ALGO 2014

INSTITUTE OF COMPUTER SCIENCE • UNIVERSITY OF WROCŁAW, POLAND

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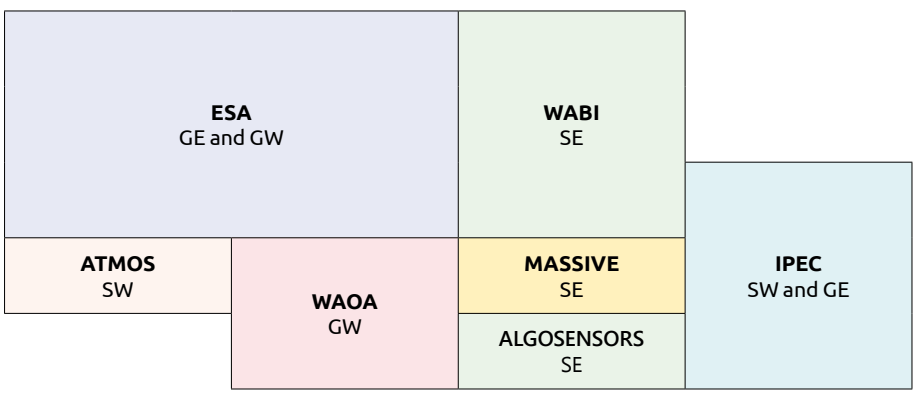


LECTURE ROOMS

Code in the schedule	Name	Entrance locations
GE	Great Eastern Lecture Hall	ground floor (door no. 25 and 27), first floor (door no. 121)
GW	Great Western Lecture Hall	ground floor (door no. 12 and 13), first floor (door no. 116)
SE	Small Eastern Lecture Hall	first floor (door no. 119A and 119B)
SW	Small Western Lecture Hall	first floor (door no. 118A and 118B)

- Each room has a beamer with VGA and HDMI connectors, capable of displaying the resolution of at least 1024×768. No overhead projectors are available. We expect the speakers to bring their own laptops (or other presenting devices).
- Each regular presentation is alloted a slot of 25 minutes. Usually, the last 5 minutes should be reserved for questions and discussion. Each invited talk is allotted a slot of 60 minutes.

Thomas Rothvoß did his PhD in Mathematics in 2009 at EPFL in Switzerland under Friedrich Eisenbrand. Then he was a PostDoc at MIT working with Michel Goemans. Since January 2014 he is Assistant Professor at the University of Washington in Seattle.

LOWER BOUNDS ON THE SIZE OF LINEAR PROGRAMS

Thomas Rothvoß (University of Washington)
ESA Invited Talk, Monday, September 8th, 09:00–10:00, room GE

One of most powerful problems that admits polynomial time algorithms is linear programming. Just in the last few years we have been able to better understand its power and its limitations. In this talk, we will give a survey on recent results which show that NP-hard problems like TSP cannot be solved with a single linear program and even the matching polytope cannot be represented by a polynomial size LP.

Marc van Kreveld obtained his PhD at Utrecht University in 1992. After a year at McGill University in Montreal he returned to Utrecht and is now full professor in computational geometry and its application. His research focuses on the design of algorithms for geographic data. He is also interested in reconstruction from LiDAR data, graph drawing, and puzzle design. He is co-author of the widely-used textbook "Computational Geometry — Algorithms and Applications".

TRAJECTORY DATA ANALYSIS

Marc van Kreveld (Utrecht University)
ESA Invited Talk, Tuesday, September 9th, 09:00–10:00, room GE

Tracking devices have become more and more widespread, which has led to large collections of movement data. The moving objects can be vehicles, animals, sports players, and people in general, and the collected data consists of trajectories: sequences of points with a time stamp. In geographic information science the analysis of these collections has become a highly important topic of research. Clustering, similarity analysis, prediction, and flock detection are examples of the analysis of trajectories. All of these analyses requires efficient geometric algorithms.

After giving an introduction into trajectory analysis we will discuss several algorithms that operate on trajectories, including trajectory segmentation and grouping analysis.

Hélene Touzet is a full-time researcher at LIFL and Inria Lille, where she leads the Bonsai team. She received her PhD in computer sciences in 1997 from University of Nancy and her habilitation in 2004 from University of Lille. Her research focuses on algorithms for computational biology. This includes the following topics: analysis of high throughput sequencing data, noncoding RNA, genome annotation.

SOME ALGORITHMS FOR RNA ANALYSIS

Hélene Touzet (University of Lille)
WABI Invited Talk, Wednesday, September 10th, 09:00–10:00, room GE

Ribonucleic acid (RNA) is one of the three major macromolecules, along with DNA and proteins, that are essential for all forms of life. RNAs are now recognized to play an active role in cells by catalyzing biological reactions and controlling gene expression, and have attracted a lot of interest in molecular biology and in computational biology recently.

Like DNA, RNA is made up of a chain of nucleotides. But a main difference is that RNAs are single stranded and fold into a three-dimensional structure. Due to this spatial structure, RNAs are modeled by complex combinatorial models, such as ordered trees or graphs. In this talk, I will present several basic problems raised by the analysis of RNA (alignment, structure inference) and introduce a universal framework to design dynamic programming algorithms that is especially well-suited for RNA analysis.

Hans Bodlaender was born in Bennekom, the Netherlands, in 1960. He obtained a M. Sc. degree in Mathematics from Utrecht University in 1983, and a Ph.D. Computer Science from Utrecht University in 1986. In 1987, he was postdoc at MIT. He became assistant professor at Utrecht University in 1987, and is currently associate professor there. Hans Bodlaender is married and has three children. His research focuses on graph algorithms, often in connection to the notion of treewidth, fixed parameter tractability and kernelization.

LOWERBOUNDS FOR KERNELIZATION

Hans L. Bodlaender (Utrecht University)
IPEC Invited Talk, Wednesday, September 10th, 13:45–14:45, room GE

Kernelization is the process of transforming the input of a combinatorial problem to an equivalent input whose size is bounded by a function of the parameter; the analysis of kernelization tells what we can achieve with polynomial time preprocessing for combinatorial problems, and is a recent active field in algorithm research. In this talk, a survey is given of a number of recent techniques to show (under complexity theoretic assumptions) lower bounds for the size of kernels. In particular, it is discussed how the notion of compositionality can show that certain (parameterized) problems do not have kernels of polynomial size.

