# 17th Applied Stochastic Models and Data Analysis International Conference (ASMDA2017)

6-9 June, 2017, De Morgan House, London, UK

## Program

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<tr>
<th>Session / Room</th>
<th>Date / Time</th>
<th>Authors / Talk Title / Event</th>
<th>Authors / Talk Title / Event</th>
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<tr>
<td>Lecture Theatre</td>
<td>8:00-9:15</td>
<td>Tuesday June 6</td>
<td>Registration</td>
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<tr>
<td>Lecture Theatre</td>
<td>9:15-9:30</td>
<td>Opening Ceremony</td>
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<tr>
<td>Lecture Theatre</td>
<td>9:30-10:20</td>
<td>Honorary Speech (Chair: Pieter M. Kroonenberg) Gilbert Saporta Conservatoire National des Arts et Métiers (CNAM) Paris, France</td>
<td>50 years of data analysis: from EDA to predictive modelling and machine learning</td>
</tr>
<tr>
<td>Lecture Theatre</td>
<td>10:20-10:40</td>
<td>Coffee Break</td>
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</tr>
<tr>
<td>Lecture Theatre</td>
<td>10:40-11:20</td>
<td>Plenary Session (Chair: Sally McClean) Robert J. Elliott Haskayne School of Business, University of Calgary, Canada and Centre for Applied Financial Studies, University of South Australia, Adelaide, Australia</td>
<td>MALLIAVIN CALCULUS IN A BINOMIAL FRAMEWORK</td>
</tr>
<tr>
<td>Lecture Theatre</td>
<td>11:20-12:00</td>
<td>Plenary Session (Chair: Valérie Girardin) Fabrizio Ruggeri IMATI, Italy</td>
<td>Recent Advances in Adversarial Risk Analysis</td>
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<td></td>
<td>12:30-13:30</td>
<td>Lunch</td>
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</table>
## SPECIAL AND CONTRIBUTED SESSIONS SCS1

### Hardy Room 13:30-15:15

**Invited Session Chair: Raimondo Manca and Dmitrii Silvestrov**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling trading duration, volume and returns by means of vector indexed semi-Markov chains</td>
<td>Guglielmo D’Amico, Filippo Petroni</td>
</tr>
<tr>
<td>Optimal provision of a dispatchable energy source for wind energy management: dependence on the wind energy model</td>
<td>Guglielmo D’Amico, Filippo Petroni, Robert Adam Sobolewski</td>
</tr>
<tr>
<td>Financial risk distribution in European Union</td>
<td>Guglielmo D’Amico, Stefania Scocchera, Loriano Storch</td>
</tr>
<tr>
<td>Hitting Times for Claim Number in Car Insurance Setting</td>
<td>Guglielmo D’Amico, Fulvio Gismondi, Jacques Janssen, Raimondo Manca, Filippo Petroni, Dmitrii Silvestrov</td>
</tr>
<tr>
<td>Step semi-Markov models and application to manpower management</td>
<td>Vlad Stefan Barbu, Guglielmo D’Amico, Raimondo Manca, Filippo Petroni</td>
</tr>
</tbody>
</table>

### Cayley Room 13:30-15:00

**Invited Session Chair: Vladimir Anisimov**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictive analytic modelling of clinical trials operation</td>
<td>Vladimir Anisimov</td>
</tr>
<tr>
<td>Estimates for Initializing Enrollment Models</td>
<td>Matthew Austin</td>
</tr>
<tr>
<td>Some issues in predicting patient recruitment in multi-centre clinical trials</td>
<td>Andishah Bakhtsh, Stephen Senn, Alan Phillips</td>
</tr>
<tr>
<td>Human factors: Coal Face Reality of Recruitment to Clinical Trials</td>
<td>Katharine D Barnard</td>
</tr>
<tr>
<td>Clinical trials simulation: Comparison of Discrete Method, Continuous Method and Copula Method for virtual Patients' generation</td>
<td>Nicolas Saay, Philippe Saint-Pierre, Sébastien Deljean, Stéphanie Saay, Sébastien Marque</td>
</tr>
<tr>
<td>Simulation before, during, and after a clinical trial: A Bayesian approach</td>
<td>Stephen D. Simon</td>
</tr>
</tbody>
</table>

### Burnside Room 13:30-15:00

**Special Session Chairs: Giuseppe Giordano and Maria Russolillo**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Impact of Mortality Projection Models in case of flexible retirement schemes</td>
<td>Mariarosaria Coppola, Maria Russolillo, Rosaria Simone</td>
</tr>
<tr>
<td>Effect of Statin Prescription on Individual and on Population Life expectancy</td>
<td>Elena Kulinskaya, Lisanne Gitsels, Ilya Babbergeny</td>
</tr>
<tr>
<td>Methodological issues in the three-way decomposition of mortality data</td>
<td>Giuseppe Giordano, Steven Haberman, Maria Russolillo</td>
</tr>
<tr>
<td>Longevity trends and their impact on life expectancy and annuity values – how fast are they changing?</td>
<td>Steven Haberman, Zoltan Butt</td>
</tr>
<tr>
<td>Modelling non-anticipated longevity shocks under Lee-Carter Model</td>
<td>Eliseo Navarro, Piar Requena</td>
</tr>
</tbody>
</table>

### Sylvester Room 13:30-15:00

**Chairs: Valery Antonov, Anatoly Kovalenko**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical and Demographic Consequences of the Stressful Living Conditions</td>
<td>Valery Antonov, Anatoly Kovalenko, Konstantin Lebedinski</td>
</tr>
<tr>
<td>Decomposition of marital status differences in life expectancy by age in the Czech Republic</td>
<td>Tomas Fiala, Jitka Langhamrova</td>
</tr>
<tr>
<td>Reliability of decrease rates for cardiovascular mortality in Russia</td>
<td>Tamara P. Sabaydy, Victoria G. Semyonova</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>Using deepest dependency paths to enhance life expectancy estimation</td>
<td>Irene Albarrán, Pablo Alonso-González, Ana Arribas-Gil, Aurea Grané</td>
</tr>
<tr>
<td>A bivariate mixed-type distribution with applications to reliability</td>
<td>Alessandro Barbiero</td>
</tr>
<tr>
<td>Some Asymptotic Results for Truncated-Censored and Associated Data</td>
<td>Zohra Guessoum, Abdelkader Tatachak</td>
</tr>
</tbody>
</table>

15:00-15:30 Coffee Break
### SCS2  Tuesday June 6  SPECIAL AND CONTRIBUTED SESSIONS SCS2

