Annual Report 1997

Work Group

Theoretical Computer Science

(Prof. Dr. Helmut Alt)

February 1998

Institut für Informatik
Fachbereich Mathematik und Informatik
Freie Universität Berlin
Takustraße 9
D–14195 Berlin, Germany

1. Members of the Group

(a) Professor

Alt, Helmut, Dr.

(b) Guest professor

Trotter, William T., Dr. (since September 1st, DFG – German national science foundation)

(c) Assistants, scientific personnel, scholarship holders

Braß, Peter, Dr. PD (graduate program *computational discrete mathematics*)
Eisenbrand, Friedrich (from April 1st – 30th, graduate program *computational discrete mathematics*)
Felsner, Stefan, Dr. PD
Gärtner, Bernd, Dr. (until March 31st)
Godau, Michael (until October 31st)
Hoffmann, Frank, Dr.
Knauer, Christian (since June 1st, graduate program *computational discrete mathematics*)
Kriegel, Klaus, Dr. (DFG – German national science foundation)
Morawe, Nicole (since October 15th)
Meißner, Lutz (since November 5th)
Schönherr, Sven (Esprit–project CGAL)
Thiele, Torsten, Dr. (since October 1st, graduate program *computational discrete mathematics*)
Wagner, Frank, Dr. PD (Heisenberg grant)
Wolff, Alexander (DFG – German national science foundation)

(d) Secretary

Heinrich, Hannah

(e) Coordinator of the graduate program

Felsner, Bettina

(f) Student assistants

Hoffmann, Ulrich (DFG – German national science foundation)
Kapoor, Vikas (DFG – German national science foundation)
Wenk, Carola (DFG – German national science foundation)

2. Guests and Lectures

Christoph Meinel
Universität Trier (April 3rd, ADiMMO '97 workshop)
Ein Reduktionskonzept für OBDD's (A Reduction Concept for OBDD's)

Walter Deuber
Universität Bielefeld (April 3rd, ADiMMO '97 workshop)
Ramsey Theorie und Lineare Algebra (Ramsey Theory and Linear Algebra)

R.H. Möhring
Technische Universität Berlin (April 3rd, ADiMMO '97 workshop)
Project Scheduling under Random Influences and Incomplete Information

Peter Gritzmann
Universität Trier (April 4th, ADiMMO '97 workshop)
Diskrete Tomographie: Ein Überblick (Discrete Tomography: A Survey)

Ingo Wegener
Universität Dortmund (April 4th, ADiMMO '97 workshop)
Kann Nichtdeterminismus in praktischen Algorithmen helfen? (Can Non-Determinism help with Practical Algorithms?)

Burkhard Monien
Universität Paderborn (May 30th)
Partitions- und Lastenverteilungsverfahren für datenparallele Anwendungen (Partitionings and load balancing methods for data parallelapplications)

Ernst W. Mayr
Technische Universität München(June 2nd)
Polynomideale – Neue Algorithmen, ihre Komplexität und Anwendungen (Partitioning and load balancing methods for data parallel applications)

Dan Halperin
Tel Aviv University (June 12th)
Geometric Modeling of Molecules: Flexibility and Robustness

Günter Rote
Technische Universität Graz (June 16th, Summer school on computational geometry in Chorin)
Realization of Three-Dimensional Polytopes

Kurt Mehlhorn
Max–Planck–Institut für Informatik, Saarbrücken (June 16th, Summer school on computational geometry in Chorin)
On the Implementation of Geometric Algorithms

Rolf Klein
Fern–Universität Hagen (June 17th, Summer school on computational geometry in Chorin)
On–Line Algorithms

Herbert Edelsbrunner
University of Illinois (June 18th, Summer school on computational geometry in Chorin)
Smooth Shapes and Deformation

Gerhard J. Woeginger
Technische Universität Graz (June 23rd)
Komplexität und Approximation von Shop Scheduling Problemen (Complexity and Approximation of Shop Scheduling Problems)

Johannes Blömer
ETH Zürich (July 7th)
Priority Encoding Transmission – wie man mit Paketverlusten auf dem Internet umgehen kann (Priority Encoding Transmission – how to handle Loss of Packages in the Internet)

