

OBSERVATIONAL CONSTRAINTS ON EVOLUTION OF DWARF NOVAE IN AND BELOW THE PERIOD GAP

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There is a gap in the distribution of the orbital periods of cataclysmic variables (CVs) between 2 and 3 hours. The period gap is explained at present by cessation of the mass transfer making CVs fainter and preventing them from being discovered. After restarting the mass transfer, CVs have been believed to evolve with the orbital periods becoming shorter, as angular momentum is released by gravitational wave radiation. In this view, the mass transfer rate depends almost only on the orbital period.

However, reconsideration of these views is urged by a series of recent discoveries of ER UMa stars (a subclass of SU UMa stars having enormous mass-transfer rates), dwarf novae bridging “classical” SU UMa stars and ER UMa stars, and the first in-the-gap dwarf nova, PG 1510+234. These objects suggest two possibilities; 1) (a part of) SU UMa stars undergo large secular changes of the mass-transfer rate, and 2) there exist parameters overlooked but strongly influential in the evolution of CVs.