FINAL Program for the 3rd International IMACS Conference on Applications of Computer Algebra

July 24, 1997 (Thursday)			
8:00 am	**Lokelani**: ACA'97 Welcome		
SESSION	COMPUTER ALGEBRA METHODS IN INTEGRATION AND ANALYSIS OF ODEs: LIE SYMMETRY METHODS *Vladimir P. Gerdt* **Lokelani**	MODERATED FORUM ON COMPUTER ALGEBRA SYSTEMS *Michael Wester* **Lealoha**	SYMBOLIC COMPUTING ASPECTS OF MULTI-AGENT SYSTEMS AND AUTONOMOUS AGENTS *John Campbell* **Lehua**
8:15 am	An Algorithm for Constructing Integrating Factors and Corresponding First Integrals for Systems of ODE's *Stephen C. Anco & George W. Bluman**	Session starts after the first break ...	Integrating Computer Algebra Systems and Theorem Provers *Jacques Calmet*
8:45 am	Using Lie Groups to Solve Differential Equations *Stephen V. Coggeshall*		
9:15 am	**BREAK**		
9:45 am	Three Methods for Exact Integration of ODEs Compared *Alexei Bocharov*	Panel *Richard Fateman, Hoon Hong, Robert Lewis, Michael Monagan, Richard Petti, Bill Pletsch, Stanly Steinberg, Michael Wester*	
10:15 am	Moving Coframes *Peter Olver*		
10:45 am	Quasi-exactly Solvable Spectral Problems for Ordinary Differential Operators *Niky Kamran*		
11:15 am	Equivalence Classes and Symmetries of Abel's Equation *Fritz Schwarz*		
11:45 am	**LUNCH**		
SESSION	ALGORITHMIC ANALYSIS OF PDEs USING ELIMINATION ALGORITHMS *Greg Reid* **Lokelani**	NON-STANDARD APPLICATIONS *Eugenio Roanes-Lozano* **Lealoha**	AUTOMATIC DIFFERENTIATION *Stephen Watt & Christele Faure* **Lehua**
1:45 pm	Introduction to Geometric and Algebraic Algorithms for Nonlinear PDE *Gregory Reid*	Applications of Computer Algebra to Image Understanding, Object Recognition, and Computer Vision *Peter F. Stiller*	Automatic Differentiation in Computer Algebra Systems *Michael Monagan*
2:15 pm	Moving Frames and Calculation of Lie Symmetry of PDE *Ian Lisle*	A Polynomial Model for Multi-Valued Logics with a Touch of Algebraic Geometry and Computer Algebra *Eugenio Roanes-Lozano*, Luis M. Laita & E. Roanes-Macias*	Data Assimilation in Meteorology: A Quest for Automatic Differentiation *Francois-Xavier Le Dimet*
2:45 pm	Applying the Factorization Technique for Simplification of Expressions Involving Differential Operator Inverses *Serguei P. Tsarev*	Progress in Natural Language Query in Macsyma *Richard J. Petti*	
3:15 pm	**BREAK**		
3:30 pm	Application of Involutive Division Methods to Polynomial and Differential Equations *Vladimir P. Gerdt*	Nonequilibrium Molecular Dynamics Integration Using Maple *Debra J. Searles, Dennis J. Isbister* & Denis J. Evans*	Automatic Differentiation of Code *Christele Faure*
4:00 pm	Rankings of Partial Derivatives and Elimination Algorithms for PDE *Colin Rust*	Analyzing the Thermodynamics of Steam Reforming with Maple *Johannes Grotendorst* & Jürgen Dornseiffer*	Advanced Algorithms for Derivative Propagation *Jason Abate*
4:30 pm	A Direct Construction Method for Conservation Laws of Partial Differential Equations *Stephen C. Anco & George W. Bluman**	Social Structures and Speeding Trucks: A Simulation with Experimentation *Michael A. Faia*	To Be Announced *Stephen Watt*
5:00 pm	**Lokelani:** ACA Business Meeting		

