

**UCSC****FACULTAD DE
INGENIERÍA**DEPARTAMENTO
DE MATEMÁTICA
Y FÍSICA APLICADAS

El Departamento de Matemática y Física Aplicadas tiene
el agrado de invitar al seminario

A GENERAL FRAMEWORK FOR RELATIVE EQUILIBRIA IN THE SYMMETRIC FULL GRAVITATIONAL N-BODY PROBLEM

Ph. D. Francisco Crespo

Embry-Riddle Aeronautical University

ABSTRACT

We present a method to determine admissible configurations that lead to relative equilibria in the full gravitational N-body problem. The method exploits the $SO(3)$ symmetry by working with its fundamental invariants and does not rely on restrictive assumptions about mass distributions or on truncating the gravitational potential. As a result it yields necessary conditions that apply to arbitrary rigid-body configurations. This work is presented in two parts. In the first (this) part we assume every body is axisymmetric to give a clear, pedagogical exposition of the approach; in a forthcoming paper we remove that restriction and treat general triaxial bodies (the method remains valid but the number of variables increases). As an illustration, we systematically recover all known relative-equilibrium families for the two-body problem consisting of one sphere and one axisymmetric body, confirm earlier results in the literature, and derive new necessary conditions for certain configurations, including additional constraints for the arrow and non-Lagrangian types.

Martes 21 de Abril 2026, 16:00 hrs.
Auditorio San José Obrero (Facultad de Ingeniería)

Organización y contacto: tomas@ucsc.cl, daniel.uzcategui@ucsc.cl