

# Book Announcements

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**CHEN, G., and ZHOU, J., *Vibration and Damping in Distributed Systems*, Studies in Advanced Mathematics, CRC Press, Boca Raton, FL, 1993, 433 pages, \$85.00.**

**Purpose:** This text gives a self-contained yet rigorous development of the theory of the dynamics and control of distributed parameter systems. It is a well-written book that would be valuable to graduate students studying more advanced techniques in the control of distributed parameter systems, and as a reference for research scientists and engineers.

**Contents:** Wave propagation and dynamics in one spatial dimension; survey of functional analysis; fundamentals of Sobolev Spaces; semigroups of evolution; stability theory; energy identities.

**VAN KEULEN, B., *H<sup>∞</sup> Control for Distributed Parameter Systems: A State Space Approach*, System & Control: Foundations & Applications, Birkhauser, Boston, 1993, 241 pages.**

**Purpose:** This important monograph gives the first self-contained presentation of the extension of  $H^\infty$  control methods from finite-dimensional models to distributed parameter systems. The monograph is advanced in nature and is most appropriate for researchers having a knowledge of either finite-dimensional  $H^\infty$  control theory or control theory for systems governed by partial differential equations.

**Contents:** Overview of  $H^\infty$  control; Pritchard-Salamon systems for unbounded control; linear quadratic control and frequency domain inequalities;  $H^\infty$  control with state feedback for infinite dimensional models;  $H^\infty$  control with measurement feedback for infinite dimensional models.

**DAVIS, M. H. A., *Markov Models and Optimization, Monographs on Statistics and Applied Probability*, Chapman & Hall, London, 1993, 295 pages.**

**Purpose:** This text gives a complete discussion of piecewise deterministic processes that arise in stochastic control theory. The treatment of material in the book is appropriate for graduate study and as a research supplementary text.

**Contents:** Stochastic processes; Markov processes; piecewise-deterministic Markov processes; distributions; control theory; dynamic programming; generalized Bellman equations; variational inequalities; jump processes and Martingales.

**SCHUMAKER, L. L., and WEBB, G., *Wavelet Analysis, Wavelet Analysis and its Applications*, Vol. III, Academic Press, Boston, 1993, 364 pages.**

**Purpose:** This text is the third in a series of well-organized texts that document recent advances in the rapidly emerging field of wavelet analysis and multirate filtering. The theoretical content of the volume assumes some knowledge of harmonic analysis, Fourier analysis, and multiresolution analysis. For this reason, the treatise is most appropriate for use by those active in the study of wavelet analysis and multirate signal filtering techniques.

**Contents:** Wavelets on closed subsets of the real line; adaptation of wavelets to kernels of pseudodifferential operators; wavelet decomposition of stochastic processes; multi-frequency wavelet decompositions; multiscale methods; and pseudodifferential equations.