William T. Trotter
Arizona State University (July 20th and 27th)
Intersection Graphs and Inclusion Orders (Part I and II)

Valeriu Soltan
Mathematical Institute of the Academy of Sciences of Moldova (November 17th)
Minimum Convex Partitions of Polygonal Domains

3. Projects supported by external grants

- *Project **"CGAL" (Constructing a Geometric Algorithms Library)** financially supported by the European Community within the ESPRIT IV-Program*

Participants:	Helmut Alt (project leader)
	Sven Schönherr
Duration of the project:	October 1st 1996 through March 31st 1998

This is a joint project of seven work groups in Utrecht, Zürich, Berlin, Sophia Antipolis/France, Saarbrücken, Linz and Tel Aviv. The main subject of the project is the implementation of the most important algorithms of computational geometry and the corresponding theoretical research.

We aim to create a software package for users of geometric algorithms. This is why the project includes the implementation of applications from fields like Geographical Information Systems (GIS), visualization and simulation, CAD/CAM and pattern-analysis and -reconstruction.

The project is planned to be realized in cooperation with several industrial companies of the participating countries of the project. Our work group joins the implementation of the "Kernel" (elementary geometric objects and algorithms) of optimization algorithms and matching of patterns and forms.

- *Graduate program* ***"Computational Discrete Mathematics"****, financially supported by the German national science foundation (DFG).*

Participating scientist:	Helmut Alt (Speaker)
Coordination:	Bettina Felsner
Scholarship holders:	Peter Braß, Dr. PD; Christian Knauer (since July 1st), Friedrich Eisenbrand (April 1st–30th) Torsten Thiele, Dr. (since October 1st)
Duration of the project:	October 1994 through September 2000

This is a joint graduate program of scientists of Freie Universität Berlin, Humboldt-Universität, Technische Universität and Konrad-Zuse-Zentrum.

Taking into consideration the algorithmic point of view, discrete mathematics has developed from classical fields like combinatorics or graph-theory into a field, which unifies aspects of fundamental as well as of applied science in a unique way. Examples are: coding theory and data security, algorithmic number theory and computational algebra, computational geometry and robotics, network planning, design of algorithms – within all these topics, computational discrete Mathematics delivers foundations and leads to the applications. The main goal of the graduate program is to work out contributions to important actual questions within the fundamental principles and applications of science by concentrating research and education.

- *Project* ***"Efficient Algorithms for Map Labeling"****, financially supported by the German national science foundation (DFG).*

Participants:	Frank Wagner (project leader) Alexander Wolff, Vikas Kapoor
Duration of the project:	June 1996 through May 1998

The contents of the project are the development, the theoretical analysis, the implementation and the experimental application of algorithms for some map labeling problems. The objective is to label a given quantity of objects (points, lines, regions) such, that

a) no labeling crosses any other,
b) the legibility is granted by a sufficient (type)height,
c) the labeled object can easily be identified.

Based on an algorithm for solving a restricted version of this problem which has already proved to be successful in practical applications, dynamic algorithm labeling problems, that occur in Geographical Information Systems (GIS) shall be solved together with the users.

- *Project **"Point-Pattern-Matching for the analysis of Gel pictures"**, financially supported by the German national science foundation (DFG).*

Participants:	Helmut Alt (project leader)
	Klaus Kriegel, Frank Hoffmann, Carola Wenk
Duration of the project:	January 1997 through December 1998

This project is a joint project of the Institute of Computer Science of Freie Universität Berlin and Deutsches Herzzentrum Berlin. The main topic of research are 2-dimensional gel pictures, that are produced by high-resolution gelelectophoresis-techniques. The gelelectrophoresis has been established to be a central molecular-biological method for the analysis of the protein/DNA-compound of tissue samples. Each "spot" in a gel picture that has been produced by gelelectrophoresis represents one protein appearing in the sample. The analysis of the pictures helps to discover molecular and genetic reasons of heart conditions.

