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**Engineering : Control , Robotics, Mechatronics**

Emelyanov, Stanislav V., Korovin, Sergey K.

# Control of Complex and Uncertain Systems

**New Types of Feedback**

- There is limited research on this topic
- The original Russian version became a core text and was very well received
- The book demonstrates the theory through industrial applications

Control of Complex and Uncertain Systems examines feedback controller design for dynamical systems. It gives a compact presentation of the evolution of feedback theory and feedback design methods, before presenting a new theoretical approach to feedback control. Traditionally, the lack of standard procedures for the design of feedback controls that will be subject to uncertain conditions, coupled with a limited understanding of how feedback mechanisms will react to those uncertain conditions, has presented a problem. This book presents a standard principle, as well as concrete methods, for feedback design. It equally aims to increase our understanding of how feedback controllers react to uncertain forces. In doing so it lays the theoretical basis for a new generation of perfect automatic systems. Topics covered include: - Synthesis of Nonlinear Controllers - Higher Degree Sliding Modes - Theory of Coordinate-Operator Feedback / Theory of Operator-Coordinate Feedback - Physical Foundations of the Compensation for Disturbances, and Stabilization of Forced Motion in Binary Systems - Signal Differentiation - Suboptimal Stabilization of an Uncertain Object

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