EDITORIAL

Editorial for the special issue: Retrial Queues (WRQ'10)

J. R. Artalejo · Q.-L. Li

This special issue of *Operational Research: An International Journal* contains papers presented at the Eight International Workshop on Retrial Queues (WRQ'10). This meeting was held at the Tshinghua University, Beijing, July 27–29, 2010. The Chairman was Prof. Quanlin Li. About 40 participants from 12 countries attended the meeting.

Many queueing situations such as computer and telecommunication systems have the feature that customers who find all servers busy upon arrival are obliged to leave the service area but they come back to the system after a random amount of time. Then, repeated attempts for service from the pool of unsatisfied customers are superimposed on the normal stream of arrivals of first customers. The non-homogeneity caused by the flow of repeated attempts is the key to understand most analytical difficulties arising in the study of Retrial Queues. The pioneering papers present Retrial Queues as an alternative to loss models in telephony design. Nowadays, Retrial Queues play a special role not only due to their application to telephone systems but also as a powerful tool for the stochastic modelling of modern computer systems and telecommunication networks.

The growing interest of Retrial Queues is reflected in the publication of several hundred papers, two specific monographs, special issues of recognized international journals and the existence of a series of international workshops started in Madrid, September 22–24, 1998. WRQ'10 was another step in the evolution of Retrial Queues. Among the talks presented in the meeting, a selection of the best papers are

J. R. Artalejo (✉)
Department of Statistics and Operations Research, Faculty of Mathematics, Complutense University of Madrid, Madrid 28040, Spain
e-mail: jesus_artalejo@mat.ucm.es

Q.-L. Li
Department of Industrial Engineering, Tsinghua University, Beijing 100084, China
e-mail: liquanlin@mail.tsinghua.edu.cn

now published in this issue. Each submitted paper was reviewed by at least two referees following the standards of all major international journals.

The paper *The single server retrial queue with finite population: a BSDE approach* by J. R. Artalejo and M. J. Lopez-Herrero uses the block-structured state-dependent event (BSDE) approach to deal with a non-exponential retrial model with finite population. With the help of the BSDE construction, the dimensionality problem is kept tractable.

The paper *A retrial queue with server interruptions, resumption and restart of service* by A. Krishnamoorthy, B. Gopakumar and V. C. Narayanan employs matrix-analytic methods to analyze the system performance of a retrial queue with service breakdowns. The interrupted service times are either resumed or restarted.

The paper *An inventory model with server interruptions and retrials* by A. Krishnamoorthy, S. S. Nair and V. C. Narayanan studies the influence of the repeated attempts in an inventory model operating according to an (s,S)-policy, where the service process is subject to interruptions.

The paper *Tail asymptotics for M/M/c retrial queues with non-persistent customers* by B. Liu, X. Wang and Y. Q. Zhao is focused on the tail behavior of a multiserver retrial queue where customers are allowed to be non-persistent. A combination of a matrix-product solution and the censoring technique is the key to prove exact tail asymptotics results for the steady-state probabilities.

The paper *An explicit solution for a tandem queue with retrials and losses* by T. Phung-Duc provides explicit expressions for the joint distribution of the state of the servers and the number of customers in the retrial group of a tandem retrial network.

The efforts of a large number of people were necessary for the success of this issue. We thank Prof. Constantin Zopounidis for providing us an opportunity to guest edit this special issue. We also express our sincere gratitude to the referees and all authors who submitted their papers for this special issue.

It is our hope that this workshop had contributed to the increment of scientific cooperation and communication among the researchers interested in the study of Retrial Queues. To conclude we would like to welcome Prof. P. Moreno who will conduct the next edition (WRQ'12) in Seville, June 28–30, 2012, at the Pablo de Olavide University.

J. R. Artalejo and Q.-L. Li
Guest Editors