1. Record Nr. UNINA9910483834503321

Titolo	Computer Algebra in Scientific Computing : 15th International Workshop, CASC 2013, Berlin, Germany, September 9-13, 2013, Proceedings / / edited by Vladimir P. Gerdt, Wolfram Koepf, Ernst W. Mayr, Evgenii V. Vorozhtsov
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2013
ISBN	9783319022970 3319022970
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (XVI, 443 p. 58 illus.)
Collana	Theoretical Computer Science and General Issues, , 2512-2029 ; ; 8136
Disciplina	005.1
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	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Polynomial algebra -- the solution of tropical linear systems and tropical polynomial systems -- the theory of matrices -- the use of computer algebra for the investigation of various mathematical and applied topics related to ordinary differential equations -- applications of symbolic computations for solving partial differential equations in mathematical physics -- problems arising at the application of computer algebra methods for finding infinitesimal symmetries -- applications of symbolic and symbolic-numeric algorithms in

mechanics and physics -- automatic differentiation -- the application of the CAS Mathematica for the simulation of quantum error correction in quantum computing -- the application of the CAS GAP for the enumeration of Schur rings over the group A5 -- constructive computation of zero separation bounds for arithmetic expressions -- the parallel implementation of fast Fourier transforms with the aid of the Spiral library generation system -- the use of object-oriented languages such as Java or Scala for implementation of categories as type classes -- a survey of industrial applications of approximate computer algebra.

Sommario/riassunto

This book constitutes the proceedings of the 14th International Workshop on Computer Algebra in Scientific Computing, CASC 2013, held in Berlin, Germany, in September 2013. The 33 full papers presented were carefully reviewed and selected for inclusion in this book. The papers address issues such as polynomial algebra; the solution of tropical linear systems and tropical polynomial systems; the theory of matrices; the use of computer algebra for the investigation of various mathematical and applied topics related to ordinary differential equations (ODEs); applications of symbolic computations for solving partial differential equations (PDEs) in mathematical physics; problems arising at the application of computer algebra methods for finding infinitesimal symmetries; applications of symbolic and symbolic-numeric algorithms in mechanics and physics; automatic differentiation; the application of the CAS Mathematica for the simulation of quantum error correction in quantum computing; the application of the CAS GAP for the enumeration of Schur rings over the group A5; constructive computation of zero separation bounds for arithmetic expressions; the parallel implementation of fast Fourier transforms with the aid of the Spiral library generation system; the use of object-oriented languages such as Java or Scala for implementation of categories as type classes; a survey of industrial applications of approximate computer algebra.