

# HALG 2016 Program

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<http://highlightsofalgorithms.org/>

AMPHITHEATER BUFFON, UNIVERSITÉ PARIS DIDEROT

## Monday, June 6, 2016

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**8:50-9:00** WELCOME REMARKS <Session chair: Artur Czumaj>

**9:00-10:30** INVITED TALKS

**9:00-10:00** Daniel Marx (Hungarian Academy of Sciences)

The optimality program for parameterized algorithms

**10:00-10:30** Stephan Kreutzer (TU Berlin)

The directed grid theorem (joint work with Ken-ichi Kawarabayashi)

**10:30-11:00** Coffee break

**11:00-12:30** INVITED TALKS <Session chair: Christian Sohler>

**11:00-11:30** Ken-ichi Kawarabayashi (National Institute of Informatics, Japan)

Deterministic global minimum cut of a simple graph in near-linear time (joint work with Mikkel Thorup)

**11:30-12:00** Clifford Stein (Columbia University)

Faster fully dynamic matchings with small approximation ratios (joint work with Aaron Bernstein)

**12:00-12:30** Monika Henzinger (Universität Wien)

Using the primal-dual method to design dynamic graph algorithms (joint work with Sayan Bhattacharya and Giuseppe F. Italiano)

**12:30-14:00** Lunch break

**14:00-16:00** INVITED TALKS <Session chair: Stefano Leonardi>

**14:00-15:00** Costis Daskalakis (MIT)

Reduction from mechanism design to optimization

**15:00-15:30** Stephen Alstrup (University of Copenhagen)

Recent results in labeling schemes

**15:30-16:00** Shiri Chechik (Tel Aviv University)

Approximate distance oracles with improved bounds

**16:00-16:30** Coffee break

**16:30-18:30** INVITED TALKS <Session chair: Pierre Fraigniaud>

**16:30-17:00** Anupam Gupta (CMU)

Greedy algorithms for Steiner forest (joint work with Amit Kumar)

**17:00-17:30** Nikhil Bansal (Eindhoven University of Technology)

Minimizing flow-time on unrelated machines (joint work with Janardhan Kulkarni)

**17:30-18:00** Yossi Azar (Tel Aviv University)

Speed scaling in the non-clairvoyant model (joint work with Nikhil Devanur, Zhiyi Huang, and Debmalya Panigraha)

## Tuesday, June 7, 2016

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**9:00-10:30** INVITED TALKS <Session chair: Anupam Gupta>

**9:00-10:00** Virginia Vassilevska Williams (Stanford)

On complexity/hardness in P

**10:00-10:30** Arturs Backurs (MIT)

Edit distance cannot be computed in strongly subquadratic time (unless SETH is false) (joint work with Piotr Indyk)

**10:30-11:00** Coffee break

**11:00-12:30** INVITED TALKS <Session chair: Nikhil Bansal>

**11:00-11:30** Ilias Diakonikolas (University of Southern California)

Hypothesis testing for structured probability distributions (joint work with Daniel M. Kane and Vladimir Nikishkin)

**11:30-12:00** Christian Sohler (TU Dortmund)

Testing cluster structure of graphs (joint work with Artur Czumaj and Pan Peng)

**12:30-14:00** Lunch break + POSTER PRESENTATIONS

**14:00-16:00** SHORT CONTRIBUTED TALKS (parallel sessions, in Amphitheater 1 and 2 of Building Olympe de Gouges)

**Session A** (Amphitheater 1) <Session chair: Robi Krauthgamer>

Parinya Chalermsook, Pattern-avoiding Access in Binary Search Trees

John Iacono, Weighted Dynamic Finger in Binary Search Trees

Ferdinando Cicalese, On the Simultaneous Optimization of Worst and Expected Testing Cost in Decision Tree Problems

Thatchaphol Saranurak, Unifying and Strengthening Hardness for Dynamic Problems via the Online Matrix-Vector Multiplication Conjecture

Shashwat Garg, Improved Algorithmic Bounds for Discrepancy of Sparse Set Systems

Khaled Elbassioni, Finding Small Hitting Sets in Infinite Range Spaces of Bounded VC-dimension

Samuel Hopkin, SoS and Planted Clique: an Almost Optimal Lower Bound

Klaus-Tycho Förster, On Consistent Migration of Flows in SDNs

Amitabh Trehan, Compact Routing Messages in Self-Healing Trees

Peter Davies, Faster Deterministic Communication in Radio Networks

Emanuele Natale, Dynamics, Consensus, and Distributed Community Detection

Petr Kuznetsov, On the Space Complexity of Set Agreement

**Session B** (Amphitheater 2) <Session chair: Artur Czumaj>

Erik Jan van Leeuwen, Do Long Paths Block the Way to Easy Independence?

