1998, XV, 228 p.

Printed book

Hardcover

119,99 € | $149.99

[1]128,39 € (D) | 131,99 € (A) | CHF 141,50

Softcover

79,99 € | $99.99

[1]85,59 € (D) | 87,99 € (A) | CHF 94,50

eBook

67,40 € | $79.99

[2]67,40 € (D) | 67,40 € (A) | CHF 75,50

Available from your library or springer.com/shop

MyCopy [3]

Printed eBook for just

€ | $ 24.99

springer.com/mycopy

Avraham Feintuch

Robust Control Theory in Hilbert Space

Series: Applied Mathematical Sciences

- - The necessary operator theory is developed from first principles - The book is as self-contained as possible - All competition is aimed at the engineering community; this book is aimed at mathematicians interested in the potential applications and extensions of their work

Motivation The latest texts on linear systems for engineering students have begun incorporating chapters on robust control using the state space approach to HOC control for linear finite dimensional time-invariant systems. While the pedagogical and computational advantages of this approach are not to be underestimated, there are, in my opinion, some disadvantages. Among these disadvantages is the narrow viewpoint that arises from the amputation of the finite dimensional time-invariant case from the much more general theory that had been developed using frequency domain methods. The frequency domain, which occupied center stage for most of the develop- ments of HOC control theory, presents a natural context for analysis and controller synthesis for time-invariant linear systems, whether of finite or infinite dimen- sions. A fundamental role was played in this theory by operator theoretic methods, especially the theory of Toeplitz and skew-Toeplitz operators. The recent lecture notes of Foias, Ozbay, and Tannenbaum [3] display the power of this theory by constructing robust controllers for the problem of a flexible beam. Although controller synthesis depends heavily on the special computational ad- vantages of time-invariant systems and the relationship between HOC optimization and classical interpolation methods, it turns out that the analysis is possible without the assumption that the systems are time-invariant.

Part of **SPRINGER NATURE**