



Statistical Modeling with Applications

Conference Program

A Conference in honour of Professor Markos V. Koutras

Edited by Ioannis S. Triantafyllou & Alex Karagrigoriou

Department of Statistics & Insurance Science

University of Piraeus

26-28 September 2025



Preface

On behalf of the Organizing Committee, we are delighted to welcome you to the Σ tatMod 2025 Conference, hosted at the University of Piraeus, under the auspices of the Department of Statistics & Insurance Science.

The conference takes place from September 26 to 28, 2025, and brings together researchers, scholars and practitioners from diverse areas of Statistical Modeling. It provides a platform for the presentation of recent advances, the exchange of ideas and the promotion of scientific collaboration.

In line with the conference's scientific scope, presentations will cover a wide range of topics in the fields of Probability, Statistics and related fields. These include, but are not limited to, Markov and semi-Markov processes, nonparametric statistics, stochastic modeling, Bayesian methods, insurance mathematics, design of experiments, theory of runs and scans, reliability modeling, entropy and information measures, statistical inference and machine learning.

Σ tatMod 2025 Conference holds special significance as it is dedicated to honoring Professor Markos V. Koutras on the occasion of his retirement. Professor Koutras has a distinguished academic career, contributing profoundly to the fields of Probability and Statistical Modeling. It is generally acknowledged that Professor Koutras has been an inspiring mentor, collaborator and leader within the statistical community in Greece and internationally. We are especially proud to host this event at the University of Piraeus, where Professor Koutras has served with commitment and excellence throughout his academic tenure.

It is a genuine pleasure for all of us that, during the course of the conference, brief addresses in recognition of the Guest of Honour, Professor Markos V. Koutras will be delivered by eminent scholars, such as Subha Chakraborti, Tasos Christofides, Charalampos Damianou, Georgios Donatos, Aglaia Kalamatianou, Andreas Kyriakousis, Athanasios Kyriazis, Takis Papaioannou, Andreas Philippou and George Roussas.

We extend our sincere gratitude to all participants, speakers and contributors for joining us in commemorating 5 years of successful Σ tatMod conferences and at the same time celebrating Professor Koutras' legacy. We anticipate that the conference will be a stimulating and collegial academic gathering.

We wish you a productive and rewarding conference experience.

On behalf of the Organizing Committee,

Ioannis S. Triantafyllou & Alex Karagrigoriou

Friday, 26 September 2025

Ground Floor Lobby 09.00-10.00	Conference registration
Conference Hall 10.00-10.30	Opening session Chair: Ioannis S. Triantafyllou
	Vlad S. Barbu , Co-chair of the Σ tatMod Conference Series Welcome address Alex Karagrigoriou , Head of the Department of Statistics & Insurance Science Welcome address Michael Sfakianakis , Rector of the University of Piraeus Welcome address Markos V. Koutras , Guest of Honour Welcome address Ioannis S. Triantafyllou , Chair of the Organizing Committee of Σ tatMod2025 Opening overview
Conference Hall 10.30-12.00	Plenary session Chair: Alex Karagrigoriou
10.30-11.00	Peihua Qiu Online Monitoring of Dynamic Data Streams Using Transparent Sequential Learning
11.00-11.30	Hon Keung Tony Ng Tests for Homogeneity of Component Lifetime Distributions Based on System Lifetime Data
11.30-12.00	Petros Dellaportas Gaussian Invariance in Markov Chain Monte Carlo
12.00-12.30	Coffee break

Conference Hall 12.30-14.00	Plenary session Chair: Donald E.K. Martin
12.30-13.00	Min Xie Some probability and statistical issues in reliability the era of AI
13.00-13.30	Serkan Eryilmaz On some analogies between engineering and biological systems from a reliability engineering point of view
13.30-14.00	Nikolaos Limnios Normal deviation of Gamma Processes in Semi-Markov Random Media
14.00-15.30	Lunch break

Conference Hall 15.30-17.30	Academic Legacy: PhD Graduates of Professor Markos V. Koutras Chair: Maria Kateri
15.30-15.50	Vasiliki A. Alexandrou Journey log
15.50-16.10	Michael V. Boutsikas On the distribution of the number of success runs in a continuous time Markov chain
16.10-16.30	Sotirios Bersimis Studying Clinical Trials Designs using Markov Chain Embedding
16.30-16.50	Fotios S. Milienos Some critical aspects of cure rate modeling
16.50-17.10	Ioannis S. Triantafyllou The signature of coherent systems: A probabilistic tool for Reliability Modeling
17.10-17.30	Elisavet M. Sofikitou Usage of novel bivariate distributions and clustering concept to construct multivariate semiparametric control charts
17.30-18.00	Coffee break

