

# Control Theory from the Geometric Viewpoint (Encyclopaedia of Mathematical Sciences)



This book presents some facts and methods of the Mathematical Control Theory treated from the geometric point of view. The book is mainly based on graduate courses given by the first coauthor in the years 2000-2001 at the International School for Advanced Studies, Trieste, Italy. Mathematical prerequisites are reduced to standard courses of Analysis and Linear Algebra plus some basic Real and Functional Analysis. No preliminary knowledge of Control Theory or Differential Geometry is required. What this book is about? The classical deterministic physical world is described by smooth dynamical systems: the future in such a system is completely determined by the initial conditions. Moreover, the near future changes smoothly with the initial data. If we leave room for free will in this fatalistic world, then we come to control systems. We do so by allowing certain parameters of the dynamical system to change freely at every instant of time. That is what we routinely do in real life with our body, car, cooker, as well as with aircraft, technological processes etc. We try to control all these dynamical systems! Smooth dynamical systems are governed by differential equations. In this book we deal only with finite dimensional systems: they are governed by ordinary differential equations on finite dimensional smooth manifolds. A control system for us is thus a family of ordinary differential equations. The family is parametrized by control parameters.

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**Control Theory from the Geometric Viewpoint - b:** Laboratoire Mathematiques, Batiment 425, Faculte des Sciences dOrsay, [3]: A. Agrachev, Y.L. Sachkov Control theory from the geometric viewpoint Control Theory and Optimization, II, Encyclopaedia of Mathematical Sciences, II, vol. **Control Theory from the Geometric Viewpoint : Andrei A. Agrachev** Control theory from the geometric viewpoint and Y. Sachkov. volume 87, Encyclopaedia of Mathematical Sciences. 40 of Mathematics and Applications. **Geometric Control Theory and Sub-Riemannian Geometry - Google Books Result** Control Theory from the Geometric Viewpoint by Andrei A. Agrachev, 9783540210191, available Hardback Encyclopaedia of Mathematical Sciences English. **Control Theory from the Geometric Viewpoint - Andrei A. Agrachev** geometric language and geometric methods are relevant to Control Theory. . A.F. Filippov for their Lessons on Mathematics and Control Theory, and for. **Quarterly of Applied Mathematics - American Mathematical Society** Chapter (1,440 KB). Chapter. Control Theory from the Geometric Viewpoint. Volume 87 of the series Encyclopaedia of Mathematical Sciences pp 145-166 **Control Theory from the Geometric Viewpoint (Encyclopaedia of** Control Theory from the Geometric Viewpoint Mathematical prereq . . of which was published as volume 38 of the Encyclopaedia of Mathematical Sciences, **Control Theory from the Geometric Viewpoint (Encyclopaedia of** Control theory from the geometric viewpoint / Andrei A. Agrachev, Yuri L. Encyclopaedia of Mathematical Sciences, Control Theory and Optimization II, **Control Theory from the Geometric Viewpoint Andrei A. Agrachev** Encyclopaedia of Mathematical Sciences. Volume 87 Control Theory from the Geometric Viewpoint Vector Fields and Control Systems on Smooth Manifolds. **Control Theory from the Geometric Viewpoint**

(**Encyclopaedia of** 2011 Russian Academy of Sciences, (DoM) and London Mathematical . L. Sachkov 2004 Control theory from the geometric viewpoint (Encyclopaedia of Math. **Geometry, Analysis and Dynamics on sub-Riemannian - Inria** Geometric control theory provides a viewpoint and several tools, issued in from the geometric viewpoint Encyclopaedia of Mathematical Sciences Andrei A. **study of the foucault pendulum within the geometric control theory** Abstract. In this paper, we consider the control system ? defined by the rolling of a strictly Control Theory for the Geometric Viewpoint, In Control. Theory and Optimization II, Encyclopaedia of Mathematical Sciences, Springer, 2004. [2] E. L. Control theory from the geometric viewpoint, Encyclopaedia of Mathematical Sciences, vol. 87, Springer-Verlag, Berlin, 2004. Control Theory and Optimization