<table>
<thead>
<tr>
<th>Hardy Room 15:30-16:30</th>
<th>Invited Session Chair: Mark Brown</th>
<th>Diverse topics in applied probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylor's Law via Ratios, for Some Distributions with Infinite Mean</td>
<td>Mark Brown</td>
<td></td>
</tr>
<tr>
<td>Sharp Bounds for Exponential Approximations of NWUE Distributions</td>
<td>Mark Brown, Shuangning Li</td>
<td></td>
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<tr>
<td>Optimal Policies for MDPs with unknown parameters</td>
<td>Michael N. Katehakis</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cayley Room 15:30-16:30</th>
<th>Invited Session Chairs: M. Molina and E. Yarovaya</th>
<th>Stochastic Models for Dynamical Systems I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal Sustainable Constant Effort Fishing Policies in Random Environments</td>
<td>Carlos A. Braumann, Nuno M. Brites</td>
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<tr>
<td>Stochastic Models for Biological Populations with Sexual Reproduction</td>
<td>Manuel Molina, Manuel Mota, Alfons Ramos</td>
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<tr>
<td>Defective Galton-Watson processes</td>
<td>Serik Sagitov, Carmen Minuesa</td>
<td></td>
</tr>
<tr>
<td>Operator Models in Theory of Branching Random Walks and their Applications</td>
<td>Elena Yarovaya</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Burnside Room 15:30-16:30</th>
<th>Special Session Chair: Christina Erlwein-Sayer</th>
<th>Financial Modelling: regime-switching, sentiment and asset allocation</th>
</tr>
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<tbody>
<tr>
<td>Portfolio strategies and filtering within regime-switching models</td>
<td>Christina Erlwein-Sayer, Stefanie Grimm, Peter Ruckdeschel, Joern Sass, Tilman Sayer</td>
<td></td>
</tr>
<tr>
<td>An Interest Rate Model with an Unobservable Mean-Reversion Level</td>
<td>Stefanie Grimm, Christina Erlwein-Sayer, Rogemar Mamon</td>
<td></td>
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<tr>
<td>Electricity spot price modelling using a higher-order HMM</td>
<td>Rogemar Mamon, Heng Xiong</td>
<td></td>
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<tr>
<td>News Augmented GARCH(1,1) Model for Volatility Prediction</td>
<td>Zryan Sadik, Paresh Date</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sylvester Room 15:30-16:30</th>
<th>Chair: Valeria D'Amato</th>
<th>Risk - Insurance</th>
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</thead>
<tbody>
<tr>
<td>&quot;Money purchase&quot; pensions: modeling non traditional life insurance products</td>
<td>Valeria D'Amato, Emilia Di Lorenzo, Marilena Sibillo, Roberto Tizzano</td>
<td></td>
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<tr>
<td>Risk factors of Severe Cognitive Impairment in the Czech Republic</td>
<td>Komelija Csillagová, Jitka Langhamrová</td>
<td></td>
</tr>
<tr>
<td>A new family of premium principles obtained by a risk-adjusted distribution</td>
<td>Miguel Ángel Sordo, Antonia Castaño, Gema Piqueiras</td>
<td></td>
</tr>
<tr>
<td>At-Risk-of-Poverty or Social Exclusion Rate – Regional Aspects in the Slovak and Czech Republic and International Comparison</td>
<td>Iveta Stankovcová, Jitka Bartošová, Vladislav Bina</td>
<td></td>
</tr>
<tr>
<td>FISS - THE FACTOR BASED INDEX OF SYSTEMIC STRESS</td>
<td>Tibor Szendrei, Katalin Varga</td>
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### SCS3  Tuesday June 6  SPECIAL AND CONTRIBUTED SESSIONS SCS3

<table>
<thead>
<tr>
<th>Hardy Room 16:30-17:30</th>
<th>Invited Session Chair: Ekaterina Bulinskaya</th>
<th>Stochastic Models for Dynamical Systems II</th>
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<tbody>
<tr>
<td>Asymptotic Analysis and Optimization of Insurance Company Performance</td>
<td>Ekaterina Bulinskaya</td>
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<tr>
<td>On Quantum Information Characterization of Markov and non-Markov Dynamics of Open Quantum Systems</td>
<td>Andrey Bulinski</td>
<td></td>
</tr>
<tr>
<td>Multivariate Risk Models and Their Applications</td>
<td>Yury Khokhlov, Olga Rumyantseva</td>
<td></td>
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<tr>
<td>Stochastic Forecast Model of Severe Storm Wind over Territory of Northern Europe and England</td>
<td>Elvira Perekhoposova</td>
<td></td>
</tr>
<tr>
<td>Cayley Room 16:30-17:30</td>
<td>Invited Session Chair: Stephane Chretien</td>
<td>Optimisation Methods for Machine Learning</td>
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<tr>
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<tr>
<td>Online robust PCA</td>
<td>Hervé Cardot, Antoine Godichon-Baggioni</td>
<td></td>
</tr>
<tr>
<td>Non-Convex structured Robust PCA</td>
<td>Stephane Chretien</td>
<td></td>
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<tr>
<td>Robust Ranking via Eigenvector and Semidefinite Programming Synchronization</td>
<td>Mihai Cucuringu</td>
<td></td>
</tr>
<tr>
<td>SNIPE for Memory-Limited PCA with Incomplete Data: From Failure to Success</td>
<td>Armin Eftekhari, Laura Balzano, Michael B. Wakin, Dehui Yang</td>
<td></td>
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<thead>
<tr>
<th>Burnside Room 16:30-17:30</th>
<th>Chair: Jan Ámos Víšek</th>
<th>Regression Issues</th>
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<tr>
<td>Are the leverage point the most terrible problem in regression?</td>
<td>Jan Ámos Víšek</td>
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<tr>
<td>The Flexible Beta Regression Model</td>
<td>Sonia Migliorati, Agnese M. Di Brisco Andrea Ongaro</td>
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<tr>
<td>Statistical analysis of regression models under grouping of the dependent variable</td>
<td>Helena Ageeva, Yuriy Khartin</td>
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<tr>
<td>Formulation of the Mean Squared Error for Logistic Regression. An Application with Credit Risk Data</td>
<td>Eva Boj del Val, Teresa Costa Cor</td>
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<thead>
<tr>
<th>Sylvester Room 16:30-17:30</th>
<th>Invited Session Chairs: Aglaia Kalamatianou and Franca Crippa</th>
<th>Data analysis in the Social Sciences</th>
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<tbody>
<tr>
<td>Measuring latent variables in space and/or time. A latent markov model approach</td>
<td>Gaia Bertarelli, Franca Crippa, Fulvia Mecatti</td>
<td></td>
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<tr>
<td>Random effects models in item analysis: exploring applications in autobiographical memory</td>
<td>Angela Tagini</td>
<td></td>
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<tr>
<td>Random Utility Models in a stated preference approach. Some considerations on the transition from university to work</td>
<td>Paolo Mariani, Andrea Marletta, Mariangela Zenga Marcella Mazzolani, Mariangela Zenga</td>
<td></td>
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<tr>
<td>Joint models for time-to-event and bivariate longitudinal data: a likelihood approach</td>
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17.30- Welcome Reception
**Wednesday June 7**

