Program for the 5th International IMACS Conference on Applications of Computer Algebra

June 25, 1999 (Friday)					
SESSION	Computer Algebra meets Education I *Bernhard Kutzler* **A**	Approximate Algebraic Computation: towards Symbolic-Numeric Algorithms *Tateaki Sasaki Matu-Tarow Noda Bernard Mourrain & Robert Corless* **B**	Combinatorial and Computational Methods in Algebraic Geometry *Jie-Tai Yu & Vladimir Shpilrain* **C**	Computer Algebra for Dynamical Systems and Mechanics I *Victor Edneral Ilias Kotsireas & Nikolay Vasiliev* **D**	
9:00 am	Setting the Tone: CAS as pedagogical tools *Bernhard Kutzler*	New results on the Table Maker's Dilemma *Jean-Michel Muller & Vincent Lefevre**	The Parameterization Problem for Algebraic Surfaces *Josef Schicho*	Computer Algebraic Approximations—Creation of Approximated Solutions of Scientific and Engineering Problems in Symbolic Form *Victor Edneral*	
9:30 am	Basic Skills versus Technology—not a Contradiction but a Completion *Josef Boehm*	Polynomial Algebra with Coefficients of Limited Accuracy *Hans Stetter*	Computing subfields in pure trascendental extensions *Jaime Gutierrez & Rosario Rubio*		
10:00 am	The Use of Mathematics Specific Technology in Capstone Mathematics Teacher Preparation Courses *Gary A. Harris*	A System of Automatic Algorithm Stabilization *Hiroshi Sekigawa*	Again $x+x^2y+z^2+t^3 = 0$ *Lenny Makar-Limanov*	Solving the problem of stabilization of a gyroscopic system with the help of Computer Algebra *A. V. Banshchikov, L. A. Bourlakova & V. D. Irtegov*	
10:30 am	Some Reflections About the Impact of Computer Algebra Systems in the Ordering of the Curricula of Mathematics *Justo Cabezas & Eugenio Roanes-Lozano**	To Be Announced *Hiroshi Kai*	Invariants of algebraic varieties *Vladimir Shpilrain*	About investigation of systems with first integrals *L. A. Bourlakova & V. D. Irtegov*	
11:00 am	**BREAK**				
11:30 am	A Computer Classroom Lecture: Asymptotic Convergence of Rational Functions *Bill Pletsch*	To Be Announced *Victor Y. Pan*		Analytical Approach for Simplifying Dynamical Systems of Polynomial Type *J. Palacián & P. Yanguas*	
12:00 pm	Exam questions when using CAS for school mathematics teaching *Vlasta Kokol-Voljc*	Mechanism of Cancellation Errors in Multivariate Hensel Construction with Floating-point Numbers *Tateaki Sasaki*		Communications of the Poisson Series Processors PSPC with General Scientific Software *A. Abad, A. Gavin & J. F. San-Juan*	
12:30 pm	Using the TI-92Plus: Examples *Michel Beaudin*	Exacts predicates for arrangement of arcs of circle *A. Fronville*		Parallelisation of Perturbation Analysis: the method of Multiple Scales applied to vibration problems *Raya Khanin & Matthew Cartmell*	
1:00 pm	Why use CAS with TI89 in mathematical education? Classrooms experiments. *Bengt Ahlander*	Approximate p-adic GCD computation *D. Rupprecht*		Some computational experiments in Celestial Mechanics *Jean-Charles Faugere*	
1:30 pm	**LUNCH**				

June 25, 1999 (Friday)					
SESSION	COMPUTER ALGEBRA MEETS EDUCATION I *Bernhard Kutzler* **A**	APPROXIMATE ALGEBRAIC COMPUTATION: TOWARDS SYMBOLIC-NUMERIC ALGORITHMS *Tateaki Sasaki Matu-Tarow Noda Bernard Mourrain & Robert Corless* **B**	TORIC IDEALS AND INTEGER PROGRAMMING *Lorenzo Robbiano* **C**	COMPUTER ALGEBRA FOR DYNAMICAL SYSTEMS AND MECHANICS I *Victor Edneral Ilias Kotsireas & Nikolay Vasiliev* **D**	APPLICATIONS OF COMPUTER ALGEBRA TO SIGNAL PROCESSING *Jeremy Johnson & Markus Pueschel* **E**
