INTEGRABILITY OF A LINEAR CENTER PERTURBED BY A FOURTH DEGREE HOMOGENEOUS POLYNOMIAL*

JAVIER CHAVARRIGA AND JAUME GINÉ

Abstract

In this work we study the integrability of a two-dimensional autonomous system in the plane with linear part of center type and non-linear part given by homogeneous polynomials of fourth degree. We give sufficient conditions for integrability in polar coordinates. Finally we establish a conjecture about the independence of the two classes of parameters which appear in the system; if this conjecture is true the integrable cases found will be the only possible ones.

*Research partially supported by a University of Lleida Project/94.