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BEHAVIOUR OF AT CANCRI IN THE SEASON 1985/86

The cataclysmic star AT Cancri was measured on 46 blue-sensitive plates (ORWO-ZU21-GG13+BG12) from 12 nights obtained with the 50/70/172 cm Schmidt camera of Sonneberg Observatory covering the time interval between 17 November 1985 and 12 April 1986, using the sequence of comparison stars given in the IBVS No. 2363. The observations are listed in Table I.

Table I

J.D.hel 244....	m_B	J.D.hel 244....	m_B	J.D.hel 244....	m_B
6387.596	$12^m.37$	6469.480	$15^m.52$	6476.449	$12^m.35$
6387.616	12.32	6469.499	15.98	6476.472	13.22
6387.635	12.34	6469.518	15.34	6476.495	12.81
6387.654	12.42	6469.537	15.84:	6476.523	12.92
6387.673	12.35	6469.556	15.49	6489.361	15.58
6440.488	15.79	6473.542	16.36:	6491.368	12.49
6440.507	15.67	6473.563	16.38:	6491.388	12.44
6440.526	14.95	6474.358	15.98	6491.407	12.57
6463.381	12.29	6474.378	15.87	6491.426	12.46
6466.401	12.78	6474.399	15.69	6491.445	12.54
6469.356	15.67	6474.419	15.10	6506.518	13.02
6469.377	15.57	6474.438	15.83	6533.364	14.74
6469.397	15.13	6474.463	16.38	6533.384	14.61
6469.419	15.03	6474.483	16.25	6533.404	14.73
6469.440	15.51	6476.429	12.89	6533.423	15.02
6469.460	15.48				

The long-term light curve of AT Cnc, which is given in Figure 1, shows variations between $m_B = 16^m.38$ and $m_B = 12^m.29$. Some remarkable changes in brightness were observed with $\Delta m_B = +2^m.89$ within 2.955 between 4 February and 7 February and $\Delta m_B = -3^m.09$ within 2.071 and 2.007 respectively between 12 February and 14 February and between 27 February and 1 March 1986.

