

policies without measuring merits (P. Dayan and S.P. Singh). Memory-based stochastic optimization (A.W. Moore and J. Schneider). Temporal difference in learning in continuous time and space (K. Doya). Reinforcement learning by probability matching (P.N. Sabes and M.I. Jordan). Author index. Keyword index.

*Language and Space*. Edited by Paul Bloom, Mary A. Peterson, Lynn Nadel and Merrill F. Garrett. MIT Press, Cambridge, MA. (1996). 597 pages. \$50.00.

Contents:

Preface. Participants. 1. The architecture of the linguistic-spacial interface (Ray Jackendoff). 2. How much space gets into language? (Manfred Bierwisch). 3. Perspective taking and ellipsis in spatial descriptions (Willem J.M. Levelt). 4. Frames of reference and Molyneux's question: Crosslinguistic evidence (Stephen C. Levinson). 5. The confluence of space and language in signed languages (Karen Emmorey). 6. Fictive motion in language and "ception" (Leonard Talmy). 7. The spatial prepositions in English, vector grammar, and the cognitive map theory (John O'Keefe). 8. Multiple geometric representations of objects in languages and language learners (Barbara Landau). 9. Preverbal representation and language (Jean M. Mandler). 10. Learning how to structure space for language: A crosslinguistic perspective (Melissa Bowerman). 11. Space to think (Philip N. Johnson-Laird). 12. Spatial perspective in descriptions (Barbara Tversky). 13. A computational analysis of the apprehension of spatial relations (Gordon D. Logan and Daniel D Sadler). 14. The language-to-object perception interface: Evidence from neuropsychology (Tim Shallice). 15. Space and language (Mary A. Peterson, Lynn Nadel, Paul Bloom and Merrill F. Garrett). Name index. Subject index.

*Mathematics for Engineers and Scientists*, (Fifth edition). By Alan Jeffrey. Chapman & Hall, New York. (1996). 911 pages. \$35.00.

Contents:

Preface to the fifth edition. Preface to the first edition. Supplementary computer problems. 1. Numbers, trigonometric functions, and coordinate geometry. 2. Variables, functions, and mappings. 3. Sequences, limits, and continuity. 4. Complex numbers and vectors. 5. Differentiation of functions of one or more real variables. 6. Exponential, logarithmic, and hyperbolic functions. 7. Fundamentals of integration. 8. Systematic integration. 9. Matrices and linear transformations. 10. Functions of a complex variable. 11. Scalars, vectors, and fields. 12. Series, Taylor's theorem, and its uses. 13. Differential equations and geometry. 14. First-order differential equations. 15. Higher-order linear differential equations. 16. Fourier series. 17. Numerical analysis. 18. A geometrical introduction to linear programming. 19. Probability and statistics. Answers. Index.

*Domain Decomposition: Parallel Multilevel Methods for Elliptic Partial Differential Equations*. By Barry Smith, Petter E. Børstad and William D. Gropp. Cambridge University Press, Cambridge, U.K. (1996). 224 pages. \$39.95.

Contents:

Introduction. 1. One level algorithms. 2. Two level algorithms. 3. Multilevel algorithms. 4. Substructuring methods. 5. A convergence theory. Appendixes. 1. Preconditioners and accelerators. 2. Software for numerical parallel computing. References. Index.

*The  $\mathcal{W}_3$  Algebra: Modules, Semi-Infinite Cohomology and BV Algebras*. By Peter Bouwknegt, Jim McCarthy and Krzysztof Pilch. Springer-Verlag, Heidelberg, Germany. (1996). 204 pages. DM 62.00, sFr 55.00.

Contents:

1. Introduction and preliminaries. 2.  $\mathcal{W}$  algebras and their modules. 3. BRST cohomology and the 4D  $\mathcal{W}_3$  string. 4. Batalin-Vilkovisky algebras. 5. The BV algebra of the  $\mathcal{W}_3$  string. Appendixes. A. Verma modules at  $c = 2$ . B. Vertex operator algebras associated to root lattices. C. Tables for resolutions of  $c = 2$  irreducible modules. D. Summary of explicit computations. E. A graphical representation of  $H_{\text{pr}}(\mathcal{W}_3, \mathbb{C})$ . F. Polyderivations  $\mathcal{P}(\mathcal{R}_N)$ . G. BV algebra  $\mathcal{P}(A)$ . H. Free modules of  $\mathfrak{P}_{\pm}$ . I. Computation of  $H(\mathfrak{n}_+, \mathcal{L}(\Lambda) \oplus \wedge \mathfrak{b}_-)$  for  $\mathfrak{sl}_3$ . J. Some explicit cohomology states. References. Glossary of notation.

*Numerical Algorithms with Fortran*. By Gisela Engeln-Müllges and Frank Uhlig. Springer-Verlag, Heidelberg, Germany. (1996). 602 pages. DM 68.00, sFr 60.00 (CD-ROM included).

Contents:

1. Computer numbers, error analysis, conditioning, stability of algorithms and operations count. 2. Nonlinear equations in one variable. 3. Roots of polynomials. 4. Direct methods for solving systems of linear equations. 5. Iterative methods for linear systems. 6. Systems of nonlinear equations. 7. Eigenvalues and eigenvectors of matrices. 8. Linear and nonlinear approximation. 9. Polynomial and rational interpolation. 10. Interpolating polynomial splines for constructing smooth curves. 11. Cubic fitting splines for constructing smooth curves. 12. Two-dimensional splines, surface splines, Bézier splines, B-splines. 13. Akima and Renner subsplines. 14. Numerical differentiation. 15. Numerical integration. 16. Numerical cubature. 17. Initial value problems for ordinary differential equations. 18. Boundary value problems for ordinary differential equations. Appendixes. A. Standard FORTRAN 77 subroutines. B. Bibliography. C. Index.