Until now, the interpretation of gel pictures is mainly based on the exact (and time consuming) examination by experienced specialists. The main goal of the project is to design and implement algorithms for the effective, computer supported gel analysis. Central to our investigations are two steps of this procedure, the gel-matching (assignment of corresponding spots from different pictures) as well as the setup and the administration of a 2-D gel protein database.

The matching represents a very important and time consuming prerequisite for the quantitative and qualitative data analysis of protein pictures. Within the matching, geometric distortions, that appear when producing protein samples, are to be equilibrated. The corresponding algorithmic problem is a variation of 2-dimensional pattern recognition, where the main difficulty is produced by geometric distortion. The project aims to develop new algorithms for gel matching, based on already known procedures for point pattern matching from computational geometry. Because of the fundamental nature of the task of approximative point pattern matching, every single progress within the work on this problem will also have great importance for various other applications.

4. Publications and Lectures

(a) Publications in Journals (with a selection procedure)

H. Alt, O. Aichholzer, G. Rote: *Matching Shapes with a Reference Point*, International Journal of Computational Geometry & Applications **7** (1997), pp. 349–363.

P. Brass: *On the Quantitative Steinitz Theorem in the Plane*, Discrete & Computational Geometry **17** (1997), pp. 111–117.

P. Brass, I. Herburt: *On Point Sets fixing a Convex Body from within*, Beiträge zur Algebra und Geometrie **38** (1997), pp. 87–90.

S. Felsner: *On-Line Partitions of Orders*, Theoretical Computer Science **175** (1997), pp. 283–292.
S. Felsner: *On the Number of Arrangements of Pseudolines*, Discrete & Computational Geometry **18** (1997), pp. 257–267.
S. Felsner, R. Müller, L. Wernisch: *Trapezoid Graphs and Generalizations: Geometry and Algorithms*, Discrete Applied Mathematics **74** (1997), pp. 13–32.
T. Trotter, G.R. Brightwell: *The order dimension of planar maps*, SIAM Journal of Discrete Mathematics **10** (1997), pp. 515–528.
T. Trotter: *Applications of the probabilistic method to partially ordered sets*, The Mathematics of Paul Erdős, II (R. L. Graham, J. Nešetřil eds.), Algorithms and Combinatorics **14**, Springer Verlag, Berlin (1997), pp. 214–228.
T. Trotter: *New perspectives on interval orders and interval graphs*, London Mathematical Society Lecture Note Series, **241** (1997), pp. 237–286.
F. Wagner, M. Stoer: *A simple min-cut algorithm*, Journal of the ACM **4** (1997), pp. 585–591.
F. Wagner, A. Wolff: *A Practical Map Labeling Algorithm*, Computational Geometry: Theory and Applications **7** (1997), pp. 387–40.

(b) Publications in conference proceedings (with a selection procedure)

H. Alt, E. Welzl, B. Wolfers: *Piecewise Linear Approximation of Bézier-Curves*, 13th Annual Symposium on Computational Geometry, Nice, 1997, pp. 433-435.
H. Alt, U. Fuchs, K. Kriegel: *On the number of simple cycles in planar graphs*, Proc. WG '97 (23rd International Workshop on Graph-Theoretic Concepts in Computer Science) in: Springer Lecture Notes in Computer Science 1335, pp. 15–24.
P. Brass: *On the maximum number unit distances among n points in dimension four*, Bolay Soc. Mathematical Studies **4** (1997), pp. 277–290.
S. Felsner, L. Wernisch: *Markov Chains for Linear Extensions, the Two Dimensional Case*, ACM-SIAM Symposium on Discrete Algorithms 1997, pp. 239–247.
F. Hoffmann, Ch. Icking, R. Klein, K. Kriegel, *A competitive strategy for learning a polygon*, in: Proc. 8th ACM–SIAM Symposium Discrete Algorithms 1997 pp. 166–174.
B. Gärtner, S. Schönherr, *Exact Primitives for Smallest Enclosing Ellipses*, Proc. 13th Annual ACM Symposium on Computational Geometry (SoCG '97), pp. 430–432.

