# Analysis of the validity of the Fast Lyapunov Indicator to study the structure of symplectic mappings. Application to the transition from Nekhoroshev regime to the Chirikov one.

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It is already known [1] that the Fast Lyapunov Indicator (hereafter FLI), i.e. the computation on a relatively short time of the largest Lyapunov indicator, allows to discriminate between ordered and weak chaotic motion. We have found that, under certain conditions, the FLI also discriminates between resonant and non resonant orbits, not only for two dimensional mappings or conservative Hamiltonian systems with two degrees of freedom but also for higher dimensional ones. Using this indicator we present an example of the Arnold's web detection for the 4 and 6 dimensional standard symplectic maps. Using the FLIs we determine for both symplectic mappings and Hamiltonian systems the critical value for which the system goes from the Nekhoroshev regime to the Chirikov one.

## References

[1] C. Froeschlé, E. Lega, and R. Gonczi. Fast Lyapunov indicators. Application to asteroidal motion. *Celest. Mech. and Dynam. Astron.*, **67**:41–62, ( **1997**).