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<thead>
<tr>
<th>Hardy Room</th>
<th>8.30-10.00</th>
<th>Invited Session Chairs: Adele H Marshall and Sally McClean</th>
<th>Healthcare Session</th>
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</thead>
<tbody>
<tr>
<td><strong>A discrete piecewise multi-state survival model: Application to breast cancer</strong></td>
<td>Juan Eloy Ruiz Castro, Mariana gela Zenga</td>
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<td></td>
</tr>
<tr>
<td><strong>Some results on the detection of CpG islands via hidden semi Markov modelling</strong></td>
<td>Zacharias Kyritsis, Alexia Papadopoulou, Sally McClean</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Modelling patient waiting time in emergency departments using Coxian phase-type distributions</strong></td>
<td>Adele H. Marshall, Laura M. Boyle, Mark Mackay</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The variances and covariances of the macro state sizes via the micro state sizes in semi Markov modeling for a healthcare system</strong></td>
<td>Aleka Papadopoulou, Sally McClean, Zacharias Kyritsis, Lalit Garg</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cayley Room</th>
<th>8.30-10.15</th>
<th>Invited Session Chair: Rustam Ibragimov</th>
<th>Theory of Majorization, Stochastic Inequalities and Their Applications</th>
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<tbody>
<tr>
<td><strong>Diversification Analysis in Value at Risk Models under Heavy-Tailedness and Dependence</strong></td>
<td>Suzanne Burns</td>
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<tr>
<td><strong>Income Inequality and Price Elasticity of Market Demand: The Case of Crossing Lorenz Curves</strong></td>
<td>Marat Ibragimov, Rustam Ibragimov, Paul Kattuman, Jun Ma</td>
<td></td>
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</tr>
<tr>
<td><strong>Optimal Bundling Strategies for Complements and Substitutes with Heavy-Tailed Valuations and Related Problems</strong></td>
<td>Rustam Ibragimov, Artem Prokhorov, Johan Walden</td>
<td></td>
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</tr>
<tr>
<td><strong>Exact Lower Bounds for the Agnostic Probably-Approximately-Correct (PAC) Machine Learning Model</strong></td>
<td>Aryeh Kontorovich, Iosif Pinelis</td>
<td></td>
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<tr>
<td><strong>Majorization and Stochastic Orders in Secure Communications</strong></td>
<td>Pin-Hsun Lin, Holger Boche, Eduard Jorswieck</td>
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<tr>
<td><strong>On Boundary Crossing By Stochastic Processes</strong></td>
<td>Victor de la Peña</td>
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<tr>
<td><strong>Schur properties of convolutions of gamma random variables with applications in RandNLA</strong></td>
<td>Farbod Roosta-Khorasani</td>
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<table>
<thead>
<tr>
<th>Burnside Room</th>
<th>8.30-10.15</th>
<th>Chair: Mark Brown</th>
<th>Demographics II</th>
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</thead>
<tbody>
<tr>
<td><strong>Fitting Markovian binary trees using global and individual demographic data</strong></td>
<td>Sophie Haupphenne, Katharine Turner, Melanie Massara</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accounting for model uncertainty in mortality projection</strong></td>
<td>Andrés Benchimol, J. Miguel Marin, Irene Albarrán, Pablo Alonso-González</td>
<td></td>
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</tr>
<tr>
<td><strong>Migration component in health losses of population in Russian megapolises (for example of Moscow)</strong></td>
<td>Victoria G. Semyonova, Tamara P. Sabgaya, Svetlana Yu. Nikitina</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prospective scenarios of death coverage of the Northeast Brazil</strong></td>
<td>Nair Antunes Paes, Alisson dos Santos Silva</td>
<td></td>
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</tr>
<tr>
<td><strong>Further exploration of the existence of a limit to human life span</strong></td>
<td>Christos H. Skiadas, Charalabos Skiadas</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dealing with inaccuracies and limitations of Empirical Mortality Data in Small Populations</strong></td>
<td>K. Zafeiris, A. Kostaki</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Health estimates for some countries of the rapid developing world</strong></td>
<td>K. N. Zafeiris, C. H. Skiadas</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sylvester Room</th>
<th>8.30-10.15</th>
<th>Invited Session Chair: Maria Symeonaki</th>
<th>LABOUR MARKET TRANSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employers’ assessments on hiring: results from a vignette experiment</strong></td>
<td>Dimitris Parsanoglou, Aggeliki Yfanti</td>
<td></td>
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<tr>
<td><strong>Fuzzyfying Labour Market States</strong></td>
<td>Maria Symeonaki</td>
<td></td>
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<tr>
<td><strong>A neuro-fuzzy approach to measuring attitudes</strong></td>
<td>Maria Symeonaki, Aggeliki Kazani, C. Michalopoulou</td>
<td></td>
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</tr>
<tr>
<td><strong>Labour Market flows in Europe: Evidence from the EU-LFS</strong></td>
<td>Maria Symeonaki, Glykeria Stamatopoulou, Maria Karamessini</td>
<td></td>
<td></td>
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</tbody>
</table>
Investigating Southern Europeans’ Perceptions of Their Employment Status
Aggeliki Yfanti, Catherine Michalopoulou,
Aggelos Mimis, Stelios Zachariou

On the Measurement of Early Job Insecurity in Europe
Maria Symeonaki, Glykeria Stamatopoulou,
Maria Karamessini

10:00-10:30
Coffee Break
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Location</th>
<th>Presenter/Author(s)</th>
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<tbody>
<tr>
<td>10:30-11:30</td>
<td>Invited Talk</td>
<td>Hardy Room</td>
<td>Jean-Marie Robine, Université Montpellier 2, Place Eugène Bataillon, Montpellier, France</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Invited Talk</td>
<td>Cayley Room</td>
<td>Jean-Marie Robine</td>
</tr>
<tr>
<td>11:00-11:15</td>
<td>Contributed Talk</td>
<td>Cayley Room</td>
<td>Nan Li, Hong Mi, Patrick Gerland</td>
</tr>
<tr>
<td>11:00-11:15</td>
<td>Contributed Talk</td>
<td>Cayley Room</td>
<td>Using Child, Adult, and Old-age Mortality to Establish a Life-table Database for Developing Countries</td>
</tr>
<tr>
<td>11:15-11:30</td>
<td>Contributed Talk</td>
<td>Cayley Room</td>
<td>Christos Skiadas, Maria Felice Arezzo</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>Contributed Talk</td>
<td>Cayley Room</td>
<td>Estimation of the Healthy Life Expectancy in Italy through a Simple Model based on Mortality Rate</td>
</tr>
<tr>
<td>10:30-11:30</td>
<td>Chair: Chrisost Skiadas, Co-Chair: Claude Lefèvre</td>
<td>Hardy Room</td>
<td>Is the longevity revolution compatible with our models of healthy ageing and/or successful ageing?</td>
</tr>
<tr>
<td>10:30-11:30</td>
<td>Chair: Hanna Livinska</td>
<td>Cayley Room</td>
<td>Switching Processes in Queueing Models</td>
</tr>
<tr>
<td>10:30-11:30</td>
<td>Chair: M. J. Valderrama</td>
<td>Burnside Room</td>
<td>The use of deviance plots for non-nested model selection in diverse models</td>
</tr>
<tr>
<td>10:30-11:30</td>
<td>Chair: Gaida Pettere</td>
<td>Sylvester Room</td>
<td>Non-Metric Partial Least Squares for Non-linear Structural Equation Model estimation</td>
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**Demographics III**