(c) Other Publications

H. Alt, F. Hoffmann, K. Kriegel, C. Wenk, K.-P. Pleissner, *CAROL - New Algorithmic Tools for Comparing Two–Dimensional Electrophoresic Gel Images*, Poster presented at: Electrophorese Forum '97, Strasbourg, November 1997.
F. Hoffmann, Ch. Icking, R. Klein, K. Kriegel, *Moving an Angle Around a Region*, Technical Report, FernUniversität Hagen, November 1997.

F. Hoffmann, Ch. Icking, R. Klein, K. Kriegel, *The Polygonal Exploration Problem: A New Strategy and a New Analysis Technique*, Technical Report, FernUni versität Hagen, December 1997.
M. van Krefeld, G. Neyer, S. Schirra, R. Rickenbach, F. Wagner, P. Widmayer, A. Wolff: *Geographic Information Systems*, report on the GIS part of CGAL task 4.1 (1997).

(d) Technical Reports

B 97-03 Bernd Gärtner, Sven Schönherr, Smallest Enclosing Ellipses – Fast and Exact.

B 97-04 Peter Brass, On Point Sets with Many Unit Distances in Few Directions.

B 97-05 Peter Brass, Isoperimetric Inequalalities for Densities of Lattice-periodic Sets.

B 97-06 Stefan Felsner, Klaus Reuter, The Linear-Extension-Diameter of Posets.

B 97-08 Helmut Alt, Urich Fuchs, Klaus Kriegel, On the Number of Simple Cycles in Planar Graphs.

B 97-09 Stefan Felsner, Klaus Kriegel, Triangles in Euclidean Arrangements.

B-97-10 Helmut Alt, Stefan Felsner, Ferran Hurtado, Marc Noy, Point sets with few k-sets.

B 97-11 Stefan Felsner, Peter C. Fishburn, William T. Trotter, Finite Three Dimensional Partial Orders which are not Sphere Orders.

B 97-12 Peter Brass, On equilateral simplices in normed spaces.

B 97-13 Frank Hoffmann, Klaus Kriegel, Carola Wenk, Matching 2D Patterns of Protein Spots.

(e) Talks

Helmut Alt

- *Geometric methods in pattern and shape matching*, Colloquium, Departament de Matemática Aplicada II, Universitat Politécnica de Catalunya, Barcelona, Spain (March 12th).
- *Geometric methods in pattern and shape matching*, invited lecture, 13th European Workshop on Computational Geometry - CG '97, Würzburg (March 21st).
- *Point sets with few k-sets*, 19th Berliner Algorithmen-Tag, Berlin (May 23rd).
- *Geometric algorithms for matching point patterns and shapes*, Summer School on Computational Geometry, Chorin (June 17th).
- *Point sets with few k-sets*, Colloquium, Institutes for Information Processing, TU Graz, Austria (November 19th).
- *Point sets with few k-sets*, Colloquium Max-Planck-Institute for Computer Science, Saarbrücken (December 3rd).

Peter Brass

- *Isoperimetrische Ungleichungen für Gitterteilmengen (Isopeimetric Inequalities for Lattice Subsets)*, Potsdamer Geometriekonferenz 1997 (April 1st–5th).

- *On Lattice-like Constructions in Combinatorial Geometry*, The Future of Discrete Mathematics, Stirin, Prague (May 19th–25th).
- *On Testing the Congruence of d-dimensional Point Sets*, Optimal Discrete Structures & Algorithms '97, Rostock (October 8th–10th).
- *Turán-type Results for Convex Drawings*, Third Kraków Conference of Graph Theory, Kazimierz Dolny (September 15th–19th).
- *Isoperimetrische Ungleichungen für periodische Mengen (Isoperimetric Inequalities for Periodic Sets)*, DMV/ÖMG-Jahrestagung, Salzburg (September 21st–27th).
- *Structural Results for Sets with Many Unit Distances*, invited guest lecture, Special Session on Graphs and Combinatorial Geometry of the Third Joint Meeting of the AMS and the SMM', Oaxaca, Mexico (December 3rd–7th).