Renato Werneck is a Senior Researcher at Microsoft Research Silicon Valley, where he helped develop several algorithms that are now in production. He obtained his PhD degree in Computer Science from Princeton University in 2006, and his research interests include algorithm engineering, data structures, graph algorithms, and combinatorial optimization. He serves on the steering committee of ALENEX and on the editorial boards of the ACM Journal on Experimental Algorithmics (JEA) and Mathematical Programming Computation (MPC).

BUILDING A REAL-WORLD ROUTING ENGINE

Renato Werneck (Microsoft Research)
ATMOS Invited Talk, Thursday, September 11th, 09:00–10:00, room GE

Computing driving directions in road networks is a fundamental problem with numerous applications. Although standard graph-search algorithms can solve it in almost linear time, this is not fast enough to enable interactive queries on continental road networks. Modern algorithms thus work in two stages: an offline preprocessing routine first computes some auxiliary data, which is then used to answer exact queries interactively. In a true success story, the past decade has seen the development of a diverse set of techniques providing various trade-offs between preprocessing effort, query time, space usage, extensibility, and simplicity. I will survey these techniques and discuss how they address the requirements of real-world routing engines, with emphasis on the algorithm behind the system currently in use by Microsoft's Bing Maps.

Aleksander Mądry is an assistant professor in the EPFL School of Computer and Communication Sciences. His research centers on algorithmic graph theory and understanding uncertainty in the context of optimization. Mądry received his PhD from MIT in 2011 and, prior to joining EPFL, spent a year as a postdoctoral researcher at Microsoft Research New England. His work was recognized with a variety of awards, including the ACM Doctoral Dissertation Award Honorable Mention, the George M. Sprowls Doctoral Dissertation Award, and a number of best paper awards at FOCS/SODA/STOC conferences.

FROM GRAPHS TO MATRICES, AND BACK: BRIDGING THE COMBINATORIAL AND THE CONTINUOUS

Aleksander Mądry (EPFL)
WAOA Invited Talk, Thursday, September 11th, 13:45–14:45, room GE

Graphs are ubiquitous in all modern sciences. This motivates a need for algorithmic tools that are capable of analyzing and computing on graphs in an efficient manner. A need that is even more pressing now that the graphs we are dealing with tend to be massive, rendering traditional methods no longer adequate.

In this talk, I will discuss a recent progress on the maximum flow problem and use it as an illustration of a broader emerging theme in graph algorithms that employs optimization methods as an algorithmic bridge between our combinatorial and spectral understanding of graphs.

I will also briefly outline how this line of work brings a new perspective on some of the core continuous optimization primitives — most notably, interior-point methods.

Phillip B. Gibbons is a Principal Research Scientist at Intel Labs and Principal Investigator for the Intel Science and Technology Center for Cloud Computing homed at Carnegie Mellon. His publications span systems and theory, and have been cited 13,000+ times with an h-index of 60. He is Editor-in-Chief for the recently launched ACM Transactions on Parallel Computing, an Associate Editor for the Journal of the ACM, and has served as program or area chair for a number of conferences in parallel/distributed computing, sensor networks, and databases. Gibbons is both an ACM and IEEE Fellow.

ALGORITHMIC CHALLENGES IN M2M

Phillip Gibbons (Intel Labs Pittsburgh)
ALGOSENSORS Invited Talk, Friday, September 12th, 09:00–10:00, room GE

Computing driving directions in road networks is a fundamental problem with nuThe Internet of Things promises a world of billions to trillions of smart objects/devices, communicating machine-to-machine (M2M) and providing us valuable information and services. This talk highlights our recent work addressing several key algorithmic challenges that arise in this setting. Specifically, we focus on problems arising in aggregation, similarity search, and machine learning on M2M's massively distributed network. After surveying these results, we present in greater detail upper and lower bounds demonstrating the cost of fault tolerance in such networks. These bounds show that across a communication-time trade-off curve, aggregation algorithms that tolerate crash failures incur an exponential cost in communication relative to non-fault-tolerant algorithms.

MONDAY, SEPTEMBER 8TH

	ESA 1	ESA 2	WABI
08:55-09:00	**Welcome**, Room GE		
09:00-10:00	**Invited talk (ESA):** Thomas Rothvoß (University of Washington): *Lower bounds on the size of linear programs*, Room GE		
10:00-10:20	**Coffee break**		

	Fixed Parameter Tractability, Room GE	**Data Structures**, Room GW	**Phylogenetics.** *SC: Sagi Snir*, Room SE
10:20-10:45	Fedor Fomin, Daniel Lokshtanov, Fahad Panolan and Saket Saurabh: *Representative Sets of Product Families*	Bryan T. Wilkinson: *Amortized Bounds for Dynamic Orthogonal Range Searching*	Sagi Snir: *Pacemaker Partition Identification*
10:45-11:10	Hadas Shachnai and Meirav Zehavi: *Representative Families: A Unified Tradeoff-Based Approach*	Daniel Larkin and Robert Tarjan: *Nested Set Union*	Luis Cunha, Luis Kowada, Rodrigo Hausen and Celina Figueiredo: *A Faster 1.375-Approximation Algorithm for Sorting by Transpositions*
11:10-11:35	Bart M. P. Jansen: *Turing Kernelization for Finding Long Paths and Cycles in Restricted Graph Classes*	Moshe Lewenstein, Ian Munro, Patrick K. Nicholson and Venkatesh Raman: *Improved Explicit Data Structures in the Bitprobe Model*	Burkhard Morgenstern, Binyao Zhu, Sebastian Horwege and Chris-Andre Leimeister: *Estimating evolutionary distances from spaced-word matches*
11:35-12:00	Petr Golovach, Marcin Kamiński, Spyridon Maniatis and Dimitrios Thilikos: *The Parameterized Complexity of Graph Cyclability*	*Umut Acar, Arthur Charguéraud and Mike Rainey. Theory and Practice of Chunked Sequences*	
12:00-13:30	**Lunch & coffee**		

