

Book Announcements

KAHANER, D., NASH, S., and MOLER, C., *Numerical Methods and Software*, Prentice-Hall, Englewood Cliffs, NJ, 1989, 384 pages.

Purpose: This book/disk package is a revision of Forsyth's *Numerical Methods for Mathematical Computations*. It focuses on current numerical methods and treats new developments in hardware and software.

Contents: Computer arithmetic and computational errors; linear systems of equations; interpolation; numerical quadrature; linear least-squares data fitting; solution of nonlinear equations; ordinary differential equations; optimization and nonlinear least squares; simulation and random numbers; trigonometric approximation and the FFT.

DAI, L., *Singular Control Systems*, Lecture Notes in Control and Information Sciences, Vol. 118, Springer-Verlag, New York, 1989, 332 pages.

Purpose: This book presents an algebraic approach to singular control systems. Some familiarity with linear systems theory and linear algebra is assumed.

Contents: Solution of linear singular systems; time domain analysis; feedback control; state observation; dynamic compensation for singular systems; structurally stable compensation in singular systems; systems analysis via transfer matrix; discrete-time singular systems; optimal control; further topics; appendices.

HUNT, K. J., *Stochastic Optimal Control Theory with Application in Self-Tuning Control*, Lecture Notes in Control and Information Sciences, Vol. 117, Springer-Verlag, New York, 1989, 308 pages.

Purpose: This book presents the algebra of polynomials and polynomial matrices for the design of stochastic optimal controllers (linear quadratic Gaussian). The resulting control laws are then manipulated for application in the self-tuning control framework.

Contents: Introduction to stochastic optimal control; stochastic tracking with measurable disturbance feedforward; introduction to self-tuning control; optimal self-tuning algorithm; case study: power system application; conclusions; applications.

MESAROVIC, M. D. and TAKAHARA, Y., *Abstract Systems Theory*, Lecture Notes in Control and Information Sciences, Vol. 116, Springer-Verlag, New York, 1989, 439 pages.

Purpose: This book presents new results in abstract systems theory based on the "top-down" formalization approach.

Contents: Basic attributes; structured terminal systems—characterization; basic properties of abstract time systems; goal-seeking system; complex systems.

Erratum

Measures of Modal Controllability and Observability for First- and Second-Order Linear Systems

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PROFESSOR J. L. Junkins brought to the attention of the authors errors in Table 2 on page 423 and Table 3 on page 424. The two recalculated tables follow. Also, there is an error in Fig. 4 on page 424; it should appear as shown here.

Table 2 Measures of controllability

Mode	Input 1	Input 2
1	0.5695	0.4192
2	0.5695	0.4192
3	0.0029	0.0209
4	0.0523	0.0186
5	0.3068	0.3193
6	0.3068	0.3193

Table 3 Measures of observability

Output	Mode					
	1	2	3	4	5	6
1	0.2194	0.2194	0.8174	0.6512	0.2451	0.2451
2	0.0210	0.0210	0.0785	0.4618	0.0665	0.0665

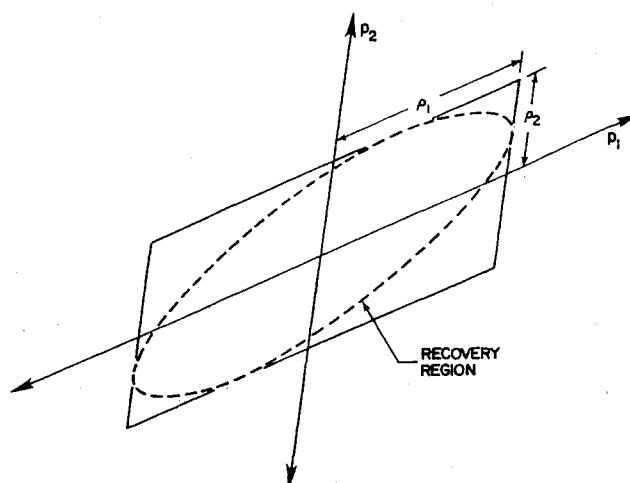


Fig. 4 The recovery region for a two-state SISO system in the non-orthogonal coordinates of the eigenvalues.