

TUESDAY, MORNING



8h30–9h35, Invited speaker 1

Amphitheater 1A

chair David Woodruff

8h30 Welcome words

8h35 Santosh Vempala

The Manifold Joys of Sampling in High Dimension

10h00–12h05, Paper session 1

Amphitheater 1A

Graph algorithms
chair Nikhil Bansal

Amphitheater 4C

Games and verification
chair Sylvain Schmitz

Amphitheater 9E

Sketching and streaming
chair Frédéric Magniez

Amphitheater 10E

Coding theory
chair Fabrizio Grandoni

10h00 Sebastian Forster
Tijn de Vos ←
Faster Cut Sparsification of Weighted Graphs

Léonard Brice ←
Jean-Francois Raskin
Marie Van Den Bogaard
The complexity of SPEs in Mean-payoff Games

Aviad Rubinfeld ←
Junyao Zhao
Maximizing Non-Monotone Submodular Functions over Small Subsets: Beyond 1/2-Approximation

Tal Yankovitz ←
Gil Cohen
LCC and LDC: Tailor-made Distance Amplification and a Refined Separation

10h25 Tianyi Zhang ←
Faster Cut-Equivalent Trees in Simple Graphs

Benjamin Bordais
Damien Busatto-Gaston ←
Shibashis Guha
Jean-Francois Raskin
Strategy Synthesis for Global Window PCTL

Moran Feldman
Paul Liu
Ashkan Norouzi-Fard ←
Ola Svensson
Rico Zenklusen
Streaming Submodular Maximization under Matroid Constraints

Nicolas Resch ←
Chen Yuan
Threshold Rates of Code Ensembles: Linear is Best

10h50 Mingyang Deng
Yael Kirkpatrick ←
Victor Rong
Virginia Vassilevska Williams
Ziqian Zhong
New Additive Approximations for Shortest Paths and Cycles

Hugo Gimbert
Corto Mascle ←
Anca Muscholl
Igor Walukiewicz
Distributed Controller Synthesis for Deadlock Avoidance

Artur Czumaj ←
Shaofeng H.-C. Jiang
Robert Krauthgamer
Pavel Veselý
Streaming Algorithms for Geometric Steiner Forest

Dean Doron ←
Mary Wootters
High-Probability List-Recovery, and Applications to Heavy Hitters

11h15 Caroline Brosse
Vincent Limouzy
Arnaud Mary ←
Polynomial Delay Algorithm for Minimal Chordal Completions

Xavier Allamigeon
Stéphane Gaubert ←
Ricardo D. Katz
Mateusz Skomra
Universal Complexity Bounds Based on Value Iteration and Application to Entropy Games

Moses Charikar ←
Erik Waingarten
Polylogarithmic Sketches for Clustering

Ittai Rubinfeld ←
Explicit and Efficient Construction of (nearly) Optimal Rate Codes for the Binary Deletion Channel and the Poisson Repeat Channel

11h40 Konrad Majewski
Tomáš Masařík ←
Jana Novotná
Karolina Okrasa
Marcin Pilipczuk
Paweł Rzażewski
Marek Sokołowski
Max Weight Independent Set in Graphs with no Long Claws: An Analog of the Gyárfás' Path Argument

Nathalie Bertrand
Nicolas Markey
Ocan Sankur
Nicolas Waldburger ←
Parameterized Safety Verification of Round-based Shared-memory Systems

Amit Deshpande ←
Rameshwar Pratap
One-pass Additive-error Subset Selection for ℓ_p Subspace approximation

Zhenjian Lu
Igor Oliveira
Marius Zimand ←
Optimal Coding Theorems in Time-Bounded Kolmogorov Complexity