Conference Hall 18.00-18.30	Plenary session Chair: Michael N. Katehakis
	Sheldon M. Ross First Ahead by at least k Multinomial Game
Conference Hall 18.30-19.20	A tribute to Professor Markos V. Koutras Chair: Ioannis S. Triantafyllou
	Commemorative session dedicated to the Guest of Honour, including contributions on his impact, followed by brief tribute addresses from Georgios Donatos , Emeritus Professor of National and Kapodistrian University of Athens Aglaia Kalamatianou , Emerita Professor of the Panteion University of Social & Political Sciences Brief greetings shall be given on behalf of Takis Papaioannou , Emeritus Professor of the University of Piraeus and University of Ioannina Charalambos Damianou , Retired Professor of National and Kapodistrian University of Athens Ourania Chrysafinou , Emerita Professor of National and Kapodistrian University of Athens
20.00	Welcome Reception

Saturday, 27 September 2025

Room 101 09.00-10.40	Demography Chair: George Psarrakos
09.00-09.20	Michail Chouzouris Unasked, Unanswered: The Quiet Power of Interviewers in a Large Panel International Survey
09.20-09.40	Elena Corina Cipu Entropy measures of population dynamics and economic implications
09.40-10.00	Georgia Verropoulou The impact of the COVID-19 pandemic on the life expectancy of the population of Greece at national and regional level: 2020-2022
10.00-10.20	Peter Hatzopoulos A General Stochastic Mortality Modelling Framework
10.20-10.40	Apostolos Bozikas Entropy Measures in Mortality Modelling
Room 102 09.00-10.40	Advanced Statistical and Dynamic Models in Epidemic and Health Data Chair: Pantelis Bagos
09.00-09.20	Vasileios E. Papageorgiou A Stochastic SPIR Model with Particle Filtering for Estimating Epidemic Dynamics
09.20-09.40	Vana Sypsa Mathematical models in infectious diseases as a tool to inform policy decisions
09.40-10.00	Christos Thomadakis Joint modelling of longitudinal and competing-risk data under failure cause and non-informative right censoring
10.00-10.20	Giota Touloumi Joint modeling of longitudinal (bio)markers and visiting process to dynamically predict time-to-next visit: identifying individuals more prone to disengage from care
10.20-10.40	Stelios Zimeras Stochastic epidemic models
Room 103 09.00-10.40	Advances in Statistical Inference under Complex Data Structures Chair: George Iliopoulos
09.00-09.20	Salim Bouzebda A nonparametric distribution-free test of independence among continuous random vectors based on L_1 -norm
09.20-09.40	Bojana Milošević Testing independence in the presence of missing data: high-dimensional case
09.40-10.00	Dimitrios Bagkavos Superefficient estimation of future conditional hazards based on marker information
10.00-10.20	Apostolos Batsidis Statistical inference under size-biased sampling
10.20-10.40	Daniel Gaigall A goodness-of-fit test for the geometric maximum compound logistic distribution model

Conference Hall 10.50-11.20	Plenary session Chair: Nikolaos Limnios
	Narayanaswamy Balakrishnan Flexible Modelling of LTRC Data with Covariates
11.20-11.50	Coffee break