**Queueing models**

**Data Analysis I**

**Models**
<table>
<thead>
<tr>
<th>Room</th>
<th>Time</th>
<th>Session Chair/Session Topic</th>
</tr>
</thead>
</table>
| Hardy Room  | 11.30-12.45| Invited Session Chair: Robert Serfling  
L-Moment and Quantile Methods in Multivariate and Time Series Analysis  
L-Comoments: Theory and Applications  
Multivariate L-moments Statistical inference, with hydrological applications  
A Gini-based time series analysis and test for reversibility  
Multivariate L-moments defined through transport  
Quantile Spectral Analysis of Time Series  
Robert Serfling  
Fatih Chebana  
Amit Shelef, Edna Schechtman  
Alexis Decurninge  
Tobias Kley |
| Cayley Room | 11.30-12.45| Invited Session Chairs: Anatoly Malyarenko and Sergei Silvestrov  
Stochastic methods in engineering, physics, and financial mathematics  
Lie Symmetries of the Black – Scholes Type Equations in Financial Mathematics  
Heavy-tailed fractional Pearson diffusions  
Saturn rings: fractal structure and random field model  
Tensor Random Fields in Conductivity and Classical or Microcontinuum Theories  
Foreign Exchange Risk Analysis Using GARCH-EVT Model with Markov Switching  
Option pricing and model calibration under multifactor stochastic volatility and stochastic interest rate - an asymptotic expansion approach  
Asaph K. Muhumuza, Silvestrov Sergei, Anatoly Malyarenko  
N.Leonenko  
Martin Ostoja-Starzewski, Anatoly Malyarenko  
Martin Ostoja-Starzewski, Anatoly Malyarenko  
Carolyn Ogotu, Betuel Canhanga, Piros Biganda, Ivivi Mwaniki, Anatoly Malyarenko  
Canhanga B., Malyarenko A., Ni Y., Rancic M., Silvestrov S. |
| Burnside Room | 11.30-12.45| Chair: Teresa Oliveira  
Measurement - Control - Entropy  
Optimal control of a pest population through geometric catastrophes  
Real-time monitoring and control of industrial processes using electrical tomography data  
Goodness-of-fit tests based on entropy. Application to DNA replication.  
Dynamic measurement of poverty: modelling and estimation  
A stochastic single vehicle routing problem with a predefined sequence of customers and delivery of two similar products  
Theodosis D. Dimitrakos, Epaminondas G. Kyriakidis  
Robert G Aykroyd  
Justine Lequesne, Valérie Girardin, Philippe Regnault  
Guglielmo D'Amico, Philippe Regnault  
Epaminondas G. Kyriakidis, Theodosis D. Dimitrakos, Constantinos Karamatsouki |
| Sylvester Room | 11.30-12.45| Chair: M.J. Valderrama  
Data Analysis Workshop  
Statfda, an easy to use tool for functional data analysis without expert knowledge  
The attendance is free. Please hold you PC to follow the examples  
M. Escabias, Ana M. Aguilara, M. C. Aguiler-Morillo, M.J. Valderrama |

12:30-13.30 | Lunch |

13.30-19.30 | Half Day Excursion |
### Thursday June 8

#### Invited Talks (Chair: )

**Hardy Room**  
8:30-9:00  
Carlos A. Coelho  
Centro de Matemática e Aplicações (CMA-FCT/UNL) and Mathematics Dept, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Portugal  
The Likelihood Ratio Test for the Equality of Mean Vectors when the Covariance Matrices are Block Compound Symmetric

**Hardy Room**  
9:00-9:30  
M. Ivette Gomes  
CEAUL and DEIO, Faculdade de Ciências, Universidade de Lisboa, Portugal  
Co-authors (Paula Reis, Luísa Canto e Castro, Sandra Dias)  
Penultimate Approximations in Extreme Value Theory and Reliability of Large Coherent Systems

**Hardy Room**  
9:30-10:00  
Claude Lefèvre  
ISFA, Lyon and ULB, Belgium  
Epidemic Risk and Insurance Coverage

10:00-10:30  
Coffee Break

**Hardy Room**  
10:30-11:10  
Sally Mcclean  
Science Research Institute, Ulster University, United Kingdom  
Markov and semi-Markov models for Health and Social Care Planning

**Hardy Room**  
11:00-11:50  
P.-C.G. VASSILIOU  
Dept of Statistical Sciences, University College London, United Kingdom  
LAWS OF LARGE NUMBERS FOR NON-HOMOGENEOUS MARKOV SYSTEMS

**Hardy Room**  
11:50-12:30  
Anatoliy Swishchuk  
Dept of Mathematics and Statistics, University of Calgary, Canada  
Financial Mathematics: Historical Perspectives and Recent Developments

### SCS7 Thursday June 8

#### SPECIAL AND CONTRIBUTED SESSIONS SCS7

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<thead>
<tr>
<th>Cayley Room</th>
<th>8:30-10.00</th>
<th>Invited Session Chair: Vilijandas Bagdonavičius</th>
<th>Accelerated life models and their applications I</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT modeling when the AFT model fails</td>
<td>Vilijandas Bagdonavičius, Rūta Levuliūnė</td>
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<tr>
<td>Semi-parametric consistent estimators for recurrent event times models based on parametric virtual age functions</td>
<td>Eric Beutner, Laurent Bordes, Laurent Doyen</td>
<td></td>
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<tr>
<td>Statistical Inference in a model of Imperfect Maintenance with Geometric Reduction of Intensity</td>
<td>J.-Y. Dauxois, S. Gasmi, O. Gaudoin</td>
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<tr>
<td>Stratified logrank test under missing data</td>
<td>Jean-François Dupuy, Rim Ben Elouafi, Manuel Franco, Juana-Maria Vivo, Debasis Kundu</td>
<td></td>
<td></td>
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<tr>
<td>A new generalized class of bivariate distributions based on latent random variables</td>
<td>Povilas Grigas, Rūta Levuliūnė, Vilijandas Bagdonavičius, Andrius Melninkaitis</td>
<td></td>
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<tr>
<td>Towards prediction of catastrophic failure events of laser-induced damage in optical laser elements</td>
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<table>
<thead>
<tr>
<th>Burnside Room</th>
<th>8:30-10.15</th>
<th>Invited Session Chair: Giuseppina Albano</th>
<th>Stochastic models in dynamic systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>A semiparametric model in environmental data</td>
<td>Giuseppina Albano, Michele La Rocca, Cira Perna</td>
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</tr>
</tbody>
</table>
**Sylvester Room**  8.30-10.00
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Invited Session Chair: Krzysztof Kolowrocki  

