



AALBORG UNIVERSITY
DENMARK

GETCO 2015, AALBORG UNIVERSITY

April 7-10 2015

Lecture Hall: Niels Jernes Vej 14 Auditorium 4-117 , Aalborg University

In recent years, topological methods and "ideology" have been used successfully to analyze and attack a number of problems in theoretical computer science and data analysis.

The workshop GETCO 2015 focuses on Applications of Algebraic Topology in Computer Science and Data Analysis. It aims to bring together mathematicians and computer scientists working in or interested in these subjects. Special emphasis will be given to

- Topological methods in Concurrency Theory.
- Persistent homology and data analysis
- Topological methods in Distributed computing
- Directed algebraic topology.

Conference Web site: <http://people.math.aau.dk/~fajstrup/KONFERENCER/GETCO2015/>

Local organizers: Lisbeth Fajstrup and Martin Raussen, Department of Mathematical Sciences.
Scientific Committee: Dmitry Feichtner-Kozlov (Univ. Bremen), Éric Goubault (École Polytechnique, Palaiseau), Lisbeth Fajstrup and Martin Raussen

We would like to invite researchers and PhD-students at Aalborg University to participate in the conference lectures.

Thanks to our sponsors:

- The [European Science Foundation Network, ACAT.](#)
- The [Carlsberg Foundation.](#)
- The [Department of Mathematical Sciences, Aalborg University](#)

Tuesday, April 7, 2015

- 11:00-11:45 Registration (Niels Jernes Vej 14, room 4.117)
11:45-12:45 Lunch break (NOVI canteen, Niels Jernes Vej 10)
12:45 Opening
13:00-13:40 Krzysztof Ziemianski: *Spaces of directed paths on semi-cubical sets*
13:50-14:30 Philippe Malbos: *Oriented Syzygies for Monoids*
14:30-15:00 Coffee break
15:00-15:40 Ulrich Bauer: *Induced Matchings and the Algebraic Stability of Persistence Barcodes*
15:50-16:30 Pawel Dlotko: *"Applied computational topology, where we should go now?"*

Wednesday, April 8, 2015

- 09:00-09:40 Sergio Rajsbaum: *Introduction to distributed computing analysis using combinatorial topology*
09:50-10:30 Armando Castañeda: *Computing independent set in an asynchronous distributed fault-tolerant environment*
10:30-11:00 Coffee break
11:00-11:40 Rick Jardine: *Path categories and algorithms*
11:50-12:30 Sanjeevi Krishnan: *Dynamic Sensor Networks (joint work with Rob Ghrist)*
12:30-14:00 Lunch break (NOVI canteen, Niels Jernes Vej 10)
14:00-14:40 Neza Mramor: *On perfect discrete Morse functions*
14:50-15:30 Primož Skraba: *Sheaves and Global Sections*
15:30-17:00 Poster session & reception

Thursday, April 9, 2015

- 09:00-09:40 Marian Mrozek: *Morse-Forman-Conley theory for combinatorial multivector fields*
09:50-10:30 Hubert Wagner: *Generalized similarity measure for texts*
10:30-10:50 Coffee break
10:50-11:30 Steve Oudot: *Reflections in quiver and persistence theories*
11:30-13:00 Lunch break (NOVI canteen, Niels Jernes Vej 10)
13:00-13:40 Emmanuel Haucourt: *Directions from Vector Fields*
13:50-14:30 Damien Imbs: *Untangling Partial Agreement: Iterated $\$x\$$ -Consensus Simulations*
15:30-18:30 Excursion - guided tour (Danish Distillers)
18:30- Conference dinner ([Prinses Juliana](#))

Friday, April 10, 2015

- 09:00-09:40 Claudia Landi: *Reducing Complexes in Multidimensional Persistent Homology*
- 09:50-10:30 Patrizio Frosini: *Geometric shape comparison via G-invariant non-expansive operators and G-invariant persistent homology*
- 10:30-11:00 Coffee break
- 11:00-11:40 Petr Kuznetsov: *"Generalized Asynchronous Computability Theorem"*
- 11:50-12:30 Thomas Nowak: *Point-Set Topology for Impossibility Results in Distributed Computing*
- 12:30-14:00 Lunch break (NOVI canteen, Niels Jernes Vej 10)
- 14:00-14:40 Samuel Mimram: *Dihomotopy and the cube property*
- 14:50-15:30 Thomas Kahl: *"Reduction of higher-dimensional automata"*

GETCO 2015 is supported by:



List of registered participants:

Armando Castaneda	Intituto de Matemáticas, UNAM, Mexico
Claudia Landi	Università di Modena e Reggio Emilia, Italy
Damien Imbs	University of Bremen, Germany
Daniele Toller	University of Camerino, Italy
Deborah Olayide	University of Ibadan, Nigeria
Dmitry Feichtner-Kozlov	University of Bremen, Germany
Emmanuel Haucourt	LIX, École Polyetchnique, France
Eric Finster	LIX, École Polyetchnique, France
Eric Goubault	LIX, Ecole Polytechnique
Fabian Romero	Intituto de Matemáticas, UNAM, Mexico
Grzegorz Jablonski	Jagiellonian University, Poland
Hubert Wagner	IST Austria
Iver Ottosen	Aalborg University, Denmark
Jan Felix Senge	University of Bremen, Germany
Jan-Philipp Litza	University of Bremen, Germany
Jeremy Dubut	LSV, ENS Cachan, France
Jose-Carlos Gomez-Larrañaga	CIMAT, Mexico
Krzysztof Ziemianski	University of Warsaw, Polen
Lisbeth Fajstrup	Aalborg University, Denmark
Maria Jose Jimenez	University of Seville, Spain
Marian Mrozek	Jagiellonian University, Poland
Martin Raussen	Aalborg University, Denmark
Natalia Garcia-Colin	INFOTEC, Mexico
Neza Mramor	University of Ljubljana, Slovenia
Nicolas Ninin	CEA List, Ecole Polytechnique, France
Nina Otter	University of Oxford, UK
Patrizio Frosini	University of Bologna, Italy
Pawel Dlotko	University of Pennsylvania, USA
Petr Kuznetsov	Telecom ParisTech - INFRES, France
Philippe Malbos	Université Claude Bernard Lyon 1, France
Primoz Skraba	Jozef Stefan Institute, Slovenia
Rick Jardine	The University of Western Ontario, Canada
Roman Bruckner	University of Bremen, Germany
Samuel Mimram	LIX, École Polytechnique, France
Sanjeevi Krishnan	University of Pennsylvania, USA
Sergio Rajsbaum	UNAM, Mexico
Steve Y Oudout	INRIA, France
Thomas Kahl	Universidade do Minho, Portugal
Thomas Nowak	ENS Paris, France
Tim Haga	University of Bremen, Germany
Ulrich Bauer	Technische Universität München, Germany