Room 101 11.50-13.30	Advances in Experimental Design, Functional Methods and Odds Models Chair: Haralambos Evangelaras
11.50-12.10	Miltiadis Chalikias Repeated Measurements Designs: The existence of a control treatment in a model of two treatments
12.10-12.30	Emmanouil Androulakis On the $E(s^2)$ -optimality of two-level supersaturated designs constructed from orthogonal arrays with partially aliased interactions
12.30-12.50	Milto Hadjikyriakou Stochastic orders and shape properties for a new distorted proportional odds model
12.50-13.10	Aylin Alin Robust Functional Penalized and Smoothed SIMPLS
13.10-13.30	Panpan Zhang The Sackin index and depth of leaves in generalized Schröder trees
Room 102 11.50-13.30	Markov and Semi-Markov Models in Contemporary Statistical Applications Chair: Vlad S. Barbu
11.50-12.10	Andreas Makrides On seismic activity and extreme events via semi-Markov modelling with multivariate state space
12.10-12.30	George Tsaklidis Study of a homogeneous Markovian compartmental model as a viscoelastic medium
12.30-12.50	Pantelis G. Bagos Hidden Markov Models in Bioinformatics: A personal narrative
12.50-13.10	Aguêmon Léon Tehungue Hidden Drifting Markov Models: Theory, Inference, and Simulation-Based Evaluation
13.10-13.30	Chafiâa Ayhar Continuous time Semi-Markov Processes for reliability and survival analysis: A Nonparametric Estimation Approach
Room 103 11.50-13.30	Modern Challenges in Statistical Inference and Estimation Techniques Chair: Nikolaos Limnios
11.50-12.10	Constantinos Petropoulos Improved estimation of location parameters of two exponential distributions with ordered scale
12.10-12.30	Georgios Afendras Uniform integrability of the OLS estimators and the convergence of their moments
12.30-12.50	George Tzavelas A way of eliminating a nuisance parameter with the plug-in method utilizing an independent sample
12.50-13.10	Alex Karagrigoriou Statistical inference for a generalized family of divergences with censoring
13.10-13.30	Konstantinos Zografos Is still the normality assumption meaningful in inference? The case of Gaussian estimation
13.30-15.00	Lunch break

Room 101 15.00-16.20	Quantitative Analysis of Market Dynamics, Financial Risk and Societal Behavior Chair: Panos Xenos
15.00-15.20	Eleni Tsami Volatility properties for the general price index of the Athens stock exchange
15.20-15.40	Vangelis Tsioumas A Quantitative Assessment of Extreme Freight Rates in Shipping
15.40-16.00	Dimitris Ioannides Estimating the Probability of Default Cascades in Financial Markets
16.00-16.20	Theodore Chadjipadelis Enhancing Civic Engagement: Behavioral Insights from Young Students
Room 102 15.00-16.20	Advances in Stein's Method and Limit Theorems Chair: Michael V. Boutsikas
15.00-15.20	Yvik Swan Stein's Method of Moments
15.20-15.40	Robert E. Gaunt Convex distance bounds for the stable central limit theorem via Stein's method
15.40-16.00	Ferdinand Rapin Higher order derivatives of Stein's solution and the Integrated Pearson family
16.00-16.20	Paul Mansanarez Edgeworth expansion in a fixed Wiener chaos
Room 103 15.00-16.20	Stochastic Optimization and Decision-Making in Dynamic Systems Chair: Guglielmo D'Amico
15.00-15.20	Apostolos Burnetas Optimal and Learning-Based Server Replacement in M/M/1 Queues with Fatigue-Induced Failures
15.20-15.40	Theodosios D. Dimitrakos Some applications of Markov decision processes using stochastic dynamic programming
15.40-16.00	Epaminondas G. Kyriakidis Optimal choice of next customer in stochastic single vehicle routing problems with pick-up and delivery
16.00-16.20	Ionel Popescu Particle swarm optimization convergence
Conference Hall 15.00-16.20	Bayesian Statistical Inference Chair: Dimitris Karlis
15.00-15.20	Ioannis Ntzoufras Bayesian Signature Authenticity Validation
15.20-15.40	Christos Merkatas System identification via Bayesian nonparametrics
15.40-16.00	Panagiotis Papastamoulis Bayesian inference and Cure Rate Models
16.00-16.20	Dário Ferreira A Robust Approach for Variance Component Estimation under Missing Data

Conference Hall 16.30-17.00	Plenary session Chair: Konstantinos Zografos
	Antonio Di Crescenzo Stochastic processes with bimodal transition densities: construction and centroid-based analysis
17.00-17.30	Coffee break

Room 101 17.30-18.50	Reliability and Forecasting Models in Renewable Energy Systems Chair: Bojana Milošević
17.30-17.50	Guglielmo D'Amico Reliability Analysis of Energy Communities
17.50-18.10	Filippo Petroni Instantaneous Mobility indexes for Markov Reliability Systems applied to Wind-Farm
18.10-18.30	Veronica Vigna Forecasting Models for Energy Demand
18.30-18.50	Paraskevi Kapetanopoulou The future of electricity production from renewable sources in Greece using Grey Markov Models
Room 102 17.30-18.50	Advances in Autoregressive Modeling and Change Detection in Time Series Models Chair: Apostolos Batsidis
17.30-17.50	Dimitris Karlis Non-parametric random coefficient integer autoregressive models
17.50-18.10	Ioannis Dimitriou On various dependence structures in vector-valued reflected autoregressive processes
18.10-18.30	Anna Nalpantidi Bivariate autoregressive model for ordinal time series
18.30-18.50	Christina Parpoula Dynamic parameter tuning for optimal detection of changes in a signal
Room 103 17.30-18.50	Postdoctoral Fellows of Professor Markos V. Koutras Chair: Udo Kamps
17.30-17.50	Petros E. Maravelakis CUSUM Control Chart for Lifetime Monitoring under Failure Censoring With Replacement
17.50-18.10	Panayiotis Bobotas On the preservation of ageing properties under random maxima
18.10-18.30	Spiros D. Dafnis On a new family of continuous univariate distributions
18.30-18.50	Demetrios Lyberopoulos Maximal inequalities for N-demimartingales with scan statistic applications
20.30	Conference Dinner