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffusions and generalised logistic dynamics</td>
<td>Antonio Barrera-García, Patricia Román-Román, Francisco Torres-Ruiz</td>
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<tr>
<td>Optimal portfolio strategies and derivative products under insider information</td>
<td>Bernardo D'Auria, Carlos Escudero Liebana</td>
</tr>
<tr>
<td>Linear Approximation of Nonlinear Threshold Models</td>
<td>Francesco Giordano, Marcella Nglo, Cosimo D. Vitale</td>
</tr>
<tr>
<td>On Fractional stochastic modeling for biological dynamics</td>
<td>Enrica Pirazzi</td>
</tr>
<tr>
<td>Some remarks on the Prendiville model in the presence of catastrophes</td>
<td>Virginia Giorno, Serena Spina</td>
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</table>

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**Sylvester Room**  10.30-11.30
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Invited Session Chair: Zdeněk Fabián  

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>Designing critical infrastructure network with cascading for predefined safety level</td>
<td>Agnieszka Blokus-Roszkowska, Krzysztof Kolowrocki</td>
</tr>
<tr>
<td>Analysis of the crude oil transfer process and its safety</td>
<td>Agnieszka Blokus-Roszkowska, Bozena Kwiatowszewska-Samocka, Pawel Wolny</td>
</tr>
<tr>
<td>Statistical identification of critical infrastructure accident consequences process, Part 1, Process of initiating events</td>
<td>Magda Bogalecka, Krzysztof Kolowrocki</td>
</tr>
<tr>
<td>Modelling spread limitations of oil spills at sea</td>
<td>Sambor Guze, Krzysztof Kolowrocki, Jolanta Mazurek</td>
</tr>
</tbody>
</table>

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**SCS8**  Thursday June 8
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SPECIAL AND CONTRIBUTED SESSIONS SCS8

**Cayley Room**  10.30-11.30  
Chair: Leda D. Minkova, Co-Chair: Zdeněk Fabián

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bivariate Non-central Polya-Aeppli process and applications</td>
<td>Leda D. Minkova, Zdeněk Fabián</td>
</tr>
<tr>
<td>The score correlation coefficient</td>
<td>Javier Hidalgo, Tatiana Komarova</td>
</tr>
<tr>
<td>A simple test of monotonicity and monotonicity-related properties</td>
<td>A. Philip Dawid, Monica Musio</td>
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<tr>
<td>Improved Bounds for the Probability of Causation</td>
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**Burnside Room**  10.30-11.30  
Invited Session Chair: Viljandas Bagdonavičius

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>On multiple step stress model under order restriction</td>
<td>Debasis Kundu, Rahul and Namita Gautam</td>
</tr>
<tr>
<td>Residuals for the modelling of covariate effects in accelerated life models</td>
<td>Jan Terje Kvale, Bo Henry Lindqvist, Stein Asaserut</td>
</tr>
<tr>
<td>A generalized distribution family of the Freund bivariate exponential model</td>
<td>Juanita Maria Vivo, Manuel Franco, Debasis Kundu</td>
</tr>
<tr>
<td>Outlier detection and identification when the number of outliers is unknown</td>
<td>Lina Petkevicius, Viljandas Bagdonavičius</td>
</tr>
</tbody>
</table>

**Sylvester Room**  10.30-11.30  
Chair: Jozef Komornik, Co-Chair: Samuel Kosolapov

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of Dependencies between Growth Rates of GDP of V4 Countries Using 4--dimensional Vine Copulas</td>
<td>Jozef Komornik, Magda Komorniková, Tomáš Bacigál</td>
</tr>
<tr>
<td>Efficiency Evaluation of Multiple-Choice Exam</td>
<td>Evgeny Gershikov, Samuel Kosolapov</td>
</tr>
</tbody>
</table>
SCS9 Thursday June 8

**SPECIAL AND CONTRIBUTED SESSIONS SCS9**

**Cayley Room 11.30-12.45**

**Invited Session Chair: James R. Bozeman**

**Mathematical Aspects of Voting**

- Ordinal regression with geometrical objects predictors. An application to predict the garment size of a child
  - Sonia Barahona, Pablo Centella, Ximo Gual-Amau, María Victoria Ibañez, Amelka Simó

- Why Elections are Hard: A Game Theoretic Examination of Complex Strategic Interactions Among Multiple Political Candidates
  - Meredith A. Jessup II, Daryl K. Ahner

- Redistricting Spain. A proposal for an unbiased system
  - Jose M. Pavia, Alberto Penades

- Partisan bias in multimember districts
  - Alberto Penades

- Experiment with a Survey-Based Election to the Student Parliament of the Karlsruhe Institute of Technology
  - Andranik Tangian

- Measuring the Shape of Voting Districts with Unchangeable Boundary
  - James R. Bozeman, Ryleigh E. Costigan, Abby Salvador

**Burnside Room 11.30-12.15**

**Invited Session Chair: Marcello Chiodi**

**Some recent development on space-time modelling**

- Clustering of spatially dependent data streams based on histogram summarization
  - Antonio Balzanella, Rosanna Verde, Antonio Irgino

- An ANOVA-type procedure for replicated spatial and spatio-temporal point patterns
  - Jorge Mateu, Jonatan Gonzalez-Monsalve, Ute Hahn, Bernardo Lagos

- Some extensions in space-time LGCP: application to earthquake data
  - Marianna Siino, Giada Adelfio, Jorge Mateu

**12.15-12.45**

**Session Chair: A.N. Gorban**

**New Methods in Data Analysis**

- Piece-wise Quadratic Approximations of Subquadratic Error Functions for Machine Learning
  - A.N. Gorban, E.M. Mirkes, A. Zinovyev

- Blessing of Dimensionality: One-Trial Correction of Legacy AI Systems in High Dimension
  - A.N. Gorban, I. Romaneniko, R. Burton, I.Y. Tyukin

  - Paul Grosu, Mikhail Malyytov, Javed Aslam, Hanai Sadaka, Virgil Pavlu, and Tong Zhang

**Sylvester Room 11.30-12.45**

**Chair: Valery Antonov**

**Chaos-Fractals-Neural**

- Identifying the boundaries application in the study of HRV
  - Valery Antonov, Artem Zaganov

- Interpolation using local iterated function systems
  - Somogyi I., Soos, A.

