

Título/Title:

Chaotic dynamics in novel Hamiltonian systems

Orientadores/Supervisors:

Ippocratis Saltas (IA-Lisbon) isaltas@fc.ul.pt

Descrição/Description:

The main objective is to study the emergence and dynamics of chaos in simple, yet novel Hamiltonian systems.

It is well known that the dynamics of realistic Hamiltonian systems can exhibit a very complicated non-linear structure due to the emergence of chaos, with applications ranging from the motion of planets in the solar system to the quantum realm. This project will give the student the opportunity to understand the basic mechanism underlying the emergence of chaotic dynamics in Hamiltonian systems, and investigate the structure of the phase space for simple, yet novel systems where chaotic dynamics have not been studied before. To meet the goals of the project, the student will have the opportunity to use both analytical and numerical tools such as Mathematica, Python, etc.