Sunday, 28 September 2025

Room 101 09.00-10.40	Advanced Statistical Methods in High-Dimensional Data and Risk Analysis Chair: Cristian Preda
09.00-09.20	Andreas Artemiou A method for Sufficient Dimension Reduction (SDR) in high dimensional settings
09.20-09.40	Georgios Skoulakis Ex-post Risk Premia Estimation using Large Cross Sections of Assets: Regularization and Clustering
09.40-10.00	Manuela-Simona Cojocea The joys and challenges of the Kolmogorov expected value
10.00-10.20	Riccardo De Blasis On the behavior of the global reaching centrality
10.20-10.40	Mihaela Pricop Jeckstadt Projective Shape Analysis for Spatial Orientation in Virtual Environments
Room 102 09.00-10.40	Advances in Probability Distributions and Statistical Modeling Chair: Sotirios Bersimis
09.00-09.20	Igor Podlubny Negative probability and signed probability distributions: simulation and some applications
09.20-09.40	Sandra Ferreira An Extension of the Weibull Distribution to Accommodate Non-Monotonic Hazard Functions: Properties and Applications
09.40-10.00	Donald E.K. Martin Efficient computation of pattern statistic distributions for many values of input parameters
10.00-10.20	Vassilis G.S. Vasdekis Bias correction in random effects models with sparse binary responses
10.20-10.40	Michael A. Zazanis Coverage Processes with Infinitely Divisible Marginals and the Ornstein-Uhlenbeck Process
Room 103 09.00-10.40	Design of Experiments with Applications Chair: Christos Koukouvinos
09.00-09.20	Christos Koukouvinos Statistical modeling using unreplicated designs
09.20-09.40	Stelios D. Georgiou Composite designs and alternatives for response surface methodology
09.40-10.00	Marilena Mitrouli Direct methods for variable selection in statistical modeling
10.00-10.20	Kalliopi Mylona Split-plot experiments in pharmaceutical industry
10.20-10.40	Haralambos Evangelaras A family of three-level orthogonal arrays useful for fitting second order linear models with quantitative factors

Conference Hall 10.50-11.20	Plenary session Chair: Athanasios C. Rakitzis
	Maria Kateri Step-Stress Accelerated Life Testing: New Developments and Trends in Reliability Modeling
11.20-11.50	Coffee break

Room 101 11.50-13.30	Advances in Insurance, Risk and Survival Modeling Chair: George Tzavelas
11.50-12.10	George Messinios Comparative Private Health Insurance Indices: International Experience and Proposals for the Greek Case
12.10-12.30	Georgios I. Papayiannis Model averaging in the Wasserstein space and applications in claim size distribution estimation
12.30-12.50	Katarzyna Szczerba AI-informed Non-linear Cox Model for Survival Analysis of Running-Related Injuries
12.50-13.10	Matúš Maciak Infinitely Stochastic Micro Reserving
13.10-13.30	Silvia Dedu General information measures for loss models and survival models involving truncated and censored random variables
Room 102 11.50-13.30	Uncertainty, Reliability and Adaptive Production in Complex Systems Chair: Serkan Eryilmaz
11.50-12.10	Yilser Devrim On reliability evaluation of fuel cell stack system subject to competing failures
12.10-12.30	Ioannis Mavrogiannis Auxiliary Heating of Nuclear Fusion Plasmas: Surrogate Model Comparison for Uncertainty Quantification and Sensitivity Analysis
12.30-12.50	Konstantinos A. Tasiias Unified management of interacting operations in degrading and adaptive production systems
12.50-13.10	Nikolaos Englezos A Novel HydroEconomic - Econometric Approach for Integrated Transboundary Water Management Under Uncertainty
13.10-13.30	Cihangir Kan Reliability assessment of systems equipped with protection blocks under discrete time modeling
Room 103 11.50-13.30	Advances in Stochastic Orders and Generalized Distributions with Applications Chair: Antonio Di Crescenzo
11.50-12.10	Georgios Psarrakos Lindley-type weighed distributions with applications to Actuarial and Risk Management
12.10-12.30	Lazaros K. Kanellopoulos Some stochastic orders and aging properties of a recent family of continuous univariate distributions
12.30-12.50	Michail Tsagris Directional data analysis: spherical Cauchy or Poisson kernel-based distribution?
12.50-13.10	George Iliopoulos On the star order for convolutions of Erlang distributions and tests for the scale of hypoexponential distribution
13.10-13.30	Christos P. Kitsos On the family of the γ -order distributions with applications to Physics
Conference Hall 13.40-14.10	Plenary session Chair: Vassilis G.S. Vasdekis
	Marianthi Markatou Poisson Kernel-Based Inference on the High-Dimensional Sphere
14.10-15.30	Lunch break

