

Numerical integrators for celestial mechanics

Long-term modelisation of the planetary trajectories is a challenge in celestial mechanics. Indeed, it requires to remain accurate over millions of orbits, without a prohibitive computation time. For that, numerical schemes have been developed, some being based on symplecticity. Several codes are available, which are reputed to fulfill the requirements.

This lab project will consist in

- making a bibliographical study of the available codes, to understand in which context they are useful,
- understanding the theory behind these schemes,
- comparing them with more classical integrators like Runge-Kutta
- implementing an efficient numerical scheme.

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