

ACTIVE AND SEMIACTIVE CONTROL

Synthesis applications for road vehicle suspensions and hydraulic servo actuating airplane primary flight controls

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“Active and semiactive control” is the title and “*Synthesis applications for road vehicle suspensions and hydraulic servo actuating airplane primary flight controls*” is the subtitle of this book which contains a progressive exposition of two topics: the synthesis of the suspension systems for road vehicles and the synthesis of the hydraulic servo actuating airplane primary flight controls. Two apparently very different subjects could be so assembled, taking into account the common keywords as **control synthesis** and **hydraulic servoactuator**. Having as framework these subjects, the book can be viewed also as the one of **applied control**. A detailed perspective on the book contents concerns problems such as: active and semiactive control of suspension systems, active and pseudoactive aeroservoelastic control, antisaturating and antichattering control, classical and artificial intelligence-based robust control synthesis, absolute stable synthesis of electrohydraulic servo, hydraulic servo impedance and the flutter.

The main body of the book is divided into **two Parts**: Part I – Active and semiactive control synthesis for road autovehicle suspensions and Part II – Active and pseudoactive control synthesis for hydraulic servo actuating airplane flight surfaces. The book preamble integrates a *Foreword*, a *Preface*, the list of *Notations*, *symbols*, *acronyms* and the *Introduction*, with a guided tour and highlights of the book.

Part I includes Chapter 2 – Preliminaries, Chapter 3 – Stochastic state model and the performance evaluation of the passive, active and semiactive systems, Chapter 4 – Dynamic equations of the road autovehicle suspensions as passive, active and semiactive systems, Chapter 5 – Active control laws for road vehicle suspension systems, Chapter 6 – Semiactive control laws for road vehicle suspension systems and Chapter 7 – Control synthesis numerical applications on the mathematical models of the active and semiactive suspension systems.

Part II includes Chapter 8 – Some analysis and synthesis problems and solutions for mechanohydraulic and electrohydraulic servo actuating airplane flight control surfaces. Pseudoactive and active aeroservoelastic control synthesis, Chapter 9 – Robust synthesis of electrohydraulic servo actuating airplane flight control surface: classical synthesis and neuro-fuzzy synthesis, Chapter 10 – Absolute stability of hydraulic servo actuating airplane flight control surfaces.

An **Addenda** deals with a special active control synthesis for an inertially stabilised system performed to be used during the Total Solar Eclipse in 1999.

Annex presents a quasi-exhaustive introduction in the **stochastic model** of control synthesis.

The **Bibliography** contains 287 references, about 50 publications pertaining to the authors. A **Glossary** and an **Index** end the 356 pages of the text.

The book offers, I think, a quick overview of the subject status around 2000. The text is thought as self-contained. The concepts are gradually introduced in a natural sequence, and the writing style is lively and clear and it is consistent across Chapters. The approach is made from a control engineering practice perspective; thus the overall book is an attempt to reduce the well-known schism between practitioners of feedback control design and its theoreticians.

This book was awarded in 2004 with Romanian Academy “Aurel Vlaicu” Prize.

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