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Title: *"Arnold Diffusion in the Three- and Four-Body Problem"*

Abstract. One possible formulation of the Arnold diffusion problem is that arbitrarily small, time-dependent, generic perturbations of autonomous Hamiltonian systems yield trajectories along which the energy grows by some quantity that is independent of the size of the perturbation, as well as trajectories for which the energy performs chaotic excursions. Verifying diffusion in concrete systems, where the perturbation is explicit, is a challenging problem. We present several models from celestial mechanics in which we prove diffusion rigorously, and construct algorithmically diffusing trajectories. Moreover, we obtain trajectories with optimal diffusion speed, and provide estimates on the Hausdorff dimension of the set of initial conditions that undergo diffusion. The results are obtained via analytical arguments and rigorous numerical computations. The motivation resides with the dynamics of Jupiter's comet Oterma, of the Neptune-Triton system, and of Jupiter's Trojan asteroids.

This is based on joint works with Jaime Burgos, Maciej Capinski and Rafael de la Llave.