Also of Interest

Well-Posed Linear Systems
Olof Johan Staffans

Many infinite-dimensional linear systems, e.g. those involving energy balance equations, can be modelled in a Hilbert space setting. Others, such as those dealing with heat transfer or population dynamics, need to be set more generally in Banach spaces.

This is the first book dealing with well-posed infinite-dimensional linear systems with an input, a state, and an output in a Hilbert or Banach space setting. It is also the first to describe the class of non-well-posed systems induced by system nodes. The inputs and outputs are either locally bounded or locally integrable to some power. The author shows how standard finite-dimensional results from systems theory can be extended to these more general classes of systems, and complements them with new results that have no finite-dimensional counterpart. In particular, he discusses a number of transformations of systems, such as parallel or cascade connections, feedback, inversion of the direction of time, and the interchange of inputs and outputs. A significant part of the book consists of applications of the theory to some problems in operator theory, including unitary dilations and universal models of contraction semigroups.

Much of the material presented is original, and many results have never appeared in book form before. A comprehensive bibliography rounds off this work, which will be indispensable to all working in systems theory, operator theory, delay equations and partial differential equations.

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