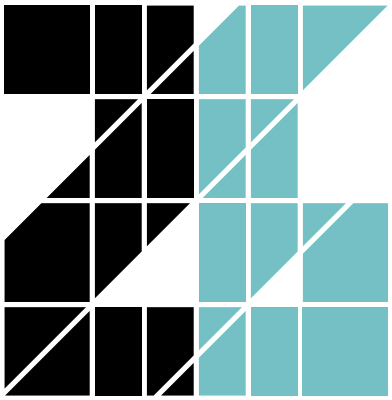
42nd European Workshop on Computational Geometry

Schedule



March 25 – 27

Hagen, Germany

Wednesday, March 25

Welcome Session

Time: Wed. 08:45 – 09:00 (lower floor)

Invited Talk:

Marcus Schaefer: Calculating with Pennies and Marbles

Time: Wed. 09:00 – 10:00 (lower floor)

Coffee Break (in front of the lecture halls)

Session 1A: Thickness and Simultaneous Embeddings

Chair: **Philipp Kindermann**

Time: Wed. 10:30 – 11:30 (lower floor)

- Simultaneous Embedding of Two Paths on the Grid
  Stephen Kobourov, William Lenhart, Guiseppe Liotta, Daniel Perz, *Pavel Valtr* and Johannes Zink
- On t-colorable k-plane drawings
  Miriam Goetze, Michael Kaufmann and *Soeren Terziadis*
- Simple Topological Thickness
  Michael Hoffmann, Julia Oppermann, *Rosna Paul*, Jonathan Rollin and Alexandra Weinberger
- Ordinal Geometric Thickness of Complete and Complete Bipartite Graphs
  Patrizio Angelini, Michael Bekos, Luca Grilli and ‡Aikaterini Maria Ntasiou‡

Session 1B: Voronoi

Chair: **Xavier Goaoc**

Time: Wed. 10:30 – 11:30 (upper floor)

- Simplicial Approximation to CW Complexes with Spherical Delaunay Triangulations
  Raphaël Tinarrage
- On quadrilaterals in higher order Voronoi diagrams
  ‡Andrea de Las Heras-Parrilla‡, Clemens Huemer and Javier Tejel
- On geodesic disks enclosing many points
  Prosenjit Bose, *Guillermo Esteban*, David Orden, Rodrigo Silveira and Tyler Tuttle
- Semi-discrete convex order and Laguerre tessellation fitting
  David P. Bourne, Thomas O. Gallouët, Quentin Mérigot and *Andrea Natale*

Short Break

Session 2A: Crossing Numbers

Chair: **Birgit Vogtenhuber**

Time: Wed. 11:45 – 12:45 (lower floor)

- The Complexity of Extending Storylines with Minimum Local Crossing Number
  Alexander Dobler, Siddharth Gupta, *Philipp Kindermann*, Fabrizio Montecchiani and Martin Nöllenburg
- Antipodal Pairs and Crossing Numbers of Complete Graphs
  Stefan Felsner
- How many times can two minimum spanning trees cross?
  Todor Antić, Morteza Saghafian, *Maria Saumell*, Felix Schröder, Josef Tkadlec and Pavel Valtr
- On rectilinear drawings of the hypercube
  Todor Antić, *Niloufar Fuladi*, Anna Margarethe Limbach and Pavel Valtr

Session 2B: Reconfiguration

Chair: **Rodrigo Silveira**

Time: Wed. 11:45 – 12:45 (upper floor)

- Tilt Automata: Gathering Particles With Uniform External Control
  Sándor P. Fekete, ‡Jonas Friemel‡, Peter Kramer, Jan-Marc Reinhardt, Christian Rieck and Christian Scheffer
- Partitioning a Tile Arrangement for Construction by a Team of Robots
  Sándor P. Fekete, Jonas Friemel, Prahlad Narasimhan Kasthurirangan, ‡Ramin Kosfeld‡, Christian Scheffer and Arne Schmidt
- Sliding Cubes in Parallel
  Hugo A. Akitaya, Joseph Dorfer, ‡Peter Kramer‡, Christian Rieck, Gabriel Shahrouzi and Frederick Stock
- Reconfiguration of Squares Using a Constant Number of Moves Each
  Thijs van der Horst, Maarten Löffler, Tim Ophelders and *Tom Peters*