	ESA Best Paper and Best Student Paper Award Session, Room GE	**Laboratory techniques #1.** *SC: Paolo Bonizzoni*, Room SE
13:30-13:55		Eiwen Yang and Tao Jiang: *GDNorm: An Improved Poisson Regression Model for Reducing Biases in Hi-C Data*
13:55-14:20	**Best Paper:** Pooya Davoodi, Jeremy Fineman, John Iacono and Ozgur Ozkan: *Cache-Oblivious Persistence*	Gustavo Sacomoto, Blerina Sinaimeri, Camille Marchet, Vincent Miele, Marie-France Sagot and Vincent Lacroix: *Navigating in a sea of repeats in RNA-seq without drowning*
14:20-14:45	**Best Paper:** Joshua Wang: *Space-Efficient Randomized Algorithms for K-SUM*	Yu-Ting Huang and Marek Chrobak: *An LP-Rounding Algorithm for Degenerate Primer Design*
14:45-15:05	**Coffee break**	

	Online Algorithms, Room GE	**Graph Algorithms I**, Room GW	**Genome assembly.** *SC: Brona Brejova*, Room SE
15:05-15:30	*Moses Charikar, Monika Henzinger and Huy Nguyen. Online Bipartite Matching with Decomposable Weights*	Zdenek Dvorak and Matthias Mnich: *Large Independent Sets in Triangle-Free Planar Graphs*	Vladimír Boža, Broňa Brejová and Tomáš Vinař: *GAML: Genome Assembly by Maximum Likelihood*
15:30-15:55	*Anupam Gupta and Marco Molinaro. How Experts Can Solve LPs Online*	Rui Ferreira, Roberto Grossi, Romeo Rizzi, Gustavo Sacomoto and Marie-France Sagot: *Amortized $\tilde{O}(\|V\|)$-Delay Algorithm for Listing Chordless Cycles in Undirected Graphs*	Matteo Comin, Andrea Leoni and Michele Schimd: *QCluster: Extending Alignment-free Measures with Quality Values for Reads Clustering*
15:55-16:20	*Niv Buchbinder, Shahar Chen and Seffi Naor. Competitive Algorithms for Restricted Caching and Matroid Caching*	Zdenek Dvorak, Martin Kupec and Vojtech Tuma: *A dynamic data structure for MSO properties in graphs with bounded tree-depth*	Yu Lin and Pavel Pevzner: *Manifold de Bruijn graphs*
16:20-16:40	**Coffee break**		

	Computational Algebra, Room GE	**Graph Algorithms II**, Room GW	
16:40-17:05	Clément Maria and Jean-Daniel Boissonnat: *Computing Persistent Homology with Various Coefficient Fields in a Single Pass*	Pavol Hell, Bojan Mohar and Arash Rafiey: *Ordering without forbidden patterns*	**WABI business meeting**, Room SE
17:05-17:30	Arnab Bhattacharyya: *Polynomial decompositions in polynomial time*	Guy Even, Moti Medina and Dana Ron: *Deterministic Stateless Local Centralized Algorithms for Bounded Degree Graphs*	
17:30-17:55	Andreas Björklund, Petteri Kaski and Lukasz Kowalik: *Fast Witness Extraction Using a Decision Oracle*	Florian Merz and Peter Sanders: *PReaCH: A Fast Lightweight Reachability Index using Pruning and Contraction Hierarchies*	
17:55-18:05			
18:05-19:30	**ESA business meeting**, Room GE		
19:30-20:00	**Welcome drink (ground floor)**		