Stefan Felsner

- *Markov Chains for Linear Extensions: The 2-Dimensional Case*, ACM–SIAM Symposium on Discrete Algorithms, New Orleans, USA (January 5th).
- *The Linear Extension-Diameter of a Poset*, AMS Joint Mathematics Meeting, San Diego, USA (January 11th).
- *Pseudogeradenarrangements, Sweeps und höhere Bruhatordnungen (Arrangements of Pseudo-Lines, Sweeps and Higher Bruhat Orders)*, Kolloquium des Mathematischen Seminars der Universität Hamburg (January 28th).
- *Markov Ketten für Arrangements; Sweeps und höhere Bruhatordnungen (Markov Chains for Arrangements, Sweeps and Higher Bruhat Orders)*, 18th Berliner Algorithmentag (January 31st).
- *Polygone, Polytope und hyperbolische Geometrie (Polygons, Polytopes and Hyperbolic Geometry)*, habilitation lecture, Freie Universität Berlin (May 7th).
- *Arrangements of Pseudo-lines, Hyper Bruhat Orders, Triangles and k-sets*, Oberwolfach-Tagung: Effiziente Algorithmen – Meeting on efficient algorithms in Oberwolfach, (August 8th).
- *Triangles in Euclidean Arrangements*, Colloquium on Combinatorics, Braunschweig (November 14th).

Frank Hoffmann

- *Algorithmen zum lokalen und globalen Matching von 2D Gelbildern I+II (Algorithms for local and global Matching of 2D-Gelpictures) (Part I Hoffmann, Part II Kriegel)*, Workshop 2D Gel Matching, Universitätsklinikum Rudolf Virchow (May 21st).

Christian Knauer

- *Verfahren der algorithmischen Geometrie zur Erkennung von Punktmustern und polygonalen Formen (Procedures of Computational Geometry for the Recognition of Point Patterns and Polygonal Forms)* , Universität Erlangen (December 19th).

Klaus Kriegel

- *On the number of simple cycles in planar graphs*, WG '97 (23rd International Workshop on Graph-Theoretic Concepts in Computer Science), Berlin (June 1997).

Sven Schönherr

- *Kleinste umschließende Ellipsen - Schnell und Exakt (Smallest Enclosing Ellipses - Fast and Exact)*, DFG-Colloquium on aspects of Implementation of Algorithms, University of Konstanz (March 14th).

Tom Trotter

- *Graphs and Partially Ordered Sets*, Dimatia Conference, Prague.
- *Interval Orders and Interval Graphs*, British Combinatorial Conference, London.
- *Partially Ordered Sets*, American Mathematical Society, Plenary Lecture, Annual Meeting, San Diego, U.S.A.
- *Unsolved Problems in Dimension Theory for Partially Ordered Sets*, Combinatorics Colloquium, Braunschweig (November 14th).
- *Recent Progress in Dimension Theory for Partially Ordered Sets*, Joint Mexican/American Mathematical Society Meeting, Special Session of Geometry and Graphs, Oaxaca, Mexico (December 3rd–7th).
- *Partially Orderd Sets, Graphs and Geometry*, Mathematical Institute, Academy of Sciences, Novosibirsk, Russia.

Frank Wagner

- *Effiziente Verfahren zur Beschriftung von Landkarten (Efficient Procedures for Map Labeling)*, Informatik Kolloquium Universität Frankfurt (February 12th).
- *Mimicking Networks*, 16th International Symposium on Mathematical Programming, Lausanne, Schweiz (September 27th).

5. Courses, Seminars, exercises and laboratories (WS 96/97 und SS 97)

H. Alt und M. Godau, *Entwurf und Analyse von Algorithmen (Design and Analysis of Algorithms)*, course and exercises, (WS 96/97).

H. Alt und Dozenten des Kollegs, *Lectures of the graduate program "computational discrete mathematics"*, lecture, (WS 96/97).

S. Felsner, B. Gärtner, *Computergraphik (Computer graphics)*, course and exercises, (WS 96/97).

F. Wagner, M. Godau, *Einführung in die Theoretische Informatik (Introduction to theoretical computer science)*, course and exercises, (WS 96/97).