Room 101 15.30-16.50	Advances in Supervised Machine Learning for Complex Domain and Survival Data Chair: Fotios S. Milienos
15.30-15.50	Vasilis Chasiotis Supervised statistical (machine) learning for domain estimation with business survey data
15.50-16.10	László Márkus On the Accuracy of Deep Learned Parameters of Fractional Processes
16.10-16.30	Iakovos-Christos Zarkadis A Classification and Adversarial Approach on the Under-Sampled UMNIDS Dataset
16.30-16.50	Danai Koutra Not all Neighbors Agree: Graph Learning Beyond Homophily
Room 102 15.30-16.50	Advances in Renewal Theory and Ruin Probabilities Chair: Konstadinos Politis
15.30-15.50	David-Jacob Economides On joint discounted densities of the deficit and the number of claims until ruin, assuming dependent claim sizes and inter-claim times
15.50-16.10	Spyridon M. Tzaninis Ruin probabilities in the Sparre Andersen model: A change of measures approach
16.10-16.30	Christos G. Papadopoulos A new approximation for the Weibull renewal function
16.30-16.50	Samis Trevezas Finite multi-time Markov Renewal chains-Algebraic properties and computational issues
Room 103 15.30-16.50	Statistical Process Monitoring Chair: Petros Maravelakis
15.30-15.50	Theodoros Perdikis Improved Shewhart-type control charts based on weak runs in multistate trials
15.50-16.10	Konstantinos G. Fountoukidis A Max-type control chart with runs rules for monitoring a shifted exponential process
16.10-16.30	Athanasios C. Rakitzis A Comparative Study of Control Charts with Individual Observations for Monitoring Shifted Exponential Processes
16.30-16.50	Panagiotis Tsiamyrtzis Self-Starting Shiryaev (3S): A Bayesian Change Point Model for Online Monitoring of Short Runs
Conference Hall 15.30-16.50	Stochastic Games and Discrete Structures Chair: Spiros D. Dafnis
15.30-15.50	Dimitris Cheliotis Operator norm for random matrices with general variance profile
15.50-16.10	Antonis Dimakis Limit Equilibria in Stochastic Resource Allocation Games
16.10-16.30	Antonis Economou The M/M/1 queue with strategic arrivals who are informed about other arrivals decisions: Performance evaluation using QBD processes, game-theoretic analysis and implications
16.30-16.50	Malvina Vamvakari On Multiparameter q -Stirling Numbers

Conference Hall 17.00-18.00	Plenary session Chair: Apostolos Burnetas
17.00-17.30	Cristian Preda Approximations for the distribution of scan statistics and applications
17.30-18.00	Michael N. Katehakis Uncertainty Quantification for Scalable Reinforcement Learning
18.00-18.30	Coffee break

Conference Hall 18.30-19.30	Plenary session Chair: Markos V. Koutras
18.30-19.00	Anant Godbole Expected Number of Distinct Patterns in Random Permutations
19.00-19.30	Joseph Glaz A Multiple Testing Approach to Scan Statistics
Conference Hall 19.30	Closing session Chair: Alex Karagrigoriou
	Subhabrata Chakraborti , Professor of Statistics at the University of Alabama Short Tribute Address to the Guest of Honour Athanasios Kyriazis , Emeritus Professor of the University of Piraeus Short Tribute Address to the Guest of Honour Markos V. Koutras , Guest of Honour Free-format talk