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THE 2013 FLARE OF ASASSN-13AE

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We followed the optical transient ASASSN-13ae (Prieto et al. 2013, ATel #4999) with the 0.30 m Schmidt-Cassegrain telescope of the Foligno Observatory, equipped with a Nikon D50 camera, from 2013-04-23 until 2013-06-05. A minimum of three images with 450 s exposure were taken each night. The effective bandwidth of the camera is similar to that of the *V* filter. Aperture photometry was performed with IRAF/apphot, with 3 arcsec radius: a comparison sequence of 15 stars, within 7 arcmin from the source, was derived from the APASS catalogue. The mean value for each night is reported in Table 1.

Table 1. Average magnitude of ASASSN-13ae from our photometry.

J.D.	<i>V</i>	rms
2456406.41	13.03	0.03
2456411.40	13.40	0.06
2456417.43	13.96	0.09
2456421.34	14.30	0.03
2456427.39	15.60	0.04
2456431.41	14.78	0.08
2456437.40	15.13	0.09
2456449.40	18.50	0.07

The star showed a monotonic decreasing trend of approximately 0.08 mag/day for about 20 days. After that, the light curve became more irregular and then much steeper, finally falling below our photometric limit. On May 8 we also looked for short-term periodic oscillations, possibly induced by the orbital period of a binary system, following the star for three hours, without finding any definite trend at our sensitivity limit (0.03 mag).

We plot in Fig. 1 our points as crosses: the discovery photometric value of ATel 4999 is reported as an asterisk, it is well aligned with our fitting line of the decreasing trend. Three points from the Catalina Sky Survey (CSS) are reported as filled circles: the first of these points seems to be somewhat before the flare peak.

The overall behaviour of the light curve is similar to that observed in the only known previous flare of this source, recorded by the CSS in 2007 (CSS 130418). The 2007 light curve is reported for comparison in the same Figure (open squares) shifted in time by

2167 days to approximately match the peak position: it shows a slope in the bright phase similar to ours. From this CSS light curve it appears that at the epoch of the GALEX observation in a bright state (MJD 54248), reported in ATel 4999, the source was at $V=13.8$ near the flare peak.

Our observations confirm that the source is a cataclysmic variable star, as suggested by Prieto et al. (2013), likely of the WZ Sge type with a recurrence of about 5.9 years. A search in historical plate archives would be useful to confirm the flare time scale. We have checked that no useful plates are available in the Asiago plate archive (Barbieri et al. 2003) and the star is not visible in a plate of the Digitized First Byurakan Survey (Mickaelian et al. 2007) taken in 1973, when it was expected to be in quiescent state ($V \sim 20$ from CSS) if the recurrence period is true.

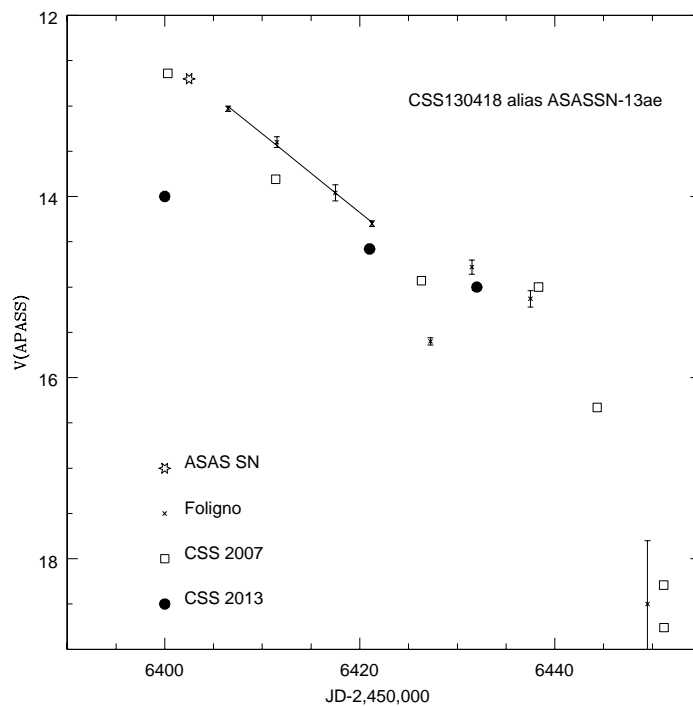


Figure 1.

Figure 1: Light curve of ASASSN-13ae in the year 2013 from our data (crosses with error bars) and data from the CSS (filled circles). The linear fit to the bright part of the light curve is shown. Data from CSS relative to the flare of 2007 are reported as open squares.

References:

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