Lunch at the Mensa
(Building No. 4, right across from the lecture halls)

Session 3A: **Art Gallery Problems**
Chair: **Maria Saumell**
Time: Wed. 14:15 – 15:45 (lower floor)

- Solving the Contiguous Art Gallery Problem using Few Starting Points
  Sarita de Berg, Jacobus Conradi, Ivor van der Hoog and Eva Rotenberg
- Guarding Offices with Maximum Dispersion
  Sándor Fekete, ‡Kai Kobbe‡, Dominik Krupke, Joseph Mitchell, Christian Rieck and Christian Scheffer
- The Chromatic Dispersive Art Gallery Problem in Polyominoes
  Anna Brötzner, *Kien C. Huynh*, Christiane Schmidt and Frederick Stock
- Improved Approximation of Two Watchmen's Routes in Simple Polygons
  ‡Anna Brötzner‡, Bengt J. Nilsson and Christiane Schmidt
- Approximating the Minmax Three-Visiting Routes for m Treasures in a Simple Polygon
  ‡Anna Brötzner‡, Bengt J. Nilsson and Christiane Schmidt
- Partitioning the boundary of an art gallery with visibility polygons
  Robert Barish and Tetsuo Shibuya

Session 3B: **Games, Complexity and Computational Models**
Chair: **Maarten Löffler**
Time: Wed. 14:15 – 15:45 (upper floor)

- Geometric Give and Take
  Oswin Aichholzer, *Katharina Klost*, Kristin Knorr, Viola Mészáros and Josef Tkadlec
- Wataridori is NP-Complete
  Suthee Ruangwises
- NP-Completeness Proofs of All or Nothing, Water Walk, and Remembered Length Using the T-Metacell Framework
  Pakapim Eua-Anant, Papangkorn Apinyanon, Thunyatorn Jirachaisri, Nantapong Ruangsuksriwong and *Suthee Ruangwises*
- Devil's Games and QR: Continuous Games complete for the First-Order Theory of the Reals.
  ‡Lucas Meijer‡, Arnaud de Mesmay, Till Miltzow, Marcus Schaefer and Jack Stade
- Oracle Separations for RPH
  ‡Lucas Meijer‡, Till Miltzow, Subhasree Patro and Thekla Hamm
- On the solvability of Shortest Descending Paths
  ‡Víctor Franco-Sánchez‡, Alex Herrero and Rodrigo I. Silveira

Coffee Break (in front of the lecture halls)

Session 4A: **Visibility**
Chair: **Christian Rieck**
Time: Wed. 16:15 – 17:30 (lower floor)

- Planar Convex Obstacle Number of Trees
  Emilio Di Giacomo, ‡Carolina Haase‡, Philipp Kindermann and Giuseppe Liotta
- General Visibility Graphy
  Franz Brandenburg
- Line Segment Visibility in Simple Polygons: Exact, Robust, Scalable Computation and Applications
  Sándor Fekete, Prahlad Kasthurirangan, Phillip Keldenich, ‡Fabian Kollhoff‡, Chek-Manh Loi and Michael Perk
- Compatible triangulations of simple polygons
  Peyman Afshani, Boris Aronov, Kevin Buchin, Maike Buchin, *Otfried Cheong*, Katharina Klost, Carolin Rehs and Günter Rote
- High Beer Index Implies Big Hollow Triangles
  Arun Kumar Das, Vít Jelínek, Jan Kynčl, Martin Pergel, Felix Schröder, Peter Stumpf and *Pavel Valtr*

Session 4B: **Tilings**
Chair: **Martin Nöllenburg**
Time: Wed. 16:15 – 17:30 (upper floor)

- Shortest Paths, Convexity, and Treewidth in Regular Hyperbolic Tilings
  Sándor Kisfaludi-Bak, Tze-Yang Poon and ‡Geert van Wordragen‡
- Recognizing Subgraphs of Regular Tilings
  ‡Eliel Ingervo‡ and Sándor Kisfaludi-Bak
- The Domino Problem is Decidable for Robust Tilesets
  Nathalie Aubrun, *Manon Blanc* and Olivier Bournez
- Graph Tile Connectability with Turn Tiles
  Maarten Löffler and ‡Ids de Vlas‡
- A convex σ-morphic protoset exists
  ‡Aleksa Džuklevski‡

