Scientific Report:

YEP XI Workshop

"Mass transport in analysis and probability"

1 Description

Location: EURANDOM, Eindhoven, the Netherlands

Date: 10-14 March, 2014

Organisers: Peter Mörters (University of Bath)
Max von Renesse (Universität Leipzig)
Michiel Renger (WIAS Berlin)

Logistics: P. Koorn (EURANDOM, Eindhoven, the Netherlands)

Young European Probabilists Meeting. The Young European Probabilists Workshop 2014 was the 11th of a series of successful yearly workshops at Eurandom, Eindhoven. Other than most previous YEP workshops the workshop of 2014 had an intradisciplinary flavour. The aim of the workshop was to bring together promising young European researchers from both analysis and probability and to expose them to some of the most recent developments in optimal transport, and to provide a forum for the exchange of ideas and a starting point for future intradisciplinary collaborations.

Mass transport in analysis and probability. Mass transport is concerned with the transport of mass between prescribed distributions at minimal cost. Although dating back to work of Monge in the 18th century, this problem has recently seen a major boost of activity with many new ideas emerging. Contemporary research in mass transport has many different focal points, including: geometry in discrete/continuous and general metric spaces, Sobolev inequalities and gradient flows, random measures, hydrodynamic limits and large deviations of particle systems, and applications to financial mathematics, kinetic theory and quantum mechanics. In particular, the aim was to bring together young researchers representing these different perspectives.

Format. The workshop consisted of four mini-courses by eminent researchers in the field, augmented with talks of sixteen young researchers who talked about their own research topic. The four mini-course lecturers were all outstanding researchers in the field, namely: Nicola Gigli (Université de Nice), Mathias Beiglböck (Universität Wien and Universität Bonn), Jan Maas (Universität Bonn) and Gero Friesecke (Technische Universität München). In order to spark informal scientific interactions, there was a reception on the first evening, a dinner on the second evening, short breaks between all talks, and long lunch breaks.

Participants. In total, there were 42 participants, which was more than envisaged. Apart from the 23 speakers and organisers, 19 scientists participated, of which 8 were from Eindhoven, 5 were somehow associated to the speakers/organisers, and 6 were external.

Evaluation. The new Eurandom provides a great environment to get together discussing in groups and, as we hoped, this lead to many stimulating cross-community interactions between and after the talks. There was also an unusual level of active participation during the talks with the ten minutes alocated for questions and discussion almost always exhausted by the participants. Our aim of having an interactive and cross-disciplinary workshop was fully achieved. Slides of most talks were posted on the workshop webpage (http://www.eurandom.nl/events/workshops/2014/YEPXI/index.html). We received positive feedback from several participants.

2 Program

Monday (10th)

09:00 – 09:50	Registration & coffee
09:50 – 10:00	Opening
10:00 – 11:00	Nicola Gigli I – *Spaces with Ricci curvature bounded from below*
11:00 – 12:00	Gero Friesecke I – *Optimal transport with Coulomb cost: theory and applications to electronic structure of atoms and molecules*
12:00 – 14:00	Lunch
14:00 – 15:00	Nicola Gigli II – *Spaces with Ricci curvature bounded from below*
15:00 – 16:00	Gero Friesecke II – *Optimal transport with Coulomb cost: theory and applications to electronic structure of atoms and molecules*
16:00 – 17:00	Martin Huesmann – *Optimal transport between random measures*
17:00 – 18:00	Christoph Thäle – *Functional Poisson approximation and optimal transport*
18:00 – ...	Reception

Tuesday (11th)

09:00 – 10:00	Mathias Beiglböck I – *Optimal Transport, Martingales, and Skorokhod embedding*

10:00 – 11:00 Gero Friesecke III – *Optimal transport with Coulomb cost: theory and applications to electronic structure of atoms and molecules*

11:00 – 12:00 Nicola Gigli III – *Spaces with Ricci curvature bounded from below*

12:00 – 14:00 Lunch

14:00 – 15:00 Jan Maas I – *Optimal transport in discrete and quantum systems*

15:00 – 16:00 Giovanni Bonaschi – *Equivalence of gradient flows and entropy solutions for singular nonlocal interaction equations in 1D*

16:00 – 17:00 Simone Di Marino – *Multimarginal optimal transportation: the one dimensional symmetric case*

18.30 –... Dinner

Wednesday (12th)

