

# The 14<sup>th</sup> International Symposium on Dynamic Games and Applications

June 19-23, 2010

The Banff Centre, Banff, Alberta, Canada

## Preliminary Program

INTERNATIONAL SOCIETY OF  
DYNAMIC GAMES *ISDA*



**GERAD**

**Chair in Game Theory and Management**

# Program Overview

Saturday, June 19

17:00 – 20:00 Registration/Reception

MB Foyer & Lounge

Sunday June 20	
8:00 - 9:00	Registration
8:30 - 8:45	Opening Address
8:45 - 9:45	Plenary I: A. Bressan
9:45 - 10:15	Coffee Break
10:15 - 12:15	Parallel Sessions
	Evolutionary Games I: <i>Tribute to T. Vincent</i>
	Differential Games I
	Applications in EE&R I
12:15 - 13:30	Lunch
13 :30-14 :30	Plenary II: W. Sandholm
14 :30-15 :00	Coffee Break
15:00 - 17:45	Parallel Sessions
	Evolutionary Games II
	Differential Games II
	Applications in EE&R II

Monday June 21	
8:00 - 10:00	Parallel Sessions
	Evolutionary Games III: <i>Tribute to T. Vincent</i> Stochastic Games
	Applications in EE&R III
10:00 - 10:30	Coffee Break
10:30 - 12:30	Parallel Sessions
	Evolutionary Games IV
	Differential Games III
	Applications in Economics and Finance I
12:30 - 13:30	Lunch
14:00 - 19:30	FREE AFTERNOON
19:30 - ...	

Tuesday June 22	
8:45 - 9:45	Plenary III: L. Lambertini
9:45 - 10:15	Coffee Break
10:15 - 12:15	Parallel Sessions
	Evolutionary Games V Applications in Economics and Finance II Dynamic Games I: <i>In Honor of G. Leitmann</i>
12:15 - 13:30	Lunch
13:30 - 15:30	Parallel Sessions
	Mathematical Aspects of Differential Games I: <i>Tribute to L. Berkovitz</i> Dynamic Games II: <i>In Honor of G. Leitmann</i> Applications in M&OM I
15:30 - 16:00	Coffee Break
16:00 - 18:00	Parallel Sessions
	Mathematical Aspects of Differential Games II: <i>Tribute to A. Melykian</i> Applications in M&OM II Applications in Economics and Finance III

Wednesday, June 23	
9:00 – 12:00	Tutorial Joel Brown
12:00 – 13:30	Lunch
13:30 – 16:30	Tutorial Aart de Zeeuw

# Sunday, June 20

**8:00 – 9:00 Registration**

**8:30 – 8:45 Opening address**

**8:45 – 9:45 Plenary I, Chair: Pierre Cardaliaguet**

**MB Auditorium**

*Systems of Hamilton-Jacobi equations and differential games*  
**Alberto Bressan**

**9:45 – 10:15 Coffee Break**

**MB Central Foyer**

**10:15 – 12:15 PARALLEL SESSIONS SA**

**SA1 Evolutionary Games I: Tribute to Thomas Vincent**  
**Chair: Tania Vincent**

**DCH Room 30**

*Introductory remarks*  
Joel Brown

*Evolutionary game theory: ESS, convergence stability, and NIS*  
Joe Apaloo, Joel Brown, Tom Vincent

*Body size evolution in food webs*  
Rosalyn Rael, Jim Cushing, Tom Vincent

*The Darwinian Dynamics of Carcinogenesis*  
Robert Gatenby and Thomas Vincent

**SA2 Differential Games: Theory and Computation I**  
**Chair: Stéphane Le Menec**

**MB Room 253**

*A nonzero-sum search game with two competitive searchers and a target*  
Ryusuke Hohzaki

*One method of solving differential games under integrally constrained controls*  
Alexander Belousov, Alexander Chentsov, Arkadii Chikrii

*Developing a library for processing input data in computational programs*  
Sergey Kumkov, Denis Sannikov

*Study of a game with two pursuers and one evader*  
Sergey Ganebny, Sergey Kumkov, Stéphane Le Menec, Valery Patsko