Short Break

Business Meeting
Time: Wed. 17:45 – 18:45 (lower floor)

Meeting Point at the Villa (Building No. 10, Feithstraße 152)
A quick meeting spot to stop by, meet people, and head out together for dinner and the evening.
There will be *no food provided*, but some limited space to stay

Thursday, March 26

Invited Talk:

Maike Buchin: A natural metric for curves – 35 years of Fréchet distance computation

Time: Thu. 09:00 – 10:00 (lower floor)

Coffee Break (in front of the lecture halls)

Session 5A: **Fréchet Distance**

Chair: **André Nusser**

Time: Thu. 10:30 – 11:30 (lower floor)

- Fréchet Distance in the Imbalanced Case
  ‡Lotte Blank‡
- A Framework for Dimension Reduction for Curves
  ⋆Matthijs Ebbens⋆, Jie Lu and Alexander Munteanu
- Fréchet Distance for paths in a d-dimensional grid graphs
  Ivor van der Hoog, Eva Rotenberg and ‡Frederikke Uldahl‡
- Computing the Fréchet Distance When Just One Curve is c-Packed: A Simple Almost-Tight Algorithm
  Jacobus Conradi, Ivor van der Hoog, ‡Thijs van der Horst‡ and Tim Ophelders

Session 5B: **Point Sets**

Chair: **Irene Parada**

Time: Thu. 10:30 – 11:30 (upper floor)

- Garment numbers of bi-colored point sets in the plane
  Oswin Aichholzer, Helena Bergold, ⋆Simon D. Fink⋆, Maarten Löffler, Patrick Schnider and Josef Tkadlec
- Point Set Transformations using Given Groups
  Thomas C. Van Dijk, Erwin Glazenburg, Wouter Meulemans, Anna Schenfisch and ‡Arjen Simons‡
- Range Counting Oracles for Extent problems
  ‡Sanghwa Han‡ and Eunjin Oh
- Exploring Mixedness of Bichromatic Point Sets
  Thijs Beurskens, Marc van Kreveld, Frank Staals and ⋆Jules Wulms⋆

Short Break

Session 6A: **Distance Measures**

Chair: **Patrick Schnider**

Time: Thu. 11:45 – 12:45 (lower floor)

- Locally Correct Interleavings between Merge Trees
  ‡Thijs Beurskens‡, Tim Ophelders, Bettina Speckmann and Kevin Verbeek
- Towards Computing Average Merge Tree Based on the Interleaving Distance
  ⋆Elena Farahbakhsh Touli⋆, Ingrid Hotz and Talha Bin Masood
- Computing L_∞ Hausdorff Distances Under Translations: The Interplay of Dimensionality, Symmetry and Discreteness
  ‡Sebastian Angrick‡, Kevin Buchin, Geri Gokaj and Marvin Künnemann
- Rupture-Isolation for the Weak Graph Distance
  Maike Buchin, ‡Wolf Kißler‡ and Fabian Kubon

Session 6B: **Coverings and Packings**

Chair: **Katharina Klost**

Time: Thu. 11:45 – 12:45 (upper floor)

- A 44-Point Configuration Not Coverable by Disjoint Unit Disks
  Takuto Nakai and ⋆Shuya Bundo⋆
- Drone Air Traffic Control: Tracking a Set of Moving Objects with Minimal Power
  Sándor Fekete, Malte Hoffmann, ‡Chek-Manh Loi‡ and Michael Perk
- Approximating Triangle Covers of Polygons
  Linda Kleist and ‡Lena Scherzer‡
- Online Packing of Orthogonal Polygons
  ‡Tim Gerlach‡, Benjamin Hennies and Linda Kleist

Lunch at the Mensa
(Building No. 4, right across from the lecture halls)

Session 7A: **Graph Drawing and Visualizations**

Chair: **Ignaz Rutter**

Time: Thu. 14:15 – 15:30 (lower floor)

