Abstract

In this talk we deal, for the classical N-body problem, with the existence of action minimizing half entire expansive solutions with prescribed limit shape and initial configuration. Tackling the cases of hyperbolic, parabolic and hyperbolic-parabolic arcs in a unified manner, our approach is based on the minimization of a renormalized Lagrangian action defined on a suitable functional space. With this new strategy, we obtain a new proof for the already-known results of existence of both hyperbolic and parabolic solutions, and we prove for the first time the existence of hyperbolic-parabolic solutions for any prescribed asymptotic expansion in a suitable class. In addition, associated with each element of this class, we find a viscosity solution of the Hamilton-Jacobi equation as a linear correction of the value function.

This work is in collaboration with Susanna Terracini.