July 25, 1997 (Friday)			
SESSION	COMPUTER ALGEBRA METHODS IN INTEGRATION AND ANALYSIS OF ODEs: LINEAR EQUATIONS AND HAMILTONIAN SYSTEMS *Fritz Schwarz* **Lokelani**	GRAND CHALLENGES IN COMPUTER ALGEBRA *Laurent Bernardin* **Lealoha**	
8:15 am	Characteristic Classes for Singularities of Linear Differential Equations *A. Levelt*	The Six-Line Problem and Polynomial Resultants *Robert H. Lewis*	
8:45 am	Solving Linear Differential Equations with Polynomial Coefficients in Some Power Series Classes *Sergei A. Abramov*	Parallel Symbolic Computation on the Desk-Top *Wolfgang Küchlin*	
9:15 am	On the New Face of Kovacic's Algorithm *Manuel Bronstein*	The Diatomic Anharmonic Oscillator According to Matrix Mechanics *Michael Monagan* & John Ogilvie*	
9:45 am	**BREAK**		
10:15 am	Factorization of Linear Differential Operators *Mark van Hoeij*	Fast Multiprecision Evaluation of Series of Rational Numbers *Bruno Haible* & Thomas Papanikolaou*	
10:45 am	Searching Local Periodic Families of ODEs in a Normal Form Method *Victor F. Edneral*	Computing on the Net or: Computer Algebra goes Java *Laurent Bernardin*	
11:15 am	On Standard Bases over Newton's Polytopes: Generalization of Buchberger's Algorithm *Victor F. Edneral* & Nikolay N. Vassiliev*	Parallel Polynomial Real Root Isolation *Werner Krandick*	
11:45 am	**LUNCH**		
SESSION	ALGORITHMIC COMPUTATION OF CONSERVATION LAWS *Greg Reid, Thomas Wolf & Alexei Bocharov* **Lokelani**	GRAND CHALLENGES IN COMPUTER ALGEBRA *Laurent Bernardin* **Lealoha**	COMPUTER ALGEBRA IN EDUCATION *Ian Cohen & Martin Lesser* **Lehua**
1:45 pm	A Comparison of Two Methods to Calculate Conservation Laws of PDE systems *Thomas Wolf*	Factoring Univariate Polynomials over Finite Fields with LiDIA *Thomas Pfahler*	Teaching Basic Mechanics With Computer Algebra, Sophia and Maple *Martin Lesser*
2:15 pm	Symbolic Computation of Conserved Densities for Nonlinear Evolution and Differential-Difference Equations *Ünal Göktas* & Willy Hereman*	Parallel Quantifier Elimination *Hoon Hong, Richard Liska, Nicolas Robidoux & Stanly Steinberg*	Theorema: Application of Mathematica for Proof Training *Bruno Buchberger* & Tudor Jebelean*
SESSION		SOFTWARE INTEGRATION *Olaf Bachmann & Andreas Sorgatz*	
2:45 pm	Symmetric Conservation Laws *Mark Hickman*	The MP protocol: Past, Present, Future *Simon Gray*	Improving Math Teaching with DERIVE and the TI-92: The Scaffolding Method *Bernhard Kutzler*
3:15 pm	**BREAK**		
SESSION	COMPUTER ALGEBRA IN ROBOTICS *Jochen Pfalzgraf*		
3:30 pm	Some Reflections on Knowledge Based System Modeling - Mathematical Aspects: Applications to Symbolic (and Geometric) Modeling of Robot Arms *Jochen Pfalzgraf*	Experiences on Software Integration Based on MP *Olaf Bachmann*	Computer Algebra Systems in Beginning College Mathematics Instruction *Bill Pletsch*
4:00 pm		Dynamically Linked Modules of MuPAD *Andreas Sorgatz*	Teaching Discrete Mathematics with Computer Algebra: A New Approach to Modern Algebra and Error-Correcting Codes *Kenneth Hulth* & Igor Gachkov*
4:30 pm	Using the 'Ausdehnungslehre' and 'Mathematica' to Determine the Unknown Parameters of Grassmann Chain Mechanisms with Two and Three Input Sources *Gloria Bitterfeld*	Accomplishing Software Integration: Dynamic Linking vs Interprocess Communications *Olaf Bachmann, Simon Gray, Andreas Sorgatz & Hannes Schönemann*	

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July 26, 1997 (Saturday)		
SESSION	COMPUTER ALGEBRA METHODS IN INTEGRATION AND ANALYSIS OF ODEs: APPROXIMATE SOLUTIONS *Vladimir P. Gerdt & Fritz Schwarz* **Lokelani**	PROBLEM SOLVING ENVIRONMENTS/SYMBOLIC-NUMERIC INTERFACES *Bruce Char, Jeremy Johnson, Sanjiwa Weerawarana &* **Lealoha**
8:30 am	Computer Algebra and the Method of Modified Equations *Mohammad O. Ahmed & Robert M. Corless**	Problem Solving Environments for Airshed Models *Donald Dabdub*
9:00 am	Nonlinear Differential Equations with Inexactly Known Boundary Conditions and Gröbner bases *Vladimir P. Gerdt*, Michael G. Dmitriev & Marina V. Nesterova*	The PSEware Project: Infrastructure for Building Problem-Solving Environments *Randy Bramley*
9:30 am	Concepts and Algorithms of Computer Analysis for an Approximate Solution of ODE's *Karl Hantzschmann*	The Use of Algorithm Templates in a Problem Solving Environment for the Numerical Solution of Differential Equations *R. L. Akers, Elaine Kant, C. J. Randall, Stanly Steinberg* & R. L. Young*
10:00 am	**BREAK**	
10:30 am	Point Mapping-Based Analysis of Nonlinear Systems Using Symbolic Algebra *Ramesh S. Guttalu* & Henryk Flashner*	Vertically Averaged Stratified Fluid Flow Models - Analysis and Numerical Solution Supported by Computer Algebra Tools *Richard Liska* & Burton Wendroff*
11:00 am	Curvature in Computer Vision *Cheri Shakiban*	Algorithm Stabilization Techniques and their Application to Symbolic Computation of Generalized Inverses *Hiroyuki Minakuchi, Hiroshi Kai, Kiyoshi Shirayanagi & Matu-Tarow Noda**
11:30 am		Panel Discussion: The Role of Computer Algebra in PSEs *Panel*