TUESDAY, AFTERNOON



14h00–15h00, Invited speaker 2

Amphitheater 1A

chair David Woodruff

14h00

Leslie Ann Goldberg

Some new (and old) Results on Contention Resolution

15h30–17h10, Paper session 2

Amphitheater 1A

Quantum

chair Sevag Gharibian

Amphitheater 4C

Computability and dynamical systems

chair Dmitry Chistikov

Amphitheater 9E

Reconstruction problems

chair Aviad Rubinfeld

Amphitheater 10E

Game theory, networks, and distributed

chair Nikhil Bansal

15h30

Chi-Ning Chou

Peter Love

Jonathan Shi

Juspreet Singh Sandhu ←

Limitations of Local Quantum Algorithms on Random MAX-k-XOR and Beyond

Djamel Eddine Amir ←

Mathieu Hoyrup

Computability of Finite Simplicial Complexes

Josep Diaz ←

Varsha Dani

Cristopher Moore

Thomas Hayes

Improved Reconstruction of Random Geometric Graphs

William Kuszmaul

Shyam Narayanan ←

Optimal Time-Backlog Tradeoffs for the Variable-Processor Cup Game

15h55

Penghui Yao

Yitong Yin

Xinyuan Zhang ←

Polynomial-Time Approximation of Zero-Free Partition Functions

Donald Stull ←

The Dimension Spectrum

Conjecture for Planar Lines

Andrew McGregor

Rik Sengupta ←

Graph Reconstruction from Random Subgraphs

Aaron Berger

William Kuszmaul

Adam Polak ←

Jonathan Tidor

Nicole Wein

Memoryless Worker-Task Assignment with Polylogarithmic Switching Cost

16h20

Jaikumar Radhakrishnan

Shyam Dhamapurkar

Shubham Pawar ←

Set Membership with Two Classical and Quantum Bit Probes

Ville Salo

Ilkka Törmä ←

What can Oracles Teach us about the Ultimate Fate of Life?

Akash Kumar

Anand Louis

Rameesh Paul ←

Exact Recovery Algorithm for Planted Bipartite Graph in Semi-random Graphs

Stavros Ioannidis ←

Bart de Keijzer

Carmine Ventre

Strong Approximations and Irrationality in Financial Networks with Derivatives

16h45

Sourav Chakraborty

Chandrima Kayal ←

Manaswi Paraashar

Separations between Combinatorial Measures for Transitive Functions

Jakob Piribauer ←

Ocan Sankur

Christel Baier

The Variance-penalized Stochastic Shortest Path Problem

Guy Blanc

Jane Lange ←

Li-Yang Tan

Reconstructing Decision Trees

Tobias Friedrich

Hans Gawendowicz ←

Pascal Lenzen

Anna Melnichenko

Social Distancing Network Creation

18h00–22h00, Cocktail and exhibition opening

Université Paris Cité

12, rue de l'École de Médecine
75006 Paris

Groups will gather at the conference location and staff members will lead them to the cocktail location.

For interested participants, a guided visit of the museum of medical history is organised.

WEDNESDAY, MORNING



8h30–9h30, Invited speaker 3

Amphitheater 1A

chair Paul Goldberg

8h30

Constantinos Daskalakis

Equilibrium Computation, Deep Learning, and Multi-Agent (Reinforcement) Learning

10h00–12h05, Paper session 3

Amphitheater 1A

Counting and sampling
chair Sevag Gharibian

Amphitheater 4C

Transducers and automata
chair Nathalie Bertrand

Amphitheater 9E

Property testing
chair Ilan Newman

Amphitheater 10E

Dynamic algorithms and
sensitivity oracles
chair Adrian Vladu

10h00

Charilaos Efthymiou ←
*On Sampling Symmetric
Gibbs Distributions on Sparse
Random Graphs and
Hypergraphs.*

Mika Göös
Stefan Kiefer
Weiqiang Yuan ←
*Lower Bounds for
Unambiguous Automata via
Communication Complexity*

Arijit Ghosh
Gopinath Mishra
Rahul Raychaudhury
Sayantan Sen ←
*Tolerant Bipartiteness Testing
in Dense Graphs*

Josh Alman
Dean Hirsch ←
*Parameterized Sensitivity
Oracles and Dynamic
Algorithms using Exterior
Algebras*

10h25

Ivona Bezakova
Andreas Galanis ←
Leslie Goldberg
Daniel Stefankovic
*Fast sampling via Spectral
Independence beyond
Bounded-degree Graphs*

Antonio Casares ←
Thomas Colcombet
Karoliina Lehtinen
*On the Size of
Good-for-games Rabin
Automata and its Link with
the Memory in Muller Games*

Louis Esperet ←
Sergey Norin
*Testability and Local
Certification of Monotone
Properties in Minor-closed
Classes*

