



Christian-Albrechts-Universität zu Kiel

**Kiel Symposium on Discrete Algorithms and their Applications
in Marine- and Life Sciences – An Indo-German Perspective**

Kiel University, September 12-14, 2018

On the occasion of the 60th birthday of Prof. Anand Srivastav

Organizers: Dr. Claudine Leonhard, Dr. Volkmar Sauerland

Program

Wednesday, September 12, 2018

Venue: Bach-Saal (RHS3-R.1), Rudolf-Höber-Straße 3

18:30 – 19:00 *Prof. Bernhard Emmer, University Music Director: Organ Composition*

Venue: Raum 424, Mathematisches Seminar, Ludewig-Meyn-Straße 4

19:15 *Reception*

Thursday, September 13, 2018

Venue: Hörsaal A, Audimax CAU, Christian-Albrechts-Platz 2

08:00 – 08:30 *Registration*

08:30 – 09:00 *Opening and Addresses*

Prof. Lutz Kipp, President Kiel University

Prof. Frank Kempken, Dean Faculty of Mathematics and Natural Sciences

Prof. Hartmut Weiß, Head Department of Mathematics

Prof. Sudhir Ghorpade, President Indian Mathematical Society

Session 1: Keynotes on Algorithms for Big Data

Chair: Claudine Leonhard

09:00 – 09:50 Dorothea Wagner, Karlsruhe Institute of Technologie, Karlsruhe, Germany:
The Impact of Route Planning Algorithms in Practice

09:50 – 10:40 Ulrich Meyer, Goethe University Frankfurt, Frankfurt, Germany:
Large-scale Graph Generation and Big Data: An Overview on Recent Results
Group Photo and Coffee Break

Session 2: Numerical Computing and Combinatorics

Chair: Christian Glazik

11:00 – 11:40 Sumit Ganguly, Indian Institute of Technology Kanpur, Kanpur, India:
On Sketching the Frequency Moments with High Confidence

- 11:40 – 12:20 Anusch Taraz, Hamburg University of Technology (TUHH), Hamburg, Germany:
Universality and Resilience in Random Graphs
- 12:20 – 13:00 Sachin Patkar, Indian Institute of Technology Bombay, Bombay, India:
Combinatorial Geometry for Petascale Boolean Matrix Vector Multiplication over a Packet-switched Network of FPGAs
- Lunch Break*

Session 3: Applications in Life Science

Chair: Gerold Jäger

- 14:00 – 14:40 Frank-André Siebert, Faculty of Medicine, Kiel University, Kiel, Germany:
Optimization Helps to Save Lives: Applications in Radiotherapy
- 14:40 – 15:20 Ute Hentschel Humeida, GEOMAR Kiel, Kiel, Germany:
From Meta-Omics to Function in Marine Sponge-Microbe Symbioses
- Coffee Break*

Session 4: Applications in Marine Science

Chair: Volkmar Sauerland

- 15:40 – 16:20 Iris Kriest, GEOMAR Kiel, Kiel, Germany:
Parameter Optimization Helps to Shed Light on Marine Biological Carbon Cycling
- 16:20 – 17:00 Katja Matthes, GEOMAR Kiel, Kiel, Germany:
Ocean Eddies in a Coupled Ocean-Atmosphere System Model

19:00 *Conference Dinner, Steigenberger Conti Hansa (Schlossgarten 7, 24103 Kiel)*

Friday, September 14, 2018

Venue: Hörsaal A, Audimax CAU, Christian-Albrechts-Platz 2

Session 5: Discrepancy and Coding

Chair: Sumit Ganguly

- 09:00 – 09:40 William Chen, Macquarie University, Sydney, Australia:
The Role of Digit Shifts in Discrepancy Theory – a Brief Survey
- 09:40 – 10:20 Giancarlo Travaglini, University of Milano-Bicocca, Milano, Italy:
Discrepancy for Convex Bodies with Flat Boundaries
- 10:20 – 11:00 Sudhir Ghorpade, Indian Institute of Technology Bombay, Bombay, India:
Higher Weights of Projective Reed-Muller Codes
- Coffee Break*

Session 6: Key Note on Evolutionary Computation

Chair: Petra Wehr

11:20 – 12:10 Benjamin Doerr, École Polytechnique, Palaiseau, France:

Theory of Evolutionary Algorithms

Session 7: Graphs and Combinatorics I

Chair: Sören Werth

12:10 – 12:50 Devdatt Dubhashi. Chalmers University of Technology Göteborg, Göteborg, Sweden:

Correlation Clustering with a Fixed Number of Clusters and Colour Naming

Lunch Break

Session 8: Graphs and Combinatorics II

Chair: Nitin Ahuja

14:15 – 14:55 Tomasz Schoen, Adam Mickiewicz University, Poznan, Poland:

New Upper Bound for Weak B_k -Sets

14:55 – 15:35 Gerold Jäger, Umeå University, Umeå, Sweden:

On the Zero Forcing Number and Zero Forcing Sets:
Bounds, Structural Results and Heuristic Approaches

15:35 – 15:45 *Concluding Remarks*