**SA3 Applications in Environment, Energy and Resources I**  
**Chair: Vladimir Mazalov**

**Function Room 6**

*A Great Fish War model with asymmetric players*  
Michèle Breton, Michel Yevenunye Keoula

*Towards a sustainable and time consistent use of the forest*  
Pablo Andres-Domenech, Guiomar Martín-Herrán, Georges Zaccour

*Managing a transboundary fishery on a highly-migratory stock*  
Robert McKelvey, Peter Golubtsov

*Fish wars with many players*  
Vladimir Mazalov, Anna Rettieva

**12:15 – 13:30 Lunch**

**Vistas Dining Room**

**13:30 – 14:30 Plenary II, Chair: Ross Cressman**

**MB Auditorium**

*Evolutionary game theory: Overview and recent results*  
**William H. Sandholm**

**14:30 – 15:00 Coffee Break**

**MB Central Foyer**

**15:00 – 17:45 PARALLEL SESSIONS SB**

**SB1 Evolutionary Games II**  
**Chair: David Rand**

**DCH Room 30**

*Competition of spatial associations*  
Gyorgy Szabo

*Evolution of cooperation and network structure*  
Cong Li, Ross Cressman, Yi Tao

*ESS for life-history trait of cooperating consumers facing cheating mutants*  
Frederic Grogard, Ludovic Mailleret, Andrei Akhmetzhanov, Pierre Bernhard

**15-minute break**

*Modelling kinship in the evolution of life history traits. An example in consumer-resource interactions*  
Andrei Akhmetzhanov, Ludovic Mailleret, Frédéric Grogard, Pierre Bernhard

*Analysis of the game "Traveler's Dilemma" using an epsilon-optimal strategies*  
Magdalena Wisniewska, Slawomir Plaskacz

**SB2 Differential Games: Theory and Computation II**  
**Chair: Leon Petrosjan**

**MB Room 253**

*Approximate solutions for multicriteria situations*  
Lucia Pusillo, Fausto Mignanego, Stef Tijs

*Information Patterns in Discrete-Time Linear-Quadratic Dynamic Games*  
Meir Pachter

*A set oriented algorithm for dynamic games*  
Marcus von Lossow

**15-minute break**

*Sustainability of cooperation over time with non-linear incentive equilibrium strategies*  
Javier de Frutos, Guiomar Martín-Herrán

*About strategic support of cooperative solutions in differential games*  
Sergey Chistyakov, Leon Petrosyan

**SB3 Applications in Environment, Energy and Resources II**  
**Chair: Rodney Beard**

**Function Room 6**

*Two-level games in natural resource management*  
Yury Korolev, Peter Golubtsov

*Incentive conditions for rational behavior in discrete bioresource management problem*  
Vladimir Mazalov, Anna Rettieva

*Investments in Oligopolistic Electricity Markets: Impact of some Parameters and Comparison of Predictions and Realizations*  
Pierre-Olivier Pineau, Hasina Rasata, Georges Zaccour

**15-minute break**

*Banking or not banking? The effects of transaction costs*  
Karima Fredj, Alain Jean-Marie, Guiomar Martín-Herrán, Mabel Tidball

*Multi-jurisdiction quota enforcement for transboundary renewable resources*  
Rodney Beard, Linda Nostbakken

# Monday, June 21

8:00 – 10:00 PARALLEL SESSIONS MA

**MA1 Evolutionary Games III: Tribute to Thomas Vincent**

**DCH Room 30**

**Chair: Joel Brown**

*Darwin's finches and Darwinian dynamics: Predicting beak strategies and abundances on the Galapagos Islands*

Tania Vincent, Thomas Vincent

*Evolutionary stability of optimal behavior in foraging games*

Vlastimil Krivan, Ross Cressman

*Competitor against optimizer: Evolutionary dynamics model*

József Garay

*Dynamics of a Threshold Public Goods Game in Ambiguity*

Arnaud Dragicevic

**MA2 Stochastic Games**

**MB Room 253**

**Chair: Andrzej S. Nowak**

*On a continuous solution to the Bellman-Poisson equation in stochastic games*

Anna Jaskiewicz

*Securing infrastructures via stochastic games*

Melike Baykal-Gursoy, Zhe Duan

*On some properties of multi-person stopping game*

Elzbieta Ferenstein, Anna Krasnosielska

*On stochastic games with unbounded payoff functions*

Andrzej S. Nowak

**MA3 Applications in Environment, Energy and Resources III**

**Function Room 6**

**Chair: Aart de Zeeuw**

*Pollution emissions in presence of international environmental agreements, uncertain and learning*

