

SM
AR
TY
22

Stochastic
Modeling &
Applied
Research of
Technology

Third International
Workshop
Petrozavodsk, Karelia
August 21-25, 2022

Evsey V. Morozov, Alexander S. Rumyantsev, Oleg V. Lukashenko (Eds.)

Proceedings of the Third International Workshop **SMARTY'22**

Petrozavodsk, 2023

Copyright © 2023 for the individual papers by the papers' authors. Copyright © 2023 for the volume as a collection by its editors. This volume and its papers are published under the Creative Commons License Attribution 4.0 International (CC BY 4.0).

Editors' addresses:

Institute of Applied Mathematical Research
Karelian Research Centre of the Russian Academy of Sciences
11 Pushkinskaya Str.
185910 Petrozavodsk, Karelia Republic, Russia

{emorozov | ar0 | lukashenko}@krc.karelia.ru

Preface

Stochastic modeling and applied probability continue to be a hot topic in the theoretical computer science and applied mathematics domain. For various technical systems, such as high performance, distributed and quantum computing and communications systems, networks, healthcare applications, the methods of applied probability, statistics, stochastic simulation and computations provide qualitative and quantitative results in effort to achieve goals of high practical value.

The Third International Workshop on Stochastic Modeling and Applied Research of Technology (SMARTY 2022) was held in Petrozavodsk, Karelia, one of the beautiful places in the North-West Russia, on August 21-25, 2022.

SMARTY workshop aims to bring together researchers working on the theoretical, algorithmic and methodological aspects of queueing theory, stochastic modeling and applied probability, focusing on applications of such methods across a broad spectrum of technical systems with primary interest in high-performance and distributed computing systems. Special event in memory of Vladimir V. Kalashnikov was held as a satellite of SMARTY on August 24. Out of the 38 talks in total, 6 full papers were processed for inclusion into proceedings volume. The accepted papers cover various topics within applied probability and discrete mathematics.

We thank the authors, invited and keynote speakers for the submissions as well as for their contribution which have made the Workshop useful and successful in all respects. We thank the Organizing Committee and Technical Program Committee for their hard work.

December 2022

Evsey V. Morozov, Alexander S. Rumyantsev
Oleg V. Lukashenko

Contents

Customization of the Auer-Cesa-Bianchi-Fisher UCB Strategy for a Gaussian Two-Armed Bandit	1
<i>Maxim Ershov, Alexander Kolmogorov, Albert Voroshilov</i>	
Stochastic differential equations for limiting description of UCB rule for Gaussian multi-armed bandits	14
<i>Sergey Garbar</i>	
Asymptotics of the structure of conditional configuration graphs with bounded number of links	22
<i>Yury Pavlov</i>	
Extremal properties of maxima and sums in evolving networks	30
<i>Natalia Markovich</i>	
Necessary conditions for graph isomorphism problem: polynomial time algorithms	36
<i>Ramamurthy Garimella</i>	
Simulation of two-way communication retrial queueing systems with unreliable server and impatient customers in the orbit	45
<i>Adam Toth and Janos Sztrik</i>	