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The large outbursts studied by small telescopes - the case of RS Oph

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Abstract. Cataclysmic variables (CVs) are one of the dominant part in astronomical research. Small telescopes are widely used to search for the sudden brightening of such stars. We present our experience with observations of the RS Ophiuchi (RS Oph) and analyses of the light curves. RS Oph is a binary system with 6 recorded outbursts classified as a recurrent nova (RN). We used the telescopes of AI SAS to measure the brightness of RS Oph after its last outburst occurred on February 12, 2006. The new observations indicate the ongoing mass transfer.

Key words: stars – novae – photometry

1. Introduction

The small telescopes are widely used for searching of sudden brightening of the CVs. The unpredictable behaviour of the most of CVs makes them very difficult for systematic observations with large telescopes, therefore the support of small telescopes is desired. Even if the CVs are too faint to be observed at the quiescence with small telescopes, daily monitoring may result in observing the start of the outbursts. The best way for widely using of the small telescopes for the particular events are campaigns or patrols of observations. The first supernova detection patrol was called by Zwicky in 1933 who used the 0.45 m Schmidt telescope at Palomar observatory (Heilbron, 2005).

RS Oph is one of the best studied RNs with 6 recorded outbursts in 1898, 1933, 1958, 1967, 1985 and recently in 2006, as well as probable eruptions in 1907 and 1945. Its light curve exhibits different types of activities, the RN eruptions, collimated ejecta (Sokoloski *et al.*, 2008) and flickering (Kundra *et al.* 2010). The presented observational material was obtained by 0.5 m, 0.6 m telescopes equipped with CCD cameras at the Stará Lesná Observatory of the AI SAS.

2. Flickering activity study and Discussion

We were searching for the flickering activity after the 2006 outburst. The disappearing of the flickering activity after the outburst and its appearance in August

2006 (Hric *et al.* 2008) is explained by the destruction of the disc by the outburst itself. The disc was created again later around the primary, a white dwarf, as the consequence of ongoing mass transfer from the secondary component, a red giant. The structure of the flickering observed in 2013 season is similar to our previous data (Kundra *et al.* 2010). The main characteristics are two time scales (60 c/d, 140 c/d) and amplitudes (0.1 mag, 0.6 mag), both parameters varying from night to night, see Fig. 1. It seems that flickering is stable and the mass transfer rate is between $(10^{-9} - 10^{-10}\, M_{\odot}\, y^{-1})$.

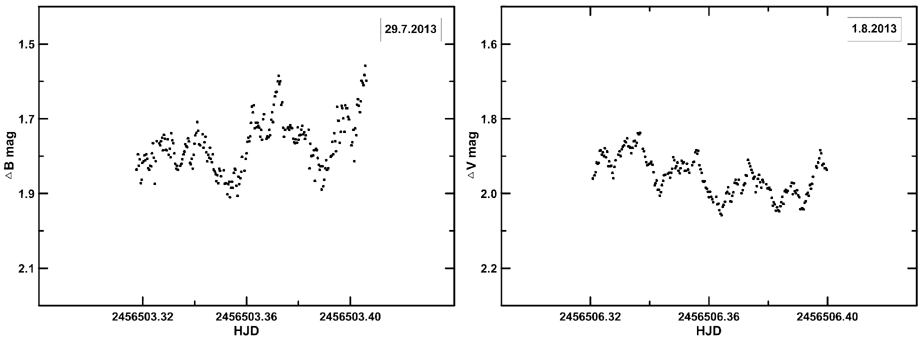

Figure 1. Light variations/flickering of RS Oph in Johnson *B, V* filters.

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