- Disproving two conjectures on the Hamiltonicity of Venn diagrams
  Sofia Brenner, Linda Kleist, Torsten Mütze, *Christian Rieck* and Francesco Verciani
- On minimum Venn diagrams
  Sofia Brenner, Petr Gregor, Torsten Mütze and ‡Francesco Verciani‡
- Edge Densities of Drawings of Graphs with One Forbidden Cell
  ‡Benedikt Hahn‡, Torsten Ueckerdt and Birgit Vogtenhuber
- Small Empty Cycles in Simple Drawings of K_n
  ‡Anna Hofer‡, Joachim Orthaber, Birgit Vogtenhuber and Alexandra Weinberger
- What induces plane structures in complete graph drawings?
  Alexandra Weinberger and *Ji Zeng*

Session 7B: **Topology**

Chair: **Tim Ophelders**

Time: Thu. 14:15 – 15:15 (upper floor)

- On the Computation of Schrijver's Kernels
  Vincent Delecroix, ‡Oscar Fontaine‡ and Francis Lazarus
- Topologically Stable Hough Transform
  Stefan Huber, Kristóf Huszár, Michael Kerber and Martin Uray
- Which Vertical Graphs are Non VPHT Reconstructible?
  ‡Jette Gutzeit‡, Kalani Kistler, Tim Ophelders and Anna Schenfisch
- Bouquet : A Visualization Tool for Symmetry Sets and Vineyards
  Erin Chambers, Christopher Fillmore, Shankha Shubhra Mukherjee, ‡Rohit Roy‡, Elizabeth Stephenson and Mathijs Wintraecken

Coffee Break (in front of the lecture halls)

Excursion:

Dechenhöhle: Buses leave about 16:15
Museum: public transport

Time: Thu. 16:00 – 18:30

Dinner:

Neue Färberei

Time: Thu. 19:00 – 22:00

Friday, March 27

Invited Talk:

Jean Cardinal: Compact Representations

Time: Fri. 09:00 – 10:00 (lower floor)

Coffee Break (in front of the lecture halls)

Session 8A: **Graph Representations**

Chair: **Stefan Felsner**

Time: Fri. 10:30 – 11:45 (lower floor)

- On the edge surplus of 1-planar unit distance graphs over matchstick graphs
  ‡Eliška Červenková‡ and Jan Kratochvil
- Grounded String Representations of Series-Parallel Graphs without Transitive Edges
  Sabine Cornelsen, ⋆Jan Kratochvíl⋆, Miriam Münch, Giacomo Ortali, Alexandra Weinberger and Alexander Wolff
- The Witness Unit Disk Representability Problem
  Carolina Haase, Giuseppe Liotta, Maarten Löffler, Fabrizio Montecchiani, Alessandra Tappini and ⋆Soeren Terziadis⋆
- Star-Based Separators for Intersection Graphs of c-Colored Pseudo-Segments
  Mark de Berg, Bart M. P. Jansen and ‡Jeroen S.K. Lamme‡
- Explicit High-Chromatic Hypergraphs Realized by Axis-Parallel Rectangles
  ⋆Gábor Damásdi⋆

Session 8B: **WSPD and Spanners**

Chair: **Otfried Cheong**

Time: Fri. 10:30 – 11:45 (upper floor)

- Fully Scalable MPC Algorithms for WSPD in Euclidean Spaces
  Eunjin Oh and ‡Hyeonjun Shin‡
- On Small Pair Decompositions for Point Sets: Hardness and the 1D case
  Kevin Buchin, Jacobus Conradi, Sariel Har-Peled, Antonia Kalb, Abhiruk Lahiri, ‡Lukas Plätz‡, Carolin Rehs and Sampson Wong
- On (Directed) Width-Parameters of Geometric Spanners
  Kevin Buchin, ⋆Carolin Rehs⋆ and Torben Scheele
- Fault-Tolerance and Oriented Dilation of the Greedy Triangulation
  ‡Antonia Kalb‡, Kevin Buchin and Prosenjit Bose
- Dynamic $(1+\varepsilon)$-Spanner in Disk Intersection Graphs
  Sarita de Berg, Ivor van der Hoog, Eva Rotenberg, ‡Johanne M. Vistisen‡ and Sampson Wong

