NetCo 2014

New trends in optimal control

23-27 June 2014

Vinci International Congress Center

Tours, France

http://netco2014.sciencesconf.org

ANR HJNET

ITN SADCO
Initial Training Network
Sensitivity Analysis for Deterministic Controller Design

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WELCOME

Dear participant,

The NetCo conference 2014 brings together researchers from the optimization and optimal control community. Researchers will have the opportunity to interact and discuss the latest trends and results in these fields as well as to review advances and challenges in industry, with a view to presenting the state of the art and developing new research collaborations. The programme includes some courses, some talks by experts and two poster sessions.

We wish you a fruitful and stimulating time at the NetCo 2014, and hope you will enjoy your stay in Touraine.

Please feel free to contact us if you have any question (netco2014@sciencesconf.org).

The organizing committee

ORGANIZING & SCIENTIFIC COMMITTEE

Organizing committee:

- Guy Barles - University of Tours
- Ariela Briani - University of Tours
- Jean-Baptiste Caillau - University of Burgundy
- Pierre Cardaliaguet - Paris-Dauphine University
- Emmanuel Chasseigne - University of Tours
- Christine Georgelin - University of Tours
- Olivier Ley - University of Rennes 1
- Emmanuel Trélat - UPMC (Paris 6) & CNRS
- Hasnaa Zidani - Ensta ParisTech & Inria Saclay **(Chair)**

Scientific Committee:

- Fabio Ancona – University of Padova
- Guy Barles – University of Tours (**Chair**)
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- Maurizio Falcone – University of Rome La Sapienza
- Hélène Frankowska – CNRS & UPMC (Paris 6)
- Lars Grüne – University of Bayreuth
- Maria do Rosario de Pinho – University of Porto
- Hasnaa Zidani – Ensta ParisTech & Inria Saclay

Administrative contact:

- Estelle Bouzat – Inria Saclay & Ensta ParisTech (netco2014@sciencesconf.org)

PLENARY SESSIONS

Plenary speakers:

- Piermarco Cannarsa (Univ. of Rome "Tor Vergata")
- Jean-Michel Coron (Univ. of Pierre & Marie Curie, Paris)
- Lawrence C. Evans (Univ. of California, Berkeley)
- Pierre-Louis Lions (Collège de France & Univ. Paris-Dauphine)
- Régis Monneau (ENPC, Paris)
- Benedetto Piccoli (Rutgers Univ.)
- Sebastien Sager (Univ. of Magdeburg)
- Heinz Schättler (Washington Univ.)
- Chi-Wang Shu (Brown Univ.)
- Panagiotis E. Souganidis (Univ. of Chicago)
- Richard Vinter (Imperial College, London)

Lecturers (summer school courses):

- Alberto Bressan (Penn State Univ.)
- Fabio Camilli (Sapienza, Univ. of Rome)

VENUE & LOCATION

Location: Vinci International Congress Center of Tours, 26 Boulevard Heurteloup, 37000 Tours

Le Vinci - Photo by Thierry de Villepin

Getting there:

Tours has two main stations: Gare de Tours central station and Gare de Saint-Pierre-des-Corps which is located 4km away from Tours city center.

The Vinci International Congress Center is located **right across Gare de Tours**. If your train terminates at St Pierre des Corps, a train shuttle will conveniently take you to Gare de Tours in 5 minutes.

LOCAL TRANSPORT

City public transports:

Tours city center is fairly small and walking is a nice way to get around. Alternatively, you may wish to take the bus or the brand new tramway line.

Public transport in Tours (Fil Bleu): http://www.filbleu.fr/en/

Train:

Train information (SNCF): http://en.voyages-sncf.com/en/

Taxis:

« GIE des Taxis de Tours » (http://www.taxis-tours.fr/uk-version/welcome/)
Tel : +33 (0)2 47 20 30 40

PRACTICAL ASPECTS

Rooms:

The two conference rooms of the NetCo conference are:

- Descartes Auditorium (+1 level)

- Courteline Room (+2 level)

Badges:

After registering, you will be requested to **wear your conference badge every time you enter the Vinci Congress Center**. Otherwise, the Congress Center staff will not be able to grant you access to the conference area. We will also provide badges for the accompanying persons so that they can enter the building if needed.

