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LONG-TERM LIGHT CURVE OF THE CATACLYSMIC X-RAY SOURCE 1ES1113+432=AR URSAE MAJORIS

Remillard et al. (1993) identified the highly variable Einstein Slew Survey X-ray source 1ES1113+432, by optical spectroscopy and CCD photometry, with a short-period cataclysmic variable. Perhaps because of a small error in the position given in the GCVS (Kholopov et al., 1987) the quoted authors did not perceive the identity of their object with the variable star AR UMa known for thirty years and discovered by Hoffmeister (1963) at Sonneberg as S 7744.

On the basis of a then scanty plate material H. Busch classified the object as what we now call "semiregular" (see Meinunger and Wenzel 1968), and it has not attracted the attention of others since then.

I observed the star on more than 400 plates taken since 1961 with the Sonneberg 400/1600 and 400/1900mm astrographs and arrived at the following conclusions: the long-term light curve is typical for a cataclysmic binary. The brightness is normally in the low state around $15^{m}_{.}5$ pg – see the distribution of the brightness data (night averages) given in Figure 1. Our magnitude sequence has been linked to the Mt. Wilson System of Selected Area 31. Six outbursts (or "high states") during 32 years were documented by our plates. They are distributed rather unevenly and are of differing heights, as is shown by the following table:

No	Mean observed date of outburst	Brightness	Limits of outburst duration
1	J.D. 243 7341	$13^{m}_{.}9$ pg	>8 days
2	243 7973	14.0	3....569
3	244 3222	13.3	65...637
4	244 4319	13.3	54...706
5	244 4648	12.8	28...706
6	244 7945	14.6	3.....46

Unfortunately there is no hint to the star's behaviour between the events 4 and 5. If the high states are generally eruptions of not more than several days or weeks duration, then a number of them could easily remained undetected in the sun gaps. Also by chance we have no observations showing the duration of the rise from low to high states, but only three descending branches; the upper limits of their duration were 12 (no. 1), 18 (no. 2), and about 30 (no. 5) days.

Figure 2 shows two sections of our light curve including the events 4, 5, 6. The scatter in minimum and maximum light is partly due to the normal inaccuracy of photographic photometry and the lack of suitable nearby comparison stars and partly to the small-range variations detected by Remillard et al. (1993), wich we are not willing to analyse with

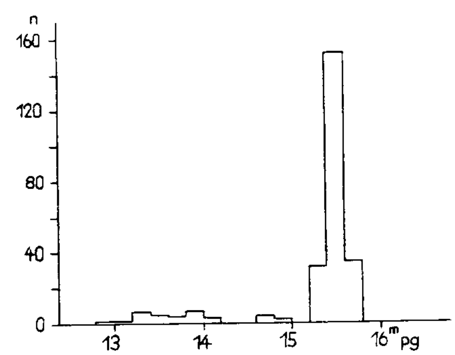

Figure 1

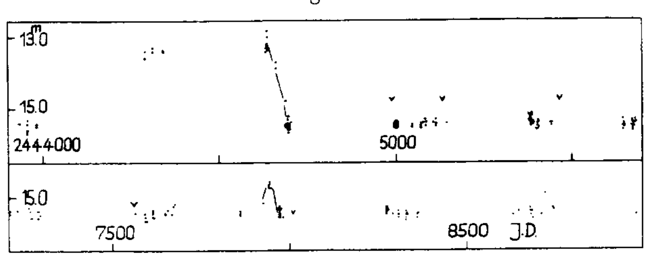

Figure 2

our present material. One should note that the whole amount of dispersion is also present in the night series (comprising up to 9 exposures per night) irrespective of the mean level of brightness.

Looking nowadays at the light curve we easily understand the classification difficulties in the sixties when the great diversity of eruptive binaries was still unknown.

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