



**UNIVERSIDAD CATOLICA
DE LA SANTISIMA CONCEPCION**

**SEMINARIO DEL DEPARTAMENTO DE
MATEMÁTICA Y FÍSICA APLICADAS**

FACULTAD DE INGENIERÍA

**“Invariant tori in the spatial 3-body
problem by averaging and reduction”**

Dra. Patricia Yanguas

Universidad Pública de Navarra

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**Facultad de Ciencias Económicas y Administrativas
UCSC**

Abstract:

We deal with the spatial three-body problem in the various regimes where the Hamiltonian is split as the sum of two Keplerian systems plus a small perturbation. By averaging over the mean anomalies, truncating higher-order terms and using singular reduction theory we get a one-degree-of-freedom Hamiltonian system. Departing from the analysis concerning the relative equilibria of this reduced system, we carry out the reconstruction of the KAM tori surrounding the motions associated to each elliptic equilibrium. The existence of five-dimensional KAM tori for the spatial three-body problem is established. These tori surround various types of motions, from circular to near rectilinear, passing through coplanar or perpendicular.

Coordinadores: Jessika Camaño, Departamento de Matemática y Física Aplicadas, Of. 29.
Patricio Montenegro, Departamento de Matemática y Física Aplicadas, of. 56.