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Disciplina	004.01/51
Soggetti	Algorithms Computer science—Mathematics Discrete mathematics Computer graphics Numerical analysis Computer arithmetic and logic units Discrete Mathematics in Computer Science Symbolic and Algebraic Manipulation Computer Graphics Numerical Analysis Arithmetic and Logic Structures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	International conference proceedings.
Nota di bibliografia	Includes bibliographical references and author index.
Nota di contenuto	On Polynomial Solutions of Linear Partial Differential and (q-)Difference Equations -- An Algebraic Characterization of Rainbow Connectivity -- Application of the Method of Asymptotic Solution to One Multi-Parameter Problem -- A New Algorithm for Long Integer Cube Computation with Some Insight into Higher Powers -- Lightweight Abstraction for Mathematical Computation in Java -- Calculation of Normal Forms of the Euler–Poisson Equations -- Stability of Equilibrium Positions in the Spatial Circular Restricted Four-Body Problem -- Computing Hopf Bifurcations in Chemical Reaction Networks Using Reaction Coordinates -- Comprehensive Involutive Systems -- A

Polynomial-Time Algorithm for the Jacobson Form of a Matrix of Ore Polynomials -- The Resonant Center Problem for a 2:-3 Resonant Cubic Lotka–Volterra System -- Complexity of Solving Systems with Few Independent Monomials and Applications to Mass-Action Kinetics
Symbolic-Numerical Calculations of -- High- $|m|$ Rydberg States and Decay Rates in Strong Magnetic Fields -- Quasi-stability versus Genericity -- Invariant Theory: Applications and Computations (Invited Talk) -- Local Generic Position for Root Isolation of Zero-Dimensional Triangular Polynomial Systems -- On Fulton’s Algorithm for Computing Intersection Multiplicities -- A Note on the Space Complexity of Fast D-Finite Function Evaluation -- Inversion Modulo Zero-Dimensional Regular Chains -- Sparse Polynomial Powering Using Heaps -- Stability Conditions of Monomial Bases and Comprehensive Gröbner Systems -- Parallel Reduction of Matrices in Gröbner Bases Computations -- Real and Complex Polynomial Root-Finding by Means of Eigen-Solving -- Root-Refining for a Polynomial Equation -- PoCaB: A Software Infrastructure to Explore Algebraic Methods for Bio-chemical Reaction Networks -- Approximately Singular Systems and Ill-Conditioned Polynomial Systems -- Symbolic-Numeric Implementation of the Method of Collocations and Least Squares for 3D Navier–Stokes Equations -- Verifiable Conditions on Asymptotic Stabilisability for a Class of Planar Switched Linear Systems -- Improving Angular Speed Uniformity by Optimal C0 Piecewise Reparameterization -- Usage of Modular Techniques for Efficient Computation of Ideal Operations (Invited Talk).

Sommario/riassunto

This book constitutes the proceedings of the 14th International Workshop on Computer Algebra in Scientific Computing, CASC 2012, held in Maribor, Slovenia, in September 2012. The 28 full papers presented were carefully reviewed and selected for inclusion in this book. One of the main themes of the CASC workshop series, namely polynomial algebra, is represented by contributions devoted to new algorithms for computing comprehensive Gröbner and involutive systems, parallelization of the Gröbner bases computation, the study of quasi-stable polynomial ideals, new algorithms to compute the Jacobson form of a matrix of Ore polynomials, a recursive Leverrier algorithm for inversion of dense matrices whose entries are monic polynomials, root isolation of zero-dimensional triangular polynomial systems, optimal computation of the third power of a long integer, investigation of the complexity of solving systems with few independent monomials, the study of ill-conditioned polynomial systems, a method for polynomial root-finding via eigen-solving and randomization, an algorithm for fast dense polynomial multiplication with Java using the new opaque typed method, and sparse polynomial powering using heaps.