- Development and application of multifractal analysis for EEG studies in a state of meditation and background
  - Dmitrieva L.A, Zorina D.A, Kuperin Yu.A., Smetanin N.M.

- Modeling of EEG signals by using artificial neural networks with chaotic neurons
  - Dmitrieva L.A, Kuperin Yu.A, Mokin P.V
### Invited Session Chair: Nikolaos Limnios

#### Hardy Room 13.30-15.15

**New Trends in Markov and non-Markovian Models**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>Asymptotic Analysis of Queueing Models by a Synchronization Method</td>
<td>Larisa Manaseva</td>
</tr>
<tr>
<td>Stability Analysis of a Queueing Model with a Regenerative Input Flow</td>
<td>Larisa Manaseva, Elena Bashkova</td>
</tr>
<tr>
<td>Stability Analysis of Multi-server Queueing System with a Regenerative Interruption Process</td>
<td>Larisa A. Manaseva, Andrey Tkachenko</td>
</tr>
<tr>
<td>Limit Theorems for Infinite Channel Queueing Systems with a Regenerative Input Flow</td>
<td>Elena Bashkova, Ekaterina Chernavskaya</td>
</tr>
<tr>
<td>Limit Theorems for Queueing Systems with Different Service Disciplines</td>
<td>Svetlana Grishunina</td>
</tr>
<tr>
<td>A Semimartingale Characterization of Semi-Markov Processes and Branching Processes with Transport of Particles</td>
<td>Nikolaos Limnios, Elena Yarovaya</td>
</tr>
</tbody>
</table>

#### Cayley Room 13.30-15.15

**Chair: Gilbert Saporta, Co-Chair: Cristian Preda**

**Data Analysis II**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prediction for regularized clusterwise multiblock regression</td>
<td>Stéphanie Bougeard, Ndeye Niang, Gilbert Saporta</td>
</tr>
<tr>
<td>Clustering variables with nonlinear relationships: an approach based on polynomial transformation and a dynamic mixed criteria</td>
<td>Christian Derquenne</td>
</tr>
<tr>
<td>Thinking by classes and their symbolic description in Data Science</td>
<td>E. Diday</td>
</tr>
<tr>
<td>Insolvency as opportunity: a marketing perspective on time-dependent credit risk.</td>
<td>Caterina Liberati, Furio Camillo</td>
</tr>
<tr>
<td>Grouping Property and Relative Importance of predictors in Linear Regression</td>
<td>Henri Wallard</td>
</tr>
<tr>
<td>Contributions of Gilbert Saporta to functional data analysis</td>
<td>Cristian Preda</td>
</tr>
<tr>
<td>Importance of factors contributing to work-related stress: comparison of four metrics</td>
<td>Mounia N. Hocine, Natalia Feronontova, Ndeye Niang, Karim Ailt-Bouzid, Gilbert Saporta</td>
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</tbody>
</table>

#### Burnside Room 13.30-15.15

**Chair: Jim Freeman, Co-Chair: Harald Hruschka**

**Models and Modeling**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random network evolution models</td>
<td>István Fazekas, Csaba Noszály, Attila Perekősvény</td>
</tr>
<tr>
<td>Hidden Variable Models for Market Basket Data</td>
<td>Bettina Foruzszyk</td>
</tr>
<tr>
<td>Estimating Heterogeneous Time-Varying Parameters in Brand Choice Models</td>
<td>Harald Hruschka</td>
</tr>
<tr>
<td>On GARCH models with temporary structural changes</td>
<td>Winfried J. Steiner, Bernhard Baumgartner, Daniel</td>
</tr>
<tr>
<td>An SEM approach to modelling housing values</td>
<td>Guhl, Thomas Kneib</td>
</tr>
<tr>
<td>The infinite horizon ruin probability in the Cramer-Lundberg model with two-sided jumps</td>
<td>Norio Watanabe, Fumiaki Okihara</td>
</tr>
<tr>
<td>Nano-Sols Shelf-Life Prediction via Accelerated Degradation Model</td>
<td>Jim Freeman, Xin Zhao</td>
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<tr>
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<td>ELEFTHERIOS THEODOSIADIS, GEORGE TSAKLIDIS</td>
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<td>Sheng-Tsang Tseng</td>
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</tbody>
</table>

#### Sylvester Room 13.30-15.00

**Invited Talks (Chair: Robert G Aykroyd)**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster validation: how to think and what to do?</td>
<td>Christian Hennig, Dept of Statistical Science, UCL, United Kingdom</td>
</tr>
</tbody>
</table>
Romney B Duffey  
DSM Associates Inc., USA  
Search and Recall: Statistical Learning Theory

14.00-14.30

15:00-15:30  
Coffee Break
### SCS11 Thursday June 8

#### SPECIAL AND CONTRIBUTED SESSIONS SCS11

**Hardy Room** 15:30-16:30

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Location</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30-16:00</td>
<td>Giovanni Barone Adesi</td>
<td>Hardy Room</td>
<td>Risk measures based on option prices and changes in the jump process of asset returns</td>
</tr>
<tr>
<td>16:00-16:30</td>
<td>Jeffrey Hunter</td>
<td>Hardy Room</td>
<td>Mean First Passage Times in Markov Chains – How best to compute?</td>
</tr>
</tbody>
</table>

#### Cayley Room 15:30-16:30

**Chair: Markos Koutras**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Compound Run Length Distribution: Properties and Applications</td>
<td>Athanasios C. Rakitzis, Markos V. Koutras</td>
</tr>
<tr>
<td>Compound distributions associated with order statistics</td>
<td>Markos V. Koutras, Vasilios M. Koutras</td>
</tr>
<tr>
<td>A biparametric version of the Univariate Generalized Waring distribution</td>
<td>Jose Rodríguez-Avi, María José Olmo-Jiménez, Valentina Cueva-López</td>
</tr>
<tr>
<td>Adaptive MCMC for Multivariate Stable Distributions</td>
<td>Ingrida Vaiciute</td>
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</tbody>
</table>

#### Burnside Room 15:30-16:30

**Scan Statistics and Applications Invited Session Chair: Jie Chen**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Using scan statistics for the change detection in Granger causality</td>
<td>Jie Chen, Thomas Ferguson, Paul Jorgensen</td>
</tr>
<tr>
<td>Scan Statistics for Disease Clusters with Risk Adjustments</td>
<td>Wendy Lou</td>
</tr>
<tr>
<td>Scan statistics for dependent models</td>
<td>Cristian Preda</td>
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</table>