3:30 pm	Using Logo as a Scaffolding to Develop Algebraic Thinking in a Virtual Classroom *Garry Clark* & Edward Redden*	Towards numerical stability in normal form algorithms *B. Mourrain*	Computing Toric Ideals *Lorenzo Robbiano*	Some remarks on differential Hilbert polynomials in two variables *G. Carra Ferro*	Minimal Syzygies and Multidimensional Filter Design *Hyungju Park*
4:00 pm	Discovery Experiences in Synthetic Geometry with DERIVE *Miguel de Guzman*	Hybrid Rational Function Approximation and its Applications *Matu T. Noda*		Extended Characteristic Sets of Finitely Generated Differential Ideals *G. Carra Ferro & Vladimir Gerdt*	Group Representations and Automatic Derivation of Fast Signal Transforms *Markus Pueschel*
4:30 pm	About how to implement Geometric Transformations on a CAS *E. Roanes-Macias & E. Roanes-Lozano**	Approximate polynomial decomposition *M. Giesbrecht*	New algorithms for Computing Toric Ideals *Anna Bigatti*	Enumeration of intersections of Newton's polyhedrons *Alexander Aranson*	A Wreath Product Approach to Signal and Image Processing *Dan Rockmore*
5:00 pm	**BREAK**				
5:30 pm	A number-based approach to introductory algebra: A study with 11-12 year olds using graphic calculators *Tenoch E. Cedillo A.*	On approximate ideals *B. Trager or P. Gianni*	Decomposing Graver Test Sets in Stochastic Programming *Raymond Hemmecke*	Symbolic Computation of Formal Solutions for 2 and 3 Dimensional Dynamical Systems *G. Eichenmueller*	Groebner Bases and Wavelet Design *Ivan Selesnick*
6:00 pm	Instrumentation processes underlying the use of TI92 at high school level *Badr Defouad*		Initial Ideals of Toric Ideals and Group Relaxations in Integer Programming *Serkan Hosten*	A new classification of planar homogeneous quadratic systems *Driss Boularas*	To Be Announced *Jean-Charles Faugere & Fabrice Rouillier*
6:30 pm	A didactical laboratory: image filtering *A. Cavallone*, C. D'Apice*, M. Marsella & S. Salerno*			Computation of Normal Forms of Hamiltonian Systems in the Presence of Poisson Commuting integrals (Liouville-Integrability and Birkhoff Normal Forms) *J. Mikram & F. Zinoun*	To Be Announced *Jeremy Johnson*

June 26, 1999 (Saturday)					
SESSION	COMPUTER ALGEBRA MEETS EDUCATION II *Bernhard Kutzler* **A**	COMPUTER AIDED GEOMETRIC DESIGN AND COMPUTER ALGEBRA *L. Gonzalez-Vega & J. R. Sendra* **B**	APPLICATIONS OF COMPUTER ALGEBRA TO ROBOTICS *Peter Kovacs* **C**	COMPUTER ALGEBRA FOR DYNAMICAL SYSTEMS AND MECHANICS II *Victor Edneral Ilias Kotsireas & Nikolay Vasiliev* **D**	COMPUTATIONS IN PURE MATHEMATICS (ALGEBRA, ANALYSIS, GEOMETRY, ...) *Maria-Emilia Alonso Francisco Castro & Laureano Gonzalez-Vega* **E**
9:00 am	A Tutorial Mathematical System for Elementary Schools *Frank Postel* & Ralf Hillebrand*	Missing points and branches of real parametric curves *Tomas Recio*	Forward kinematics of parallel robots *Jean-Pierre Merlet*	Computational aspects of the N-body problem *Ilias Kotsireas*	Steenrod reduced powers and computability *Rocio Gonzalez-Diaz & Pedro Real*
