Hamiltonian systems: proposed projects

March 12, 2018

• The dynamics of convex billiards
• Twist maps and Aubry-Mather Theory
• The proof of Kolmogorov Theorem
• The Nekhoroshev theorem
• The convergence of the Birkhoff normal form
• The separatrix map for area preserving maps
• Oscillatory motions and the Sitnikov problem
• Dynamics close to collision in the three body problem
• Triple collision in the three body problem
• Central configurations
• Choreographies in the $N$-body problem
• Center manifolds of the Libration points
• Normal forms around the libration points
• Chaos in the restricted three body problem
• Invariant manifolds of Lyapunov orbits near $L_2$ in the planar circular restricted three body problem
• Transfer of energy in Hamiltonian Partial Differential Equations
• Normal forms in Hamiltonian Partial Differential Equations.
• Nekhoroshev theorem in Hamiltonian Partial Differential Equations.