

# *3rd International Conference on Dynamics, Games and Science*

*February 17-21, 2014  
University of Porto*

## Parallel Thematic Sessions

Room 2 (4th floor)

|                     | February 17<br>Monday   | February 18<br>Tuesday   | February 19<br>Wednesday   | February 20<br>Thursday   | February 21<br>Friday  |
|---------------------|---|--|--|---|--|
| 11:30<br>–<br>12:30 | Isabel Pereira:<br>Bayesian<br>Statistics                         | Joana Becker:<br>Applied Game<br>Theory  | Bruno Oliveira:<br>Oligopoly<br>Theory                                     | Ricardo Cruz:<br>Dynamic<br>Games   | Orlando<br>Gomes and<br>Luís Cavique:<br>Knowledge<br>Discovery        |
| lunch break         |   |  |  |   |  |
| 14:15<br>–<br>15:15 | Delfim F. M.<br>Torres:<br>Dynamic<br>Equations on<br>Time Scales | José Fernando<br>Oliveira:<br>Applications of<br>Operations<br>Research in<br>Industry and<br>Services | João Paulo<br>Almeida:<br>Dynamics,<br>Computation<br>and<br>Combinatorics | Diana Mendes,<br>Vivaldo<br>Mendes:<br>Nonlinear time<br>series models<br>applied to<br>economics | Carlos Ramos:<br>Complexity<br>and nonlinear<br>dynamics               |
| 15:30<br>–<br>16:30 |   |  |  |   | Sara<br>Fernandes:<br>Fluid<br>Dynamics and<br>Numerical<br>Semigroups |
| coffee break        |   |  |  |   |  |

Room 3 (3rd floor)

|                     | February 17<br>Monday  | February 18<br>Tuesday                    | February 19<br>Wednesday   | February 20<br>Thursday | February 21<br>Friday   |
|---------------------|--|---|----------------------------|-------------------------|---|
| 11:30<br>–<br>12:30 | Edgard<br>Pimentel:<br>Dispersive<br>equations and<br>mean-field<br>models | João Gama:<br>Data Sciences               |                            |                         | <b>António<br/>Machuco Rosa<br/>and Joaquim<br/>M. C. Correia:<br/>Philosophy,<br/>Science and<br/>Social Science</b> |
| lunch break         |  |   |                            |                         |   |
| 14:15<br>–<br>15:15 | Fátima Silva<br>Leite and Luís<br>Machado:                                 | Alberto A.<br>Álvarez López:<br>Micro and | Renato Soeiro:<br>Dynamics |                         | Luís Silva:<br>Statistical and<br>mathematical  |

|                     |  |  |  |  |  |
|---------------------|--|--|--|--|--|
| 15:30<br>–<br>16:30 | Optimization<br>and Dynamical<br>Systems on<br>Manifolds | macroeconomic<br>implications of<br>some dynamic<br>models |  |  | models in<br>plant ecology<br>and forestry |
| coffee break        |  |  |  |  |  |

Monday 17

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## Bayesian Statistics

Organizer: *Isabel Pereira*  
Universidade de Aveiro, CIDMA

Speakers:

- Marília Antunes, CEAUL and DEIO-FCUL, University of Lisbon: “Modelling the abundance of *Culex pipiens* in Portugal in a bayesian perspective”
- Patrícia de Zea Bermudez, CEAUL and DEIO-FCUL, University of Lisbon: “Parameter Estimation of Bilinear Processes using Approximate Bayesian Computation”
- Sandra Ramos, Polytechnic Institute of Oporto, CEAUL: “Nonparametric Bayesian Models in Screening Problems”

## Dispersive equations and mean-field models

Organizer: *Edgard Pimentel*  
CAMGSD-IST-UTL

Speakers:

- Edgard Pimentel, CAMGSD-IST-UTL: “Regularity for mean-field games systems”
- Mahendra Panthee, IMECC-UNICAMP, Brazil: “Sharp local well-posedness of KdV type equations with dissipative perturbations”
- Joaquim Correia, DMat e CIMA, ECT, UÉvora & CAMGSD-IST, Portugal: “Zero limit of dispersive-dissipative perturbed hyperbolic conservation laws”

## Dynamic Equations on Time Scales

Organizer: *Delfim F. M. Torres*  
University of Aveiro

Speakers:

- Monika Dryl, University of Aveiro: “Direct and Inverse Problems of the Calculus of Variations on Time Scales”
- Artur M. C. Brito da Cruz, Escola Superior de Tecnologia de Setúbal: “A time-scale fractional calculus”
- Natália Martins, University of Aveiro: “Extension of Noether’s Second Theorem to Variational Problems on Time Scales”
- Małgorzata Guzowska, University of Szczecin (Poland): “Calculus of variations on time scales: applications to economic models”
- Susana Pinheiro, University of Porto (Portugal): “On a stochastic logistic growth model with predation and power-type diffusion coefficient: dynamics and optimal harvesting”

## Optimization and Dynamical Systems on Manifolds

Organizer: *Fátima Silva Leite and Luís Machado*  
Fátima Silva Leite (Department of Mathematics and Institute of Systems and Robotics (ISR), University of Coimbra) / Luís Machado (Department of Mathematics, University of Trás-os-Montes e Alto Douro (UTAD) and Institute of Systems and Robotics (ISR), University of Coimbra)

Speakers:

- Luís Machado, UTAD & ISR: “Function approximation on the SPD manifold”
- Sandra Ricardo, UTAD & ISR: “Linearization of mechanical control systems”
- Fernando Louro, : “Explicit controllability of rolling spheres in higher dimension”

- Fátima Pina, Department of Mathematics, University of Coimbra: "Rolling the essential manifold"
- Fátima Silva Leite, DMUC and ISR - University of Coimbra: "Rolling motion of ellipsoids - constructive proof of controllability"

## Tuesday 18

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### Applied Game Theory

Organizer: *Joana Becker*  
University of Porto

Speakers:

- Pedro Sousa, University of Porto, Faculty of Law and School of Criminology: "Game Theory in Criminology – Discussions on the efficacy of crime deterrence instruments"
- Saeed Banihashemi, School of International Relations of MOFA Iran: "Application of games theory on international relations"
- Victor Maia Senna Delgado, Universidade Federal de Ouro Preto: "A study on the relationship between student allocation and proficiency in Belo Horizonte, Brazil"

### Data Sciences

Organizer: *João Gama*  
INESC TEC

Speakers:

- Luis Moreira-Matias, Instituto de Telecomunicações: "Time-Evolving O-D Matrix Estimation using high-speed GPS data streams"
- Alexandre Faria de Carvalho, INESC TEC: "Regression. A Perspective on Latent and Canonical Variables."
- Vânia Maria Gomes de Almeida, INESC TEC: "Finding Time Series Motifs in Wind Power Generation"

### Applications of Operations Research in Industry and Services

Organizer: *José Fernando Oliveira*  
University of Porto

Speakers:

- Teresa Bianchi-Aguiar, INESC TEC, Faculty of Engineering, University of Porto: "Applying Optimization Methods in the practice of Shelf Space Management at a Portuguese Retail Chain"
- Diana Yomali Ospina, INESC TEC, Faculty of Engineering, University of Porto: "Coffee aggregate production planning"
- Elsa Silva, INESC TEC, Faculty of Engineering, University of Porto : "Integrated cutting and production planning in a home textile manufacturing company"
- Sam Heshmati, INESC TEC, Faculty of Engineering, University of Porto: "An Agent-based Approach to Schedule Crane Operations in Rail-Rail Transshipment Terminals"

### Micro and macroeconomic implications of some dynamic models

Organizer: *Alberto A. Álvarez López*  
UNED

Speakers:

- Manuel J. Sánchez, UNED: "Modern Forecasting of NOEM Models"
- Ramón Miralles Rafart , UNED: "A model of optimal taxation under uncertainty"
- Eduardo Oliva, UNED: "Statistical Properties of Coordination failures"
- Alberto A. Álvarez-López, UNED: "Adjusting Non-Durable and Durable Consumption Models with Habits"

## Wednesday 19

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## Oligopoly Theory

Organizer: *Bruno Oliveira*  
University of Porto / INESC TEC

Speakers:

- Flávio Ferreira, ESEIG, Polytechnic Institute of Porto (Portugal): "Patent licensing schemes in an international competition"
- Electra Petracou, Department of Geography, University of the Aegean (Greece): "Migration modelling: A socio-economic perspective"
- Bruno Oliveira, University of Porto / INESC TEC: "Cournot duopolies with R&D investment"

## Dynamics, Computation and Combinatorics

Organizer: *João Paulo Almeida*  
LIAAD - INESC TEC and Instituto Politécnico de Bragança

Speakers:

- Mário Abrantes, Instituto Politécnico de Bragança: "Reasoning in Contradictory Contexts with Logic Programming"
- Inês Barbedo, CIDMA, Department of Mathematics, University of Aveiro and Instituto Politécnico de Bragança: "Regular exceptional graphs and equitable partitions"
- Maria F. Pacheco, CIDMA, University of Aveiro and Instituto Politécnico de Bragança: "Determination of (0,2)-regular sets in graphs and applications"
- João Paulo Almeida, LIAAD - INESC TEC and Instituto Politécnico de Bragança: "Anosov diffeomorphisms and Tilings"
- Carlos Balsa, Instituto Politécnico de Bragança: "Inexact Subspace Iteration to Accelerate the Solution of Linear Systems with Multiple Right-Hand Sides"
- Rui Gonçalves, LIAAD INESC TEC e Universidade do Porto: "Modeling errors in temperature forecasts"
- Luis M. Mesquita, Instituto Politécnico de Bragança: "Modelling of Intumescent Coatings Kinetics and Dynamics of Swelling"
- Luís António de Almeida Vieira, Center of Research of Mathematics of University of Porto (Portugal): "Alternating Hadamard Series and Some Theorems on Strongly Regular Graphs"

## Dynamics

Organizer: *Renato Soeiro*  
LIAAD - INESC TEC and University of Porto

Speakers:

- Mohiniso Hidirova, Centre for the development of software and hardware program complexes at Tashkent University of Informational Technologies, Uzbekistan: "Regulatorika of excitable media"
- Agustin Perez-Barahona, INRA and Ecole Polytechnique (France): "Environmental Pollution and Biodiversity: Light Pollution and Sea Turtles in the Caribbean"
- Marek Lampart, Dept. of Applied Mathematics & IT4Innovations, Technical University of Ostrava: "Nontrivial dynamics of Laplacian-type coupling systems"
- Juliana Pimentel, IST - Universidade de Lisboa: "Asymptotic behavior of a non-dissipative scalar parabolic PDE"

## Thursday 20

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## Dynamic Games

Organizer: *Ricardo Cruz*  
INESC TEC, University of Porto

Speakers:

- Mohammad Choubar, INESC TEC, University of Porto: "Stationary Sunspot Equilibrium as Limit of Expectations Coordination Failures"
- Miguel Arantes, University of Porto: "Look a STress"
- Ricardo Cruz, INESC TEC, University of Porto: "Testing universality in complex systems"
- Filipe Martins, INESC TEC: "Optimal Stochastic Control of Life Insurance and Investment strategies"
- Renato Soeiro, INESC TEC, University of Porto

## Nonlinear time series models applied to economics

Organizer: *Diana Mendes, Vivaldo Mendes*  
ISCTE-IUL

Speakers:

- Ana Maria Guedes, ISCAP, IPP: "Is the Iberian Electricity Market Chaotic? Characterization and Prediction with Nonlinear Methods"
- Pedro Fortes Ferreira, ISCTE-IUL, TBA: "A New Mixed Method to Select Non-Linear Complex Time Series"
- Telma Gonçalves, ISCTE-IUL, TBA: "Nonlinear Fiscal Multiplier: Evidence From Portugal"
- Diana Mendes, ISCTE-IUL: "Volatility and Risk Estimation with Nonlinear Methods"
- Monica Isfan, INE: "Forecasting Financial Time Series by Using Artificial Neural Networks"

Friday 21

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## Knowledge Discovery

Organizer: *Orlando Gomes (ISCAL-IPL) and Luís Cavique (Univ. Aberta)*

Speakers:

- Jorge Santos, Univ. Évora: "Discovering Clusters with Data Envelopment Techniques"
- Armando Mendes, Univ. Açores: "Decision Support in an e-Government Environment"
- Luís Cavique, Univ. Aberta: "A Data Analysis Graph Based Algorithm"
- Orlando Gomes, ISCAL: "Sentiment Cyclicity"

## Philosophy, Science and Social Science

Organizer: *António Machuco Rosa (University of Porto) and Joaquim M. C. Correia (University of Évora)*

Speakers:

- Sofia Miguens, University of Porto (Portugal): "What should we believe? Epistemological questions and research on cognition"
- João Alberto Pinto, University of Porto (Portugal): "To lie or not to lie"
- J.C. Tiago de Oliveira, DMAT-UE & CFCUL (Portugal): "Bata satas batas bava - a cooperant's apology (Invited Talk)"
- António Machuco Rosa, University of Porto, CETAC Media (Portugal): "Dynamical Systems and Sacrificial Crisis in Anthropology"
- Carlos J.S. Alves, Dep. Matemática, Instituto Superior Técnico, Univ. Lisboa (Portugal): "Causation and emergence, finite and infinite settings"
- Joaquim M.C. Correia, DMat e CIMA, ECT, UÉvora & CAMGSD-IST (Portugal): "Modelling with PDEs"

## Complexity and nonlinear dynamics

Organizer: *Carlos Ramos*  
Universidade de Évora

Speakers:

- Luis Bandeira, Universidade de Évora: "On certain infinite dynamical systems"
- Carlos Ramos, Universidade de Évora: "Regulatory systems"
- Ricardo Severino, Universidade do Minho: "On the cellular automata classification"

## Fluid Dynamics and Numerical Semigroups

Organizer: *Sara Fernandes*  
Universidade de Évora

Speakers:

- Marília Pires, Universidade de Évora: "A traceless variant of the Johnson-Segalman viscoelastic model"
- Denise Torrão, Universidade de Évora: "On the enumeration of the set of saturated numerical semigroups of a given genus"
- Sajjad Hossain, Universidade de Évora: "Flows of Oldroyd-B Fluids in 2D Geometries"

## Statistical and mathematical models in plant ecology and forestry

Organizer: *Luís Silva*  
CIBIO/INBIO

Speakers:

- Joana R. Vicente, CIBIO/INBIO: "Applications of ecological models to assess biological invasions, rare species conservation, and habitat quality of forest ecosystems in a rapidly changing world"
- Luís Silva, CIBIO/INBIO: "Using Bayesian inference to determine plant community assemblages and indicator species"
- Abílio Pereira Pacheco, FEUP: "The Forest of Forking Paths: an integrated landscape intra-annual optimization model, considering escape and suppression costs"
- Ana Sofia Lino Vaz, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto (CIBIO)/InBIO: "Disentangling tree assemblages towards point patterns analysis: Implementing spatially explicit models in forest habitats"
- Brigitte Botequim, Instituto Superior de Agronomia: "Tools for creating fire-resistant landscapes in Portuguese ecosystems"
- Lurdes Silva, CIBIO/INBIO: "Development of biomass estimation models for management of exotic woodland in the Azores"
- Lara Silva, CIBIO/INBIO: "Species distribution models in forestry"