Conference Equipment:

The conference rooms are equipped with a beamer and a small whiteboard. A PC with a PDF and a Powerpoint viewer will be provided. Please bring your presentation on a USB memory stick and transfer it before your session.

Speakers whose presentations contain animations or videos, or require a special version of the viewer software, are strongly encouraged to use their own notebook and to test the system in advance.

Internet Access:

Wi-Fi will be available in the coffee break area, with a common password valid for the duration of the conference:

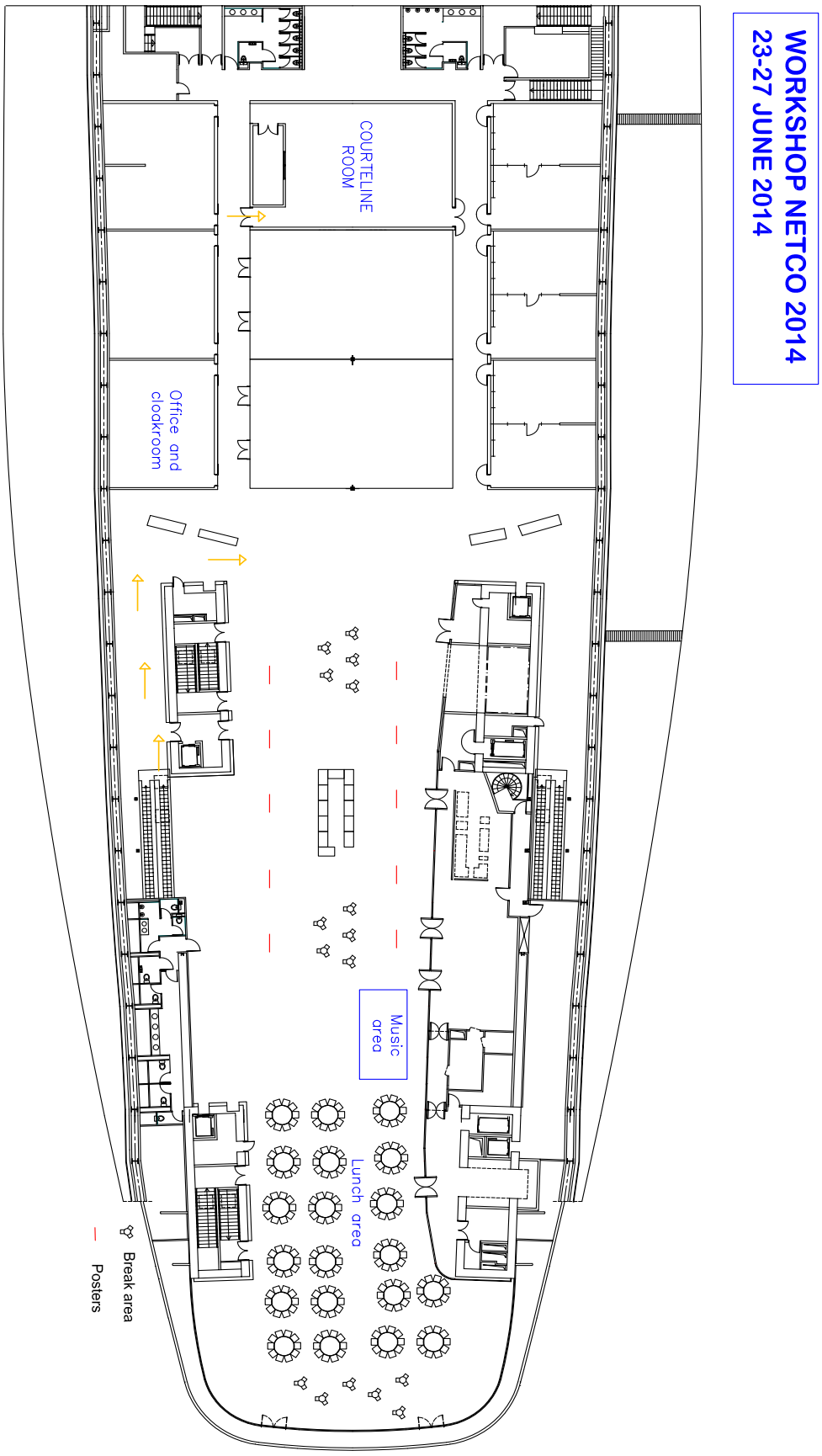
ID : NETCO2014
PSWD : cmath2014

Meals and refreshments:

A lunch buffet and coffee breaks will be provided on-site for all the participants (+2 level).