Short Break

Session 9A: **Counting Problems**

Chair: **Clemens Huemer**

Time: Fri. 12:00 – 12:45 (lower floor)

- Counting d-Dimensional Polycubes, Revisited
  ⋆Gill Barequet⋆ and Tom Feldman
- The number of occurrences of the two smallest distances
  ‡Cameron Strachan‡ and Konrad Swanepoel
- Lower Bounding the Number of Triangulations as a Function of the Convex Hull Size
  ⋆Justin Dallant⋆

Session 9B: **Incremental Data Structures and Online Algorithms**

Chair: **Frank Staals**

Time: Fri. 12:00 – 12:45 (upper floor)

- Dynamic Level Planarity Testing
  ‡Jonathan Højlev‡, Simon D. Fink and Eva Rotenberg
- Incremental k-lowest planes and planar k-nearest neighbor with optimal query time
  John Iacono, Yakov Nekrich and ⋆Martin P. Seybold⋆
- Online searching for rays in the half-plane
  Florian Gans and ⋆Elmar Langetepe⋆

Lunch at the Mensa
(Building No. 4, right across from the lecture halls)

Session 10A: **Spanning Trees and Flips**

Chair: **Michael Hoffmann**

Time: Fri. 14:15 – 15:15 (lower floor)

- The Euclidean Minimum Spanning Tree Extension Problem (and its Approximation)
  Emilio Di Giacomo, Giuseppe Liotta, *Daniel Perz* and Morteza Saghafian
- Structural Properties of Shortest Flip Sequences Between Plane Spanning Trees
  Oswin Aichholzer, Joseph Dorfer, ‡Peter Kramer‡, Christian Rieck and Birgit Vogtenhuber
- Flipping Non-crossing Spanning Trees is NP-Hard
  Havard Bjerkevik, ‡Joseph Dorfer‡, Linda Kleist, Torsten Ueckerdt and Birgit Vogtenhuber
- Centered flips of non-crossing, perfect matchings
  Alexandra Wesolek and ‡Lisa Kudlik‡

Session 10B: **Width and FPT-Algorithms**

Chair: **Simon Dominik Fink**

Time: Fri. 14:15 – 15:15 (upper floor)

- On the Pathwidth of 2-Layer k-Matching-Planar Graphs
  Saeed Odak, Jonathan Rollin and ‡Torben Scheele‡
- The Parameterized Complexity of Geometric 1-Planarity
  ‡Alexander Firbas‡
- Revisiting Graph Modification via Disk Scaling: From One Radius to Interval-Based Radii
  ‡Thomas Depian‡ and Frank Sommer
- An FPT Algorithm for Maximum k × k Square Packing Parameterized by Remaining Space
  ‡Maarten Dankers‡, Thomas C. Van Dijk and Kevin Verbeek

Short Coffee Break (in front of the lecture halls)

Session 11A: **Arrangements and Polytopes**

Chair: **Günter Rote**

Time: Fri. 15:30 – 16:30 (lower floor)

- Signotopes Induce Unique Source Orientations on Grids
  ‡Sandro M. Roch‡
- Simplex volumes in hyperplane arrangements
  ‡Koki Furukawa‡
- Approximation Depth of Convex Polytopes
  ‡Egor Bakaev‡, Florestan Brunck and Amir Yehudayoff
- On the Surjectivity of a Map by Kapranov and Voevodsky in four Dimensions
  ‡Yan Alves Radtke‡

Session 11B: **Heuristics and Computations**

Chair: **Sandor Fekete**

Time: Fri. 15:30 – 16:15 (upper floor)

- Multi-Block Grids via Polycubes
  ‡Maxim Snoep‡, Stevie-Ray Janssen, Bettina Speckmann and Kevin Verbeek
- Undirected TSP as a Constrained GSTP Variant
  Yılmaz Arslanoğlu
- Finding Patient Zero via Low-Dimensional Geometric Embeddings
  Stefan Huber and *Dominik Kaaser*

Short Break

Award ceremony and farewell:

Time: Fri. 16:40 (lower floor)