Mathematics mechanization and applications [

Gao, Xiao-Shan
Wang, Dongming

Academic Press,
c2000

Libros electrónicos

Monografía

Mathematics Mechanization and Applications provides a uniform presentation of major developments, carried out mostly in Wu's extended Chinese group, on algorithms and software tools for mechanizing algebraic equations solving and geometric theorem proving together with their applications to problems in science and engineering. It is distinguished by its uniform presentation with all-Chinese contributors and a 40-page list of references. There are 20 chapters written by experienced researchers. The book is divided into four parts: polynomial system solving, automated geometric reasoning, algebraic computation, and implementations and applications. Each chapter is devoted to surveying and expounding the main results achieved from one selected subject. The book contains surveys for diverse applications of the theories and methods to real world problems, ranging from the analysis of robotics and mechanisms to nonlinear programming and chemical equilibrium computation. Part of the theoretical and practical work reviewed in the book has been either unpublished or published only in Chinese journals or even only in the Chinese language. This book therefore provides Western readers working in symbolic and algebraic computation, geometric reasoning and modeling, algorithmic mathematics, robotics, CAGD, and other relevant areas with an easily accessible source of references for what the Chinese researchers have been doing under the banner of mathematics mechanization. * Addresses the frontiers of research with original ideas and results * Includes sophisticated, successful applications to scientific and engineering problems * Covers polynomial system solving, geometric reasoning, computer algebra, and mathematical software * Is comprehensive and focused * Contains an extensive bibliography--of high reference value--particularly for western readers

Título: Mathematics mechanization and applications Recurso electrónico] edited by Xiao-Shan Gao and Dongming Wang

Editorial: San Diego Academic Press c2000

Descripción física: xix, 551 p. ill. 26 cm

Mención de serie: Books on ScienceDirect

Bibliografía: Includes bibliographical references (p. 507-539) and index

Contenido: Preface. List of Contributors. Polynomial System Solving: W. Wu, The Characteristic Set Method and Its Application. D. Wang, Some Algorithms for Zero Decomposition of Polynomial Systems. S. Zhang, G. Feng, The Eigenvalue Approach to Polynomial System. S.Wang, K. Wu, Solving the Yang-Baxter Equation by Wu's Method. Automated Geometric Reasoning: S. Chou, D. Lin, Wu's Method for Automated Geometry Theorem Proving and Discovering. H. Li, Mechanical Theorem Proving in Differential Geometry. J. Zhang, Points Elimination Methods for Geometric Problem Solving. H. Li, Clifford Algebra Approaches to Mechanical Geometry Theorem Proving. X. Hou, Proving by Examples. X. Gao, Search Methods Revisited. J. Wu, First-Order Polynomial Based Theorem Proving. Algebraic Computation: Z. Li, Greatest Common Right Divisors, Least Common Left Multiples, and Subresultants of Ore Polynomials. L. Zhi, Algebraic Factorization and GCD Computation. X. Gao, Conversion Between Implicit and Parametric Representations of Algebraic Varieties. Implementations and Applications: Z. Lu, S. Ma, Centers, Foci, and Limit Cycles for Polynomial Differential Systems. Z. Li, Exact Solitary Wave Solutions of Non-linear Evolution Equations. H. Zhang, E. Fan, Applications of Mechanical Methods to Partial Differential Equations. Q. Liao, Equation Solving in Robotics and Mechanisms. G. Feng, H. Ren, Y. Zhou, Blending Several Implicit Algebraic Surfaces. S. Chou, X. Gao, Z. Liu, D-K Wang, D. Wang, Geometric Theorem Provers and Algebraic Equation Solvers. References. Index

Restricciones de acceso: Acceso restringido a miembros del Consorcio de Bibliotecas Universitarias de Andalucía

Detalles del sistema: Modo de acceso: World Wide Web

Fuente de adquisición directa: ScienceDirect (M)

ISBN: 9780127347608 0127347607

Materia: Equations- Numerical solutions- Data processing Automatic theorem proving

Autores: Gao, Xiao-Shan Wang, Dongming
