Ayudas Fundación BBVA a Investigadores, Innovadores y Creadores Culturales

Mathematical Methods for Ecology and Industrial Management

Seminar

Tuesday, November 17, 2015, 12h00

ICMAT, Aula Naranja

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A geometric approach to Abel equations and its applications

The recently developed theory of quasi-Lie systems will be used as a geometric approach to study Abel first order differential equation of the first kind. In particular we will characterize some particular examples of integrable Abel equations. A basic ingredient is the structure preserving group and the associated invariants characterizing the orbits of the action of the group of curves in the affine group on the set of Abel first order differential equations of the first kind. Higher order Abel equations will be discussed and inverse problem of the Lagrangian dynamics is studied in the particular case of the second-order equations and the existence of two alternative Lagrangian formulations is proved, both Lagrangians being of a non-natural class. The study is carried out by means of the Darboux polynomials and Jacobi multipliers.

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