours, the above-mentioned observers have discovered irregular variability up to  $0^m .15$  on a time-scale of weeks and months with general morphological similarity between all three colours.

In August 1991 we have carried out the photometric observations of 4 Dra in Vilnius photometric system using the 1-m telescope and the single-channel pulse-counting photometer at Mt. Maidanak in Uzbekistan. 6 Dra=BS 4795=HD 109551 ( $V=4.89$ ) was used as a comparison star. The results (Table 1) are presented as differences between the variable and the comparison star in stellar magnitudes in the instrumental system. The observational errors range from  $\leq 0^m .01$  to  $0^m .04$  varying from night to night and usually increasing towards shorter wavelengths. The measurements have been corrected for differential extinction using the mean extinction coefficients for Mt. Maidanak by Zdanavičius & Macijauskas (1980). It should be mentioned that in some cases the star was lying quite low in the sky ( $z \approx 70^\circ$ ) and the extinction corrections extend up to  $0^m .09$  at shortest wavelengths. However, possible errors arising from the use of mean extinction coefficients instead of instantaneous ones cannot alter the general pattern of variability, illustrated in Fig. 1. The most striking feature in Fig. 1 is the well-pronounced variability in the U filter (centered at  $\lambda = 3450 \text{ \AA}$ ) and analogous variations (but with smaller amplitude) up to the wavelength  $4050 \text{ \AA}$  (filter X). At the same time the variations at longer wavelengths ( $\lambda \geq 4660 \text{ \AA}$ ) are quite moderate and they may even have an opposite sign

compared with that in U filter. However, our observing run is too short for to conclude, whether the behaviour of 4 Dra was really somewhat different from that described by Urban & Hric (1990) and Hric et al. (1991). It can be mentioned that phases of our observations according to the ephemeris for the wide pair by Reimers et al. (1988) are between 0.290 and 0.305.

Table 1. Observations of 4 Dra in Vilnius photometric system

<i>JD</i>	$\Delta S$	$\Delta V$	$\Delta Z$	$\Delta Y$	$\Delta X$	$\Delta P$	$\Delta U$
2448471.307	-0.213	0.011	0.086	0.289	0.597	0.939	1.205
472.365	-0.187	0.059	0.111	0.325	0.666	1.104	1.389
473.302	-0.214	0.031	0.085	0.284	0.597	0.968	1.261
476.330	-0.187	0.035	0.115	0.315	0.614	0.980	1.221
478.399	-0.155	0.056	0.130	0.357	0.647	1.042	1.357
479.203	-0.157	0.087	0.134	0.349	0.656	1.016	1.328
482.278	-0.081	0.151	0.216	0.431	0.747	1.096	1.411
487.252	-0.058	0.181	0.216	0.452	0.724	1.055	1.351
489.296	-0.076	0.161	0.212	0.439	0.689	0.979	1.250
490.406	-0.024	0.193	0.236	0.445	0.648	0.923	1.094
492.380	-0.073	0.192	0.212	0.430	0.684	0.966	1.099
493.258	-0.072	0.177	0.210	0.441	0.693	1.008	1.277
494.231	-0.081	0.160	0.212	0.433	0.704	1.033	1.324
496.189	-0.096	0.157	0.200	0.421	0.674	1.032	1.312
496.273	-0.076	0.149	0.200	0.422	0.683	1.023	1.314

The triple system 4 Dra is a very bright star which deserves continuous attention. The multicolour observations described above would be very useful for finding out which role the hot component (cataclysmic binary) can play in forming of the continuous spectrum of the triple system at  $\lambda \leq 4000 \text{ \AA}$ . Since January 1991 some UBV observations of 4 Dra have been carried out at Tartu observatory as well. Results of them will be published later.

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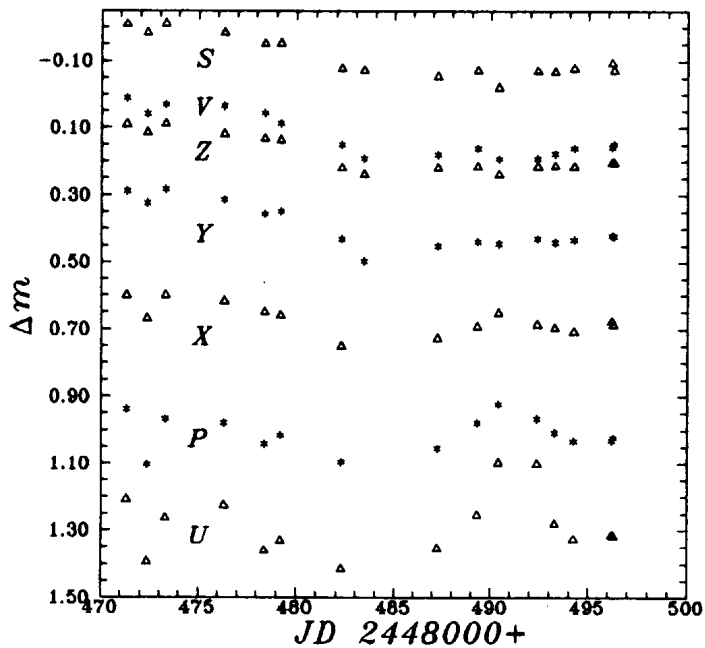


Fig.1. Variability of 4 Dra in seven filters of the Vilnius photometric system.

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