TUESDAY, SEPTEMBER 9TH

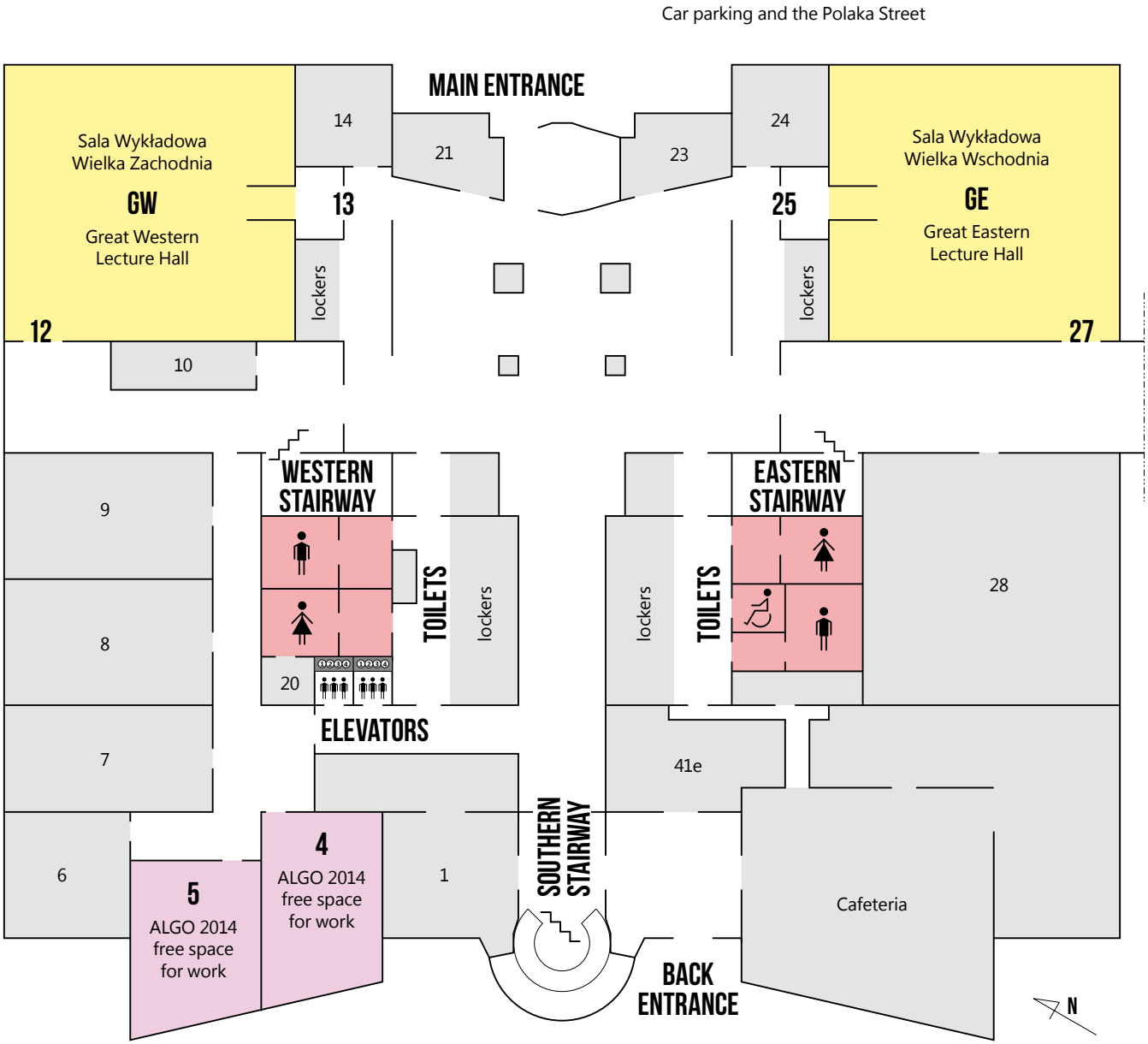
	ESA 1	ESA 2	WABI
09:00-10:00	**Invited talk (ESA):** Marc van Kreveld (Utrecht University): *Trajectory Data Analysis*, Room GE		
10:00-10:20	**Coffee break**		
	Approximation Algorithms I, Room GE	**Time-Space Tradeoff**, Room GW	**Mass spectrometry and proteomics.** *SC: Sebastian Böcker*, Room SE
10:20-10:45	Harald Räcke and Chintan Shah: *Improved Guarantees for Tree Cut Sparsifiers*	Tomasz Kociumaka, Tatiana Starikovskaya and Hjalte Wedel Vildhøj: *Sublinear Space Algorithms for the Longest Common Substring Problem*	Dominik Kopczynski and Sven Rahmann: *An Online Peak Extraction Algorithm for Ion Mobility Spectrometry Data*
10:45-11:10	Venkatesan Chakaravarthy, Anamitra Roy Choudhury, Shalmoli Gupta, Sambuddha Roy and Yogish Sabharwal: *Improved Algorithms for Resource Allocation Under Varying Capacity*	Paweł Gawrychowski, Moshe Lewenstein and Patrick K. Nicholson: *Weighted ancestors in suffix trees*	Kerstin Scheubert, Franziska Hufsky and Sebastian Böcker: *Multiple Mass Spectrometry Fragmentation Trees Revisited: Boosting Performance and Quality*
11:10-11:35	Alantha Newman: *The traveling salesman problem on subquartic graphs*	Andrew McGregor, Eric Price and Sofya Vorotnikova: *Trace Reconstruction Revisited*	Sharon Bruckner, Falk Hüffner and Christian Komusiewicz: *A Graph Modification Approach for Finding Core–Periphery Structures in Protein Interaction Networks*
11:35-12:00	Jianer Chen, Wenjun Li and Jianxin Wang: *Deeper Local Search for better Approximation on Maximum Internal Spanning Trees*	Omar Darwish and Amr Elmasry: *Optimal Time-Space Tradeoff for the 2D Convex-Hull Problem*	
12:00-13:30	**Lunch & coffee**		
	Packing, Scheduling and Self-Assembly, Room GE	**Structural Results**, Room GW	**Genome rearrangement and the DCJ operation.** *SC: Max Alekseyev*, Room SE
13:30-13:55	Fidaa Abed, Jose Correa and Chien-Chung Huang: *Optimal Coordination Mechanisms for Multi-Job Scheduling Games*	Michael A. Bender, Martin Farach-Colton, Mayank Goswami, Dzejla Medjedovic, Pablo Montes and Meng-Tsung Tsai: *The Batched Predecessor Problem in External Memory*	Fábio Henrique Viduani Martinez, Pedro Feijão, Marília Braga and Jens Stoye: *On the family-free DCJ distance*
13:55-14:20	Caleb Malchik and Andrew Winslow: *Tight Bounds for Active Self-Assembly Using an Insertion Primitive*	Zhewei Wei and Ke Yi: *Equivalence between Priority Queues and Sorting in External Memory*	Shuai Jiang and Max Alekseyev: *Linearization of Median Genomes under DCJ*
14:20-14:45	Flavio K. Miyazawa, Lehilton L. C. Pedrosa, Rafael C. S. Schouery, Maxim Sviridenko and Yoshiko Wakabayashi: *Polynomial-Time Approximation Schemes for Circle Packing Problems*	Stacey Jeffery, Frederic Magniez and Ronald de Wolf: *Optimal parallel quantum query algorithms*	Phillip Compeau: *A Generalized Cost Model for DCJ-Indel Sorting*
14:45-15:05	**Coffee break**		

	Approximate Counting and Sampling, Room GE	**FPT Algorithms**, Room GW	**Laboratory techniques #2.** *SC: Gene Myers*, Room SE
15:05-15:30	Charilaos Efthymiou: *Switching colouring of G(n,d/n) for sampling up to Gibbs Uniqueness Threshold*	Gregory Gutin, Mark Jones and Bin Sheng: *Parameterized Complexity of the k-Arc Chinese Postman Problem*	Adrin Jalali and Nico Pfeifer: *Interpretable per Case Weighted Ensemble Method for Cancer Associations*
15:30-15:55	Romeo Rizzi and Alexandru I. Tomescu: *Faster FPTASes for counting and random generation of Knapsack solutions*	Ivan Bliznets, Fedor Fomin, Marcin Pilipczuk and Michał Pilipczuk: *A subexponential parameterized algorithm for Proper Interval Completion*	Chen Gu, Leonidas Guibas and Michael Kerber: *Topology-driven Trajectory Synthesis with an Example on Retinal Cell Motions*
15:55-16:20	Jingcheng Liu, Pinyan Lu and Chihao Zhang: *FPTAS of Counting Weighted Edge Covers*	Amir Abboud, Kevin Lewi and Ryan Williams: *Losing Weight by Gaining Edges*	Iman Hajirasouliha and Benjamin Raphael: *Reconstructing mutational history in multiply sampled tumors using perfect phylogeny mixtures*
16:20-16:40	**Coffee break**		

