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Uniqueness of invariant Lagrangian graphs in a homology or a cohomology class

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Abstract. Given a smooth compact Riemannian manifold M and a Hamiltonian H on the cotangent space T^*M, strictly convex and superlinear in the momentum variables, we prove uniqueness of certain "ergodic" invariant Lagrangian graphs within a given homology or cohomology class. In particular, in the context of quasi-integrable Hamiltonian systems, our result implies global uniqueness of Lagrangian KAM tori with rotation vector ρ. This result extends generically to the C^0-closure of KAM tori.

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