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on EU-CIRCLE Project

Guest Editor
Athanasios Sfetsos

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Secretariat
Maritime University
Department of Mathematics
ul. Morska 81-87
81-225 Gdynia, Poland
e-mail: ssars@am.gdynia.pl
phone: + 48 58 6901220, + 48 535008093 fax: + 48 58 6206701

Website
http://jpsra.am.gdynia.pl

Editorial Board

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Guest Editorial

The Journal of Polish Safety and Reliability Association, Volume 7, Number 3 is a special issue including papers accepted for Workshop 3. Modelling, Identification and Prediction of Operation Processes and Safety of Complex Systems. The Workshop 3 was organised during Summers Safety and Reliability Seminars – SSARS 2016 as a part of EU-CIRCE project activity. The EU-CIRCLE project untitled "A pan-European framework for strengthening Critical Infrastructure resilience to climate change" is proposing a consolidated approach to identify the resilience of interconnected critical infrastructures to climate stresses. The objective of EU-CIRCLE is to understand how interconnected infrastructure network(s) are resilient to today's natural hazards and prepared for the future changing climate. Furthermore, since modern infrastructures are inherently interconnected and interdependent systems; extreme events affecting any single asset are prone to lead to "cascade failures". EU-CIRCLE scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. It will be open & accessible to all interested parts in the infrastructure resilience business and having a confirmed interest in creating customized and innovative solutions. The design principles, offering transparency and greater flexibility, will allow potential users to introduce fully tailored solutions and infrastructure data, by defining and implementing customised impact assessment models, and use climate/weather data on demand.
The EU-CIRCLE project is organized into 9 Workpackages (Wp1-Wp9) composed of a number of Tasks.
In the Workshop 3, there were presented papers including results obtained in the scope of Wp3 entitled "Critical Infrastructure Risk Model for Climate Hazards" and composed of the following Tasks: Task 3.1 Definition of CI assets and networks, Task 3.2 Definition of climate related CI critical event parameters and CI exposure, Task 3.3 CI interconnections, Task 3.4 Impact Assessment Models, Task 3.5 Holistic Risk Assessment Propagation model.
These papers are included in this JPSRA, Volume 7, No 3 edition.

Athanasios Sfetsos

Preface

Journal of Polish Safety and Reliability Association is an international journal devoted to the development and application of the methods of modelling, identification, prediction and optimization of the reliability, safety and security of complex systems and processes. The journal mainly publishes the papers and lectures accepted for and presented at the *Summer Safety and Reliability Seminars*.

The idea beyond the organization of the annual, one-week *Summer Safety and Reliability Seminars* is to provide a forum for discussing, advancing and developing methods for the safety and reliability analysis of the complex systems, which form the backbone of our modern Societies.
The subjects of the Seminars are chosen each year by the Programme Board in an effort to dynamically represent the methodological advancements developed to meet the newly arising challenges in the field of safety and reliability analysis.
This year the emphasis was addressed to the following subjects:
• Reliability and Safety Improvement and Optimization Methods ;
• Accident Consequences Modelling;
• Reliability and Safety of Complex Systems and Processes;
• Safety of Critical Infrastructures;
• Monte Carlo Simulation Methods in Safety and Reliability.
Both 1-2 hours lectures on advanced methods (accompanied by a corresponding full text of up to 12 pages) and technical presentations of 20-30 minutes on applications of such methods (with corresponding full text of up to 8 pages) are offered during the plenary sessions and the seminar sessions, respectively.

The extended version of papers and lectures in the form of articles are collected in the *Journal of Polish Safety and Reliability Association: Summer Safety and Reliability Seminars*, which constitute an up-to-date reference textbook for the participants to the Seminars and all the researchers in the field.
The JPSRA Editorial Board with the assistance of the Invited Professors have performed the evaluations of all contributions: as a result, recommendations have been sent out to help the authors improving their work. In all, 68 papers and lectures have been accepted for presentation during the Seminar and for publication in the *Journal of Polish Safety and Reliability Association: Summer Safety and Reliability Seminars*. 30 of the papers and lectures are included in Number 1, 20 papers are included in Number 2 and 17 of the papers and lectures are included in Number 3.

SSARS Seminar Boards

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Invited Professors & Plenary Lectures

Heinz-Peter Berg, How to Investigate and Assess Combinations of Hazards
Mohamed Eid, Critical Infrastructure Preparedness: Cascading of Disruptions Considering Vulnerability and Dependency
Franciszek Grabski, Reliability and Maintainability Characteristics in Semi-Markov Models
Kazimierz Kosmowski, Organizational Culture as Prerequisite of Proactive Safety and Security Management in Critical Infrastructure Systems Including Hazardous Plants and Seaports
Jacek Mazurkiewicz, A Repair Time Model of a Web Based System Including Administrator Working Hours
Lauri Ojala, HAZARD Project – Mitigating the Effects of Emergencies in Baltic Sea Region Ports
Athanasios Sfetsos, EU-CIRCLE Project - Strengthening Critical Infrastructure Resilience to Climate Change
Barbara Tchórzewska-Cieślak, Analysis and Assessment Methods of Water Network Failure in Critical Infrastructure Methodology

Training Courses – TC

Joanna Soszyńska Budny, EU-CIRCLE TC 1. Safety of Multistate Ageing Systems
Joanna Soszyńska Budny, EU-CIRCLE TC 2. Modelling Critical Infrastructure Operation Process
Joanna Soszyńska Budny, EU-CIRCLE TC 3. Prediction of Critical Infrastructure Operation Process
Mateusz Torbicki, EU-CIRCLE TC 4. Modelling Climate-Weather Change Process
Ewa Kuligowska, EU-CIRCLE TC 5. Identification of Climate-Weather Change Process
Magdalena Bogalecka, EU-CIRCLE TC 6. Modelling Critical Infrastructure Accident Consequences

Thematic Workshops - TW

Joanna Soszyńska-Budny, Athanasis Sfetsos, EU-CIRCLE TW 1. Baltic Sea Region Critical Infrastructure Networks
Agnieszka Blokus-Roszkowska, Athanasis Sfetsos, EU-CIRCLE TW 2. General Methodology on Critical Infrastructure Safety Aspects
Krzysztof Kołowrocki, Athanasis Sfetsos, EU-CIRCLE TW 3. Modelling**,** Identification and Prediction of Operation Processes and Safety of Complex Systems
Krzysztof Kołowrocki, Lauri Ojala, HAZARD TW 1. Risk Assessment and Analysis

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List of Papers & Lectures