

Contents

Linear Differential Systems with Infinite Power Series Coefficients (Invited Talk)	1
<i>S.A. Abramov</i>	
On the Asymptotic Stability of a Satellite with a Gravitational Stabilizer	16
<i>Andrei V. Banskchikov</i>	
Sparse Interpolation, the FFT Algorithm and FIR Filters	27
<i>Matteo Biani, Annie Cuyt, and Wen-shin Lee</i>	
On New Integrals of the Algaba-Gamero-Garcia System	40
<i>Alexander D. Bruno, Victor F. Edneral, and Valery G. Romanovski</i>	
Full Rank Representation of Real Algebraic Sets and Applications	51
<i>Changbo Chen, Wenyuan Wu, and Yong Feng</i>	
Certifying Simple Zeros of Over-Determined Polynomial Systems.	66
<i>Jin-San Cheng and Xiaojie Dou</i>	
Decomposing Polynomial Sets Simultaneously into Gröbner Bases and Normal Triangular Sets	77
<i>Rina Dong and Chenqi Mou</i>	
Symbolic Versus Numerical Computation and Visualization of Parameter Regions for Multistationarity of Biological Networks.	93
<i>Matthew England, Hassan Errami, Dima Grigoriev, Ovidiu Radulescu, Thomas Sturm, and Andreas Weber</i>	
The Polymake Interface in Singular and Its Applications	109
<i>Raul Epure, Yue Ren, and Hans Schönemann</i>	
Computation of Some Integer Sequences in Maple	118
<i>W.L. Fan, D.J. Jeffrey, and Erik Postma</i>	
Symbolic-Numerical Algorithm for Generating Interpolation Multivariate Hermite Polynomials of High-Accuracy Finite Element Method	134
<i>A.A. Gusev, V.P. Gerdt, O. Chuluunbaatar, G. Chuluunbaatar, S.I. Vinitsky, V.L. Derbov, and A. Gózdź</i>	

Symbolic-Numerical Algorithms for Solving the Parametric Self-adjoint 2D Elliptic Boundary-Value Problem Using High-Accuracy Finite Element Method	151
<i>A.A. Gusev, V.P. Gerdt, O. Chuluunbaatar, G. Chuluunbaatar, S.I. Vinitsky, V.L. Derbov, and A. Gózdź</i>	
A Symbolic Study of the Satellite Dynamics Subject to Damping Torques . . .	167
<i>Sergey A. Gutnik and Vasily A. Sarychev</i>	
Characteristic Set Method for Laurent Differential Polynomial Systems	183
<i>Youren Hu and Xiao-Shan Gao</i>	
Sparse Polynomial Interpolation with Finitely Many Values for the Coefficients	196
<i>Qiao-Long Huang and Xiao-Shan Gao</i>	
On Stationary Motions of the Generalized Kowalewski Gyrostat and Their Stability	210
<i>Valentin Irtegov and Tatyana Titorenko</i>	
Computing the Integer Points of a Polyhedron, I: Algorithm.	225
<i>Rui-Juan Jing and Marc Moreno Maza</i>	
Computing the Integer Points of a Polyhedron, II: Complexity Estimates	242
<i>Rui-Juan Jing and Marc Moreno Maza</i>	
Non-linearity and Non-convexity in Optimal Knots Selection for Sparse Reduced Data.	257
<i>Ryszard Kozera and Lyle Noakes</i>	
The Convergence Conditions of Interval Newton's Method Based on Point Estimates.	272
<i>Zhe Li, Baocheng Wan, and Shugong Zhang</i>	
Normalization of Indexed Differentials Based on Function Distance Invariants	285
<i>Jiang Liu</i>	
Symbolic-Numeric Integration of the Dynamical Cosserat Equations	301
<i>Dmitry A. Lyakhov, Vladimir P. Gerdt, Andreas G. Weber, and Dominik L. Michels</i>	
Algorithms for Zero-Dimensional Ideals Using Linear Recurrent Sequences . . .	313
<i>Vincent Neiger, Hamid Rahkooy, and Éric Schost</i>	
Symbolic-Numerical Analysis of the Relative Equilibria Stability in the Planar Circular Restricted Four-Body Problem.	329
<i>Alexander N. Prokopenya</i>	

The Method of Collocations and Least Residuals Combining the Integral Form of Collocation Equations and the Matching Differential Relations at the Solution of PDEs	346
<i>Vasily P. Shapeev and Evgenii V. Vorozhtsov</i>	
A Special Homotopy Continuation Method for a Class of Polynomial Systems	362
<i>Yu Wang, Wenyuan Wu, and Bican Xia</i>	
Penalty Function Based Critical Point Approach to Compute Real Witness Solution Points of Polynomial Systems	377
<i>Wenyuan Wu, Changbo Chen, and Greg Reid</i>	
Computing Multiple Zeros of Polynomial Systems: Case of Breadth One (Invited Talk)	392
<i>Lihong Zhi</i>	
Author Index	407

<http://www.springer.com/978-3-319-66319-7>

Computer Algebra in Scientific Computing
19th International Workshop, CASC 2017, Beijing,
China, September 18-22, 2017, Proceedings
Gerdt, V.P.; Koepf, W.; Seiler, W.M.; Vorozhtsov, E.V.
(Eds.)
2017, XIII, 407 p. 75 illus., Softcover
ISBN: 978-3-319-66319-7