Michèle Breton, Lucia Sbragia

*Buying cooperation in an asymmetric environmental differential game*

Pascaux Smala Fanokoa, Issam Telahigue, Georges Zaccour

*On clean technologies in a transboundary pollution game*

Hassan Bencheikroun, Amrita Ray Chaudhuri

*The size of stable International Environmental Agreements in the case of stock pollution*

Florian Wagener, Aart de Zeeuw

**10:00 – 10:30 Coffee Break**

**MB Central Foyer**

**10:30 – 12:30 PARALLEL SESSIONS MB**

**MB1 Evolutionary Games IV**  
**Chair: Vlastimil Krivan**

**DCH Room 30**

*The evolution of anti-social punishment*  
David Rand

*The evolution of preferences, punishment and collective action*  
Gonzalo Olcina, Vicente Calabuig

*The evolutionary models in the stock market simulation*  
Elena Gubar

*A large population mate choice problem with age preferences*  
David Ramsey

**MB2 Differential Games: Theory and Computation III**  
**Chair: Tamer Basar**

**MB Room 253**

*Differential game-theoretic approach to a spatial jamming problem*  
Sourabh Bhattacharya, Tamer Basar

*Game problems for systems involving Hilfer fractional derivatives*  
Arkadii Chikrii, Ivan Matychyn

*Feedback Nash equilibria for linear quadratic descriptor differential games*  
Jacob Engwerda, Salmah Salmah

*Nash equilibrium seeking for dynamic systems with non-quadratic payoffs*  
Paul Frihauf, Miroslav Krstic, Tamer Basar

**MB3 Applications in Economics and Finance I**  
**Chair: Vladimir Petkov**

**Function Room 6**

*Inflation Linked Bonds: An incentive for lower inflation? Pricing from a Central Bank's perspective*  
Johannes Geissler, Christian Ewald

*Emergence of a nested coalition structure in a pure bargaining game*  
Haruo Imai

*The Co-evolution of entrepreneurship and the public sector efficiency*  
Gonzalo Olcina, Empar Pons, Luisa Escriche

*Endogenous addictiveness: Implications for competition and regulation*  
Paul Calcott, Vladimir Petkov

# Tuesday June 22

8:45 – 9:45 Plenary III, Chair: Georges Zaccour

MB Auditorium

*Differential oligopoly games with capacity accumulation*

Luca Lambertini

9:45 – 10:15 Coffee Break

MB Central Foyer

10:15 – 12:15 PARALLEL SESSIONS TA

TA1 Evolutionary Games V

DCH Room 30

Chair: Joe Apaloo

*Reward and punishment in repeated games: experimental evidence*

David Rand, Martin Nowak, Anna Dreber, Drew Fudenberg

*Costly punishment does not always increase cooperation*

Ross Cressman, Yi Tao

*Time delays in replicator dynamics in social and biological models*

Jacek Miekisz

*Convergence properties of the stochastic replicator dynamics in potential games*

Panayotis Mertikopoulos, Aris Moustakas

TA2 Applications in Economics and Finance II

MB Room 253

Chair: Jorge Navas

*A dynamic game model for the resolution of financial distress under Chapter 11*

Amira Annabi, Michèle Breton, Pascal François

*Real options in a duopoly under incomplete information*

Gert Janssens, Peter Kort

*Strategies in repeated plays ---Expert Selection Problem*

Mingfei Li

*Time inconsistent preferences with non-homogeneous constant discount rates*

Albert De Paz, Jesús Marín-Solano, Jorge Navas

**TA3 Dynamic Games I: In honor of George Leitmann**  
**Chair: Dean Carlson**

**Function Room 6**

*The Leitmann - Schmitendorf advertising differential game*  
Steffen Jørgensen, Guiomar Martín-Herrán, Georges Zaccour

*The incentive to invest in environmental-friendly technologies: Dynamics makes a difference*  
Luca Lambertini, Davide Dragone, Arsen Palestini

