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THE LOW STATE OF Z CMa

Z CMa, a remarkable star, has been attracting the attention of observers for many years. Its photometric behaviour summarized at least twice recently (Covino et al., 1984. Kolotilov, 1991) often shows new details. After the period of a relative stability in early 80-es (Kilkenny et al., 1985, Herbst et al., 1987) two visual brightness increases of the star was observed. The first one occurred in 1985 (Shevchenko, 1989), and the second was in 1986-1987 (Miroshnichenko and Yudin, 1992). The mean brightness level in the U-band was near $9\overset{m}{.}3$ before 1985, and $8\overset{m}{.}7$-$8\overset{m}{.}8$ in maxima of the outbursts. Besides, we have observed an increasing polarization degree up to the level of 4-5 per cent during the second outburst. Unfortunately, we could not observe the development of the second brightening because of the invisibility of the object at our observational site between April and October. Our last observation of this event was on March 20, 1987. The next one occurred in November 1987 when the star showed $V=9\overset{m}{.}7$. By that time polarization decreased to 2 per cent. Strong variability was observed in the position angle between the end of 1987 and 1990. The star was slightly variable in the visible range between 1987 and 1991 with the mean $V=9\overset{m}{.}8$. During this period the mean polarization was typically about 1.5-2 per cent. Making observations of Z CMa in 1992 we detected a further weakening in the brightness of the star (see Table 1) and changes in the polarization (see Table 2).

All recent photometric UBVRI and polarimetric RI observations were carried out with the 1 meter telescope of the Astrophysical Institute of Kazakhstan Academy of Sciences (Assy Observatory) with a two-channel photometer-polarimeter (Bergner et al., 1988) using a 26" diaphragm. The photometric errors do not exceed $0\overset{m}{.}05$ in the U-band, and $0\overset{m}{.}02$ in other bands.

Table 1
Photometry of Z CMa

JD 244...	U	B	V	R	I
8652.23	–	11.19	9.97	8.65	7.56
8932.49	12.00	11.50	10.22	9.00	7.93
8933.45	12.28	11.55	10.32	9.11	8.09
8934.40	12.21	11.81	10.52	9.13	8.16
8935.47	12.19	11.51	10.28	9.14	8.10
8961.39	11.96	11.44	10.26	9.03	7.86
8996.26	–	11.29	10.14	8.93	7.95
8997.24	12.13	11.48	10.25	9.00	7.98
9000.23	12.15	11.40	10.22	8.95	7.80
9003.27	11.98	11.34	10.10	8.92	7.82

Table 2
Polarimetry of Z CMa

JD 244...	R		I	
	P,%	θ, deg	P,%	θ, deg
8933.47	0.70±0.28	156±9	–	–
8934.43	0.52±0.18	148±6	–	–
8935.49	0.36±0.15	165±9	–	–
9003.29	2.18±0.32	152±4	1.86±0.29	165±5

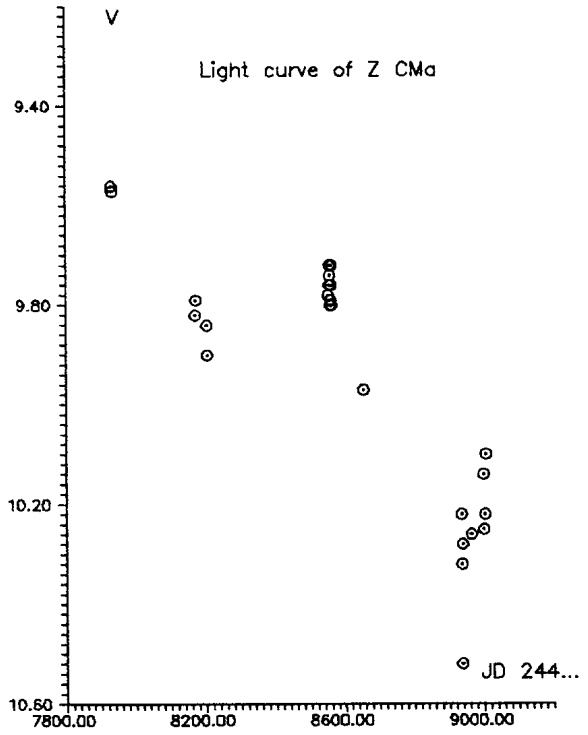

Figure 1

Z CMa is probably in an interesting phase of its evolution, and any observations of this object made by different methods are desirable.

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