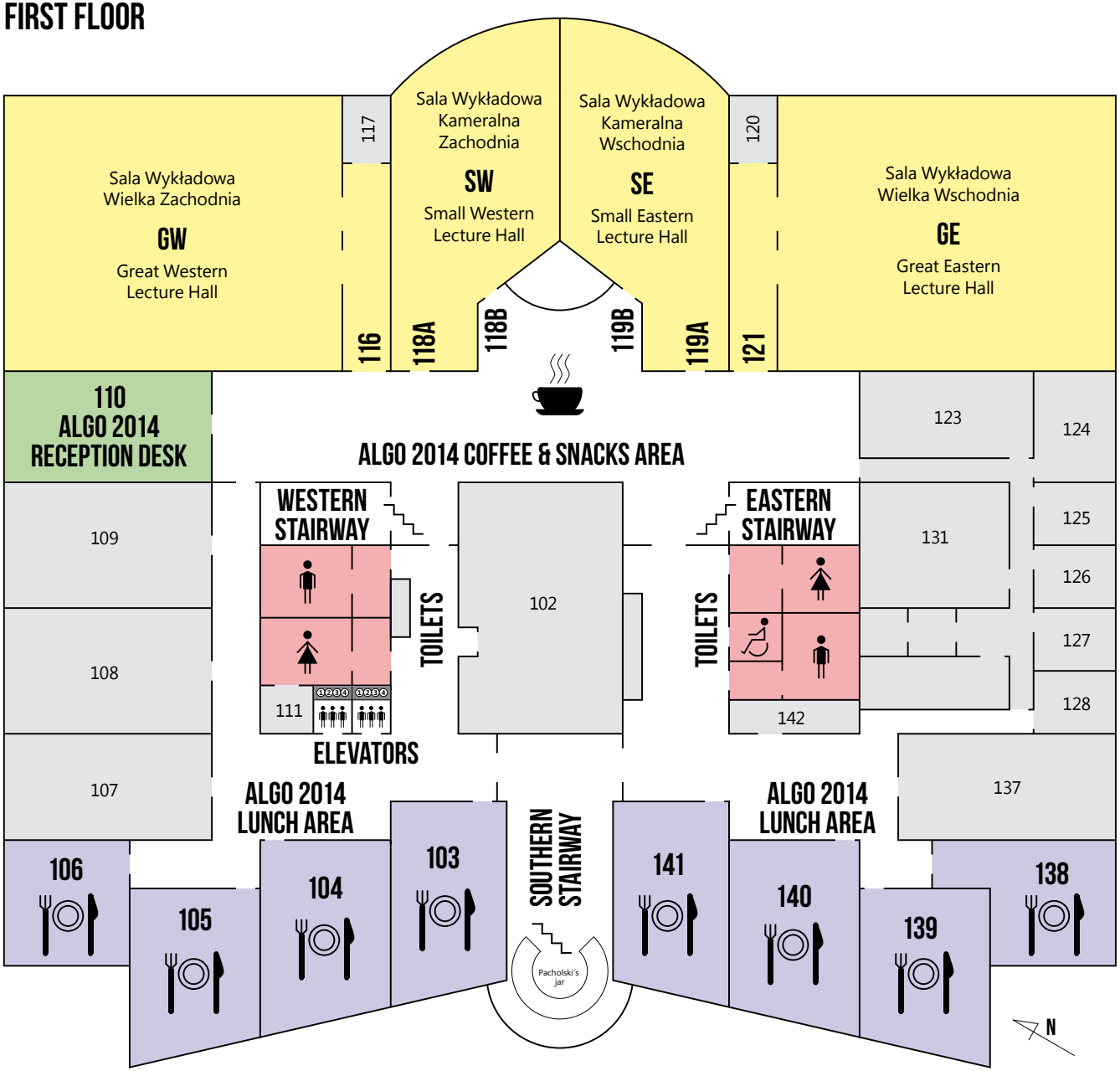
	Data Structures and Compression, Room GE	**Computational Complexity**, Room GW	
16:40-17:05	Timothy M. Chan, Meng He, J. Ian Munro and Gelin Zhou: *Succinct Indices for Path Minimum, with Applications to Path Reporting*	Daniel Lokshtanov, Saket Saurabh and Ondrej Suchy: *Solving Multicut Faster than 2^n*	**WABI poster session**
17:05-17:30	Andrea Farruggia, Paolo Ferragina and Rossano Venturini: *Bicriteria data compression: efficient and usable*	Rasmus Pagh and Morten Stöckel: *The Input/Output Complexity of Sparse Matrix Multiplication*	
17:30-17:55	Gonzalo Navarro, Simon J. Puglisi and Jouni Sirén: *Document Retrieval on Repetitive Collections*	Dominique Attali, Olivier Devillers, Marc Glisse and Sylvain Lazard: *Recognizing shrinkable complexes is NP-complete*	
17:55-19:00			
18:00-19:30	**Excursion (including boat trip) to conference dinner site**		
19:30-22:00	**Conference dinner**		

[A map of Wrocław included here in the printed booklet has been removed from the on-line version due to copyright restrictions.]

GROUND FLOOR



FIRST FLOOR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WEDNESDAY, SEPTEMBER 10TH

	ESA 1	ESA 2	WABI	IPEC
09:00-10:00	**Invited talk (WABI):** Hélène Touzet, (University of Lille): *Some algorithms for RNA analysis*, Room GE			
10:00-10:20	**Coffee break**			

	Shortest Paths, Room GE	**Computational Geometry I**, Room GW	**Sequence alignment.** *SC: Matteo Comin*, Room SE	**Kernelization.** *SC: Marek Cygan*, Room SW
10:20-10:45	Daniel Delling, Andrew Goldberg, Thomas Pajor and Renato Werneck: *Robust Distance Queries on Massive Networks*	Michael Hoffmann, Vincent Kusters and Tillmann Miltzow: *Halving Balls in Deterministic Linear Time*	Sebastian Will and Peter F. Stadler: *A Common Framework for Linear and Cyclic Multiple Sequence Alignment Problem*	Marthe Bonamy and Łukasz Kowalik: *A 14k-kernel for Planar Feedback Vertex Set via Region Decomposition*
10:45-11:10	Davide Bilò, Luciano Gualà, Stefano Leucci and Guido Proietti: *Fault-Tolerant Approximate Shortest-Path Trees*	Matt Gibson, Kasturi Varadarajan and Xiaodong Wu: *Computing Regions Decomposable into m Stars*	Nicolas Boria, Adam Kurpisz, Samuli Leppänen and Monaldo Mastrolilli: *Improved Approximation for the Maximum Duo-Preservation String Mapping Problem*	Gregory Gutin, Stefan Kratsch and Magnus Wahlström: *Polynomial Kernels and User Reductions for the Workflow Satisfiability Problem*

