Dynamics and Darboux Integrability of the D_2 Polynomial Vector Fields of Degree 2 in $\mathbb{R}^3$

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Abstract

We characterize the Darboux integrability and the global dynamics of the 3-dimensional polynomial differential systems of degree 2 which are invariant under the D_2 symmetric group, which have been partially studied previously by several authors.

1 Introduction and Statement of the Results

Differential systems having some symmetries appear often in many applications, and consequently have been studied by several authors, see for instance [3, 6, 8, 9, 14].

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