Valia Mitsou, Double-exponential and Triple-exponential Bounds for Choosability Problems Parameterized by Treewidth

Seun William Umboh, Robust Algorithms for Noisy Minor Free and Bounded Treewidth Graphs

Pavel Dvořák, Parameterized Complexity of Length-bounded Cuts and Multi-cuts

Rajesh Chitnis, Parameterized and Promised Streaming Algorithms

Mateus de Oliveira Oliveira, An Algorithmic Metatheorem for Directed Treewidth

Pavel Kolev, A Note on Spectral Clustering

Tselil Schramm, Overcomplete Tensor Decomposition: Fast Spectral Algorithms from Sum-of-Squares Analyses

Aurélien Ooms, Solving k-SUM Using Few Linear Queries

Thomas Kesselheim, Secretary Problems with Non-Uniform Arrival Order

Rani Izsak, The Supermodular Degree

Paul Duetting, Algorithms as Mechanisms: The Price of Anarchy of Relax-and-Round

**16:00-16:30** Coffee break + POSTER PRESENTATIONS

**16:30-17:30** INVITED TALK <Session chair: Claire Mathieu>

**16:30-17:30** Ryan Williams (Stanford)

New applications of the polynomial method to algorithm design

**17:40-18:40** SHORT CONTRIBUTED TALKS (parallel sessions, in Amphitheater 1 and 2 of Building Olympe de Gouges)

**Session A** (Amphitheater 1) <Session chair: Alexandr Andoni>

Bartosz Walczak, Outer Common Tangents and Nesting of Convex Hulls in Linear Time and Constant Workspace

Nicolas Schabanel, Folding Turing is Hard but Feasible

Nithin Varma, Erasure-Resilient Property Testing

Arkadiusz Socała, Tight Lower Bounds on Graph Embedding Problems

Elazar Goldenberg, Streaming Algorithms for Embedding and Computing Edit Distance in the Low Distance Regime

Arnold Filtser. On Notions of Distortion

**Session B** (Amphitheater 2) <Session chair: Aleksander Madry>

Jiří Sgall, General Caching Is Hard: Even with Small Pages

Moti Medina, Better Online Deterministic Packet Routing on Grids

Kevin Schewior, Improvements on Online Machine Minimization

Jakub Łącki, Algorithmic Complexity of Power Law Networks

Sebastian Krinninger, A Deterministic Almost-Tight Distributed Algorithm for Approximating Single-Source Shortest Paths

**19:15-20:15**(or shorter) BUSINESS MEETING

## Wednesday, June 8, 2016

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**9:00-10:30** INVITED TALKS <Session chair: Pino Italiano>

**9:00- 9:30** Greg Bodwin (Stanford)

The  $4/3$  additive spanner exponent is tight (joint work with Amir Abboud)

**9:30-10:00** Huacheng Yu (Stanford)

An improved combinatorial algorithm for Boolean matrix multiplication

**10:00-10:30** Ola Svensson (EPFL)

Approximating ATSP by relaxing connectivity

**10:30-11:00** Coffee break + POSTER PRESENTATIONS

**11:00-12:30** INVITED TALKS <Session chair: Piotr Sankowski>

**11:00-12:00** Aleksander Madry (MIT)

Fast graph algorithms and continuous optimization

**12:00-12:30** Shayan Oveis Gharan (University of Washington)

Effective-resistance-reducing flows, spectrally thin trees, and asymmetric TSP (joint work with Nima Anari)

**12:30-14:00** Lunch break

**14:00-15:30** INVITED TALKS <Session chair: Ola Svensson>

**14:00-15:00** Aaron Sidford (MIT)

Faster algorithms for convex optimization

**15:00-15:30** David Mount (University of Maryland)

A fast and simple algorithm for computing approximate Euclidean minimum spanning trees (joint work with Sunil Arya)

**15:30-16:00** Coffee break

**16:00-17:30** INVITED TALKS <Session chair: Aleksander Madry>

**16:00-16:30** Moshe Lewenstein (Bar Ilan University)

Clustered integer 3SUM via additive combinatorics (joint work with Timothy M. Chan)

**16:30-17:00** Alexandr Andoni (Columbia University)

Optimal data-dependent hashing for approximate near neighbors (joint work with Ilya Razenshteyn)

**17:00-17:30** Robert Krauthgamer (Weizmann Institute)

Sketching and embedding are equivalent for norms (joint work with Alexandr Andoni and Ilya P. Razenshteyn)

**17:30** CONFERENCE ADJOURNED