

1. Record Nr.	UNINA9910547294003321
Titolo	Non-Smooth and Complementarity-Based Distributed Parameter Systems : Simulation and Hierarchical Optimization // edited by Michael Hintermüller, Roland Herzog, Christian Kanzow, Michael Ulbrich, Stefan Ulbrich
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Birkhäuser, , 2022
ISBN	3-030-79393-1
Edizione	[1st ed. 2022.]
Descrizione fisica	1 online resource (518 pages)
Collana	International Series of Numerical Mathematics, , 2296-6072 ; ; 172
Disciplina	003.78
Soggetti	Mathematical optimization Calculus of variations Numerical analysis System theory Control theory Mathematics - Data processing Calculus of Variations and Optimization Numerical Analysis Systems Theory, Control Computational Science and Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	S. Bartels, S. Hertzog, Error Bounds for Discretized Optimal Transport and its Reliable Efficient Numerical Solution -- H. G. Bock, E. Kostina, M. Sauter, J. P. Schlöder, M. Schlöder, Numerical Methods for Diagnosis and Therapy Design of Cerebral Palsy by Bilevel Optimal Control of Constrained Biomechanical Multi-Body Systems -- S. Banholzer, B. Gebken, M. Dellnitz, S. Peitz, S. Volkwein, ROM-Based Multiobjective Optimization of Elliptic PDEs via Numerical Continuation -- S. Dempe, F. Harder, P. Mehlitz, G. Wachsmuth, Analysis and Solution Methods for Bilevel Optimal Control Problems -- M. Herrmann, R. Herzog, S. Schmidt, J. Vidal-Núñez, A Calculus for Non-Smooth Shape Optimization with Applications to Geometric Inverse Problems -- R.

Herzog, D. Knees, C. Meyer, M. Sievers, A. Stötzner, S. Thomas, Rate-Independent Systems and Their Viscous Regularizations: Analysis, Simulation, and Optimal Control -- D. Ganhururu, M. Hintermüller, S.-M. Stengl, T. M. Surowiec, Generalized Nash Equilibrium Problems with Partial Differential Operators: Theory, Algorithms, and Risk Aversion -- A. Alphonse, M. Hintermüller, C. N. Rautenberg, Stability and Sensitivity Analysis for Quasi-Variational Inequalities -- C. Gräßle, M. Hintermüller, M. Hinze, T. Keil, Simulation and Control of a Nonsmooth Cahn-Hilliard Navier-Stokes System with Variable Fluid Densities -- C. Kanzow, V. Karl, D. Steck, D. Wachsmuth, Safeguarded Augmented Lagrangian Methods in Banach Spaces -- M. Hahn, C. Kirches, P. Manns, S. Sager, C. Zeile, Decomposition and Approximation for PDE-Constrained Mixed-Integer Optimal Control -- C. Christof, C. Meyer, B. Schweizer, S. Turek, Strong Stationarity for Optimal Control of Variational Inequalities of the Second Kind -- A. Hehl, M. Mohammadi, I. Neitzel, W. Wollner, Optimizing Fracture Propagation Using a Phase-Field Approach -- A. Schiela, M. Stöcklein, Algorithms for Optimal Control of Elastic Contact Problems with Finite Strain -- O. Weiß, A. Walther, S. Schmidt, Algorithms based on Abs-Linearization for Nonsmooth Optimization with PDE Constraints -- V. Schulz, K. Welker, Shape Optimization for Variational Inequalities of Obstacle Type: Regularized and Unregularized Computational Approaches -- J. Becker, A. Schwartz, S. Steffensen, A. Thünen, Extensions of Nash Games in Finite and Infinite Dimensions with Applications.

Sommario/riassunto

Many of the most challenging problems in the applied sciences involve non-differentiable structures as well as partial differential operators, thus leading to non-smooth distributed parameter systems. This edited volume aims to establish a theoretical and numerical foundation and develop new algorithmic paradigms for the treatment of non-smooth phenomena and associated parameter influences. Other goals include the realization and further advancement of these concepts in the context of robust and hierarchical optimization, partial differential games, and nonlinear partial differential complementarity problems, as well as their validation in the context of complex applications. Areas for which applications are considered include optimal control of multiphase fluids and of superconductors, image processing, thermoforming, and the formation of rivers and networks. Chapters are written by leading researchers and present results obtained in the first funding phase of the DFG Special Priority Program on Nonsmooth and Complementarity Based Distributed Parameter Systems: Simulation and Hierarchical Optimization that ran from 2016 to 2019.
