

**Contreras, Gonzalo; Iturriaga, Renato**

**Convex Hamiltonians without conjugate points.** (English) Zbl 1044.37046  
*Ergodic Theory Dyn. Syst.* 19, No. 4, 901-952 (1999).

Summary: We construct the Green bundles for an energy level without conjugate points of a convex Hamiltonian. In this case we give a formula for the metric entropy of the Liouville measure and prove that the exponential map is a local diffeomorphism. We prove that the Hamiltonian flow is Anosov if and only if the Green bundles are transversal. Using the Clebsch transformation of the index form we prove that if the unique minimizing measure of a generic Lagrangian is supported on a periodic orbit, then it is a hyperbolic periodic orbit.

We also show some examples of differences with the behaviour of a geodesic flow without conjugate points, namely: (non-contact) flows and periodic orbits without invariant transversal bundles, segments without conjugate points but with crossing solutions and non-surjective exponential maps.

Reviewer: [Reviewer \(Berlin\)](#)

**MSC:**

- [37J99](#) Dynamical aspects of finite-dimensional Hamiltonian and Lagrangian systems Cited in **35** Documents
- [37D25](#) Nonuniformly hyperbolic systems (Lyapunov exponents, Pesin theory, etc.)
- [37D40](#) Dynamical systems of geometric origin and hyperbolicity (geodesic and horocycle flows, etc.)
- [37J50](#) Action-minimizing orbits and measures (MSC2010)

**Full Text:** [DOI](#)