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The Kowalewski separability conditions. (English) [Zbl 07377923]


Summary: The paper is an introduction to a novel viewpoint on the theory of separable systems of classical mechanics, based on a set of separability conditions called “Kowalewski separability conditions”. The aim is to illustrate the geometric meaning of these conditions, and to explain their relations to some classical results by Jacobi, Neumann, Stäckel, and Kowalewski.

For the entire collection see [Zbl 1461.37001].

MSC:

37J35 Completely integrable finite-dimensional Hamiltonian systems, integration methods, integrability tests
37J38 Relations of finite-dimensional Hamiltonian and Lagrangian systems with algebraic geometry, complex analysis, special functions
37J39 Relations of finite-dimensional Hamiltonian and Lagrangian systems with topology, geometry and differential geometry (symplectic geometry, Poisson geometry, etc.)
70H06 Completely integrable systems and methods of integration for problems in Hamiltonian and Lagrangian mechanics
70H20 Hamilton-Jacobi equations in mechanics
53D17 Poisson manifolds; Poisson groupoids and algebroids

Keywords:
classical mechanics; separation of variables

Full Text: DOI