HySaX Project — FWF P11160-TEC
Scientific Output in 1996

March 4, 1997

Publications:

[Hill] E. Hillgarter, "Rational Points on Conics", Diploma Thesis, Research Institute for Symbolic Computation (RISC-Linz), Universität Linz, Austria, 1996.

[MnWi] M. Mňuk, F. Winkler, "CASA — A System for Computer Aided Constructive Algebraic Geometry", in: *Proc. International Symposium on Design and Implementation of Symbolic Computation Systems (DISCO'96)*, Karlsruhe, Sept. 1996, LNCS 1128, p. 297–307, Springer-Verlag, 1996.

[Tran1] Tran Q.-N., "A Hybrid Symbolic-Numerical Method for Tracing Algebraic Curves in Higher Dimensions", in: *Proc. International Congress on Computational and Applied Mathematics*, ICCAM–96 conference, Leuven, Belgium, 1996, preprint.

[Tran2] Tran Q.-N., "Intersection of Surfaces", in: *Proc. The Seventh Mathematics of Surfaces*, The Institute of Mathematics and its Applications, Dundee, U.K., 1996.

[Tran3] Tran Q.-N., *A Hybrid Symbolic-Numerical Approach in Computer Aided Geometric Design (CAGD) and Visualization*, Dissertation, Research Institute for Symbolic Computation (RISC-Linz), Universität Linz, Austria, 1996.

Technical Reports:

[Tran4] Tran Q.-N., "A Note on Irreducible Decomposition of Algebraic Sets and Automatic Theorem Proving", RISC-Linz, Techn. Rep. RISC 96-35

Talks and Lectures:

[Tran5] Tran Q.-N., "Extending Dixon's Resultant Using Pseudoinverse Matrices and Its Applications to Geometric Reasoning", Talk at the workshop "Automated Deduction in Geometry", Toulouse, France", Sept. 1996.

[Win1] F. Winkler, "Reelle Parametrisierung algebraischer Kurven", Talk at Institut für Geometrie, TU Wien, Jan. 1996.

[Win2] F. Winkler, "Computeralgebra–Software für Algebraische Geometrie (CASA)", Seminar "Computeralgebra–Software", Schloß Dagstuhl, Saarland, Germany, Feb. 1996.

[Win3] F. Winkler, "Parametrization over Prescribed Coefficient Fields", Talk at the conference *IMACS-ACA*, RISC-Linz, July 1996.

[Win4] F. Winkler, "CASA — A System for Constructive Algebraic Geometry", Talk at the workshop "Computeralgebra", in the frame of the conference *INFORMATIK'96*, Klagenfurt, Sept. 1996.

[Win5] F. Winkler, "Parametrizability of Algebraic Curves — Constructive Proofs", Talk at the workshop "Automated Deduction in Geometry", Toulouse, France", Sept. 1996.

<u>Implementations:</u>

The program system CASA was developed further during this first year of HySaX. For a description of CASA we refer to

`http://wwww.risc.uni-linz.ac.at:81/software/casa/casa.html`

In particular, the following improvements over the old version were achieved:

Tran Quoc-Nam:

> Implementations of algorithms for dimension computation, Dixon resultants, and problems of computer aided geometric design, such as intersection of surfaces.

Erik Hillgarter:

> Implementation of a constructive version of the Legendre Theorem for deciding whether a conic has a rational point (i.e. with coefficients in $\mathbb{Q}$), and if so finding one. This implementation can also decide whether a conic has a point over $\mathbb{R}$ or $\mathbb{Q}(t)$.