

Contents

| | |
|---|-----|
| Preface | VII |
| Stability theory | |
| <i>A. Beghi, A. Lepschy and U. Viaro</i> | |
| The Hurwitz Matrix and the Computation of Second-Order Information Indices | 1 |
| <i>B. Bernhardsson, A. Rantzer and L. Qiu</i> | |
| A Summary on the Real Stability Radius and Real Perturbation Values | 11 |
| <i>J. Garloff and B. Srinivasan</i> | |
| The Hadamard Factorization of Hurwitz and Schur Stable Polynomials | 19 |
| <i>Y.V. Genin</i> | |
| On the Cauchy Index of a Real Rational Function and the Index Theory of Pseudo-Lossless Rational Functions | 23 |
| <i>H. Górecki, M. Szymkat and M. Zaczýk</i> | |
| A Generalization of the Orlando Formula-Symbolic Manipulation Approach | 33 |
| <i>L. Atanassova, D. Hinrichsen and V.L. Kharitonov</i> | |
| On Convex Stability Directions for Real Quasipolynomials | 43 |
| <i>E.I. Jury</i> | |
| From J.J. Sylvester to Adolf Hurwitz: A Historical Review | 53 |
| <i>F.J. Kraus, M. Mansour and M. Sebek</i> | |
| Hurwitz Matrix for Polynomial Matrices | 67 |
| <i>H.C. Reddy, P.K. Rojan and G.S. Moschytz</i> | |
| Two-Dimensional Hurwitz Polynomials | 75 |
| <i>E.D. Sontag and H.J. Sussmann</i> | |
| General Classes of Control-Lyapunov Functions | 87 |
| <i>R. Strietzel</i> | |
| Towards the Stability of Fuzzy Control Systems | 97 |
| <i>M. Vidyasagar</i> | |
| Discrete Optimization Using Analog Neural Networks with Discontinuous Dynamics | 107 |

Robust Stability*B.D.O. Anderson and S. Dasgupta*

- Multiplier Theory and Operator Square Roots: Application to
Robust and Time-Varying Stability 113

R. Lozano and D.A. Suárez

- Adaptive Control of Non-Minimum Phase Systems Subject to
Unknown Bounded Disturbances 125

M. Mansour and B.D.O. Anderson

- On the Robust Stability of Time-Varying Linear Systems 135

W. Sienel

- On the Computation of Stability Profiles 151

Q.H. Wu and M. Mansour

- Robust Stability of Family of Polynomials with 1-Norm-Bounded
Parameter Uncertainties 163

E. Zeheb

- On the Characterization and Formation of Local Convex Directions
for Hurwitz Stability 173

Numerics*G.E. Collins*

- Application of Quantifier Elimination to Solotareff's
Approximation Problem 181

R. Jeltsch

- Stability of Time Discretization, Hurwitz Determinants
and Order Stars 191

R. Liska and S. Steinberg

- Solving Stability Problems Using Quantifier Elimination 205

M.R. Trummer

- Stability of Numerical Methods for Solving Differential Equations 211

J. Sreedhar, P. Van Dooren and A.L. Tits

- A Fast Algorithm to Compute the Real Structured Stability Radius 219

- Some Open Problems** 231

Appendix: Original Article by A. Hurwitz*A. Hurwitz*

- Über die Bedingungen, unter welchen eine Gleichung nur

- Wurzeln mit negativen reellen Theilen besitzt 239