

ISSAC 2002 Program

July, Sunday 7th, 2002

08h00 – 19h00 **Registration**

08h30 – 10h00 **ISSAC Tutorial 1:** BERNARD MOURRAIN.
“Symbolic-numeric methods for algebraic curves and surfaces”.

09h00 – 19h00 **IAMC Workshop**

10h00 – 10h15 **Coffee break**

10h15 – 11h45 **ISSAC Tutorial 1:** BERNARD MOURRAIN.
Cont.

11h45 – 12h45 **Lunch**

12h45 – 15h45 **ISSAC Tutorial 2:** GEORGES RACINET.
“Computer algebra and combinatorial problems at the interplay of
number theory and quantum algebra: the example of Multiple Zeta
Values”.

15h45 – 16h00 **Coffee break**

16h00 – 19h00 **ISSAC Tutorial 3:** PIERRICK GAUDRY.
“Introduction to public key cryptography based on algorithmic number
theory”.

19h00 – 20h00 **Welcome Reception**

July, Monday 8th, 2002

08h00 – 12h00 **Registration**

08h45 – 09h00 **Welcome and Opening Remarks**

09h00 – 10h00 **Invited Talk 1:** TORBJÖRN GRANLUND.
“GMP - a functional foundation for fast arithmetic”.

10h00 – 10h30 **Coffee Break/Poster Session**

10h30 – 12h10 **Session 1:**

- “Fraction-free row reduction of matrices of skew polynomials.”
B. BECKERMANN, H. CHENG, G. LABAHN.
- “A reduced form for perturbed matrix polynomials”.
C.-P. JEANNEROD.
- “An output-sensitive variant of the baby steps/giant steps determinant algorithm”.
E. KALTOFEN.
- “High-order lifting”.
A. STORJOHANN.

12h10 – 13h40 **Lunch**

13h40 – 15h40 **Accepted Software Demonstrations**

- “Cooperation between the Mathematical Knowledge Base MBASE and the Theorem Prover Ω MEGA”.
A. FRANKE, M. MOSCHNER, M. POLLET.
- “Theorema: A System for the Working Mathematician”.
T. JEBELEAN, B. BUCHBERGER, THE THEOREMA GROUP.

- “Solving polynomial equation systems using the Kronecker package”.
G. LECERF.
- “PolyLib: A Library for doing Symbolic Polyhedra Operations”.
V. LOECHNER, P. CLAUSS, D. WILDE, G. BITRAN, J. LÉGER.
- “SCANNER: a Maple Package for Symbolic Creation of Approximate Normal Forms for Nonlinear Differential Equations with Resonances”.
J. MIKRAM, F. ZINOUN.
- “Discussing Parametric Gröbner Bases: `dpgb` software”.
A. MONTES.
- “The FOC Compiler: Towards a Certified Computer Algebra Library”.
V. PREVOSTO.
- “ALLTYPES Software for Differential Algebra”.
F. SCHWARZ.

15h40 – 16h10 **Coffee Break/Poster Session**

16h10 – 17h50 **Session 2:**

- “Editing mathematical content and presentation markup in interactive mathematical documents”.
S.S. DOOLEY.
- “Finite fields linear algebra subroutines”.
J.-G. DUMAS, T. GAUTIER, C. PERNET.
- “Sparsity issues in the computation of jacobian matrices”.
S. HOSSAIN, T. STEIHAUG.
- “Towards faster real algebraic numbers”.
R. RIOBOO.

17h50 – 18h00 **Break**

18h00 – 19h15 **Session 3:**

- “A Geometric-numeric algorithm for factoring multivariate polynomials”.
R.M. CORLESS, A. GALLIGO, I.S. KOTSIREAS, S.M. WATT.
- “Towards certified irreducibility testing of bivariate approximate polynomials”.
K. NAGASAKA.
- “Yet another practical implementation of polynomial factorization over finite fields”.
M. NORO, K. YOKOYAMA.

July, Tuesday 9th, 2002

08h00 – 09h00 **Invited Talk 2:** MICHAEL STILLMAN.

“Computing in algebraic geometry and commutative algebra using Macaulay 2”.

09h00 – 10h15 **Session 4:**

- “Computing the topology of real algebraic surfaces”.
E. FORTUNA, P. GIANNI, P. PARENTI, C. TRAVERSO .
- “Computation of canonical forms for ternary cubics”.
I .A. KOGAN, M. MORENO MAZA .
- “Simplification of surface parametrizations”.
J. SCHICHO.

