

Book Announcements

BARMISH, B. R., *New Tools for Robustness of Linear Systems*, Macmillan, New York, 1994, 394 pages, \$64.00

Purpose: This text discusses robust control theory employing the properties of interval polynomial families and refinements of Kharitonov's Theorem. The text gives a detailed discussion of the recent developments in robust control theory and is appropriate for advanced graduate study. It is also well suited as a reference for researchers active in robust control design.

Contents: Review of uncertain systems; robust stability with a single parameter; invariant degree; Theorem of Baillas; interval polynomial families; Kharitonov's polynomials; Kharitonov's Theorem; Tsympkin-Polyak Method; the use of value sets; polyhedral theory; spherical theory.

GAJIC, Z., and SHEN, X., *Parallel Algorithms for Optimal Control of Large Scale Linear Systems*, Springer-Verlag, London, 1993, 455 pages, \$79.00.

Purpose: This book gives a concise description of numerous algorithms suitable for the design of controllers for large scale systems. It should prove to be a valuable reference for researchers in control theory who are confronted with practical problems whose treatment is not amenable to conventional computational methods.

Contents: Recursive method for singularly perturbed linear continuous systems; recursive methods for weakly coupled linear continuous systems; recursive methods for singularly perturbed linear discrete systems; recursive methods for weakly coupled linear discrete systems; parallel algorithms for the

algebraic Lyapunov equation; parallel algorithms for the differential and difference Riccati equations.

HECK, A., *Introduction to Maple*, Springer-Verlag, New York, 1993, 497 pages, \$39.00.

Purpose: This text gives an excellent introduction to one of the most commonly employed computer algebra systems: Maple V. The volume is appropriate as an introduction to computer algebra systems for undergraduate students and as a reference for both graduate students and researchers in diverse technical fields.

Contents: Calculus on numbers; variables and names; polynomial and rational functions; functions; differentiation; integration; series expansions; simplification; graphics; solution of equations; differential equations; linear algebra.

SABERI, A., CHEN, B. M., and SANNUTI, P., *Loop Transfer Recover: Analysis and Design*, Springer-Verlag, London, 1993, 352 pages, \$89.00

Purpose: This manuscript gives a comprehensive presentation of the theory of Loop Transfer Recovery for control design. This text is appropriate for advanced graduate study or will be invaluable as a theoretical treatment of LTR theory for the active researcher.

Contents: Review of observer based controllers; recovery matrices; analysis for recoverable target loop transfer functions; H_2 and H_∞ optimization based design algorithms; design for recovery for over a specified subspace; implication of controller architecture.