11:10-11:35	Rachit Agarwal: *The Space-Stretch-Time Tradeoff in Distance Oracles*	Rafel Jaume, Matthias Henze, Micha Sharir, Rinat Ben-Avraham, Orit E. Raz, Balazs Keszegh and Igor Tubis: *Minimum Partial Matching and Hausdorff RMS-Distance Under Translation: Combinatorics and Algorithms*	Laxmi Parida, Cinzia Pizzi and Simona E. Rombo: *Entropic profiles, maximal motifs and the discovery of significant repetitions in genomic sequences*	N.R. Aravind, R.B. Sandeep and Naveen Sivadasan: *On Polynomial Kernelization of H-free Edge Deletion*
11:35-12:00	Alexandros Efentakis and Dieter Pfoser: *GRASP. Extending Graph Separators for the single-source shortest-path problem*	Sariel Har-Peled and Subhro Roy: *Approximating the Maximum Overlap of Polygons under Translation*	Eugene Myers: *Efficient Alignment Discovery amongst Noisy Long Reads*	Vuong Anh Quyen and Stefan Kratsch: *On kernels for covering and packing ILPs with small coefficients*
12:00-13:15	***Lunch & coffee***			
13:15-13:30			NOKIA (ALGO sponsor): *For a World in Motion*, Room GW	
13:30-13:45				
13:45-14:45	**Invited talk (IPEC):** Hans Bodlaender (Utrecht University): *Lowerbounds for Kernelization*, Room GE			
14:45-15:05	**Coffee break**			

	Approximation Algorithms II, Room GE	**Convex Hulls, LPs, and Branch & Price**, Room GW	**Systems programming issues.** *SC: Tomas Vinar*, Room SE	**Degrees in graphs.** *SC: Pinar Heggernes*, Room SW
15:05-15:30	Alina Ene and Huy Nguyen: *From Graph to Hypergraph Multiway Partition: Is the Single Threshold the Only Route?*	Pankaj K. Agarwal, Sariel Har-Peled, Subhash Suri, Hakan Yıldız and Wuzhou Zhang: *Convex Hulls under Uncertainty*	Paola Bonizzoni, Gianluca Della Vedova, Yuri Pirola, Marco Previtali and Raffaella Rizzi: *Constructing String Graphs in External Memory*	Jannis Bulian and Anuj Dawar: *Graph Isomorphism Parameterized by Elimination Distance to Bounded Degree*
15:30-15:55	Parinya Chalermsook, Sandy Heydrich, Eugenia Holm and Andreas Karrenbauer: *Nearly Tight Approximability Results for Minimum Biclique Cover and Partition*	Martin Grohe, Kristian Kersting, Martin Mladenov and Aziz Erkal Selman: *Dimension Reduction via Colour Refinement*	Tomas Flouri, Alexandros Stamatakis, Kassian Kobert and Andre Aberer: *The divisible load balance problem and its application to phylogenetic inference*	Petr Golovach: *Editing to a Graph of Given Degrees*
15:55-16:20	Samuel Fiorini, R. Krithika, N.S. Narayanaswamy and Venkatesh Raman: *LP Approaches to Improved Approximation for Clique Transversal in Perfect Graphs*	Martijn van Brink and Ruben van der Zwaan: *A branch and price procedure for the container premarshalling problem*	Martin Muggli, Simon J. Puglisi and Christina Boucher: *Efficient Indexed Alignment of Contigs to Optical Maps*	Cristina Bazgan and André Nichterlein: *Parameterized Inapproximability of Degree Anonymization*
16:20-16:40	**Coffee break**			

	Dealing with Large Structures, Room GE	**Computational Geometry II**, Room GW	**Population genetics.** *SC: Laxmi Parida*, Room SE	**Lower bounds.** *SC: Martin Grohe*, Room SW
16:40-17:05	Mina Ghashami, Amey Desai and Jeff Phillips: *Improved Practical Matrix Sketching with Guarantees*	Siu-Wing Cheng, Liam Mencel and Antoine Vigneron: *A Faster Algorithm for Computing Straight Skeletons*	Niina Haiminen, Claude Lebreton and Laxmi Parida: *Best-Fit in Linear Time for Non-generative Population Simulation*	Igor Razgon: *No small nondeterministic read-once branching programs for CNFs of bounded treewidth*
17:05-17:30	Brian Dean, Rommel Jalasutram and Chad Waters: *Lightweight Approximate Selection*	Thomas Bläsius, Ignaz Rutter and Guido Brückner: *Complexity of Higher-Degree Orthogonal Graph Embedding in the Kandinsky Model*	Constantinos Tsirogiannis, Brody Sandel and Adrija Kalvisa: *New Algorithms for Computing Phylogenetic Biodiversity*	Holger Dell: *A simple proof that AND-compression of NP-complete problems is hard*
17:30-17:55	Karl Bringmann, Tobias Friedrich and Anton Krohmer: *De-anonymization of Heterogeneous Random Graphs in Quasilinear Time*	Michael Bekos, Thomas C. Van Dijk, Martin Fink, Philipp Kindermann, Stephen Kobourov, Sergey Pupyrev, Joachim Spoerhase and Alexander Wolff: *Improved Approximation Algorithms for Box Contact Representations*		Patrick Traxler: *The Relative Exponential Time Complexity of Approximate Counting Satisfying Assignments*
17:55-18:20		Sander Alewijnse, Quirijn Bouts and Alex Ten Brink: *Distribution-Sensitive Construction of the Greedy Spanner*		

