

# Celestial Encounters

*Sub-Riemannian Geometry and Celestial Mechanics*

A Conference to celebrate the 60<sup>th</sup> birthday of

Richard Montgomery

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## Abstract

The  $n$ -body problem of celestial mechanics still shows new facets. I shall present joint work with Jacques Fejoz (Paris-Dauphine) and Richard Montgomery (UC Santa Cruz) on topological, geometrical and symplectic aspects. We analyze scattering of  $n$  celestial bodies by comparing their deterministic motion on  $6n$ -dimensional phase space with the non-deterministic process of free motion of a billiard ball, including scattering by linear subspaces. Every generic scattering of the billiard is approximated by scattering of the celestial bodies.

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