Surender Baswana
Koustav Bhanja ←
Abhyuday Pandey
*Minimum+1 (s,t)-cuts and
Dual Edge Sensitivity Oracle*

10h50

Amin Coja-Oghlan
Andreas Galanis
Leslie Ann Goldberg
Jean Bernoulli
Ravelomanana ←
Daniel Stefankovic
Eric Vigoda
*Metastability of the Potts
Ferromagnet on Random
Regular Graphs*

Léo Exibard ←
Emmanuel Filiot
Ayrat Khalimov
*A Generic Solution to
Register-bounded Synthesis
With an Application to
Discrete Orders*

Omri Ben-Eliezer
Shoham Letzter ←
Erik Waingarten
*Finding Monotone Patterns
in Sublinear Time, Adaptively*

Davide Bilò
Keerti Choudhary
Sarel Cohen
Tobias Friedrich
Martin Schirneck ←
*Deterministic Sensitivity
Oracles for Diameter,
Eccentricities and All Pairs
Distances*

11h15

Andreas Galanis ←
Daniel Stefankovic
Eric Vigoda
*Approximating Observables is
as Hard as Counting*

León Bohn ←
Christof Löding
*Passive Learning of
Deterministic Büchi
Automata by Combinations
of DFAs*

Talya Eden ←
Dana Ron
Will Rosenbaum
*Almost Optimal Bounds for
Sublinear-Time Sampling of
k-Cliques in Bounded
Arboricity Graphs*

Aaron Bernstein
Jan van den Brand ←
Maximilian Probst
Danupon Nanongkai
Thatchaphol Saranurak
Aaron Sidford
He Sun
*Fully-Dynamic Graph
Sparsifiers Against an
Adaptive Adversary*

11h40

Guoliang Qiu
Yanheng Wang ←
Chihao Zhang
*A Perfect Sampler for
Hypergraph Independent Sets*

Moses Ganardi ←
Rupak Majumdar
Andreas Pavlogiannis
Lia Schütze
Georg Zetsche
*Reachability in Bidirected
Pushdown VASS*

Karl Bringmann
Alejandro Cassis
Nick Fischer ←
Vasileios Nakos
*Improved Sublinear-Time
Edit Distance for
Preprocessed Strings*

Aleksander B. G.
Christiansen ←
Eva Rotenberg
*Fully-dynamic $\alpha + 2$
Arboricity Decomposition
and Implicit Colouring.*

WEDNESDAY, AFTERNOON



14h00–16h05, Best papers session

Amphitheater 1A

chair Mikołaj Bojańczyk and David Woodruff

- 14h00 | Joakim Blikstad ←
Sublinear-round Parallel Matroid Intersection
- 14h25 | Jakub Tětek ←
Approximate Triangle Counting via Sampling and Fast Matrix Multiplication
- 14h50 | Gaëtan Douéneau-Tabot ←
Hiding Pebbles when the Output Alphabet is Unary
- 15h15 | Ilan Newman
Nithin Varma ←
Strongly Sublinear Algorithms for Testing Pattern Freeness
- 15h40 | Jakub Gajarský
Michał Pilipczuk ←
Wojciech Przybyszewski
Szymon Toruńczyk
Twin-width and Types

16h45–17h30, EATCS Award 2022

Amphitheater 1A

chair Jean-François Raskin

- 16h45 | Patrick Cousot
Abstraction of Hybrid Semantics

17h30–19h30, EATCS general assembly

Amphitheater 1A

Award ceremony

- ICALP Best Paper Awards
- EATCS Distinguished Dissertation Award
- Presburger Award
- EATCS Award
- Gödel Prize

ICALP Business meeting

- Report on EATCS activities
- Appointments of new EATCS fellows
- News about next ICALP
- Report on ICALP 2022