H. Alt, B. Gärtner, *Seminar über Algorithmische Geometrie (Seminar on computational geometry)*, seminar, (WS 96/97).

H. Alt, *Diplomanden- und Doktorandenseminar – Theoretische Informatik (Seminar for M.S. and Ph.D. students in theoretical computer science)*, seminar, (WS 96/97).

H. Alt und Dozenten des Kollegs, *colloquium of the graduate program "computational discrete mathematics"*, colloquium (WS 96/97).

H. Alt, *Komplexitätstheorie (Complexity theory)*, course and exercises, (SS 97).

S. Felsner, *Randomisierte Algorithmen (Randomized algorithms)*, course and exercises, (SS 97).

H. Alt und Dozenten des Kollegs, *Lectures of the graduate program "computational discrete mathematics"*, course, (SS 97).

F. Hoffmann, K. Kriegel, *Zweidimensionale Mustererkennung und Anwendungen (2-dimensional pattern recognition and applications)*, seminar, (SS 97).

H. Alt, M. Godau, *Computergrahik (computer graphics)*, laboratory, (SS 97).

H. Alt und Dozenten des Kollegs: *Diplomanden- und Dokotorandenseminar – Theoretische Informatik (Seminar for M.S. and Ph.D. students in theoretical computer science)*, seminar, (SS 97).

H. Alt und Dozenten des Kollegs, *colloquium of the graduate program "computational discrete mathematics"*, colloquium, (SS 97).

6. Organisation of scientific events

ADiMMO '97, joint workshop of the graduate program *computational discrete mathematics* with the graduate program *mathematical optimization*, University of Trier, Berlin (April 3rd–4th).
Organisation: H. Alt, B. Felsner, H. Heinrich.

Summer School of the graduate program *computational discrete mathematics* on computational geometry, Chorin (June 16th–18th).
Organisation: H. Alt, B. Felsner, H. Heinrich, Ch. Knauer.

7. Habilitation

Stefan Felsner, cumulative with publications about algorithms, structure of partially ordered sets and discrete geometry.
Lecture on May 7th: *Polygone, Polytope und hyperbolische Geometrie (Polygons, Polytopes and Hyperbolic Geometry)*
Supervisor: Helmut Alt.

8. Diplomas

Susanne Oesterreicher
Planare Symmetriegruppen und DOL-Systeme (Planar Symmetry Groups and DOL-systems), 1997
Supervisor: H. Alt.

Nicole Morawe
Variationen des Huffmann-Verfahrens zur Bestimmung optimaler Bäume und Codes (Variations of the Huffmann-Procedure for Determination of Optimal Trees and Codes), 1997
Supervisor: S. Felsner.

9. Miscellaneous

Helmut Alt
- Speaker of the Graduate Program *Algorithmic Discrete Mathematics*.
- Speaker and deputy speaker of the special interest group 0.1.1 *Algorithms and Data Structures* of the German Association for Computer Science (GI).

- Referee for the research focus program (SPP) *Efficient algorithms for discrete problems and their applications* of the german research association (DFG).
- Chairman of the habilitation committee of Dr. Stefan Felsner.
- Member and referee of the habilitation committee of Dr. Jens Gustedt, TU Berlin.
- Member of the Ph.D. committee of Jules Vleugels, University of Utrecht, The Netherlands.
- Member of the Ph.D committee of Frank Recker, Freie Universität Berlin.
- Member of the Ph.D. committee of Oswin Aichholzer, TU Graz, Austria.
- Member of the search committee for two professorates (C3 and C4) in scientific computing.

Peter Brass

- Member of the speaker's gremium of the study group geometry.
- Referee for *Zentralblatt*.
- Assistance with the project *Jahrbuch über die Fortschritte der Mathematik*.
- Referee for *Discrete Mathematics* and proceedings.

Stefan Felsner

- Referee for *Discrete Applied Mathematics*.
- Referee for *Information Processing Letters*.
- Referee for *STACS '98*.
- Referee for *ESA '97*.

Frank Hoffmann

- Course *Mathematische Methoden der Informatik II (Mathematical methods of computer science II)*, Berufsakademie Berlin (1997).
- Referee for *ESA 97*.
- Referee for *STACS 98*.

