



## Geometric Properties from Incomplete Data

Schloß Dagstuhl. Wadern, Germany

March 21 – March 26, 2004

### Chairmen

**Reinhard Klette** (New Zealand), **Ryszard Kozera** (Australia),  
**Lyle Noakes** (Australia) and **Joachim Weickert** (Germany)

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### Monday morning

09.00      **Opening:** Reinhard Klette

09:10 - 12      **SESSION 1: SHAPE**

chair: Lyle Noakes

09:10-09:50      Christoph Schnörr, Universität Mannheim  
Estimation of Volumes from Incomplete Projection Data

09:50-10:15      Simon Collings, Univ. of Western Australia - Perth  
Shape Recovery of a Strictly Convex Solid from N-Views

10:15-10:30      BREAK

10:30-11:00      Ulrich Eckhardt, Universität Hamburg  
Shape from incomplete boundary data

11:00-11:30      Knut M. Mörken, University of Oslo  
On High Order Approximation of Parametric Surfaces

11:30-12:00      Otmar Scherzer, Universität Innsbruck  
Some Methods for Shape Recovery in Inverse Problems

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**Monday afternoon** - definition of working groups

14:00 – 14:30 **Definition of Working Groups**

chair: Lyle Noakes

**Monday afternoon** - first sessions of working groups

14:30 – 15:30 **Working Groups**

Approximation Theory (chair: H. Mhaskar) – Main Lecture Hall

Digital Geometry (chair: R. Klette) – Room N 033

Scale space (chair: J. Weickert) – Billiard room S 105

Main streams and intentions (chair: R. Kozera) – Wappensaal S 111

**Monday late afternoon**

16 - 18      **SESSION 2: APPROXIMATION**

chair: Gabriele Steidl

16:00-16:40      Leo Dorst, University of Amsterdam

Estimating Rigid Body Motion of Point Clouds

16:40-17:20      Hrushikesh N. Mhaskar, California State Univ. - Los Angeles

Local polynomial operators

17:20-18:00      Ryszard Kozera, Univ. of Western Australia - Perth

Interpolation with Cumulative Chords for Length and Curve  
Estimation

**Monday evening after dinner**

19      **PERSONAL INTRODUCTIONS:** chair: Ryszard Kozera

**location: White Hall** (Room S 101)

**Tuesday morning**

9 - 12 **SESSION 3: CURVES**

chair: Alfred M. Bruckstein

09:00-09:30      Lyle Noakes, Univ. of Western Australia - Perth

Curves in Spheres

- 09:30-10:10 Rida T. Farouki, Univ. of California at Davis  
Algorithms for Spatial Pythagorean-Hodograph Curves
- 10:10-10:30 BREAK
- 10:30-11:00 Atsushi Imiya, Chiba University  
Vectorization of 2 and 3D Digital Curves by Nonlinear Optimization
- 11:00-11:30 Helene Dörksen, Universität Hamburg  
Convex and Concave Parts of Digital Curves
- 11.30-12.00 Antonia Robles-Kelly, York University  
Graph-spectral methods for surface height recovery from the Gauss map

**Tuesday afternoon** - working groups

14-15.30 group meetings

**Tuesday late afternoon**

16 – 18 **SESSION 4: MOTION**

chair: Gerald Sommer

- 16:00-16:30 Andrés Bruhn, Universität Saarbrücken  
Confidence Measures for Variational Optic Flow Methods
- 16:30-17:00 Joachim Weickert, Universität Saarbrücken  
Optic Flow Computation with High Accuracy
- 17:00-17:30 Kenichi Kanatani, Okayama University  
Video Image Sequence Analysis:  
Estimating Missing Data and Segmenting  
Multiple Motions
- 17:30-18:00 Christian Perwass, Kiel University  
Geometry from Uncertain Data

