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Cyclic brightening in the short-period WZ Sge-type cataclysmic variable SDSS J080434.20+510349.2

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Abstract

Aims. We observed a new cataclysmic variable (CV) SDSS J080434.20+510349.2 to study the origin of long-term variability found in its light curve.Methods. Multi-longitude, time-resolved, photometric observations were acquired to analyze this uncommon behavior, which has been found in two newly discovered CVs. Results. This study of SDSS J080434.20+510349.2 concerns primarily the understanding of the nature of the observed, double-humped, light curve and its relation to a cyclic brightening that occurs during quiescence. The observations were obtained early in 2007, when the object was at about , about 0.4 mag brighter than the pre-outburst magnitude. The light curve shows a sinusoidal variability with an amplitude of about 0.07 mag and a periodicity of 42.48 min, which is half of the orbital period of the system. We observed in addition two "mini-outbursts" of the system of up to 0.6 mag, which have a duration of about 4 days each. The "mini-outburst" has a symmetric profile and is repeated in approximately every 32 days. Subsequent monitoring of the system shows a cyclical behavior of such "mini-outbursts" with a similar recurrence period. The origin of the double-humped light curve and the periodic brightening is discussed in the light of the evolutionary state of SDSS J080434.20+510349.2. © 2008 ESO.

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Keywords

Methods: observational, Stars: dwarf novae, Stars: novae, cataclysmic variables, Techniques: photometric