

1. Record Nr.	UNINA9910780893703321
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Titolo	Geometry of nonholonomically constrained systems [[electronic resource] /] / Richard Cushman, Hans Duistermaat, Jędrzej Śniatycki
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific, c2010
ISBN	1-282-76167-6 9786612761676 981-4289-49-3
Descrizione fisica	1 online resource (421 p.)
Collana	Advanced series in nonlinear dynamics ; ; v. 26
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Disciplina	516.3/6
Soggetti	Nonholonomic dynamical systems Geometry, Differential Rigidity (Geometry) Caratheodory measure
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 387-393) and index.
Nota di contenuto	Contents; Acknowledgments; Foreword; 1. Nonholonomically constrained motions; 1.1 Newton's equations; 1.2 Constraints; 1.3 Lagrange-d'Alembert equations; 1.4 Lagrange derivative in a trivialization; 1.5 Hamilton-d'Alembert equations; 1.6 Distributional Hamiltonian formulation; 1.6.1 The symplectic distribution ( $H_+$ ); 1.6.2 $H$ and in a trivialization; 1.6.3 Distributional Hamiltonian vector field; 1.7 Almost Poisson brackets; 1.7.1 Hamilton's equations; 1.7.2 Nonholonomic Dirac brackets; 1.8 Momenta and momentum equation; 1.8.1 Momentum functions; 1.8.2 Momentum equations 1.8.3 Homogeneous functions 1.8.4 Momenta as coordinates; 1.9 Projection principle; 1.10 Accessible sets; 1.11 Constants of motion; 1.12 Notes; 2. Group actions and orbit spaces; 2.1 Group actions; 2.2 Orbit spaces; 2.3 Isotropy and orbit types; 2.3.1 Isotropy types; 2.3.2 Orbit types; 2.3.3 When the action is proper; 2.3.4 Stratification on by orbit types; 2.4 Smooth structure on an orbit space; 2.4.1 Differential structure; 2.4.2 The orbit space as a differential space; 2.5 Subcartesian spaces; 2.6 Stratification of the orbit space by orbit types;

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#### Sommario/riassunto

This book gives a modern differential geometric treatment of linearly nonholonomically constrained systems. It discusses in detail what is meant by symmetry of such a system and gives a general theory of how to reduce such a symmetry using the concept of a differential space and the almost Poisson bracket structure of its algebra of smooth functions. The above theory is applied to the concrete example of Caratheodory's sleigh and the convex rolling rigid body. The qualitative behavior of the motion of the rolling disk is treated exhaustively and in detail. In particular, it classifies all mot

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