THURSDAY, MORNING



8h30–9h30, Invited speaker 4

Amphitheater 1A

chair Anca Muscholl

8h30

Albert Atserias

Towards a Theory of Algorithmic Proof Complexity: Motivation and Directions

10h00–12h05, Paper session 4

Amphitheater 1A

Computational Geometry

chair Claire Mathieu

Amphitheater 4C

Parameterized complexity

chair Yixin Cao

Amphitheater 9E

Approximation algorithms

chair Robert Krauthgamer

Amphitheater 10E

Optimization

chair Adrian Vladu

10h00

Arindam Khan
Aditya Lonkar ←
Arnab Maiti
Amatya Sharma
Andreas Wiese

Tight Approximation

Algorithms for

Two-dimensional Guillotine

Strip Packing

Ramanujan M. Sridharan ←
Daniel Lokshtanov
Fahad Panolan

Backdoor Sets on Nowhere

Dense SAT

Lin Chen ←

Xiaoyu Wu

Guochuan Zhang

Approximation Algorithms

for Interdiction Problem with

Packing Constraints

Shunhua Jiang

Bento Natura ←

Omri Weinstein

A Faster Interior-Point

Method for Sum-of-Squares

Optimization

10h25

Fedor Fomin
Petr Golovach
Tanmay Inamdar ←
Meirav Zehavi
(Re)packing Equal Disks into
Rectangle

Bingkai Lin
Xuandi Ren
Yican Sun
Xiuhan Wang ←
On Lower Bounds of
Approximating
Parameterized k -Clique

Karl Bringmann
Alejandro Cassis ←
Faster Knapsack Algorithms
via Bounded Monotone
Min-Plus-Convolution

Ming Ding ←
Rasmus Kyng
Peng Zhang
Two-Commodity Flow is
Equivalent to Linear
Programming under
Nearly-Linear Time
Reductions

10h50

Ziyun Huang ←
Jinhui Xu
In-Range Farthest Point
Queries and Related Problem
in High Dimensions

Ishay Haviv ←
A Fixed-Parameter Algorithm
for the Kneser Problem

Nikhil Ayyadevara
Rajni Dabas
Arindam Khan
K. V. N. Sreenivas ←
Near-optimal Algorithms for
Stochastic Online Bin Packing

Marcin Briański
Martin Koutecký
Daniel Král
Kristýna Pekárková ←
Felix Schröder
Characterization of Matrices
with Bounded Graver Bases
and Depth Parameters and
Applications to Integer
Programming

11h15

Jacobus Conradi ←
Anne Driemel
On Computing the k -Shortcut
Fréchet Distance

Clément
Legrand-Duchesne ←
Ashutosh Rai
Martin Tancer
Parameterized Complexity of
Untangling Knots

Amir Abboud
Vincent Cohen-Addad
Euiwoong Lee
Pasin Manurangsi ←
Improved Approximation
Algorithms and Lower
Bounds for
Search-Diversification
Problems

Ming Ding ←
Rasmus Kyng
Maximilian Probst Gutenberg
Peng Zhang
Hardness Results for
Laplacians of Simplicial
Complexes via Sparse-Linear
Equation Complete Gadgets

11h40

Klaus Jansen
Arindam Khan
Marvin Lira
K. V. N. Sreenivas ←
A PTAS for Packing
Hypercubes into a Knapsack

Alexandra Lassota
Aleksander Łukasiewicz ←
Adam Polak
Tight Vector Bin Packing with
Few Small Items via Fast
Exact Matching in
Multigraphs

Claire Mathieu
Hang Zhou ←
A PTAS for Capacitated
Vehicle Routing on Trees

Mitchell Black ←
Amir Nayyeri
Hodge Decomposition and
General Laplacian Solvers for
Embedded Simplicial
Complexes

THURSDAY, AFTERNOON



14h00–15h20, Presburger Award and Gödel Prize 2022

Amphitheater 1A

14h00 Dor Minzer
chair Mikołaj Bojańczyk
Recent advances in PCP and Boolean functions

14h25 Zvika Brakerski
Craig Gentry
Vinod Vaikuntanathan
chair Anca Muscholl
FHE and LWE, work together quite efficiently...

