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On cyclicity one elliptic islands of the Standard family

Jacopo De Simoi

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We study abundance of a special class of elliptic islands (called cyclicity one elliptic islands) for the Standard family of area preserving diffeomorphisms for large parameter values, i.e. far from the KAM regime. Outside a bounded set of parameter values, we prove that the Lebesgue measure of the set of parameter values for which an infinite number of such islands coexist is zero. On the other hand we construct a positive Hausdorff dimension set of arbitrarily large parameter values for which the associated standard map admits infinitely many elliptic islands of cyclicity one, whose centers accumulate on a locally maximal hyperbolic set.

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