9:30 am	High-Powered Technology in a Low-Level Mathematics Course *Jim Schultz*		Using Computer algebra tools for off-line studies of parallel manipulators *Jean-Charles Faugere, Luc Rolland & Fabrice Rouillier**	The study by symbolic computation of the sign of the riemannian curvature in the configuration space of the 3-body problem and applications *B. Elmabsout & M. Barbosu*	Analyzing the transference of the coalgebra structure on the homology of CDGAs *M. J. Jimenez, P. Real & B. Silva*
10:00 am	A Scheme for Conservative Use of Computer Algebra *Rein Prank*	Applying general-purpose symbolic and numerical computation programs for Computer Graphics and CAGD. Some applications to industry *Andres Iglesias & Akemi Galvez*	Self-Motions of Griffis-Duffy Type Parallel Manipulators *Manfred Husty & Adolf Karger*	Oscillators in Resonance *Antonio Elipe & André Deprit*	Homology of semidirect product of groups *V. Alvarez, J. A. Armario & P. Real*
10:30 am	Mathematica and didactical innovation: a quadric use case *G. Albano*, A. Cavallone, C. D'Apice* & G. Gargiulo*	Proper Parametrization of Real Algebraic Surfaces *Josef Schicho*	Functional Ideal Decomposition—a Tool for Kinematics *Peter Kovacs*	Construction of Invariants of Simplectic Mapping *Nikolay Vasiliev*	The use of Mathematica for the classification of some nilpotent Lie algebras *L. M. Camacho, J. R. Gomez & R. M. Navarro*
11:00 am	**BREAK**				

June 26, 1999 (Saturday)

SESSION	COMPUTER ALGEBRA MEETS EDUCATION II *Bernhard Kutzler* **A**	COMPUTER AIDED GEOMETRIC DESIGN AND COMPUTER ALGEBRA *L. Gonzalez-Vega & J. R. Sendra* **B**	SYMBOLIC-NUMERIC INTERFACE AND PROBLEM SOLVING ENVIRONMENTS I *Richard Liska Stanly Steinberg & Robert van Engelen* **C**	COMPUTER ALGEBRA FOR DYNAMICAL SYSTEMS AND MECHANICS II *Victor Edneral Ilias Kotsireas & Nikolay Vasiliev* **D**	COMPUTATIONS IN PURE MATHEMATICS (ALGEBRA, ANALYSIS, GEOMETRY, ...) *Maria-Emilia Alonso Francisco Castro & Laureano Gonzalez-Vega* **E**
11:30 am	Computer Aided Instruction for Business Calculus in an International Liberal Arts College *A. Kehagias & P. N. Vlachos**	An algorithm for approximate conversion of rational B-spline curves/surfaces to integral B-spline curves/surfaces and its implementation *Jesus Espinola, Laureano Gonzalez-Vega & Ioana Necula*	Finite Difference Numerical Modelling Supported by Computer Algebra *Richard Liska*	Some properties of the symplectic Lie algebra *Rodney Coleman*	New ways of defining filiform Lie algebras *J. C. Benjumea, F. J. Echarte, D. Fernandez, M. C. Marquez, J. Nuñez & F. Ramirez*
12:00 pm	Flexible Mathematical GUI Controls for Mathematical Electronical Documents *Ralf Hillebrand* & Frank Postel*	Groebner Bases and Statistics *Lorenzo Robbiano*		Discussion *by ALL*	About an algorithm of T. Oaku *Maribel Hartillo*
SESSION				INTERACTION ON PHYSICS, NUMBER THEORY & COMPUTER SCIENCE I *Hoang Ngoc Minh*	
12:30 pm	Mathematica in Undergraduate Mathematics Courses—A Teaching or Learning Aid? *May C. Abboud*		Ctadel: A Computer Algebra System for the Generation of Efficient Numerical Codes for PDEs *Robert van Engelen*	Colored multiple zeta values relations table *M. Bigotte*	Slopes in submodules of a free module *Jose Maria Ucha*
