

CONTENTS

INTRODUCTION	1
PART I PROGRAMMING LANGUAGES	3
1. An Introduction to FORTRAN and ALGOL Programming <i>Niklaus Wirth, Stanford University</i>	5
PART II THE QUOTIENT-DIFFERENCE ALGORITHM	35
2. Quotient-Difference Algorithms <i>Peter Henrici, Eidgenössische Technische Hochschule, Zurich</i>	37
PART III NUMERICAL LINEAR ALGEBRA	63
3. The Solution of Ill-Conditioned Linear Equations <i>J. H. Wilkinson, National Physical Laboratory</i>	65
4. The Givens-Householder Method for Symmetric Matrices <i>James Ortega, University of Maryland</i>	94
5. The LU and QR Algorithms <i>B. N. Parlett, University of California (Berkeley)</i>	116
PART IV NUMERICAL QUADRATURE AND RELATED TOPICS	131
6. Advances in Numerical Quadrature <i>Herbert S. Wilf, University of Pennsylvania</i>	133

7.	Approximate Multiple Integration	145
	<i>A. H. Stroud, State University of New York at Buffalo</i>	
8.	Spline Functions, Interpolation, and Numerical Quadrature	156
	<i>T. N. E. Greville, University of Wisconsin</i>	
PART V	NUMERICAL SOLUTION OF EQUATIONS	169
9.	The Solution of Transcendental Equations	171
	<i>J. F. Traub, Bell Telephone Laboratories (Murray Hill)</i>	
10.	The Numerical Solution of Polynomial Equations and the Resultant Procedures	185
	<i>Erwin H. Bareiss, Argonne National Laboratory</i>	
11.	Alternating Direction Methods Applied to Heat Conduction Problems	215
	<i>Jerome Spanier, Bettis Atomic Power Laboratory</i>	
PART VI	MISCELLANEOUS METHODS	247
12.	Random Number Generation	249
	<i>Jack Moshman, EBS Management Consultants</i>	
13.	Rational Chebyshev Approximation	264
	<i>Anthony Ralston, State University of New York at Buffalo</i>	
	Index	285

