

Invariant Curves for Twist Maps – Computer Assisted

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In 1998 Levi and Moser gave a new proof of the Invariant Curve Theorem for twist maps. They showed that if there exists a curve γ_0 which is approximatively invariant under the twist map then there exists an invariant curve γ near γ_0 . Of course the rotation number has to satisfy a diophantine condition.

All estimates needed for the proof can be computed explicitly with the help of a computer. This leads to a computer assisted algorithm to show the existence of an invariant curve for a given twist map. The algorithm is applied to the standard map.