16h00–17h40, Paper session 5

Amphitheater 1A

Homomorphisms
chair Leslie Ann Goldberg

Amphitheater 4C

Process calculi and types
chair Paul-André Mellies

Amphitheater 9E

Learning theory, fairness, and privacy
chair Sylvain Perifel

Amphitheater 10E

Randomness in computation
chair Frédéric Magniez

16h00 Martin Grohe
Gaurav Rattan
Tim Seppelt ←
Homomorphism Tensors and Linear Equations

David Barozzini
Paweł Parys ←
Jan Wróblewski
Unboundedness for Recursion Schemes: A Simpler Type System

Jan Pich ←
Rahul Santhanam
Learning Algorithms versus Automatability of Frege Systems

Omar Alrabiah
Eshan Chattopadhyay
Jesse Goodman ←
Xin Li
João Ribeiro
Low-Degree Polynomials Extract from Local Sources

16h25 Sandra Kiefer ←
Daniel Neuen
A Study of Weisfeiler-Leman Colorings on Planar Graphs

Enguerrand Prebet ←
Functions and References in the pi-Calculus: Full Abstraction and Proof Techniques

Nathaniel Harms ←
Yuichi Yoshida
Downsampling for Testing and Learning in Product Distributions

Shir Peleg
Gil Cohen ←
Dor Minzer
Aaron Potechin
Amnon Ta-Shma
Expander Random Walks: The General Case and Limitations

16h50 Robert Ganian
Thekla Hamm
Viktoria Korchemna
Karolina Okrasa ←
Kirill Simonov
The Fine-Grained Complexity of Graph Homomorphism Parameterized by Clique-Width

Todd Schmid ←
Wojciech Rozowski
Alexandra Silva
Jurriaan Rot
Processes Parametrised by an Algebraic Theory

Niclas Boehmer
Tomohiro Koana ←
The Complexity of Finding Fair Many-to-One Matchings

Nikhil Bansal
Haotian Jiang ←
Raghu Meka
Sahil Singla
Makrand Sinha
Smoothed Analysis of the Koplós Conjecture

17h15 Balagopal Komarath
Anurag Pandey ←
C. S. Rahul
Monotone Arithmetic Complexity of Graph Homomorphism Polynomials

Jeremiah Blocki
Elena Grigorescu
Tamalika Mukherjee ←
Privately Estimating Graph Parameters in Sublinear time

Jakob Bæk Tejs Houen ←
Mikkel Thorup
Understanding the Moments of Tabulation Hashing via Chaos

19h30–22h30, Conference dinner

Restaurant “Le Train Bleu”, first floor of “Gare de Lyon” train station
Place Louis Armand, 75012 Paris

Groups will gather at the conference location and staff members will lead them to the restaurant.

FRIDAY, MORNING



8h30–9h30, Invited speaker 5

Amphitheater 1A

chair Artur Czumaj

8h30

Madhu Sudan

Streaming and Sketching Complexity of CSPs: A survey

10h00–12h05, Paper Session 6

Amphitheater 1A

Data structures, sorting, and string processing
chair David Woodruff

Amphitheater 4C

Graphs and complexity
chair Albert Atserias

Amphitheater 9E

Graph distances and fault tolerance
chair Yixin Cao

Amphitheater 10E

Complexity
chair Frédéric Magniez

10h00

Elahe Ghasemi
Vincent Jugé ←
Ghazal Khalighinejad
Galloping in Fast-growth
Natural Merge Sorts

Samir Datta
Chetan Gupta
Rahul Jain
Anish Mukherjee ←
Vimal Raj Sharma
Raghunath Tewari
Dynamic Meta-theorems for
Distance and Matching

Shimon Kogan
Merav Parter ←
Beating Matrix
Multiplication for
 $n^{1/3}$ -Directed Shortcuts

Karl Bringmann
Alejandro Cassis ←
Nick Fischer
Marvin Künnemann
A Structural Investigation of
the Approximability of
Polynomial-Time Problems

10h25

Takaaki Nishimoto ←
Shunsuke Kanda
Yasuo Tabei
An Optimal-Time RLBWT
Construction in BWT-runs
Bounded Space

Amina Doumane ←
Regular Expressions for
Tree-Width 2 Graphs

Michał Pilipczuk
Nicole Schirrmacher ←
Sebastian Siebertz
Szymon Toruńczyk
Alexandre Vigny
Algorithms and Data
Structures for First-order
Logic with Connectivity
under Vertex Failures

Theodoros Papamakarios ←
Alexander Razborov
Space Characterizations of
Complexity Measures and
Size-space Trade-offs in
Propositional Proof Systems