European emergency number: *112*

+2 Level map:


WORKSHOP NETCO 2014
23-27 JUNE 2014
COURTELINE ROOM
Office and cloakroom
Music area
Lunch area
Break area
Posters

SOCIAL PROGRAM

Music sessions:

Some colleagues will do us the honor of performing some music pieces throughout the week.

Wine & cheese receptions:

Two wine & cheese cocktails are planned during the poster sessions on Tuesday **June 24** and Thursday **June 26** from 5.30 pm.

Visit of Château de Chenonceau & Gala Dinner:

Prior registration is compulsory for the visit of the Château de Chenonceau and the Gala Dinner on Wednesday June 25.

Chenonceau stickers will be added to the badges of the invited participants (and their accompanying guests) who have confirmed their participation to this dinner. All the guests will be requested to **show their badge** in order to board the bus and to enter the Château.

The Château de Chenonceau is located 40 km away from Tours. NetCo buses will leave from Vinci International Congress Center at **4:00 pm and 4:30 pm** to allow the participants to visit the Château and tour its gardens before dinner. The self-tour is included.

For organizational purposes, participants will be requested to choose a departure time on Tuesday June 24.

Apéritif will be offered from **7.15 pm** at the Orangerie Restaurant where dinner will be served at **8.00 pm**.

The NetCo buses will take the participants back to the Vinci International Congress Center after dinner.

For more information on the Château de Chenonceau, please visit: http://www.chenonceau.com.

SCIENTIFIC PROGRAM

	Monday 23		Tuesday 24		Wednesday 25		Thursday 26		Friday 27
08:45	**Opening Session**								
09:00 10:00	**P1**		**P3**		**P5**		**P7**		**P9**
10:00 *10:30*	*Coffee break*		*Coffee break*		*Coffee break*		*Coffee break*		*Coffee break*
10:30 12:30	**Courses 1&2** (2*1h)	**S1-** Differential Games	**Courses 1&2** (2*1h)	**S4-** Hamilton-Jacobi Equations and Singularities	**Courses 1&2** (2*1h)	**S7-** Numerical Methods for OC Problems	**Courses 1&2** (2*45 min) + 1 talk	**S8** - Applied Optimal Control Problems	**S11** - Numerical Optimal Control Problems
12:30 *14:00*	*Lunch*		*Lunch*		*Lunch*		*Lunch*		*Lunch*
14:00 16:00	**S2**- Optimal control problems	**S3-** Homo-genization	**S5** - Optimality conditions	**S6** - Traffic Flow Problems	**P6**		**S9-** Control of PDEs	**S10** - Mean Field Games	**P10**
					Free time				**P11**
16:00 *16:30*	*Coffee break*		*Coffee break*		*Social event*		*Coffee break*		Closure session - Organizing Committee
16:30 17:30	**P2**		**P4**				**P8**		
17:30 18:45			Poster session I Wine & cheese				Poster session II Wine & cheese		
18:45 19:15			Music session				Music session		
19:15 23:00					*Gala Dinner*				