10h15 – 10h45 **Coffee Break/Poster Session**

10h45 – 12h25 **Session 5:**

- “Efficiency and optimality considerations of Dixon-based resultant methods”.
A.D. CHTCHERBA, D. KAPUR.
- “Multihomogeneous resultant matrices”.
A. DICKENSTEIN, I. EMIRIS .
- “Determinantal formula for the Chow form of a toric surface”.
A. KHETAN.
- “Degree bounds and lifting techniques for triangular sets”.
É. SCHOST.

12h30 – 14h00 **Lunch**

14h00 – 16h00 **Invited Software Demonstrations**

- “The CoCoA System, Computations in Commutative Algebra”.
THE COCoA TEAM.
- “Maple 8”.
L. BERNARDIN.

- “Singular – A Computer Algebra System for Polynomial Computations”
G.-M. GREUEL, G. PFISTER, H. SCHÖNEMANN.
- “Singular: Plural – A Computer Algebra System for Noncommutative Polynomial Algebras”.
V. LEVANDOVSKYY.
- “WIRIS, an Internet mathematical system for teaching-learning communities”.
S. XAMBÓ-DESCAMPS.

16h00 – 16h30 **Coffee Break/Poster Session**

16h30 – 17h45 **Session 6:**

- “A new efficient algorithm for computing Gröbner bases without reduction to zero (F5)”.
J.C. FAUGÈRE.
- “An alternative approach to comprehensive Gröbner bases”.
Y. SATO, A. SUZUKI.
- “Numerical stability and stabilization of Gröbner basis computation”.
C. TRAVERSO, A. ZANONI.

17h45 – 18h00 **Break**

18h00 – 18h50 **Session 7:**

- “Partial solvability by radicals”.
P. FERNANDEZ FERREIROS, M .A. GOMEZ MOLLEDA, L. GONZALEZ VEGA.
- “Polynomial-time normalizers for permutation groups with restricted composition factors”.
E .M. LUKS, T. MIYAZAKI.

18h50 – 19h15 **Awards**

20h30 – ***** **Conference Banquet**

July, Wednesday 10th, 2002

08h00 – 09h00 **Invited Talk 3:** PETER J. OLVER.
“Computational aspects of moving frames”.

09h00 – 10h15 **Session 8:**

- “Solutions of linear ordinary differential equations in terms of special functions”.
M. BRONSTEIN, S. LAFAILLE.
- “Factoring zero-dimensional ideals of linear partial differential operators”.
Z. LI, F. SCHWARZ, S. TSAREV.
- “The differential Hilbert function of a differential rational mapping can be computed in polynomial time”.
G. MATERA, A. SEDOGLAVIC.

10h15 – 10h45 **Coffee Break**

10h45 – 12h25 **Session 9:**

- “A new zero-test for formal power series”.
J. VAN DER HOEVEN.
- “Algorithms for computing the sparsest shifts of polynomials via the Berlekamp/Massey algorithm”.
M. GIESBRECHT, E. KALTOFEN, WEN-SHIN LEE.
- “A modular GCD algorithm over number fields presented with multiple extensions”.
M. VAN HOEIJ, M. MONAGAN.
- “Accelerated computation by extended euclidean algorithm for integers and applications”.
V .Y. PAN, X. WANG.

12h30 – 14h00 **Lunch**

14h00 – 15h30 **ISSAC and SIGSAM Business Meetings**

15h30 – 16h00 **Coffee Break**

16h00 – 17h40 **Session 10:**

- “Some observations about familiar numbers”.
S. LANGLEY, D. RICHARDSON.
- “Applicability of Zeilberger’s algorithm to hypergeometric terms”.
S .A. ABRAMOV
- “Towards better simplification of elementary functions”.
R .J. BRADFORD, J .H. DAVENPORT .
- “Simplification of definite sums of rational functions”.
H .Q. LE.

17h40 – 18h00 **Closing Remarks**

18h00 – ***** **Closing reception offered by the town of Villeneuve–d’Ascq**
Modern Art Museum, parc du Héron, Villeneuve–d’Ascq.

July, Thursday 11th, 2002

09h00 – 18h00 **Second Workshop on Categorical Programming Languages
with an Emphasis on Aldor**