10h50

Arnab Ganguly
Rahul Shah
Sharma V. Thankachan ←
Fully Functional
Parameterized Suffix Trees in
Compact Space

Tamio-Vesa Nakajima ←
Stanislav Živný
Linearly Ordered Colourings
of Hypergraphs

Chao Liao
Qingyun Chen ←
Bundit Laekhanukit
Yuhao Zhang
Almost Tight Approximation
Hardness for Single-Source
Directed k -Edge-Connectivity

Amulya Musipatla ←
Ryan O'Donnell
Tselil Schramm
Xinyu Wu
The SDP Value of Random
2CSPs

11h15

Debarati Das
Tomasz Kociumaka ←
Barna Saha
Improved Approximation
Algorithms for Dyck Edit
Distance and RNA Folding

Niel De Beudrap
Aleks Kissinger ←
John van de Wetering
Circuit Extraction for
ZX-diagrams can be #P-hard

Parinya Chalermsook
Chien-Chung Huang
Danupon Nanongkai
Thatchaphol Saranurak
Pattara Sukprasert
Sorrachai
Yingchareonthawornchai ←
Approximating
 k -Edge-Connected Spanning
Subgraphs via a Near-Linear
Time LP Solver

Luyining Gan ←
Jie Han
The Decision Problem for
Perfect Matchings in Dense
Hypergraphs

11h40

Pawel Gawrychowski
Karol Pokorski ←
Sublinear Dynamic Interval
Scheduling (on one or
multiple machines)

Pawel Idziak
Piotr Kawałek
Jacek Krzaczkowski
Armin Weiß ←
Satisfiability Problems for
Finite Groups

David Caballero
Timothy Gomez ←
Robert Schweller
Tim Wylie
Unique Assembly Verification
in Two-Handed Self-Assembly

FRIDAY, AFTERNOON



14h00–15h00, Invited speaker 6

Amphitheater 1A

chair Mikołaj Bojańczyk

14h00 | Stéphan Thomassé
A brief tour in twin-width

15h30–16h45, Paper session 7

Amphitheater 1A

Online algorithms
chair Adrian Vladu

Amphitheater 4C

Decremental algorithms
chair Yixin Cao

Amphitheater 9E

Cryptography
chair Geoffroy Couteau

Amphitheater 10E

Counting and complexity
chair Sylvain Perifel

15h30 | Yossi Azar
Chay Machluf ←
Boaz Patt-Shamir
Noam Touitou
*Competitive Vertex
Recoloring*

Jakub Łącki
Yasamin Nazari ←
*Near-Optimal Decremental
Hopsets with Applications*

Zvika Brakerski
Nico Döttling
Sanjam Garg
Giulio Malavolta ←
*Factoring and Pairings are
not Necessary for iO:
Circular-Secure LWE Suffices*

Surya Mathialagan ←
Virginia Vassilevska Williams
Yinzhan Xu
*Listing, Verifying and
Counting Lowest Common
Ancestors in DAGs:
Algorithms and Fine-Grained
Lower Bounds*

15h55 | Ryder Chen
Jahanvi Khatkar
Seeun William Umboh ←
*Online Weighted Cardinality
Joint Replenishment Problem
with Delay*

Arun Jambulapati
Yujia Jin
Aaron Sidford
Kevin Tian ←
*Regularized Box-Simplex
Games and Dynamic
Decremental Bipartite
Matching*

Shweta Agrawal
Damien Stehle
Anshu Yadav ←
*Round-Optimal
Lattice-Based Threshold
Signatures, Revisited*

Calvin Beideman
Karthikeyan Chandrasekaran
Weihang Wang ←
*Counting and Enumerating
Optimum Cut Sets for
Hypergraph k -partitioning
problems for fixed k*

16h20 | Diptarka Chakraborty
Kushagra Chatterjee ←
Keerti Choudhary
*Pairwise Reachability Oracles
and Preservers under Failures*

Sepehr Assadi
Aaron Bernstein
Aditi Dudeja ←
*Decremental Matching in
General Graphs*

Justin Holmgren
Andrea Lincoln
Ron Rothblum ←
*Delegation for Search
Problems*

Pierre Bergé
Édouard Bonnet
Hugues Déprés ←
*Deciding Twin-width at most
4 is NP-complete*