

Discovery of standstills in the SU UMa-type dwarf nova NY Serpentis

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Abstract

© The Author(s) 2019. We found that the SU UMa-type dwarf nova NY Ser in the period gap [orbital period 0.097558(6) d] showed standstills twice in 2018. This is the first clear demonstration of a standstill occurring between superoutbursts of an SU UMa-type dwarf nova. There was no sign of superhumps during the standstill, and at least one superoutburst directly started from the standstill. This provides strong evidence that the 3:1 resonance was excited during standstills. This phenomenon indicates that the disk radius can grow during standstills. We also deduce that the condition close to the limit of the tidal instability caused early quenching of superoutbursts, which resulted in a substantial amount of matter left in the disk after the superoutburst. We think that substantial matter in the disk in a condition close to the limit of the tidal instability is responsible for standstills (as in the high-mass-transfer system NY Ser) or multiple rebrightenings (as in the low-mass-transfer system V1006 Cyg).

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Keywords

Accretion, accretion disks, Stars: dwarf novae, Stars: individual (NY Serpentis), Stars: novae, cataclysmic variables

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