Monday June 23

Ground floor & +1 Level	08:00 08:45	*Registration & Coffee*	
Opening session *Descartes Auditorium*	08:45 09:00	**Hasnaa Zidani, Olivier Ley**	
P1 *Descartes Auditorium*	09:00 10:00	**Lawrence C. Evans** *UC Berkeley*	Some new perspectives for differential games
+2 Level	10:00 10:30	*Coffee Break*	
C1 - C2 *Descartes Auditorium*	10:30 11:30	**Alberto Bressan** *Penn State University*	Traffic flow on networks: modeling, optimization, and Nash equilibria
	11:30 12:30	**Fabio Camilli** *La Sapienza Univ. of Rome*	Hamilton-Jacobi equations on networks
S1 - Differential Games *Courteline room*	10:30 11:00	**Marianne Akian** *CMAP*	Policy iteration for stochastic zero-sum games
	11:00 11:30	**Fabio Bagagiolo** *University of Trento*	Differential games with exit costs
	11:30 12:00	**Tien Khai Nguyen** *Penn State University*	A game-theoretical model of debt and bankruptcy
	12:00 12:30	**Sorin Sylvain** *UPMC*	Asymptotic analysis of discounted zero-sum games: some recent advances
+2 Level	12:30 14:00	*Lunch*	
S2 - Optimal control problems *Descartes Auditorium*	14:00 14:30	**Franco Rampazzo** *University of Padova*	"Limit solutions" for control systems
	14:30 15:00	**Maria-Soledad Aronna** *IMPA*	Quick reachability and proper extension of problems with unbounded controls
	15:00 15:30	**Roberta Ghezzi** *Math. Institute of Burgundy*	Regularization of chattering phenomena via bounded variation controls
	15:30 16:00	**Frédéric Jean** *Ensta ParisTech*	Complexity of control-affine motion planning
S3 - Homogenization *Courteline room*	14:00 14:30	**Martino Bardi** *University of Padova*	Viscosity methods for multiscale financial models with stochastic volatility
	14:30 15:00	**Nicolas Forcadel** *INSA*	From discrete microscopic models to macroscopic models and applications to traffic flow
	15:00 15:30	**Antonio Siconolfi** *La Sapienza Univ. of Rome*	Asymptotic models for Hamilton--Jacobi--Bellman equations
	15:30 16:00	**Nicoletta Tchou** *IRMAR, Rennes 1*	Homogenization results for a deterministic multi-domains periodic control problem
+2 Level	16:00 16:30	*Coffee Break*	
P2 *Descartes Auditorium*	16:30 17:30	**Piermarco Cannarsa** *Univ. of Rome Tor Vergata*	Compactness estimates for Hamilton-Jacobi equations

Tuesday June 24

P3 *Descartes Auditorium*	09:00 10:00	**Jean-Michel Coron** *UPMC*	Control of 1-D hyperbolic systems
+2 Level	10:00 10:30	*Coffee Break*	
C1 - C2 *Descartes Auditorium*	10:30 11:30	**Alberto Bressan** *Penn State University*	Traffic flow on networks: modeling, optimization, and Nash equilibria
	11:30 12:30	**Fabio Camilli** *La Sapienza - University of Rome*	Hamilton-Jacobi equations on networks
S4 - HJB equations and singularities *Courteline Room*	10:30 11:00	**Marco Mazzola** *UPMC*	Propagation of singularities for semiconcave solutions of Hamilton-Jacobi equations
	11:00 11:30	**Cristopher Hermosilla** *Ensta ParisTech & Inria*	Infinite horizon problems on stratifiable state constraints sets
	11:30 12:00	**Giovanni Colombo** *University of Padova*	On the singularities of minimum time function for normal linear control systems
	12:00 12:30	**Hayk Sedrakyan** *UPMC*	Stability of value functions for state constrained Bolza problems
+2 Level	12:30 14:00	*Lunch*	
S5 - Optimality conditions for control problems *Descartes Auditorium*	14:00 14:30	**Maria Do Rosario De Pinho** *University of Porto*	Necessary Conditions for Implicit and DAE Control Systems
	14:30 15:00	**Andrei Dmitruk** *Russian Academy of Science*	Necessary conditions in optimal control problems with integral equations of Volterra type
	15:00 15:30	**Laura Poggiolini** *University of Florence*	Bang-bang trajectories with a double switching time in the minimum time problem
	15:30 16:00	**Helmut Maurer** *University of Münster*	The minimum principle for state-constrained optimal control problems with time delays
S6 - Traffic flow problems *Courteline Room*	14:00 14:30	**Antonin Chambolle** *CMAP*	Variational curvature flows
	14:30 15:00	**Yves Achdou** *Paris Diderot University*	Hamilton-Jacobi equations on networks as limits of singularly perturbed problems in optimal control: dimension reduction
	15:00 15:30	**Emiliano Cristiani** *IAC-CNR*	Modeling and control of pedestrian behaviors: an environment optimization approach
	15:30 16:00	**Guillaume Costeseque** *Paris 12 University*	Numerical approach for Hamilton-Jacobi equations on a network: application to traffic
+2 Level	16:00 16:30	*Coffee Break*	
P4 *Descartes Auditorium*	16:30 17:30	**Heinz Schättler** *Washington University*	Optimal control problems for mathematical models of cancer treatments
Poster Session I *+2 level*	17:30 18:45	**Poster Session** - *Wine & Cheese*	
Music *+2 level*	18:45 19:15	**Music Session**	

