Contents

Part I Invited Talks of ASCM2012

Symbolic Computation and Complexity Theory
Transcript of My Talk......................................................... 3
Erich L. Kaltofen

Factorization of Motions ................................................. 9
Josef Schicho

Part II Contributed Papers of ASCM2009

Simplification of the Lattice Based Attack of Boneh and Durfee for RSA Cryptoanalysis .................................................. 15
Yoshinori Aono

Real Root Isolation of Regular Chains ................................. 33
François Boulier, Changbo Chen, François Lemaire and Marc Moreno Maza

A Practical Implementation of a Modular Algorithm for Ore Polynomial Matrices ....................................................... 49
Howard Cheng and George Labahn

Computing Popov Forms of Matrices Over PBW Extensions ............ 61
Mark Giesbrecht, George Labahn and Yang Zhang

On the Simplest Quartic Fields and Related Thue Equations ............ 67
Akinari Hoshi
On the Implementation of Boolean Gröbner Bases .......................... 87
Shutaro Inoue and Akira Nagai

Comprehensive Gröbner Bases in a Java Computer
Algebra System ................................................................. 93
Heinz Kredel

A Practical Method for Floating-Point Gröbner Basis Computation . . . . 109
Tateaki Sasaki

Series-Expansion of Multivariate Algebraic Functions
at Singular Points: Nonmonic Case. .................................... 125
Tateaki Sasaki and Daiju Inaba

A Sequence of Nearest Polynomials with Given Factors. ............... 141
Hiroshi Sekigawa

Digitization Workflow in the Czech Digital Mathematics Library. . . . 147
Petr Sojka

The Implementation and Complexity Analysis of the Branch
Gröbner Bases Algorithm Over Boolean Polynomial Rings ............ 157
Yao Sun and Dingkang Wang

Towards the Calculation of Casimir Forces for Inhomogeneous
Planar Media ........................................................................ 171
C. Xiong, T.W. Kelsey, S.A. Linton and U. Leonhardt

Part III Contributed Papers of ASCM2012

Sparse Polynomial Interpolation by Variable Shift in the Presence
of Noise and Outliers in the Evaluations ................................. 183
Brice Boyer, Matthew T. Comer and Erich L. Kaltofen

An Incremental Algorithm for Computing Cylindrical
Algebraic Decompositions .................................................... 199
Changbo Chen and Marc Moreno Maza

Finding the Symbolic Solution of a Geometric Problem
Through Numerical Computations ......................................... 223
Liangyu Chen, Tuo Leng, Liyong Shen, Min Wu,
Zhengfeng Yang and Zhenbing Zeng
Contents

A Symbolic Approach to Compute a Null-Space Basis in the Projection Method ........................................ 243
Mark Giesbrecht and Nam Pham

A Simple Quantifier-Free Formula of Positive Semidefinite Cyclic Ternary Quartic Forms ......................... 261
Jingjun Han

The Vanishing Ideal of a Finite Set of Points with Multiplicity Structures ............................................ 275
Na Lei, Xiaopeng Zheng and Yuxue Ren

Signature-Based Method of Deciding Program Termination ........ 297
Yaohui Li, Yuqing Song and Zhifeng Wu

High-Precision Eigenvalue Bound for the Laplacian with Singularities .................................................. 311
Xuefeng Liu, Tomoaki Okayama and Shin’ichi Oishi

POLY: A New Polynomial Data Structure for Maple 17 ......... 325
Michael Monagan and Roman Pearce

Degree and Dimension Estimates for Invariant Ideals of P-Solvable Recurrences .................................... 349
Marc Moreno Maza and Rong Xiao

Real Root Isolation of Polynomial Equations Based on Hybrid Computation .......................................... 375
Fei Shen, Wenyuan Wu and Bican Xia

Overview of the Mathemagix Type System ...................... 397
Joris van der Hoeven

Resultant-Free Computation of Indefinite Hyperexponential Integrals ......................................................... 427
Xiaoli Wu

ImUp: A Maple Package for Uniformity-Improved Reparameterization of Plane Curves ............................... 437
Jing Yang, Dongming Wang and Hoon Hong

The Diagonal Reduction Algorithm Using Fast Givens .......... 453
Wen Zhang, Sanzheng Qiao and Yimin Wei
Constructing Generalized Bent Functions from Trace Forms of Galois Rings ........................................... 467
Xiaoming Zhang, Baofeng Wu, Qingfang Jin and Zhuojun Liu

Matrix Formulae of Differential Resultant for First Order Generic Ordinary Differential Polynomials ................. 479
Zhi-Yong Zhang, Chun-Ming Yuan and Xiao-Shan Gao
Computer Mathematics
9th Asian Symposium (ASCM2009), Fukuoka, December 2009, 10th Asian Symposium (ASCM2012), Beijing, October 2012, Contributed Papers and Invited Talks
Feng, R.; Lee, W.-s.; Sato, Y. (Eds.)
2014, XVI, 503 p. 54 illus., Hardcover
ISBN: 978-3-662-43798-8