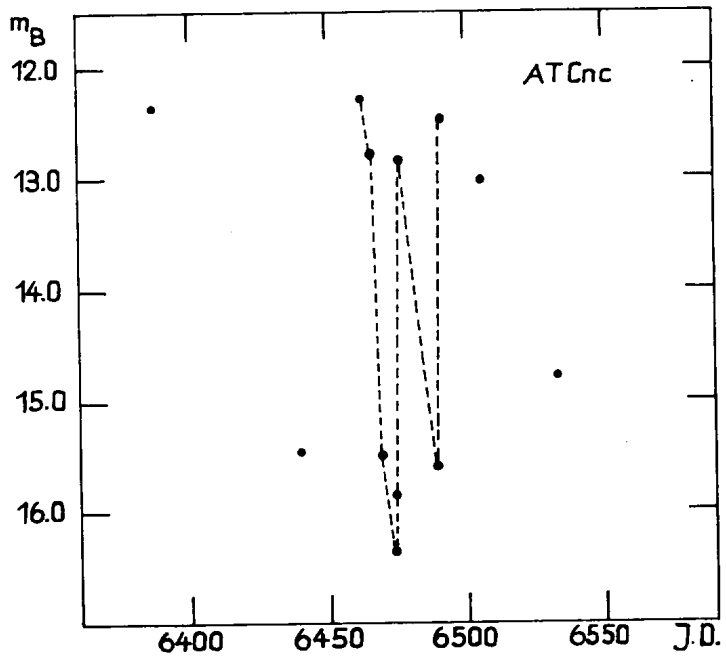

Figure 1

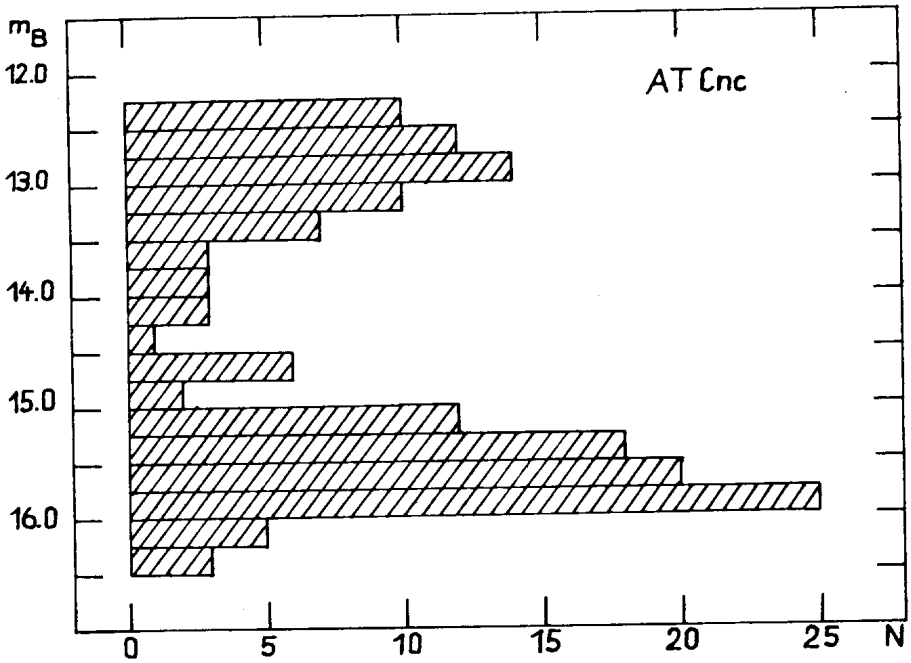

Figure 2

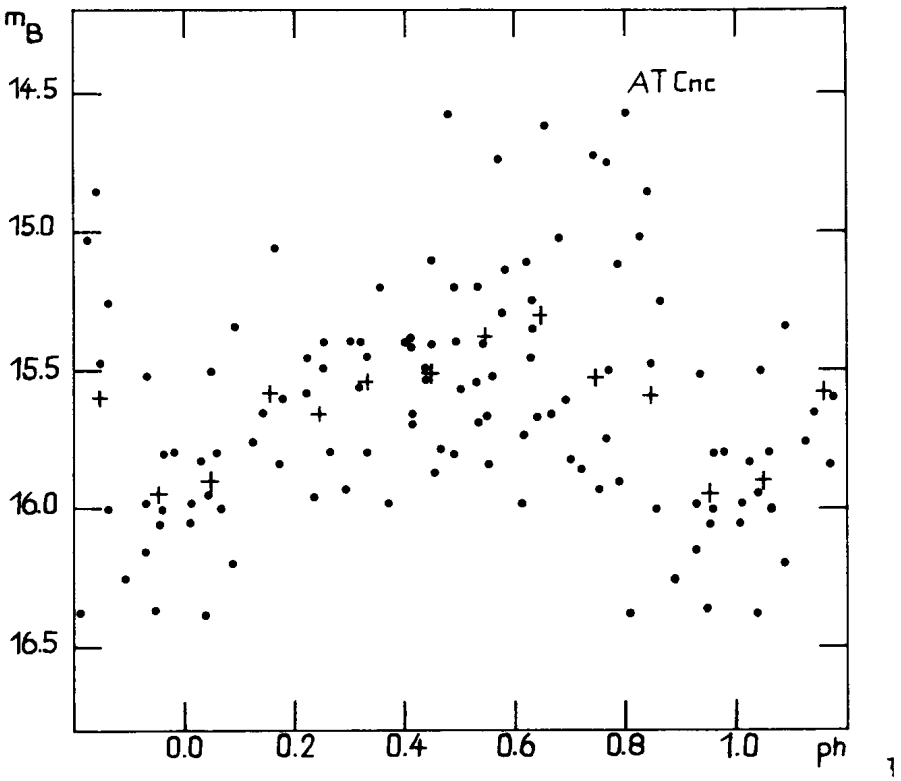

Figure 3

The brightness distribution of the star from all series of observation given in the IBVS No. 2363, No. 2526, No. 2734 and in Table I is shown in Figure 2. It can be seen there that AT Cnc prefers two states of brightness, the high ($m_B \approx 12^m.75$) and the low ($m_B \approx 15^m.75$) one.