Wednesday June 25

P5 *Descartes Auditorium*	09:00 10:00	**Chi-Wang Shu** *Brown University*	Discontinuous Galerkin method for Hamilton-Jacobi equations and front propagation with obstacles
+2 Level	10:00 10:30	*Coffee Break*	
C1 - C2 *Descartes Auditorium*	10:30 11:30	**Alberto Bressan** *Penn State University*	Traffic flow on networks: modeling, optimization, and Nash equilibria
	11:30 12:30	**Fabio Camilli** *La Sapienza Univ. of Rome*	Hamilton-Jacobi equations on networks
S7 - Numerical methods for control problems *Courteline Room*	10:30 11:00	**Ilaria Xausa** *Volkswagen AG*	Software for verification of collision avoidance algorithms via Optimal Control Techniques.
	11:00 11:30	**Adriano Festa** *Ensta ParisTech*	Reconstruction of independent sub-domains in a Hamilton-Jacobi and its application to parallel calculus
	11:30 12:00	**Axel Kroener** *RICAM*	Numerical methods for optimal control of the wave equation
	12:00 12:30	**Oliver Junge** *TU München*	Dynamic programming using radial basis functions
+2 Level	12:30 14:00	*Lunch*	
P6 *Descartes Auditorium*	14:00 15:00	**Pierre-Louis Lions** *Collège de France & Paris IX Univ.*	A new perspective on Mean Field Games
In front of the Vinci	16:00 & 16:30	*Buses to Chenonceau Castle*	

Thursday June 26

P7 *Descartes Auditorium*	09:00 10:00	**Sebastian Sager** *Univ. of Madgeburg*	Decoding complexc ardiac arrhythmia using mathematical optimization
+2 Level	10:00 10:30	*Coffee Break*	
C1 - C2 *Descartes Auditorium*	10:30 11:15	**Alberto Bressan** *Penn State University*	Traffic flow on networks: modeling, optimization, and Nash equilibria
	11:15 12:00	**Fabio Camilli** *La Sapienza - Univ. of Rome*	Hamilton-Jacobi equations on networks
Talk *Descartes Auditorium*	12:00 12:30	**Jean-Patrick Lebacque** *IFSTTAR, GRETTIA*	Bidimensional traffic flow models
S8 - Applied Optimal Control Problems *Courteline Room*	10:30 11:00	**Urszula Ledzewicz** *Southern Illinois University Edwardsville*	Sufficient conditions for strong local optimality with applications to biomedical problems
	11:00 11:30	**J. Frederic Bonnans** *CMAP*	Optimization of running strategies based on anaerobic energy and variations of velocity
	11:30 12:00	**M. Margarida Ferreira** *University of Porto*	Optimality in the management of hydroelectric power stations in
	12:00 12:30	**Huijuan Li** *University of Bayreuth*	Continuous and piecewise affine Lyapunov functions using the Yoshizawa construction
+2 Level	12:30 14:00	*Lunch*	
S9 - Control of PDEs *Descartes Auditorium*	14:00 14:30	**Ugo Boscain** *CMAP*	The heat equation associated to a time-optimal control problem linear in the control
	14:30 15:00	**Mario Annunziato** *University of Salerno*	Optimal control of stochastic processes via probability density distribution function control
	15:00 15:45	**Hans Josef Pesch** *University of Bayreuth*	New contributions to theory and numerics for state-constrained elliptic optimal control problems
S10: Mean field games *Courteline Room*	14:00 14:30	**Olivier Guéant** *Laboratoire Jacques-Louis Lions*	Mean field games on graphs
	14:30 15:00	**Juan Pablo Maldonado Lopez** *UPMC*	Discrete time mean field games: the short-stage limit
	15:00 15:30	**Francisco Silva** *University of Limoges*	Semi-Lagrangian schemes for second order Mean field games
	15:30 16:00	**Daniela Tonon** *Paris Dauphine University*	Degenerate second order mean field games systems
+2 Level	16:00 16:30	*Coffee Break*	
P8 *Descartes Auditorium*	16:30 17:30	**Benedetto Piccoli** *Camden University*	Multiscale models for vehicular traffic and crowd dynamics
Poster Session II *+2 level*	17:30 18:45	**Poster Session** - *Wine & Cheese*	
Music *+2 level*	18:45 19:15	**Music Session**	

