

Survey of period variations of superhumps in SU UMa-type dwarf novae. VIII. The eighth year (2015-2016)

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Abstract

© The Author 2016. Continuing the project described by Kato et al. (2009, PASJ, 61, S395), we collected times of superhump maxima for 128 SUUMa-type dwarf novae observed mainly during the 2015-2016 season and characterized these objects. The data have improved the distribution of orbital periods, the relation between the orbital period and the variation of superhumps, and the relation between period variations and the rebrightening type in WZSge-type objects. Coupled with new measurements of mass ratios using growing stages of superhumps, we now have a clearer and statistically greatly improved evolutionary path near the terminal stage of evolution of cataclysmic variables. Three objects (V452 Cas, KK Tel, and ASASSN-15cl) appear to have slowly growing superhumps, which is proposed to reflect the slow growth of the 3 : 1 resonance near the stability border. ASASSN-15sl, ASASSN-15ux, SDSSJ074859.55+312512.6, and CRTS J200331.3-284941 are newly identified eclipsing SUUMa-type (or WZ Sge-type) dwarf novae. ASASSN-15cy has a short (0.050 d) superhump period and appears to belong to EI Psc-type objects with compact secondaries having an evolved core. ASASSN-15gn, ASASSN-15hn, ASASSN-15kh, and ASASSN-16bu are candidate period bouncers with superhump periods longer than 0.06 d. We have newly obtained superhump periods for 79 objects and 13 orbital periods, including periods from early superhumps. In order that future observations will be more astrophysically beneficial and rewarding to observers, we propose guidelines on how to organize observations of various superoutbursts.

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Keywords

Accretion, Accretion disks-novae, Cataclysmic variables-stars, Dwarf novae