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On Polynomial Hamiltonian Planar Vector Fields*

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We study the dynamical behaviour of polynomial hamiltonian planar vector fields. Particularly we analyze the structure of finite and infinite critical points and we obtain the best upper bound of the number of centers and of the number of saddles that a system of this type can exhibit, depending on its degree. © 1993 Academic Press, Inc.

INTRODUCTION

In this paper we study the dynamical behaviour of polynomial hamiltonian planar systems, i.e., systems of the form $\dot{x} = -\partial H/\partial y$, $\dot{y} = \partial H/\partial x$, where H is a polynomial. These systems play an important role in order to construct planar polynomial vector fields with limit cycles. The final objective would be to advance in the knowledge of the number and distribution of limit cycles depending on the degrees of the vector field (sixteenth Hilbert problem).

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