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Superhumps and Repetitive Rebrightenings of the WZ Sge-Type Dwarf Nova, EG Cancri

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abstract We report on time-resolved photometric observations of the WZ Sge-type dwarf nova, EG Cnc (Huruhata’s variable), during its superoutburst in 1996–1997. EG Cnc, after the main superoutburst accompanied with development of superhumps typical of a WZ Sge-type dwarf nova, exhibited a series of six major rebrightenings. During these rebrightenings and the following long fading tail, EG Cnc persistently showed superhumps having a period equal to the superhump period observed during the main superoutburst. The persistent superhumps had a constant superhump flux with respect to the rebrightening phase. These findings suggest the superhumps observed during the rebrightening stage and the fading tail are a “remnant” of usual superhumps, and are not newly triggered by rebrightenings. By comparison with the 1977 outburst of this object and outbursts of other WZ Sge-type dwarf novae, we propose an activity sequence of WZ Sge-type superoutbursts, in which the current outburst of EG Cnc is placed between a single-rebrightening event and distinct outbursts separated by a dip. The post-superoutburst behavior of WZ Sge-type dwarf novae can be understood in the presence of considerable amount of remnant matter behind the cooling front in the outer accretion disk, even after the main superoutburst. We consider the premature quenching of the hot state due to the weak tidal effect under the extreme mass ratio of the WZ Sge-type binary is responsible for the origin of the remnant mass.