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Soggetti	Computer science—Mathematics Computer programming Discrete mathematics Algorithms Symbolic and Algebraic Manipulation Programming Techniques Discrete Mathematics in Computer Science Mathematical Applications in Computer Science
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Nota di contenuto	Comparison Maps for Relatively Free Resolutions -- A Symbolic-Numeric Approach for Solving the Eigenvalue Problem for the One-Dimensional Schrödinger Equation -- Reducing Computational Costs in the Basic Perturbation Lemma -- Solving Algorithmic Problems on Orders and Lattices by Relation Algebra and RelView -- Intervals, Syzygies, Numerical Gröbner Bases: A Mixed Study -- Application of Computer Algebra for Construction of Quasi-periodic Solutions for Restricted Circular Planar Three Body Problem -- Efficient Preprocessing Methods for Quantifier Elimination -- Symbolic and Numerical Calculation of Transport Integrals for Some Organic Crystals -- On the Provably Tight Approximation of Optimal Meshing for Non-convex Regions -- Providing Modern Software Environments to Computer Algebra Systems -- The Instability of the Rhombus-Like

Central Configurations in Newton 9-Body Problem -- Algorithmic Invariants for Alexander Modules -- Sudokus and Gröbner Bases: Not Only a Divertimento -- Simplicial Perturbation Techniques and Effective Homology -- Numerical Study of Stability Domains of Hamiltonian Equation Solutions -- Numeric-Symbolic Computations in the Study of Central Configurations in the Planar Newtonian Four-Body Problem -- A Symbolic-Numerical Algorithm for Solving the Eigenvalue Problem for a Hydrogen Atom in Magnetic Field -- On Decomposition of Tame Polynomials and Rational Functions -- Newton Polyhedra and an Oscillation Index of Oscillatory Integrals with Convex Phases -- Cellular Automata with Symmetric Local Rules -- Parallel Laplace Method with Assured Accuracy for Solutions of Differential Equations by Symbolic Computations -- On Connection Between Constructive Involutive Divisions and Monomial Orderings -- A Symbolic-Numeric Approach to Tube Modeling in CAD Systems -- Inequalities on Upper Bounds for Real Polynomial Roots -- New Domains for Applied Quantifier Elimination -- Algorithms for Symbolic Polynomials -- Testing Mersenne Primes with Elliptic Curves.

Sommario/riassunto

This volume contains revised versions of the papers submitted to the workshop by the participants and accepted by the program committee after a thorough reviewing process. The collection of papers included in the proceedings covers not only various expanding applications of computer algebra to scientific computing but also the computer algebra systems themselves and the CA algorithms. The eight earlier CASC conferences, CASC 1998, CASC 1999, CASC 2000, CASC 2001, CASC 2002, CASC 2003, CASC 2004, and CASC 2005 were held, respectively, in St. Petersburg, Russia, in Munich, Germany, in Samarkand, Uzbekistan, in Konstanz, Germany, in Crimea, Ukraine, in Passau, Germany, in St. Petersburg, Russia, and in Kalamata, Greece, and they proved to be successful. It was E. A. Grebenikow (Computing Center of the Russian Academy of Sciences, Moscow) who drew our attention to the group of mathematicians and computer scientists at the Academy of Sciences of Moldova conducting research in the field of computer algebra. We were impressed that this group not only is concerned with applications of CA methods to problems of scientific computing but also carries out research on the fundamental principles underlying the current computer algebra systems themselves, see also their papers in the present proceedings volume. It was therefore decided to organize the 9th workshop on Computer Algebra in Scientific Computing, CASC 2006, in Chişinău, the capital of Moldova.
