Alexander Dudin Koen De Turck (Eds.)

Analytical and Stochastic Modelling Techniques and Applications

20th International Conference, ASMTA 2013 Ghent, Belgium, July 8-10, 2013 Proceedings Volume Editors

Alexander Dudin
Belarusian State University
Department of Applied Mathematics and Computer Science
Nezavisimosti Ave. 4, Minsk 220030, Belarus
E-mail: dudin@bsu.by

Koen De Turck Ghent University Department of Telecommunications and Information Processing Sint-Pietersnieuwstraat41, 9000 Gent, Belgium E-mail: kdeturck@telin.ugent.be

ISSN 0302-9743 e-ISSN 1611-3349 ISBN 978-3-642-39407-2 e-ISBN 978-3-642-39408-9 **DOI** 10.1007/978-3-642-39408-9 Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2013941915

CR Subject Classification (1998): C.2, D.2.4, D.2.8, D.4, C.4, H.3, F.I

LNCS Sublibrary: SL 2 - Programming and Software Engineering

© Springer-Verlag Berlin Heidelberg 2013

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai. India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

It is our pleasure to present the proceedings of the 20th International Conference on Analytical and Stochastic Modelling and Applications (ASMTA 2013) held in Ghent, Belgium, during July 8-10, 2013. ASMTA conferences have become established quality events in the calendar of analytical, numerical and even simulation experts in Europe and well beyond. We were happy to receive interesting contributions from both regular participants and newcomers from such countries as the USA, the UK, Germany, France, Italy, The Netherlands, Belgium, Hungary, Belarus, Latvia, Hungary, Korea and many others.

The quality of this year's program was exceptionally high. The conference committee was extremely selective this year, accepting 30 papers, and rejecting many high-quality contributions. The International Program Committee reviewed the submissions critically and in detail, thereby assisting the Program Chairs in making the final decision as well as in providing the authors with useful comments to improve their papers. We would therefore like to thank every member of the Program Committee for their time and efforts.

We are very grateful for the generous support of the sponsors. The conference was co-sponsored by the IEEE UK-R.I Computer Chapter, by ECMS - The European Council for Modelling and Simulation, by the Faculty of Engineering and Architecture of Ghent University, by the SMACS Research Group and by IAP VII/19 DYSCO and IAP VII/23 BESTCOM. Thank you for your contribution to ASMTA 2013.

May 2013

Alexander Dudin Koen De Turck Khalid Al-Begain Herwig Bruneel