1:00 pm	Searching roots for three degree polynomials with the help of Mathematica *Marilo Lopez Gonzalez & Javier Rodrigo Hitos**		Invariant Variational Principles and Associated Numerical Schemes for Regularization of Ill-Posed Problems *Ravi Venkatesan*	Nested Sums and Iterated Integrals *D. Bradley*	Computing Toric First Syzygies *P. Pison-Casares & A. Vigneron-Tenorio*
1:30 pm	**LUNCH**				

June 26, 1999 (Saturday)					
SESSION	COMPUTER ALGEBRA MEETS EDUCATION II *Bernhard Kutzler* **A**	DEMOS OF COMPUTER ALGEBRA SYSTEMS *Michael Wester & Winfried Neun* **B**	SYMBOLIC-NUMERIC INTERFACE AND PROBLEM SOLVING ENVIRONMENTS II *Richard Liska Stanly Steinberg & Robert van Engelen* **C**	COMPUTER ALGEBRA IN THE SPANISH EDUCATIONAL SYSTEM *Lola Rodriguez* **D**	COMPUTATIONS IN PURE MATHEMATICS (ALGEBRA, ANALYSIS, GEOMETRY, ...) *Maria-Emilia Alonso Francisco Castro & Laureano Gonzalez-Vega* **E**
3:30 pm	Derivations and Visualizations for the Hydrogen Atom *Joseph D. Myers*, Kelley B. Mohrmann & Terry T. Crow*	Some Perspectives on the Usability of Computer Algebra Systems *Michael Wester*	Group Invariant Finite-Difference Schemes for Advection Equation *Ravi C. Venkatesan*	Aparicion de nuevos contenidos curriculares en matematicas mediante la aplicacion de nuevas tecnologias *Justo Cabezas Corchero*	The ideal generation conjecture for s general rational curves *F. Orecchia*
4:00 pm	CONVODE: A Reduce package for solving differential equations *Alain Moussiaux*	Solving a RLC Circuit using Convolution with DERIVE for Windows *Michel Beaudin*	Usefulness of computer algebra methods in numerical simulations *Michel Fournie*	Las herramientas euclideas y el ordenador *Tomas Recio*	Basic Algorithms for Specialization in Groebner Bases *A. Montes*
4:30 pm	Exploring sequences with DERIVE *Paolo Boieri*	The Computer Algebra System CoCoA *Lorenzo Robbiano*	Prototyping Symbolic-Numeric Algorithms using Naglink *Brian J. Dupee* & James H. Davenport*	Diferentes opciones para la resolucion de problemas con calculadoras graficas *Agustin Carrillo*	The Generation of Polya Polynomials using Macsyma, with Applications *Bill Pletsch*
5:00 pm	**BREAK**				
SESSION	TEACHING OF EFFICIENT MATHEMATICS *A. Akritas & Gennadi Malaschonok*				
5:30 pm	A project of Computer Aided Learning: A course of Computer Algebra in the web *Rafael J. Villanueva Mico & A. Hervas*	The REDLOG Package—Tools and Applications *Volker Weispfenning*	A symbolic-numerical package for linear stability analysis of numerical methods for ODEs *Massimo Cafaro & Beatrice Paternoster**	Cambios curriculares en la enseñanza del Algebra *Lola Rodriguez Soalleiro*	Duality in Effective Algebraic Geometry *Bernard Mourrain*
6:00 pm	A study of particular methods for the approximate construction of some regular polygons by using Mathematica 3.0 *Juan A. Aledo, Juan C. Cortes & Fernando L. Pelayo*	MuPAD—An Open Computer Algebra System and its Approach of Software Integration *Ralf Hillebrand & Frank Postel*	A Symbolic Numeric Environment for Analyzing Measurement Data in Multi-Model Settings *Christoph Richard & Andreas Weber**	Busqueda automatica de lugares geometricos *Eugenio Roanes Macias & Eugenio Roanes Lozano*	A Fast Computation of Hook Schur Functions *F. Gaeta*
6:30 pm		Computer Algebra Applied to Mathematical Cartography *Carlos Enriguez Turiño*	Extraction of Low Order Boolean Rules from Trained Neural Networks using a Computer Algebra System *Terence Etchells*	Matematicas en Pantalla *Rafael Perez Gomez & Miguel Posadas*	