Christian Knauer

- Summer school on computational geometry of the graduate program *computational discrete mathematics*, Chorin (June 16–18th).
- Summer school on real algebraic geometry at the institute of mathematics, Universität Potsdam (October 6th–10th).

Klaus Kriegel

- Refereee for *Random 97*.
- Referee for *ESA '97*.
- Referee for *Computational Geometry: theory and applications*.

Tom Trotter

- Named Managing Editor of ORDER, effective, January 1st, 1998.
- Member of Editorial Board of Journal of Graph Theory.
- Member of Editorial Board of Annals of Discrete Mathematics.
- Member of Editorial Board of SIAM book series on Applied Discrete Mathematics.
- Guest Editor of Special Issue of Discrete Mathematics devoted to partially ordered sets.

Frank Wagner

- Referee for *Algorithmica*.
- Referee for *Information Processing Letters*.
- Stay at the am International Computer Science Intstitute at Berkley, USA for research (June 3rd–August 13th, 1997).
- Member of the program committee of the 5th International Symposium on Spatial Databases (SSD 97).

Alexander Wolff

- Workshop about aspects of the implementation of algorithms, March 12th–14th, Universität Konstanz.
- Research seminar about proof verification and approximative algorithms, Schloß Dagstuhl, Gesellschaft für Informatik (April 21st–25th).

Appendix:

Talks in the *Noon Seminar* 12.00 a.m.

January 7th: Bernd Gärtner
The Criss-Cross Method (part I)

January 9th: Carola Wenk
Crossmatching Algorithms in Dendrochronology

January 14th: Bernd Gärtner
The Criss-Cross Method (part II)

January 16th: Frank Hoffmann
Matching of 2D-Gelpictures

Janaury 21st: Alexander Wolff
Searching for the Kernel of a Polygon

January 23rd: Helmut Alt
BZH - the balanced zonotopal hull

January 28th: Torsten Thiele
Circles with Many Lattice Points

January 30th: Peter Brass
Frequent (?)distances in finite point sets

January 31st: Friedrich Eisenbrand
Factor Refinement in Quadratic Number Fields

February 6th: Christian Knauer
Specification and Synthesis of Finite Automata for Design of Reactive Systems using Algebraic Methods

February 13th: Sven Schönherr
Safe and Efficient Evaluation of Determinants

February 20th: Klaus Kriegel
Sharp Bounds for the Flip Distance of Triangulated Graphs

March 4th: Ulrich Fuchs
How many Facets in a 0-1-Polytope?

March 25th: Frank Wagner
Mimicking Networks: Graphs with Bounded Treewidth

March 26th: Stefan Felsner
Surfaces

April 3rd: Torsten Theobald
Optimization of Binary Decision Graphs: The Linear Sifting-Algorithm

April 8th: Michael Godau
Convex Hulls of Bounded Curvature

April 10th: Lars Knipping
An Algorithm for the Rectangle Enclosure Problem

April 15th: Frank Hoffmann
Exploring unknown Directed Graphs

April 17th: Alexander Wolff
The Non-Approxibility of Set Cover

April 22nd: Friedrich Eisenbrandt
Separation Bounds

April 24th: Helmut Alt
News about k-sets

April 29th: Ulrich Fuchs
The newest about k-sets

May 6th: Sven Schönherr
Programming in CGAL – An Introduction

May 13th: Peter Brass
Isoperimetric Inequalities for Lattice Periodic Sets

May 15th: Klaus Kriegel
Lower Bounds using Graph Grammars

May 20th: Stefan Felsner
How can Men be Transformed into Mice: Algorithms for the Genom Distance

May 22nd: Bernd Gärtner
Still more news of k-stes

May 27th: Michael Godau
Diagonal Winding Numbers

May 29th: Frank Wagner
A simple Algorithm for Minimum Spanning Tree in Planar Graphs

June 3rd: Frank Hoffmann
On-line TSP on the line

June 5th: Alexander Wolff
Label Placement by Maximum Independent Set in Rectangles

