

Mathematics of Traffic Flow Modeling, Estimation and Control

Wednesday December 7, 2011

- 8:00–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*
- 9:00–9:20 *Welcome and Opening remarks by Russ Caflisch and Alex Bayen*
- 9:20 *Mathematical modeling (1) Session Chair: Dan Work*
- 9:20–10:00 **Halina Frankowska** (Centre National de la Recherche Scientifique (CNRS))
Strong and Weak Boundary Conditions for Solutions of Scalar Conservation Laws
- 10:10–10:40 *Break*
- 10:40–11:20 **Christian Claudel** (King Abdullah University of Science and Technology (KAUST))
Convex optimization formulation of estimation problems involving Hamilton-Jacobi equations. Applications to traffic flow estimation
- 11:30–1:30 *Lunch (on your own)*
- 1:30 *Mathematical modeling (2) Session chair: Halina Frankowska*
- 1:30–2:10 **Anya Desilles** (École Nationale Supérieure de Techniques Avancées)
Viability approach to Hamilton-Jacobi-Moskowitz problem involving variable regulation parameters
- 2:20–3:00 **Alberto Bressan** (Pennsylvania State University)
Nash equilibria for models of traffic flow.
- 3:10–3:30 *Break*
- 3:30 *Panel: future directions in control, estimation and modeling using PDEs*
- 3:30–3:35 *Moderator: Miroslav Krstic (UC San Diego)*
- 3:35–5:00 *Panelists: Michael Herty (Universität Kaiserslautern), Petros Ioannou (USC), Alberto Bressan (Penn State), Tong Li (University of Iowa)*
- 5:00–6:30 *Reception and Poster Session at IPAM*
- 5:30–6:30 *Posters: Aude Hofleitner, Sebastien Blandin, Amelio Maurizi, N. Farhi, T. Saumtally, Alexander Zuyev*



Thursday December 8, 2011

- 8:00–9:00 *Continental Breakfast*
- 9:00 *Estimation and stochastics (1) Henry Liu*
- 9:00–9:40 **Markos Papageorgiou** (Technical University of Crete)
Macroscopic Traffic Flow Modeling Rendered Useful
- 9:50–10:30 **Daniel Work** (University of Illinois at Urbana-Champaign)
Traffic monitoring using GPS enabled smartphones
- 10:40–11:10 *Break*
- 11:10–11:50 **Lyudmila Mihaylova** (Lancaster University)
Scalable Bayesian Approaches for Freeway Traffic Systems
- 12:00–1:30 *Lunch (on your own)*
- 1:30 *Modeling, Estimation and stochastics (2) Session Chair: Michael Zhang*
- 1:30–2:10 **Corrado Lattanzio** (University of l'Aquila)
Micro-Macro Coupled Models in Car Traffic Flow
- 2:20–3:00 **Alexandros Sopasakis** (Lund Institute of Technology)
Stochastic Modeling and Simulation of Multi-Lane/Class Traffic
- 3:10–3:30 *Break*
- 3:30 *Panel: impacts of new technology for traffic monitoring and control research*
- 3:30–3:35 *Moderator: Joan Sollenberger (California DOT)*
- 3:35–5:00 *Panelists: Olli-Pekka Tossavainen (Nokia Corporation), Emiliano Cristiani (Octotelematics), (Chris Scofield (INRIX), Christopher Flores (Sensys Networks).*

Friday December 9, 2011

- 8:00–9:00 *Continental Breakfast*
- 9:00 *Control (1) Session Chair: Jean-Patrick Lebacque*
- 9:00–9:40 **Hani Mahmassani** (Northwestern University)
Properties of Simulated Path Travel Times and Implications for Dynamic Network Assignment and Control Algorithms
- 9:50–10:30 **Jean-Patrick Lebacque** (IFSTTAR/GRETTIA)
Stochastic macroscopic traffic modeling
- 10:40–11:10 *Break*

(Friday schedule continued on next page)

(Friday schedule continued from previous page)

- 11:10–11:50 **Rinaldo Colombo** (University of Brescia)
On the Macroscopic Modeling of Crowd
- 12:00–1:30 *Lunch (on your own)*
- 1:30 *Control (2) Session Chair: Michael Zhang*
- 1:30–2:10 **Wenlong Jin** (University of California, Irvine (UCI))
A kinematic wave theory of multi-commodity network traffic flow
- 2:20–3:00 **Roberto Horowitz** (University of California, Berkeley (UC Berkeley))
Modeling, Simulation, Analysis and Control of Freeway Traffic Corridors
- 3:10–3:30 *Closing Remarks by Alex Bayen*