*Caratheodory's royal road of the calculus of variations: Missed exits to the maximum principle of optimal control theory*  
Hans Josef Pesch

*A penalty method approach for open-loop variational games with equality constraints*  
Dean Carlson, George Leitmann

**12:15 – 13:30 Lunch**

**Vistas Dining Room**

**13:30 – 15:30 PARALLEL SESSIONS TB**

**TB1 Mathematical Aspects of Differential Games I:  
Tribute to Leonard Berkovitz**  
**Chair: Marc Quincampoix**

**DCH Room 30**

*A differential game with one player in the dark*  
Pierre Cardaliaguet, Anne Souquière

*Mean field social dynamics with egoistic, altruistic and massive agents: A Nash game formulation*  
Peter Caines, Minyi Huang, Roland Malhamé

*Option pricing with zero lower-bound of impulse cost*  
Naïma El Farouq, Pierre Bernhard

*Approachability of repeated games with incomplete information*  
Marc Quincampoix

**TB2 Dynamic Games II: In honor of George Leitmann**  
**Chair: Arkady Kryazhinsky**

**MB Room 253**

*Differential games with mixed leadership*  
Tamer Basar

*Dynamically consistent solution for a cooperative differential game of climate change control*  
David Yeung

*Necessary and sufficient conditions for Pareto optimality in differential games*  
Puduru Reddy, Jacob Engwerda

*TBA*  
Arkady Kryazhinsky

**TB3 Applications in Marketing and Operations Management I**  
**Chair: Gary Erickson**

**Function Room 6**

*Offensive versus defensive spending: What is the optimal mix?*  
Guiomar Martín-Herrán, Shaun McQuitty, Simon Sigué

*A differential games approach to event advertising*  
Luca Grosset, Bruno Viscolani

*How to reinforce a brand value using a licensing agreement*  
Alessandra Buratto, Luca Grosset

*A differential game model of the marketing-operations interface*  
Gary Erickson

**15:30 – 16:00 Coffee Break**

**MB Central Foyer**

**16:00 – 18:00 Parallel Sessions TC**

**TC1 Mathematical Aspects of Differential Games II:**  
**A tribute to Arik Melikyan**  
**Chair: Geert Jan Olsder**

**DCH Room 30**

*Anglers' fishing problem*  
Krzysztof Szajowski

*Dynamic inverse Stackelberg problems*  
Geert Jan Olsder

*Characterization of feedback Nash equilibrium for differential games*  
Yurii Averboukh

**TC2 Applications in Marketing and Operations Management II**  
**Chair: Bruno Viscolani**

**MB Room 253**

*A supply chain game with design and conformance quality under wholesale price and revenue-sharing contract*  
Fouad El Ouardighi, Konstantin Kogan

*Coop programs in closed-loop supply chain with incentives*  
Pietro De Giovanni, Georges Zaccour

*Price competition and store competition: Store brands vs. national brand*  
Karima Fredj, Sungchul Choi

*Comparative advertising as a differential game*  
Bruno Viscolani, Luca Grosset

**TC3 Applications in Economics and Finance III**  
**Chair: Francisco Cabo**

**Function Room 6**

*Games with long term and short term players*  
George P. Papavassilopoulos, Nikolaos Kakogiannis

*Sooner or later? On the possibility of accelerating adoption of socially desirable choices*  
Jacek Krawczyk, Mabel Tidball

*Foresight and myopia in a transboundary pollution game*  
Hassan Benchenkroun, Guiomar Martín-Herrán

*The endogenous determination of retirement age and Social Security benefits*  
Francisco Cabo, Ana García-González

## **Wednesday, June 23**

**9:00 – 12:00 Tutorial I, Chair: Joe Apaloo**

**DCH Room 30**

*Solution concepts and modelling tools for solving and applying evolutionary games*  
Joel Brown

**(10:15 – 10:45 Coffee Break)**

**MB Central Foyer**

**12:00 – 13:30 Lunch**

**Vistas Dining Room**

**13:30 – 16:30 Tutorial II, Chair: Michèle Breton**

**DCH Room 30**

*Dynamic games in environmental economics*  
Aart de Zeeuw

**(14:45 – 15:15 Coffee Break)**

**MB Central Foyer**