THURSDAY, SEPTEMBER 11TH

	ATMOS	MASSIVE	WAOA	IPEC
09:00-10:00	**Invited talk (ATMOS):** Renato Werneck (Microsoft Research): *Building a Real-World Routing Engine*, Room GE			
10:00-10:20	**Coffee break**			
	Session #1, Room SW	**I/O and cache-oblivious algorithms**, Room SE	**Session #1**, Room GW	**Structural parameterization, treewidth.** *SC: Hans Bodlaender*, Room GE
10:20-10:45	Julian Dibbelt, Ben Strasser and Dorothea Wagner: *Delay-Robust Journeys in Timetable Networks with Minimum Expected Arrival Time*	Lars Arge and Mikkel Thorup: *RAM Efficient external memory algorithms*	Marie G. Christ, Lene Favrholdt and Kim S. Larsen: *Online Multi-Coloring with Advice*	Zoltán Király: *Shortest Paths in Nearly Conservative Digraphs*
10:45-11:10	Tim Nonner and Marco Laumanns: *Shortest Path with Alternatives for Uniform Arrival Times: Algorithms and Experiments*	Peyman Afshani and Nodari Sitchinava: *I/O-efficient range minima queries*	Martin Böhm, Jiří Sgall and Pavel Veselý: *Online Colored Bin Packing*	Janka Chlebikova and Morgan Chopin: *The Firefighter Problem: A Structural Analysis*
11:10-11:35	Alessio Cionini, Gianlorenzo D'Angelo, Mattia D'Emidio, Daniele Frigioni, Kalliopi Giannakopoulou, Andreas Paraskevopoulos and Christos Zaroliagis: *Engineering Graph-Based Models for Dynamic Timetable Information Systems*	Francesco Silvestri: *Subgraph enumeration in massive graphs*	Martin Böhm, Jiří Sgall, Rob van Stee and Pavel Veselý: *Better Algorithms for Online Bin Stretching*	Jan Obdrzalek, Jakub Gajarský, Felix Reidl, Peter Rossmanith, Fernando Sanchez Villaamil, Somnath Sikdar and Sebastian Ordyniak: *Finite Integer Index of Pathwidth and Treewidth*
11:35-12:00	Martin Lemnian, Ralf Rückert, Steffen Rechner, Christoph Blendinger and Matthias Müller-Hannemann: *Timing of Train Disposition: Towards Early Passenger Rerouting in Case of Delays*	Pooya Davoodi, Jeremy Fineman, John Iacono and Ozgur Ozkan: *Cache-oblivious persistence*	Brian Brubach: *Online square-into-square packing with fixed and variable height shelves*	Julien Baste and Ignasi Sau: *The role of planarity in connectivity problems parameterized by treewidth*
12:00-13:15	***Lunch & coffee***			
13:15-13:30			Neurosoft (ALGO sponsor): *Looking for the meaning of data — big data applications in Intelligent Transportation Systems*, Room GW	
13:30-13:45				
13:45-14:45	**Invited talk (WAOA):** Aleksander Mądry (EPFL): *From Graphs to Matrices, and Back: Bridging the Combinatorial and the Continuous*, Room GE			
14:45-15:05	**Coffee break. IPEC poster session**			

	Session #2, Room SW	**Parallel and distributed algorithms**, Room SE	**Session #2**, Room GW	**Invited Tutorial.** *SC: Pinar Heggernes*, Room GE
15:05-15:30	Vianney Boeuf and Frédéric Meunier: *Online Train Shunting*	Erika Duriakova, Neil Hurley, Deepak Ajwani and Alessandra Sala: *Balancing Synchronization and Consistency: Engineering Semi-synchronous Community Finding Algorithms*	Vincent Cohen-Addad, Zhentao Li, Claire Mathieu and Ioannis Milis: *Energy-efficient algorithms for non-preemptive speed-scaling*	Stefan Szeider: *Backdoors, Satisfiability, and Problems Beyond NP*
15:30-15:55	Markus Reuther, Ralf Borndoerfer and Thomas Schlechte: *A Coarse-To-Fine Approach to the Railway Rolling Stock Rotation Problem*	Zengfeng Huang, Bozidar Radunovic, Milan Vojnovic and Qin Zhang: *Communication Complexity of Distributed Computation of Approximate Maximum Matching*	Jurek Czyzowicz, Evangelos Kranakis, Danny Krizanc, Lata Narayanan and Jaroslav Opatrny: *Optimal online and offline algorithms for robot-assisted restoration of barrier coverage*	
15:55-16:20	Ward Passchyn, Dirk Briskorn and Frits C. R. Spieksma: *Mathematical programming models for scheduling locks in sequence*	Dominik Köppl: *Dynamic Skyline computation with the skyline breaker algorithm*	Martina Eikel, Christian Scheideler and Alexander Setzer: *Minimum Linear Arrangement of Series-Parallel Graphs*	
16:20-16:40	**Coffee break. IPEC poster session**			

	Session #3, Room SW	**Data structures and streaming**, Room SE	**Session #3**, Room GW	**Languages, automata and logic.** *SC: Holger Dell*, Room GE
16:40-17:05	Moritz Baum, Julian Dibbelt, Lorenz Hübschle-Schneider, Thomas Pajor and Dorothea Wagner: *Speed-Consumption Tradeoff for Electric Vehicle Route Planning*	Mina Ghashami, Jeff M. Phillips and Feifei Li: *Continuous matrix approximation on distributed data*	Rudolf Scheifele: *Steiner Trees with Bounded RC-Delay*	Tatsuya Akutsu, Jesper Jansson, Atsuhiro Takasu and Takeyuki Tamura: *On the Parameterized Complexity of Associative and Commutative Unification*
17:05-17:30	Esther Arkin, Paz Carmi, Matthew Katz, Joseph Mitchell and Michael Segal: *Locating Battery Charging Stations to Facilitate Almost Shortest Paths*	Zhewei Wei and Ke Yi: *On range summary queries*	Nachshon Cohen and Zeev Nutov: *Approximating {0,1,2}-Survivable Networks with Minimum Number of Steiner Points*	Simone Bova, Robert Ganian and Stefan Szeider: *Quantified Conjunctive Queries on Partially Ordered Sets*
17:30-17:55	Markus Reuther: *Local Search for the Resource Constrained Assignment Problem*	**MASSIVE business meeting**, Room SE	Sin-Shuen Cheung: *The submodular facility location problem and the submodular joint replenishment problem*	Ran Ben-Basat, Ariel Gabizon and Meirav Zehavi: *The k-Distinct Language: Parameterized Automata Constructions*

