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Dynamical Evolution of the RS CVn-type Binaries

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Abstract: The orbital angular momentum (orbital AM) of a sample of forty RS CVn-type binaries with the orbital periods $P \leq 10$ days were estimated and the orbital AM distribution with respect to P was critically interpreted as the orbital AM evolution of these systems caused by the magnetic braking process with the existence of spin-orbit coupling. The empirical relations (between the orbital AM loss, mass loss and period variation) derived from the diagram of the orbital AM distribution were used in deriving a semi-empirical formula for the dynamical evolution of the RS CVn-type binaries. The magnetic braking induced dynamical evolution of the RS CVn-type binaries maybe at different rates but is always towards the shorter periods in the existence of spin-orbit coupling and before the Roche lobe filling of a component star.

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