Título:

Autor: Schättler, Heinz, Ledzewicz, Urszula

Precio: $1480.18

Editorial:

Año: 2012

Tema:

Edición: 1ª

Sinopsis

ISBN: 9781461438335

Comprehensive presentation of an up-to-date geometric approach to optimal control, both necessary and sufficient conditions, which has not been done in a book form before

Rigorous presentation, written in a easy tutorial style accessible to non-experts and advanced undergraduate and graduate students

Palette of fully and in detail worked out, well illustrated, nontrivial examples which are only available in the research literature

This book gives a comprehensive treatment of the fundamental necessary and sufficient conditions for optimality for finite-dimensional, deterministic, optimal control problems. The emphasis is on the geometric aspects of the theory and on illustrating how these methods can be used to solve optimal control problems. It provides tools and techniques that go well beyond standard procedures and can be used to obtain a full understanding of the global structure of solutions for the underlying problem. The text includes a large number and variety of fully worked out examples that range from the classical problem of minimum surfaces of revolution to cancer treatment for novel therapy approaches. All these examples, in one way or the other, illustrate the power of geometric techniques and methods. The versatile text contains material on different levels ranging from the introductory and elementary to the advanced. Parts of the text can be viewed as a comprehensive textbook for both advanced undergraduate and all level graduate courses on optimal control in both mathematics and engineering departments. The text moves smoothly from the more introductory topics to those parts that are in a monograph style were advanced topics are presented. While the presentation is mathematically rigorous, it is carried out in a tutorial style that makes the text accessible to a wide audience of researchers and students from various fields, including the mathematical sciences and engineering.

Heinz Schättler is an Associate Professor at Washington University in St. Louis in the Department of Electrical and Systems Engineering, Urszula Ledzewicz is a Distinguished Research Professor at Southern Illinois University Edwardsville in the Department of Mathematics and Statistics.

Content Level » Graduate

Keywords » Lie bracket computations - Pontryagin Maximum Principle - calculus of variations - geometric optimal control - reachable sets

Related subjects » Computational Intelligence and Complexity - Control Engineering - Dynamical Systems & Differential Equations - Geometry & Topology - Mathematics