17:55-18:00	Alicia De-Los-Santos, Gilbert Laporte, Juan A. Mesa and Federico Perea: *Simultaneous frequency and capacity setting for rapid transit systems with a competing mode and capacity constraints*	**Session #4**, Room GW	**IPEC business meeting**, Room GE
18:00-18:20		Ojas Parekh and David Pritchard: *Generalized Hypergraph Matching via Iterated Packing and Local Ratio*	
18:20-18:25			
18:25-18:50		Guilherme D. Da Fonseca, Vinícius G. Pereira de Sá and Celina M. H. de Figueiredo: *Linear-Time Approximation Algorithms for Unit Disk Graphs*	
18:50-19:15			
19:15-22:00	**Barbecue in botanic garden**		

FRIDAY, SEPTEMBER 12TH

	ALGOSENSORS	WAOA	IPEC
09:00-10:00	**Invited talk (ALGOSENSORS):** Phillip Gibbons (Intel Labs Pittsburgh): *Algorithmic Challenges in M2M*, Room GE		
10:00-10:20	**Coffee break**		
	Robot Planning, Room SE	**Session #5**, Room GW	**FPT and exact algorithms.** *SC: Hans Bodlaender*, Room GE
10:20-10:45	Jurek Czyzowicz, Leszek Gąsieniec, Konstantinos Georgiou, Evangelos Kranakis and Fraser MacQuarrie: *The Multi-source Beachcombers' Problem*	Andreas Wierz, Britta Peis and Tom Mccormick: *Primal-Dual Algorithms for Precedence Constrained Covering Problems*	Vikraman Arvind and Gaurav Rattan: *The Parameterized Complexity of Geometric Graph Isomorphism*
10:45-11:10	Eric Aaron, Danny Krizanc and Elliot Meyerson: *Multi-Robot Foremost Coverage of Time-varying Graphs*	Jaroslaw Byrka and Bartosz Rybicki: *Improved approximation algorithm for Fault-Tolerant Facility Placement*	Henry Perret Du Cray and Ignasi Sau: *Improved FPT algorithms for weighted independent set in bull-free graphs*
11:10-11:35	Christian Ortolf and Christian Schindelhauer: *Strategies for Parallel Unaware Cleaners*	Yann Disser, Stefan Kratsch and Manuel Sorge: *The Minimum Feasible Tileset problem*	Ron Y. Pinter, Hadas Shachnai and Meirav Zehavi: *Improved Parameterized Algorithms for Network Query Problems*

11:35-12:00	Serafino Cicerone, Gabriele Di Stefano and Alfredo Navarra: *Gathering of Oblivious Robots over Fixed Points*	Alexander Ageev and Alexander Kononov: *Improved Approximations for the Max k-Colored Clustering Problem*	Mathieu Chapelle, Manfred Cochefert, Dieter Kratsch, Romain Letourneur and Mathieu Liedloff: *Exact Exponential Algorithms to Find a Tropical Connected Set of Minimum Size*
12:00-13:30	**Lunch & coffee**		

	Algorithms & Data Structures on Graphs, Room SE	**Invited Tutorial**, Room GW	**Parameterized study.** *SC: Holger Dell*, Room GE
13:30-13:55	Avery Miller and Andrzej Pelc: *Fast Rendezvous with Advice*	Monaldo Mastrolilli: *The Lasserre/Sum-of-Squares Hierarchy: a gentle introduction*	Sebastian Ordyniak and Alexandru Popa: *A Parameterized Study of Maximum Generalized Pattern Matching Problems*
13:55-14:20	Emmanuel Godard and Dorian Mazauric: *Computing the Dynamic Diameter of Non-Deterministic Dynamic Networks is Hard*		Rajesh Chitnis, Hossein Esfandiari, Mohammadtaghi Hajiaghayi, Rohit Khandekar, Guy Kortsarz and Saeedreza Seddighin: *A Tight Algorithm for Strongly Connected Steiner Subgraph On Two Terminals With Demands*
14:20-14:45	Stefan Dobrev and Milan Plžík: *Improved Spanners in Networks with Symmetric Directional Antennas*		V. Arvind, Johannes Köbler, Sebastian Kuhnert and Jacobo Torán: *Solving Linear Equations Parameterized by Hamming Weight*
14:45-15:05	**Coffee break**		

	Wireless Networks, Room SE	**Session #6**, Room GW	**Reconfiguration problems.** *SC: Marek Cygan*, Room GE
15:05-15:30	Rom Aschner, Gui Citovsky and Matthew Katz: *Exploiting Geometry in the SINRk Model*	Antonios Antoniadis, Neal Barcelo, Michael Nugent, Kirk Pruhs and Michele Scquizzato: *A o(n)-Competitive Deterministic Algorithm for Online Matching on a Line*	Matthew Johnson, Dieter Kratsch, Stefan Kratsch, Viresh Patel and Daniel Paulusma: *Finding Shortest Paths between Graph Colourings*
15:30-15:55	Yves Brise, Kevin Buchin, Dustin Eversmann, Michael Hoffmann and Wolfgang Mulzer: *Interference Minimization in Asymmetric Sensor Networks*	Lene Favrholdt and Jesper With Mikkelsen: *Online Dual Edge Coloring of Paths and Trees*	Amer Mouawad, Naomi Nishimura, Venkatesh Raman and Marcin Wrochna: *Reconfiguration over tree decompositions*
15:55-16:20	Jonathan Gagnon and Lata Narayanan: *Minimum Latency Aggregation Scheduling in Wireless Sensor Networks*	Jiří Sgall and Gerhard J. Woeginger: *Multiprocessor jobs, preemptive schedules, and one-competitive online algorithms*	Paul Bonsma, Amer Mouawad, Naomi Nishimura and Venkatesh Raman: *The Complexity of Bounded Length Graph Recoloring and CSP Reconfiguration*

16:20-16:40	**Coffee break**

16:40-17:05	
17:05-17:30	
17:30-17:55	

Session #7, Room GW
Wolfgang Dvořák and Monika Henzinger: *Online Ad Assignment with an Ad Exchange*
Tomasz Jurdziński, Dariusz Kowalski and Krzysztof Loryś: *Online Packet Scheduling under Adversarial Jamming*
Martijn van Ee and Rene Sitters: *Routing under Uncertainty: the a priori Traveling Repairman Problem*

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