Small short time-scale variations of the star can be observed in all series. They are regular and refer to orbital light changes. The observations from the season 1985/86 confirm this statement which was first announced in the IBVS No. 2734. Reducing all observations from all series to one common epoch the preliminary orbital elements given there could be improved to

$$\text{Min.}_{\text{hel.}} = 244\ 6110.504 + 0^d.2386913 \cdot E \ .$$

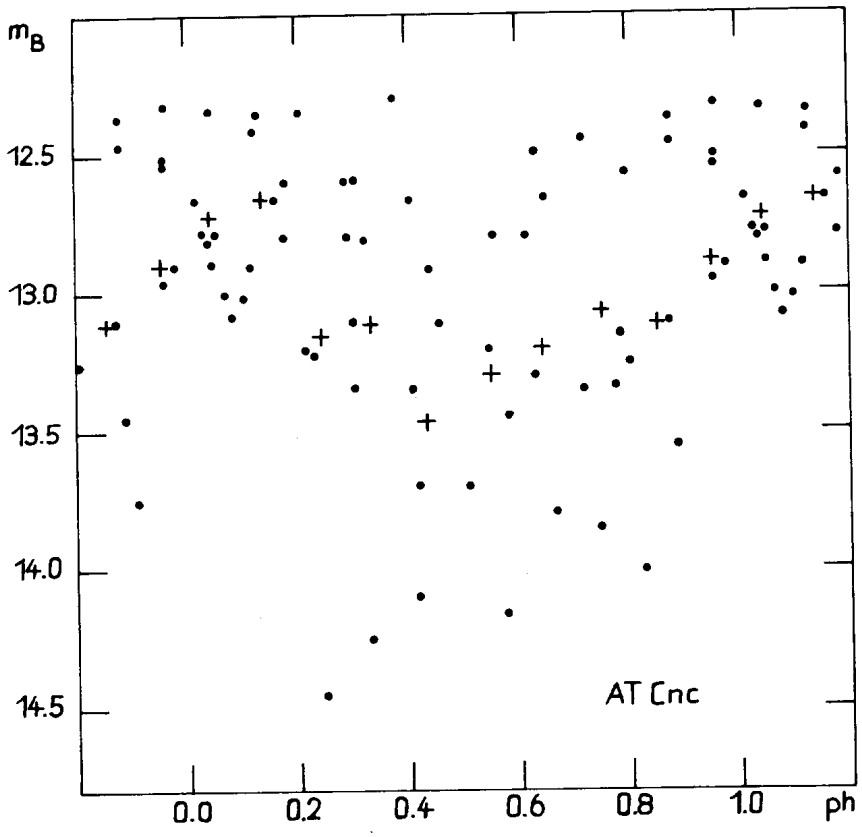

Figure 4

The results are given in Figures 3 and 4 where the magnitudes m_B from observations of the low ($14^m.5 < m_B < 16^m.4$) and the high ($12^m.3 < m_B < 14^m.5$) state of brightness obtained between the years 1982 and 1986 are plotted against the phases. The mean values are marked by crosses there. Comparing Figures 3 and 4 it can be seen that in the high state the minimum phase is displaced to phase ≈ 0.5 rather than phase 0.75 as was provisionally stated in the IBVS No. 2734.

W. GÖTZ

Akademie der Wissenschaften
der DDR, Zentralinstitut für
Astrophysik, Sternwarte Sonneberg