

Volume No. : 22

Title : The Joint Conference of ASCM2009 and MACIS2009

Editors : Masakazu Suzuki, Hoon Hong, Hirokazu Anai, Chee Yap, Yousuke Sato, Hiroshi Yoshida

Written In : English

ISSN : 1881-4042

Published In : 2009 年12 月14 日

Authors: Authors Index 参照

Contents :

| | |
|--|----|
| A New Symbolic Method for Linear Boundary Value Problems Using Grobner Bases | 1 |
| <i>Markus Rosenkranz (joint work with Bruno Buchberger)</i> | |
| Holonomic functions revisited | 2 |
| <i>Toshinori Oaku</i> | |
| Computational Illusion _ Toward Escher and Beyond Escher | 6 |
| <i>Kokichi Sugihara</i> | |
| A Symbolic-numeric Algorithm for Computing the Multiple Roots of Polynomial Systems Accurately | 13 |
| <i>Lihong Zhi</i> | |

ASCM 2009 Regular Session

| | |
|--|----|
| Real Root Isolation of Regular Chains | 15 |
| <i>Francois Boulrier, Changbo Chen, Francois Lemaire, and Marc Moreno Maza</i> | |
| A Practical Implementation of a Modular Algorithm for Ore Polynomial Matrices | 30 |
| <i>Howard Cheng, and George Labahn</i> | |
| Ramanujan graphs of larger girth | 39 |
| <i>Xavier Dahan, and Jean-Pierre Tillich</i> | |
| Raman Spectra Estimation with Classical and Nonnegative Weighted Least Squares | 44 |
| <i>Barry Drake, Jingu Kim, Mahendra Mallick, and Haesun Park</i> | |
| Computing Popov Forms of Matrices over PBW Extensions | 54 |
| <i>Mark Giesbrecht, George Labahn, and Yang Zhang</i> | |
| On the Implementation of Boolean Grobner Bases | 58 |
| <i>Shutaro Inoue, and Akira Nagai</i> | |
| A Symbolic-Numeric Approach to Some Classes of Parametric Optimization Problems for Manufacturing Design | 63 |
| <i>Hidenao Iwane, Hitoshi Yanami, and Hirokazu Anai</i> | |
| Design of a PI controller with H performance and step response constraints | 67 |
| <i>Takuya Kitamoto, and Tetsu Yamaguchi</i> | |
| Comprehensive Grobner Bases in a Java Computer Algebra System | 77 |
| <i>Heinz Kredel</i> | |
| Computing Monodromy Groups defined by Plane Algebraic Curves by using Extended Hensel Construction | 91 |

| | |
|--|-----|
| A Family of Block Numerical Multistage-Multistep Method with Advanced Step-Points | 101 |
| <i>Ming-Gong Lee, and Rei-Wei Song</i> | |
| PGB: A package for computing parametric polynomial systems | 111 |
| <i>Katsusuke Nabeshima</i> | |
| An Algorithm to Compute Parametric Standard Bases Using Algebraic Local Cohomology for Zero Dimensional Ideals | 123 |
| <i>Katsusuke Nabeshima, Yayoi Nakamura, and Shin'ichi Tajima</i> | |
| Discrete Mathematics and Computer Algebra System | 127 |
| <i>Masakazu Naito, Toshiyuki Yamauchi, Taishi Inoue, Yuuki Tomari, Koichiro Nishimura, Takuma Nakaoka, Soh Tatsumi, Ryohei Miyadera, Wataru Ogasa, and Daisuke Minematsu</i> | |
| Spectral Decomposition and Eigenvectors of Matrices by Residue Calculus | 137 |
| <i>Katsuyoshi Ohara, and Shin'ichi Tajima</i> | |
| Characterizing the Intersection Pattern of Two Conics: A Bezoutian-Based Approach | 141 |
| <i>Sylvain Petitjean</i> | |
| Certified Complex Root Isolation via Adaptive Root Separation Bounds | 151 |
| <i>Michael Sagraloff, Michael Kerber, and Michael Hemmer</i> | |
| A Practical Method for Floating-point Grobner Basis Computation | 167 |
| <i>Tateaki Sasaki</i> | |
| Series Expansion of Multivariate Algebraic Functions at Singular Points _ Nonmonic Case | 177 |
| <i>Tateaki Sasaki, and Daiju Inaba</i> | |
| A Sequence of Nearest Polynomials with Given Factors | 187 |
| <i>Hiroshi Sekigawa</i> | |
| The Implementation and Complexity Analysis of the Branch Grobner Bases Algorithm over Boolean Ring | 191 |
| <i>Yao Sun, and Dingkang Wang</i> | |
| Computing Boolean Grobner Bases within Linear Algebra | 201 |
| <i>Akira Suzuki</i> | |
| Finite Element Time Domain Method for Electromagnetic Wave Problems | 205 |
| <i>Kengo Taira, and Seiji Fujino</i> | |
| GPGCD, an Iterative Method for Calculating Approximate GCD of Univariate Polynomials, with the Complex Coefficients | 212 |
| <i>Akira Terui</i> | |
| Towards the calculation of Casimir forces for inhomogeneous planar media | 222 |
| <i>Chun Xiong, Tom Kelsey, Steve Linton, and Ulf Leonhardt</i> | |