evening	7:00pm - 8:00pm: Business Session in A				

Program for the 5th International IMACS Conference on Applications of Computer Algebra

June 27, 1999 (Sunday)				
SESSION	TEACHING OF EFFICIENT MATHEMATICS *A. Akritas & Gennadi Malaschonok* **A**	MATHEMATICS ON THE INTERNET *Angel Diaz & Erich Kaltofen* **B**	APPLICATIONS OF QUANTIFIER ELIMINATION *Volker Weispfenning & Hoon Hong* **C**	INTERACTION ON PHYSICS, NUMBER THEORY & COMPUTER SCIENCE II *Hoang Ngoc Minh* **D**
9:00 am	A comparative study between two general methods for the approximate construction of regular polygons by using Mathematica 3.0 *Juan A. Aledo, Juan C. Cortes & Fernando L. Pelayo*	Interfacing Proof Checkers With OpenMath *Olga Caprotti*	A Robust Control System Design by a Special Quantifier Elimination Method using a Sturm-Habicht Sequence *Hirokazu Anai & Shinji Hara*	Functional Equations on Polylogarithms with Axiom *Hoang Ngoc Minh*
9:30 am	Possibilities for Alternative Uses of the "Calculus and Mathematica" Approach *Alkiviadis Akritas, Stelios Kapranidis & Athina Katalifou*	Plug and Play Mathematical Components *Mike Dewar*	A Special Quantifier Elimination Algorithm for Pham Systems *Laureano Gonzalez-Vega & Neila Gonzalez-Campos*	Algebraic Structures on the Set of Multiple Zeta Values *Mike Hoffman*
10:00 am	Classical Mathematics with Mathematica *Alkiviadis Akritas & Zamir Bavel*	To Be Announced *Angel L. Diaz*	A new solution of the quartic problem: with application to integration *David J. Jeffrey*	Computer aided Knot Theory using Mathematica and MathLink *N. Imafuji*
10:30 am	Calculus and the Race Track Principle *Alkiviadis Akritas & Zamir Bavel*	Mathematics on the Web—Past, Present and Future *Dave Raggett*	Reach Set Computation for Linear Vector Fields using Quantifier Elimination *Gerardo Lafferriere, George J. Pappas & Sergio Yovine*	Combinatorics on Algebraic Identification *G. Jacob*
11:00 am	**BREAK**			
11:30 am	Some elementary mathematics revisited and revised *David J. Jeffrey*	Unicode Encoding of Mathematics *Murray Sargent*	Quantifier Elimination for Trigonometric Polynomials by Cylindrical Trigonometric Decomposition *Petru Pau & Josef Schicho*	Computational Construction of representation matrices for parallel version polynomial invariants *M. Ochiai*
12:00 pm	Teaching Error-Correcting Codes, Discrete Mathematics and Modern Algebra with Computer Algebra *Igor Gachkov & Kenneth Hulth*	Stylesheets for Mathematical Web Pages *Stephen Watt*	The Study of Stability using Computer Algebra *Stanly Steinberg*	Computational Decomposition of homeomorphisms into canonical Dehn's twists *Y. Sakata*
12:30 pm	Teaching of efficient mathematics *Gennadi Malaschonok & Natalia Malaschonok*	Accessing Quantifier Elimination Packages Over the Internet Out of General Purpose Systems *Andreas Weber*		On l-adic iterated integral *Z. Wojtkowiak*
1:00 pm	Efficient methods of mathematical analysis *Gennadi Malaschonok*	Concluding Discussion of the Issues Addressed in the Talks (Moderator with Audience Participation) *Erich Kaltofen*	Semilinear motion planning in REDLOG *Volker Weispfenning*	
1:30 pm	**LUNCH**			
SESSION				
3:30 pm	**BREAK**			