June 10th: Ulrich Fuchs
k - clusters

June 12th: Helmut Alt
The very newest about k-sets

June 20th: Herbert Edelsbrunner
Surface Reconstruction from a Point Cloud

June 24th: Peter Brass
Congruence tests for High Dimensional Point Sets

June 26th: Christian Knauer
LUO - Automatic Average-case Analysis of Algorithms

July 1st: Frank Recker
Disputation

July 3rd: Sven Schönherr
Modular Arithmetic for Geometric Predicates

July 8th: Stefan Felsner
Perfect Matchings in Bipartite Graphs: 0(1)-space is suffices

July 10th: Carola Wenk
Dynamic Timewarping in Dendrochronology

July 15th: Michael Godau
Calculation of the Fréchet-Distance for Surfaces

July 17th: Ross M. McConnell
Vertex Partitioning

July 24th: Klaus Kriegel
Expectations in Random Triangulations

July 29th: Helmut Alt
Algorithms for Computing Largest Common Point Sets

July 31st: Peter Brass
Convex Polygons with small Diameter

August 5th: Christian Knauer
Super Concentrators and the Stable Marriage Theorem

August 7th: Frank Hoffmann
Partial Matching of Polylines under Similarity Transformations

August 12th: Stefan Felsner
Polygones, Polytopes and Max-Flow Min-Cut

August 21st: Frank Wagner
A solvable Labeling Problem

September 2nd: Alexander Wolff
Map Labeling with Sliding Labels

September 4th: Sven Schönherr
Data Accessors

September 9th: Klaus Kriegel
Combinatorial Discrepancy – A New Proof of the Beck-Fiala-Theorem

September 11th: Tom Trotter
On-line algorithms, extremal problems and partially ordered sets

September 16th: Michael Godau
Constructive Hopf's Theorem or: How to untangle Closed Planar Curves

September 18th: Ulrich Fuchs
How many questions do you need?

September23rd: Ulrich Fuchs
How many questions do you need?(II)

September 25th: Frank Hoffmann
Lower bounds for on-line polygon exploration

September 30th: Christian Knauer
Lower Bounds for Shape Matching Problems

October 2nd: Alexander Wolff
Algorithms for Sliding Labels

October 7th: Helmut Alt
Bisectors between curves

October 9th: Peter Brass
Turan-type Theorems for Convex Drawings

October 16th: Tom Trotter
Circle Orders - Recent Progress on Old Problems

Ocotober 17th: Stefan Felsner
Posets I: Posets and Distributive Lattices

October 21st: Torsten Thiele
How to draw a Graph in Space

October 23rd: Frank Wagner
On Cactus Representations

October 28th: Lorenz Wernisch
Partitionings of Proteins

October 30th: Sven Schönherr
Make It! – Generating and Maintaining Makefiles Automatically

October 31st: Bernd Gärtner
Exact Linear Programming

November 4th: Stefan Felsner
Posets II

November 6th: Klaus Kriegel
On the Expected Number of Edges in Planar Graphs

November 11th: Peter Brass
Equilateral Simplices in Normed Spaces

November 13th: Nicole Morawe
Gray-Codes

November 18th: Alexander Wolff
The hardness of Sliding Labels

November 20th: Frank Hoffmann
Matching 2D Patterns of Protein Spots (status quo)

November 21st: Stefan Felsner
Posets III: Interval Extensions and Reductions of a Poset

November 27th: Clemens Hendler
Binding Functions for the Chromatic Number in Terms of the Clique Number

November 28th: Graham Brightwell
Forbidden Induced Partial Orders

December 2nd: Peter Held
A Randomized Min-Cut Algorithm

December 5th: Stefan Felsner
Balanced Tableaux

December 9th: Frank Wagner
An Exact Algorithm for the Minimum Quotient Cut

December 11th: Tom Trotter
Planar Graphs, from Schnyder to de Verdiére and beyond:
Why a computational approach seems worthwhile!

December 16th: Michael Godau
Computation of the Fréchet-Distance for Surfaces (Part II)

December 18th: Helmut Weil
Combinatorics of Pseudo-Line Arrangements
December 19th: Stefan Felsner
Triangles in Arrangements