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**Wednesday morning**

9 - 12 **SESSION 5: GEOMETRIC COMPUTING**

chair: Leo Dorst

- 09:00-09:30 Gerald Sommer, Universität Kiel  
The Twist Representation of Shape
- 09:30-10:00 Michael Hofer, TU Wien  
A Feature Sensitive Metric with Applications in  
Geometric Computing
- 10:00-10:15 BREAK
- 10:15-10:40 Wayne M. Lawton, National University of Singapore  
Approximation subject to nonlinear constraints
- 10:40-11:10 Harry McLaughlin, Rensselaer Polytechnic  
Interpolating Data in Cellular Arrays
- 11:10-11:35 Reinhard Klette, University of Auckland  
Multigrid Convergence of Property Estimators in  
Picture Analysis
- 11:35-12:00 Nahum Kiryati, Tel Aviv University  
Variational Pairing of Image Segmentation and  
Blind Restoration

**Wednesday afternoon / evening - no official program**

- 13.15 Group photo (stairs to the chapel)
- 13.30 Bus tour to Trier, followed by a  
winery visit in Riol, wine tasting and dinner

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**Thursday morning**

9-12 **SESSION 6: APPLIED GEOMETRY**

chair: Christoph Schnörr

- 09:00-09:45 Alfred M. Bruckstein, Technion - Haifa  
Applied Geometry
- 09:45-10:10 Vojtech Franc, Czech Technical University  
Greedy Kernel Principal Component Analysis
- 10:10-10:25 BREAK
- 10:25-11:00 Wladyslaw Skarbek, Warsaw Univ. of Technology  
Face Detection, Face Recognition, and Indexing
- 11:00-11:30 Ron Kimmel, Technion - Haifa

11:30-12:00 3D Face Recognition without 3D Reconstruction of the Face  
Michael Felsberg, Linköping University and  
Norbert Krüger, Aalborg University Esbjerg  
Symbol-based and Signal-based Representations

**Thursday afternoon** - working groups

14-15.30 group meetings

**Thursday late afternoon**

16-18 **SESSION 7: DIGITAL TOMOGRAPHY & GEOMETRY**

chair: Nahum Kiryati

16:00-16:30 Peter Gritzmann, TU München  
On instability, error correction, and noise-compensation in  
discrete tomography

16:30-17:00 Alain Daurat, University of Strasbourg  
Reconstruction of Binary Images from Noisy X-Rays

17:00-17:30 Massi Pontil, Univ. College London  
An introduction to kernel methods in learning theory

17:30-18:00 Isabelle Debled-Rennesson, LORIA - Nancy  
Estimation of tangents to a noisy discrete curve

**Thursday evening after dinner**

19.30 **WG REPORTS:**

chair: Joachim Weickert

**round-table discussion**

chairs of working groups present their reports

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**Friday morning**

9-12 **SESSION 8: GEOMETRIC COMPUTING**

chair: Isabelle Debled-Rennesson

09:00-09:30 Thomas Bülow, Philips - Hamburg  
Extraction of the Coronary Artery Tree from Cardiac

09:30-10:00 Multi-Slice CT Data  
Jovisa Zunic, University of Exeter  
Approximation of Moments

10:00-10.15 BREAK

**10.15-12 SESSION: APPROXIMATION**

chair: Reinhard Klette

10:15-10:40 Nir Sochen, Tel Aviv University  
The Beltrami flow over Manifolds: Intrinsic vs. Implicit

10:40-11.05 Gabriele Steidl, Universität Mannheim  
Relation between nonlinear methods in signal and  
image processing

11:05-11:30 Pavel Mrazek, Saarland University  
On robust estimation and smoothing with tonal  
and spatial kernels

11.30-12.00 Matthias Mühlich, Frankfurt University  
Unbiased Errors-In-Variables Estimation Using Generalized  
Eigensystem Analysis

**Participants: please send submission for the edited book (with Kluwer) by  
end of May to [r.klette@auckland.ac.nz](mailto:r.klette@auckland.ac.nz)  
(pdf format, min. 10 pages, max 15 pages, Kluwer tex style)**

**Reviewing will be in June, and camera-ready manuscripts (all tex sources)  
are due by end of July**