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	numerical scheme; 2.5.2. State of the art summary and results shown in this publication; 2.5.3. Convergence (general results and order 1/2); 2.5.4. Convergence (order one) 2.5.5. Change of scalar product2.5.6. Resolvent calculation; 2.5.7. More regular schemes; Chapter 3. Stochastic Theoretical Context; 3.1. Introduction; 3.2. Stochastic integral; 3.2.1. The stochastic processes background; 3.2.2. Stochastic integral; 3.3. Stochastic differential equations; 3.3.1. Existence and uniqueness of strong solution; 3.3.2. Existence and uniqueness of weak solution; 3.3.3. Kolmogorov and Fokker-Planck equations; 3.4. Multivalued stochastic differential equations; 3.5.1. Problem statement; 3.4.2. Uniqueness and existence results; 3.5. Numerical scheme 3.5.1. Which convergence: weak or strong?3.5.2. Strong convergence results; 3.5.3. Weak convergence results; Chapter 4. Riemannian Theoretical Context; 4.1. Introduction; 4.2. First or second order; 4.3. Differential geometry; 4.3.1. Sphere case; 4.3.2. General case; 4.4. Dynamics of the mechanical systems; 4.4.1. Definition of mechanical system; 4.4.2. Equation of the dynamics; 4.5. Connection, covariant derivative, geodesics and parallel transport; 4.6. Maximal montone term; 4.7. Stochastic term; 4.8. Results on the existence and uniqueness of a solution; Chapter 5. Systems with Friction 5.1. Introduction5.2. Examples of frictional systems with a finite number of degrees of freedom; 5.2.1. General framework; 5.2.2. Two elementary models; 5.2.3. Assembly and results in finite dimensions; 5.2.4. Conclusion; 5.2.5. Examples of numerical simulation; 5.2.6. Identification of the generalized Prandtl model (principles and simulation); 5.3. Another example: the case of a pendulum with friction; 5.3.1. Formulation of the problem, existence and uniqueness; 5.3.2. Numerical scheme; 5.3.3. Numerical estimation of the order; 5.3.4. Example of numerical simulations 5.3.5. Free oscillations
Sommario/riassunto	This book contains theoretical and application-oriented methods to treat models of dynamical systems involving non-smooth nonlinearities. The theoretical approach that has been retained and underlined in this work is associated with differential inclusions of mainly finite dimensional dynamical systems and the introduction of maximal monotone operators (graphs) in order to describe models of impact or friction. The authors of this book master the mathematical, numerical and modeling tools in a particular way so that they can propose all aspects of the approach, in both a deterministic