Editorial

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This Special Issue for Methodology and Computing in Applied Probability (MCAP) contains 14 invited articles presented at the 17th Applied Stochastic Models and Data Analysis International Conference (ASMDA2017) which was held at De Morgan House of the London Mathematical Society, London, UK, 6–9 June, 2017. The ASMDA conference hosted articles, both theoretical and practical, presenting new research achievements of high quality and potential for solving real-life problems.

The articles included in the Special Issue, have been selected after a refereeing procedure similar to the one followed by the MCAP journal and have been placed in alphabetical order of the family names of the first author. We provide below a brief description of each article.

Larisa Afanaseva in the paper on *'Asymptotic Analysis of Queueing Models based on Synchronization Method'* focuses on the stability conditions for a multiserver queueing system with heterogeneous servers and a regenerative input flow.

Larisa Afanaseva, Elena Bashtova and Svetlana Grishunina in their paper on *'Stability Analysis of a Multi-server model with Simultaneous Service and a Regenerative Input Flow'* carry out a study on the stability conditions of a multi-server queueing system in which each customer requires a random number of servers simultaneously.

Sotiris Bersimis and Kostas Triantafyllopoulos explore the *'Dynamic non-parametric monitoring of air-pollution'*. They consider dynamic monitoring of pollution data (output of multivariate processes) using Kalman filters and multivariate statistical process control techniques.

Jie Chen, Thomas Ferguson, and Paul Jorgensen explore the Bandwagon effect by *'Using Scan Statistics for Cluster Detection: Recognizing Real Bandwagons'*. They investigate the use of two variable window scan statistics, the minimum P value scan statistic and the generalized likelihood ratio test (GLRT) statistic, to analyze one important form of the bandwagon problem.

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Lesław Gajek and Marcin Rudź's article '*Finite-horizon ruin probabilities in a risk-switching Sparre Andersen model*' demonstrates how to calculate finite-horizon ruin probabilities and develops new upper and lower bounds in a risk-switching Sparre Andersen model.

A second article by the same authors discusses '*Finite-horizon general solvency risk measures in a regime switching Sparre Andersen model*'. The authors investigate a general insolvency risk measure for a regime-switching Sparre Andersen model in which the distributions of claims and/or wait times are driven by a Markov chain.

Svetlana Grishunina explores a multi-server queueing system with regenerative input flow and independent service times with finite means in her contribution '*Limit theorems for queueing systems with various service disciplines in heavy-traffic conditions*'.

Vasileios M. Koutras and Markos V. Koutras discuss the '*Exact distribution of random order statistics and applications in risk management*'. Some new results are provided for the exact distribution of the r −th largest observation of the sample, and several interesting properties are developed when the sample size belongs to wide classes of discrete distributions.

Epaminondas G. Kyriakidis, Theodosis D. Dimitrakos and Constantinos C. Karamatsoukis propose '*A Stochastic Single Vehicle Routing Problem with a Predefined Sequence of Customers and Collection of Two Similar Materials*'. The objective of the article is to find the routing strategy that minimizes the total expected cost among all possible strategies for servicing all customers.

Nikolaos Limnios and Elena Yarovaya consider a '*Diffusion Approximation of Branching Processes in Semi-Markov Environment*'. They consider continuous-time Markov branching processes in semi-Markov random environment and obtain diffusion approximation results for the near critical case.

Sotirios Losidis and Konstadinos Politis, in their article on '*Moments of the forward recurrence time in a renewal process*' study the moments of the forward recurrence time in a renewal process.

Christos H Skiadas and Charilaos Skiadas discuss '*The first exit time stochastic theory applied to estimate the life-time of a complicated system*' with applications to the health state of biological systems (the human population and the Mediterranean flies) and to the functionality life time of cars.

Anatoliy Swishchuk explores the very recent trends in financial mathematics associated with big data in finance in the paper '*Stochastic Modelling of Big Data in Finance*' and presents an application exploiting a semi-Markov model.

Finally, Panagiotis Vassiliou, in his paper '*Laws of Large Numbers for Non-homogeneous Markov Systemes*', after presenting some theoretical issues, provides two applications firstly for geriatric and stroke patients in a hospital and secondly for the population of students in a University system.

We thank all the authors for their excellent contributions and the referees for their thorough and thoughtful reviews who helped achieving a high quality special issue. Our sincere thanks go to Professor Joseph Glaz (Founder and Editor in Chief of MCAP) for his generous help in setting up this issue.