09:00 – 10:00 Jan Maas II – *Optimal transport in discrete and quantum systems*

10:00 – 11:00 Mathias Beiglböck II – *Optimal Transport, Martingales, and Skorokhod embedding*

11:00 – 12:00 Fabio Cavalletti – *Decomposition of Wasserstein geodesics*

12:00 – 14:00 Lunch

14:00 – 15:00 Emanuel Indrei – *A sharp quantitative log-Sobolev inequality*

15:00 – 16:00 Harald Oberhauser – *On the Skorokhod embedding problem*

16:00 – 17:00 Xiaolu Tan – *Martingale transport and peacocks*

Thursday (13th)

09:00 – 10:00 Mathias Beiglböck III – *Optimal Transport, Martingales, and Skorokhod embedding*

10:00 – 11:00 Jan Maas III – *Optimal transport in discrete and quantum systems*

11:00 – 12:00 Gioia Carinci – *Mass transport via current reservoirs: a microscopic model for a free boundary problem*

12:00 – 14:00 Lunch

14:00 – 15:00 Andrea Mondino – *Some analytic and geometric properties of infinitesimally Hilbertian metric measure spaces with lower Ricci curvature bounds*

15:00 – 16:00 Matthias Erbar – *Curvature effects for infinite particle systems via optimal transport*

16:00 – 17:00 Nicolas Juillet – *An optimal transport problem for two measures in the convex order*

Friday (14th)

09:00 – 10:00 Max Fathi – *Quantitative rates of convergence to the hydrodynamic limit*

10:00 – 11:00 Richard Kraaij – *A Lagrangian formalism for large deviations of Feller processes*

11:00 – 12:00 Bertrand Cloez – *Wasserstein curvature of Markov processes*

12:00 – 13:00 Yan Dolinsky – *Hedging of Game Options under Model Uncertainty in Discrete Time*

13:00 – 14:30 Lunch

3 Abstracts

See *http://www.eurandom.nl/events/workshops/2014/YEPXI/index.html*

4 Participants

surname	given name	affiliation
Badila	Serban	TU Eindhoven
Beiglböck	Mathias	University of Vienna
Bonaschi	Giovanni	TU Eindhoven
Carinci	Gioia	University of Modena and Reggio Emilia
Cavalletti	Fabio	RWTH-Aachen
Cloez	Bertrand	Universit de Toulouse
Delplancke	Claire	Institut de Mathmatiques de Toulouse
Dolinsky	Yan	Hebrew University
Duhart	Horacio	University of Bath
Erbar	Matthias	Scuola Normale Superiore di Pisa
Fathi	Max	LPMA, Universit Paris 6
Feyeux	Nelson	INRIA
Frerix	Thomas	TU München
Friesecke	Gero	TU München
Gigli	Nicola	IMJ - UPMC
van der Hofstad	Remco	TU Eindhoven
Huesmann	Martin	Universität Bonn
Indrei	Emanuel	Carnegie Mellon University
Juillet	Nicolas	Universit de Strasbourg
Kopfer	Eva	University Bonn
Kraaij	Richard	TU Delft
Lamacz	Agnes	TU Eindhoven
Maas	Jan	University of Bonn
Max	von Renesse	Universität Leipzig
Medvedev	Alexey	Central European University
van Meurs	Patrick	TU Eindhoven
Mondino	Andrea	ETH Zürich
Mörters	Peter	University of Bath
Muntean	Adrian	TU Eindhoven
Nazir	Talat	Technical University Eindhoven
Oberhauser	Harald	University of Oxford
Prioriello	Maria Luisa	TU Eindhoven
Redl	Istvan	University of Bath
von Renesse	Max	Universität Leipzig
Renger	Michiel	WIAS Berlin
Sharma	Upanshu	TU Eindhoven
Simone	Di Marino	Scuola Normale Superiore di Pisa
Siorpaes	Pietro	University of Vienna
Tan	Xiaolu	University of Paris-Dauphine
Thäle	Christoph	Ruhr University Bochum
Wickmann	Manuel	LMU Munich
Wolff	Michael	LMU Munich
van Zuijlen	Willem	Universiteit Leiden

COST OVERVIEW WORKSHOP YEP 2014

Travel	€ 3.505,00
Hotel	€ 6.760,00
Catering	€ 4.560,00
Miscellaneous	€ 800,00
Total costs for whole activity month	**€ 15.625,00**