ASCM Organized Session

Digitizing Mathematics

| | |
|---|-----|
| Digitized Mathematical Literature and the Semantic Web (Invited talk) | 231 |
|---|-----|

David Ruddy

Extract Baseline Information Using Support Vector Machine 232

Walaa Aly, Seiichi Uchida, and Masakazu Suzuki

Audio/Visual/Tactual Presentation of Scientific Graphics 242

John Gardner, Vladimir Bulatov, Masakazu Suzuki, and Katsuhito Yamaguchi

Orientation-Independent Recognition of Handwritten Characters with Integral Invariants 252

Oleg Golubitsky, Vadim Mazalov, and Stephen M. Watt

Towards context-based disambiguation of mathematical expressions 262

Mihai Grigore, Magdalena Wolska, and Michael Kohlhase

Digitisation Workflow in the Czech Digital Mathematics Library 272

Petr Sojka

Validated Numerical Computation

Computational Existence Proofs for Spherical t -Designs 281

Xiaojun Chen, Andreas Frommer, and Bruno Lang

Error Bound for Harmonic Balance Method Using Grobner Base..... 284

Takashi Hisakado, and Masakazu Yagi

Computer Assisted Proofs for Spectral Problems..... 288

Kaori Nagatou

Numerical Verification Method for Nonlinear Differential Equations 292

Shin'ichi Oishi, Akitoshi Takayasu, and Takayuki Kubo

Rigorous numerics for homoclinic dynamics 301

Daniel Wilczak

Construction of an automatic validated computation for boundary value problems of ODEs 306

Nobito Yamamoto, Ryuji Ukawa, and Nozomu Matsuda

Computational Algebraic Number Theory

Simplification of the lattice based attack of Boneh and Durfee for RSA cryptanalysis 310

Yoshinori Aono

On the simplest quartic fields and related Thue equations 320

Akinari Hoshi

In-place Arithmetic for Univariate Polynomials over an Algebraic Number Field 330

Seyed Mohammad Mahdi Javadi, and Michael Monagan

viii

MACIS2009

Polynomial system solving

Intersection Formulas and Algorithms for Computing Triangular Decompositions 343

Changbo Chen, and Marc Moreno Maza

Root Isolation of Zero-dimensional Polynomial Systems with Linear Univariate Representation 344

Jin-San Cheng, Xiao-Shan Gao, and Leilei Guo

Efficient computation of square-free Lagrange resolvents 348

Antoine Colin, and Marc Giusti

On some probabilistic aspects around modular methods 352

Xavier Dahan

Stability and Bifurcation Analysis of Coupled Fitzhugh-Nagumo Oscillators..... 356

William Hanan, Dagash Mehta, Guillaume Moroz, and Sepanda Pouryahya

Computer Algebra for Integer Portfolio problems 360

Francisco Jesus Castro-Jimenez, Manuel Jesus Gago-Vargas,

Maria Isabel Hartillo, Justo Puerto, and Jose Maria Ucha

Algebraic points in geometry and application to CAD 364

Daniel Lazard

On Using Triangular Decomposition for Solving Parametric Polynomial Systems 370

Fabrice Rouillier, and Rong Xiao

Systems and Control

A Sum of Squares Approach to Nonlinear Gain Analysis of a Class of

Nonlinear Dynamical Systems 374

Hiroyuki Ichihara, and Hirokazu Anai

On the computation of the optimal H_2 norm of a parametric system achievable

by a feedback controller 378

Takuya Kitamoto, and Tetsu Yamaguchi

Stability Analysis for Discrete Biological Models Using Algebraic Methods 382

Xiaoliang Li, Chenqi Mou, Wei Niu, and Dongming Wang

Optimization and Synthesis for a Mechatronic System 386

Fu-Cheng Wang, Hsiang-An Chan, Jason Zheng Jiang, and Malcolm C. Smith

Algebraic approaches to underdetermined systems 391

Hiroshi Yoshida, and Kinji Kimura

ix

Software Science

Automatically Generating High-Performance Parallel Code for

Atmospheric Simulation Models: Challenges and Solutions for Auto-Programming Tools 395

Robert van Engelen

SPIRAL and Beyond: Automatic Derivation and Optimization of DSP Algorithms and More 399

Jeremy Johnson

A logic-based approach to the implementation of medical knowledge mining 403

Nittaya Kerdprasop, and Kittisak Kerdprasop

A Principled, Complete, and Efficient Representation of C++ 407

Gabriel Dos Reis, and Bjarne Stroustrup

On the Future of Computer Algebra Systems at the Threshold of 2010 422

Stephen M. Watt

Automated induction of frequent patterns with knowledge-based software engineering 431

Kittisak Kerdprasop, and Nittaya Kerdprasop _ _ _ _ _ (Short presentation)