Friday June 27

P9 *Descartes Auditorium*	09:00 10:00	**Panagiotis Souganidis** *University of Chicago*	Advances in the theory of random homogenization
+2 Level	10:00 10:30	*Coffee Break*	
S11 - Numerical Optimal Control Problems *Descartes Auditorium*	10:30 11:00	**Matthias Knauer** *University of Bremen*	Parametric sensitivity analysis and real-time optimal control using TransWORHP
	11:00 11:30	**Mario Zanon** *KU Leuven*	Indefinite linear MPC and approximated economic MPC for nonlinear systems
	11:30 12:00	**Johannes Michael** *University of the Federal Armed Forces Munich*	On the optimization of Riemann-Stieltjes-control-systems with application in vehicle dynamics
	12:00 12:30	**Mattia Bongini** *TU München*	Conditional consensus emergence under decentralized controls
+2 Level	12:30 14:00	*Lunch*	
P10 - P11 *Descartes Auditorium*	14:00 15:00	**Richard Vinter** *Imperial College London*	Necessary conditions in dynamic optimization
	15:00 16:00	**Régis Monneau** *ENPC*	Traffic on networks: modeling and analysis

POSTER SESSIONS

Two poster sessions will be organized during the week, on Tuesday and Thursday evenings, along with wine & cheese receptions.

The participants will be available to present and discuss their poster during the receptions.

Session 1 - Tuesday June 24 - 17:30

Burtchen Angie	*Spectral Methods for the Solution of Infinite Horizon Optimal Control Problems*
Chupin Maxime	*Interplanetary transfer with low consumption using three body problem properties*
Feleqi Ermal	*A nonsmooth Hormander condition*
Heiter Pascal Frederik	*Model Reduction for Optimal Control Problems with Singularly Perturbed Systems*
Jounieaux Pierre	*Optimal design of boundary observers for the wave equation*
Kimmerle Sven-Joachim	*Optimal control of a tank truck*
Laura-Guarachi Leonardo	*Asymptotic properties in optimal control problems*
Mercier Gwenael	*Mean curvature flow with obstacles: a level-set approach*
Ntovoris Eleftherios	*An improved level set method*
Palagachev Konstantin	*Switched System Control for Robots Interactions*
Prandi Dario	*The heat and Schrödinger equations on conic and anticonic-type surface*
Ribeiro Ana	*Optimal control to analyse a hydroelectric power station*
Sorokin Stepan	*Weakly monotone solutions of Hamilton-Jacobi inequality and necessary global optimality conditions for discrete optimal control problems*
Staritsyn Maxim	*Optimal control of dynamical systems with polynomial impulses*
Zheng Chen	*Conjugate point tests for fuel-optimal orbital transfers*

Session 2 - Thursday June 26 - 17:30

Alla Alessandro	*Model Predictive Control initialization for Bellman equations*
Assellaou Mohamed	*Safety probabilistic reachability analysis*
Cacace Simone	*Pacman-HJ: a classic arcade game powered by Hamilton-Jacobi equations*
Cavagnari Giulia	*Generalized control systems in the space of probability measures*
Di Girolami Cristina	*On the Dynamic Programming Approach to Optimal Control of Delay Equations with Delay in the Control*
Ghilli Daria	*Large deviation principles for fast mean-reverting stochastic volatility models*
Graber Philip Jameson	*Mean field games systems of first order*
Hochart Antoine	*Fixed point of payment-free Shapley operators and structural properties of mean payoff games*
Mészáros Alpár Richárd	*Variational approach for Mean Field Games with density constraints*
Nguyen Luong	*Local regularity of the minimum time function*
Picarelli Athena	*State-constrained stochastic optimal control problems via reachability approach*
Rao Zhiping	*Singular perturbation of optimal control problems on multi-domains*
Sahu Smita	*Numerical Schemes for first order Hamilton-Jacobi Bellman equations and error estimates.*
Thi Thien Thuy Le	*High order discrete controllability and the approximation of the minimum time function*

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