

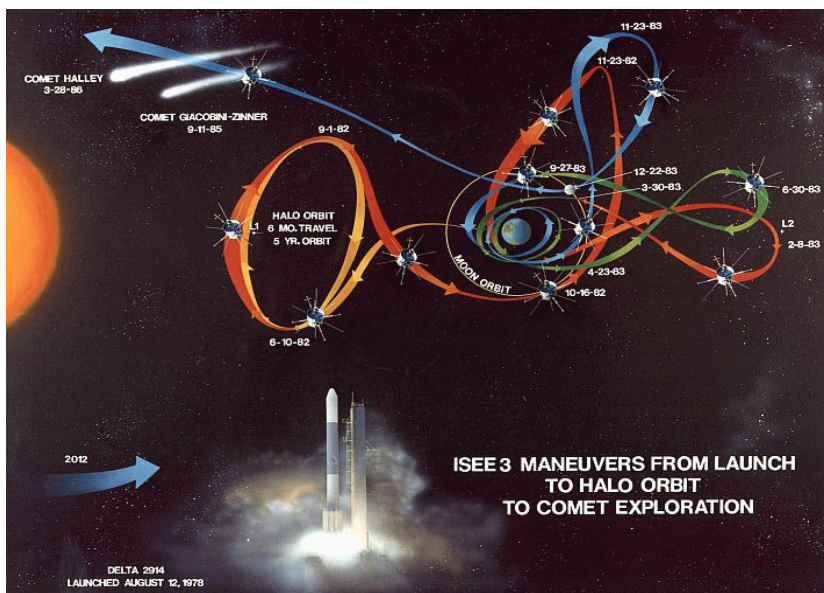
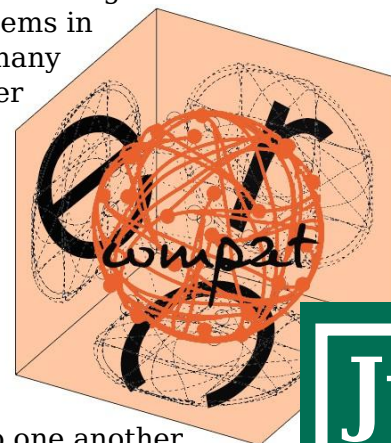
Seminario de Matemáticas

Symmetries, homographic solutions and choreographies in Celestial Mechanics Alessandro Portaluri

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The study of the dynamics of n -point masses interacting according to Newtonian gravitational potential is usually called the n -body problem. However, most of the problems in Celestial Mechanics are beyond the present limits of the knowledge and many natural questions are difficult or even impossible to solve when the number of bodies n is greater than 2. In order to make progress in this field one must look for specific objects. From a geometrical point of view a key point consists in trying to understand the structure of the phase space looking for the equilibrium points, periodic orbits, invariant tori, etc. The stable and unstable manifolds associated to these objects form a kind of network of connections, which together with the previous invariants objects constitute a big part of the essential skeleton of the system. One of the main ingredients of the phase space are the periodic orbits. A particular interesting type of periodic orbit in the planar n -body problem is one in which the particles remain in the same shape relative to one another.



The possible configurations for the particles in such orbits are called central configurations. Other interesting periodic solutions are the choreographies which are extremely valuable and may govern the flow in regions of phase space. The figure eight and subsequent choreographies were found by combining variational methods with symmetry methods and numerical methods.

The purpose of our talk is to introduce the audience to this "Celestial World".

Jueves 17
Septiembre

16:00 hrs
Sala SA1

ENTRADA
LIBRE