#### Sylvester Room 15:30-16:30

**Chair: Yiannis Dimotikalis, Co-Chair: Lino Sant**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>Choosing tuning instruments for Generalized Rubin-Tucker Lévy Measure Estimators</td>
<td>Lino Sant, Mark Anthony Caruana</td>
</tr>
<tr>
<td>Entropic Analysis of Mixture Binomial Distributions applied to Online Ratings</td>
<td>Yiannis Dimotikalis</td>
</tr>
<tr>
<td>Forecasting with functional data: case study</td>
<td>Laurynas Nauševičius, Alfredas Rackauskas</td>
</tr>
<tr>
<td>Distribution of specific costs of agricultural production in the European Union: an approach based on the quantile regression method</td>
<td>Dominique Desbois</td>
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### SCS12 Thursday June 8

#### SPECIAL AND CONTRIBUTED SESSIONS SCS12

**Hardy Room** 16:30-17:30

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<tr>
<th>Time</th>
<th>Speaker</th>
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<th>Title</th>
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<tbody>
<tr>
<td>16:30-17:00</td>
<td>Rebecca Kippen</td>
<td>Hardy Room</td>
<td>Projecting life expectancy: A global history</td>
</tr>
<tr>
<td>17:00-17:30</td>
<td>Tapan K. Nayak</td>
<td>Hardy Room</td>
<td>Event and Its Location Detection in a Wireless Sensor Network</td>
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#### Cayley Room 16:30-17:30

**Invited Session Chair: Anatoliy Swishchuk**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Stochastic Models in Finance and Energy Finance</td>
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<tr>
<td>Burnside Room</td>
<td>16:30-17:30</td>
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<tr>
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<tr>
<td>Using an extended Tobit Kalman filter in order to improve the motion recorded by Microsoft Kinect</td>
<td>K. Loumponias, N. Vretos, P. Daras, G. Tsaklidis</td>
</tr>
<tr>
<td>Estimation of two sided asset return jumps via constraint Kalman filtering</td>
<td>Ourania Theodosiadou, George Tsaklidis</td>
</tr>
<tr>
<td>The Problem of the SARIMA Model Selection for the Forecasting Purpose</td>
<td>Josef Arlt, Peter Trcka, Marketa Arltova</td>
</tr>
<tr>
<td>Extremes in Random Graphs Models of Complex Networks</td>
<td>Natalia Markovich</td>
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</table>

<table>
<thead>
<tr>
<th>Sylvester Room</th>
<th>16:30-17:30</th>
<th>Chair: Samuel Kosolapov</th>
<th>Bayes - Monte-Carlo</th>
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<tbody>
<tr>
<td>Bayesian Multidimensional Item Response Theory Modeling Using Working Variables</td>
<td>Alvaro Montenegro, Luisa Parra</td>
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<tr>
<td>Robust Bayesian analysis using classes of priors</td>
<td>Sánchez-Sánchez, M., Sordo, M. A., Suárez-Llorens, A.</td>
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<tr>
<td>Monte-Carlo Accuracy Evaluation of Pintograph-based Laser Cutting Machine</td>
<td>Samuel Kosolapov</td>
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<tr>
<td></td>
<td>21.00-</td>
<td>Farewell Dinner</td>
<td>23.30</td>
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## Friday June 9

### Hardly Room 8.30-10.15
**Chair:** Dimitrios Sotiropoulos

### Data Analysis III

<table>
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<th>Title</th>
<th>Speaker(s)</th>
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<tr>
<td>Selecting speech spectrograms to evaluate sounds in development</td>
<td>Dimitrios Sotiropoulos</td>
</tr>
<tr>
<td>An intervention analysis regarding the impact of the introduction of budget airline routes to Maltese tourism</td>
<td>Maristelle Darmanin, David Suda, M. Filomena Teodoro, Carla Simão</td>
</tr>
<tr>
<td>Prevalence of Pediatric High Blood Pressure: a Preliminary Estimate</td>
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<tr>
<td>Utilizing Customer Requirements’ Data to Link Quality Management and Services Marketing Objectives</td>
<td>Andreas C. Georgiou, Kamvysi Konstantina, Gottzami Katerina Andronikidis Andreas</td>
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<td>Monitoring the compliance of countries on emissions mitigation, using dissimilarity indices</td>
<td>Ketzaki Elieni, Rallakis Stavros, Farmakis Nikolaos, Eftichios Sarbazakis</td>
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<td>The Feed Consumption and the Piglets’ Growth during the Rearing Period Observed in 2015 VS Expected in 2005</td>
<td>Marijan Sviben</td>
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<td>Resolving a dynamic winner determination problem (WDP) by dynamic programming</td>
<td>Asli Larbi, Aider Méziane</td>
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### Cayley Room 8.30-10.15
**Chair:** Sergei Silvestrov, Co-Chair: Nikolay Novitsky

### Models and Modeling II

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<tr>
<td>A comprehensive study of Lattice Pricing beyond Black and Scholes</td>
<td>Carolyne Ogutu, Karl Lundengård, Ivivi Mwaniki, Sergei Silvestrov, Patrick Wake</td>
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<td>Modelling a dynamic size biased sampling</td>
<td>Federica Nicolussi, Manuela Cazzaro</td>
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<td>Modelling Dietary Exposure to Chemical Components in Heat-Processed Meats</td>
<td>P. Economou, G. Tzavelas, A. Batsidis</td>
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<td>PROBABILISTIC MODELING OF HYDRAULIC CONDITIONS IN PIPELINE SYSTEMS UNDER A RANDOM SET OF BOUNDARY PARAMETERS AT NODES</td>
<td>Stylianos Georgiadis, Lea Stjelting Jakobsen, Bo Friis Nilsen, Anders Stockmann, Elena Botani, Lene Duedahl-Olesen, Tine Hald, Sara Montero Pires</td>
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<tr>
<td>PROBABILISTIC MODELING OF HYDRAULIC CONDITIONS OF PIPELINE NETWORKS UNDER RANDOM COMPOSITION OF BOUNDARY CONDITIONS AT NODES</td>
<td>Novitsky N.N., Vantyeva O.V.</td>
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<td>An approximation to social wellbeing evaluation using structural equation modeling</td>
<td>Leonel Santos-Barrios, Mónica Ruiz-Torres, William Gómez-Demetrio, Ernesto Sánchez-Vera, Ana Lorga da Silva, Francisco Martínez-Castañeda</td>
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### Burnside Room 8.30-10.15
**Invited Session Chair:** Krzysztof Kolowrocki

### Safety and Reliability of Critical Infrastructures and Complex Systems II

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<td>Port oil transport critical infrastructure safety approximate evaluation</td>
<td>Krzysztof Kolowrocki, Joanna Soszynska-Budny</td>
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<td>Safety prediction of critical infrastructure impacted by climate-weather change process</td>
<td>Krzysztof Kolowrocki, Joanna Soszynska-Budny</td>
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<tr>
<td>Simplified approach to safety prediction of port oil transport critical infrastructure related to operation process</td>
<td>Krzysztof Kolowrocki, Joanna Soszynska-Budny</td>
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<td>Embedded Semi-Markov process as reliability model of two different units renewal cold standby system</td>
<td>Franciszek Grabski</td>
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<td>Climate-weather change process realizations uniformity testing for maritime ferry operating area</td>
<td>Ewa Kuligowska, Matusz Torbiński</td>
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### Stochastic Processes

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<td>Comparison of Stochastic Processes</td>
<td>Jesús, E. García, V.A. González-López</td>
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<td>Stochastic Distance between Burkitt lymphoma/leukemia Strains</td>
<td>Jesús, E. García, V.A. González-López</td>
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<td>A multi-mode model for stochastic project scheduling with adaptive policies based on the starting times and project state</td>
<td>Pedro Godinho</td>
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<td>An Application of Data Mining Methods to the Analysis of Bank Customer Profitability and Buying Behavior</td>
<td>Pedro Godinho, Joana Dias, Pedro Torres</td>
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<td>Parameters Estimation of Stochastic Differential Equations Using First Passage Times and Inverse Gaussian Law</td>
<td>Samia MEDDAHI, Khaled KHALDI</td>
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<td>Topic detection using the DBSCAN-Martingale and the Time Operator</td>
<td>Ilias Glialampoukidis, Stefanos Vrochidis, Ioannis Kompatsiaris, Ioannis Antoniou</td>
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<td>Asymptotic Rate for Weak Convergence of Random Walk with a Generalized Reflecting Barrier</td>
<td>Tahir Khaniyev, Basak Gever, Zulfiye Hanaloglu</td>
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<td>Asymptotics for a conditional quantile estimator under censoring and association</td>
<td>Wafaa Djelladj, Abdelkader Tatachak</td>
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#### Coffee Break

10:00-10:30
### SCS14 Friday June 9

#### Hardy Room 10:30-11:30

**Invited Talks (Chair: Dimitrios Sotiropoulos)**

- **10:30-11:00**
  - **Griselda Deelstra, Matthieu Simon**
  - Service Sciences Actuarielles, Département de Mathématique, Université libre de Bruxelles, Belgique
  - Multivariate European option pricing in a Markov-modulated Lévy framework

- **11:00-11:30**
  - **Tõnu Kollo, Meelis Käärik, Anne Selart**
  - Institute of Mathematics and Statistics, University of Tartu, Estonia
  - Asymptotic confidence regions of parameters of the skew normal distribution

#### Cayley Room 10:30-11:30

**Chair: Sergei Silvestrov, Co-Chair: Robert G Aykroyd**

**Theoretical Issues**

- Numerical Stability of the Escalator Boxcar Train under reducing System of Ordinary Differential Equations
  - Tin Nwe Aye, Linus Carlsson, Sergei Silvestrov

- Evaluation of Stopping Criteria for Ranks in Solving Linear Systems
  - Benard Abola, Pitos Biganda, Christopher Engström, Sergei Silvestrov

- Estimation of a Two Variable Second Degree Polynomial
  - Papatsouma Ioanna, Farmakis Nikolaos, Ketzaki Eleni

- PageRank and Perron-Frobenius Theory in Analysis of Non-negative Matrices
  - Benard Abola, Sergei Silvestrov

#### Burnside Room 10:30-11:30

**Chair: Y. Kaniovski**

**Theory**

- Dependent credit rating migrations: a heuristics for estimating unknown parameters
  - Y. Kaniovski, Y. Kaniovskyi, G. Pflug

- Limit Theorems for Compound Renewal Processes: Theory and Applications
  - Nadia Zinchenko

- A spectral analysis of the Weierstrass-Mandelbrot function on the Cantor set
  - Emanuel Guariglia, Xiaomin Qi, Sergei Silvestrov

- Blaschke's way of the Mathevisin calculus for large order generators on a Lie group
  - Rémi Leandre

#### Sylvester Room 10:30-11:30

**Chair: Lino Sant, Co-Chair: Doncho Donchev**

**Markov - Stochastic**

- Modelling grade seniority in manpower planning: Markov or semi-Markov?
  - Philippe Carette, Marie-Anne Guerry

- Rates of approximation of integral functionals of Markov processes with applications
  - Iuri Ganychenko

- Brownian motion exit densities for general one-sided boundaries
  - Doncho Donchev

- A Realized p-Variation Random Function As a Statistical Diagnostic for Semimartingales
  - Lino Sant

### SCS15 Friday June 9

#### Hardy Room 11:30-12:20

**Keynote Talk (Chair: Christos Skiadas)**

- **N. Balakrishnan**
  - Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario, Canada
  - Multivariate Stochastic comparisons in Actuarial Science and Applications
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<td>Lounes Ameur, Louiza Berdjoudj, Karim Abbas</td>
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<td>Join Moments for the Backward and Forward recurrence times</td>
<td>Losidis Sotiros, Konstadinos Politis</td>
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<td>The Epistemic Uncertainty Analysis for the Inventory Management System with (Q,r) Policy</td>
<td>Massinissa Soufit, Karim Abbas</td>
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<td>Estimation the Key Value of Shift Cipher by Neural Networks – A Case Study</td>
<td>Eylem Yucel, Ruya Samli</td>
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<td>PageRank re-calculation methods based on specific types of changes in a graph</td>
<td>Christopher Engström, Sergei Silvestrov</td>
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<td>Stepwise Regression – an Application in Earthquakes Localization</td>
<td>E. Guariglia, G. Pucciarelli, S. Silvestrov</td>
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<td>Data Analysis of Nanofluid Thin Film Flow over an Unsteady Stretching Sheet in Presence of External Magnetic Field</td>
<td>Prashant G Metri, Sergei Silvestrov</td>
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<td>Extreme points of ordinary and generalized Vandermonde determinants</td>
<td>Jonas Österberg, Sergei Silvestrov, Karl Lundengård</td>
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<th>Odd Log Logistic Power Lindley Distribution with Theory and Lifetime Data Application</th>
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<td>Gamze Özel Kadılar, Emrah Altun, Morad Alizadeh</td>
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<td>Family’s transfers to the divorced elderly</td>
<td>Ekaterina Tretiyakova</td>
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<td>On the behavior of the conditional quantile estimator for truncated-associated data</td>
<td>Latifa Adjoudj, Abdelkader Tatachak</td>
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<td>Hazard rate estimator for right censored data under association</td>
<td>Samra Dhiabi, Ouzida Sadki</td>
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<td>Greece and India the countries of great heritages: Facing critical socio-economic crisis</td>
<td>Barun Kumar Mukhopadhyay</td>
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<td>Comparing generalized mixed effects models with RE-EM tree method in corporate</td>
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<td>Quantifying the sensitivity of bush bean and maize seed germination to soil</td>
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<td>The Half-logistic Lomax distribution for lifetime modeling</td>
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<td>Predicting of least limiting water range (LLWR) of soil using MSECE model</td>
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<td>Sparsity Against Exponential Complexity: Parallel Implementation of Separate</td>
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