

# SSARS 2021

**15<sup>th</sup> Summer Safety and Reliability Seminar and Workshop**  
September 5–12, 2021, Ciechocinek, Poland

## PROGRAMME



### Organizers and Sponsors

*Gdynia Maritime University (GMU)*  
*Polish Safety and Reliability Association (PSRA)*



### Secretariat

*Gdynia Maritime University*  
*Department of Mathematics*  
*81-225 Gdynia, ul. Morska 81-87*  
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### Website

*<https://ssars.umg.edu.pl>*

### Location

*„Pod Tężniami” Hotel Conference & Spa*  
*<https://www.podtezniami.pl/en/contact/>*  
*Warzelniana 7 Street*  
*87-720 Ciechocinek, Poland*  
*e-mail: [rezerwacja@podtezniami.pl](mailto:rezerwacja@podtezniami.pl)*

# Seminar Board

## General Chair

Kołowrocki Krzysztof, *Gdynia Maritime University, Poland*

## Executive Chairs

Bogalecka Magdalena, Dąbrowska Ewa, Torbicki Mateusz, *Gdynia Maritime University, Poland*

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Bautista Bárcena Lucía, *Spain*

Bérenguer Christopher, *France*

Berg Heinz-Peter, *Germany*

Coello Coello Carlos A., *Mexico*

Coolen Frank, *Great Britain*

Eid Mohamed, *France*

Grabski Franciszek, *Poland*

Kosmowski Kazimierz, *Poland*

Kostogryzov Andrey, *Russia*

Li Yan-Fu, *China*

Malinowski Jacek, *Poland*

Pietrucha-Urbanik Katarzyna, *Poland*

Popek Marzenna, *Poland*

Röwekamp Marina, *Germany*

Tanguy Christian, *France*

Tchórzewska-Cieślak Barbara, *Poland*

Torres Castro Inmaculada, *Spain*

## Technical Team

Cichocka Oliwia, *Poland*

Magryta-Mut Beata, *Poland*

**Sunday, 5.09.2021**

TIME	SEMINAR EVENTS (SEMINAR ROOM)
14 <sup>00</sup> – 17 <sup>00</sup>	Participants' Arrival ("Pod Tężniami" Hotel)
17 <sup>00</sup> – 18 <sup>00</sup>	Participants' Registration (Seminar Desk)
18 <sup>00</sup> – 19 <sup>00</sup>	<b>Dinner (Hotel Restaurant)</b>

Monday, 6.09.2021

TIME	SEMINAR EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	<b>Breakfast (Hotel Restaurant)</b>
	<b>Opening Ceremony</b>
10 <sup>00</sup> – 10 <sup>30</sup>	Welcome ( <i>Kołowrocki Krzysztof</i> – General Chair) Technical Information ( <i>Dąbrowska Ewa</i> – Executive Chair)
	<b>Plenary Session 1</b>
10 <sup>30</sup> – 11 <sup>00</sup>	Chair: <i>Berg Heinz-Peter</i> Title: <i>Network connectivity dynamic modelling</i> Speaker: <i>Eid Mohamed</i>
11 <sup>00</sup> – 11 <sup>30</sup>	<b>Coffee/Tea Break (Seminar Room)</b>
	<b>Plenary Session 2</b>
11 <sup>30</sup> – 12 <sup>00</sup>	Chair: <i>Malinowski Jacek</i> Title: <i>Cox processes in system degradation modelling</i> Speakers: <i>Bautista Bárcena Lucía, Torres Castro Inmaculada, Landesa Porrás Luis</i>
	<b>Plenary Session 3</b>
12 <sup>00</sup> – 12 <sup>30</sup>	Chair: <i>Bogalecka Magdalena</i> Title: <i>Comprehensive model of operation process of complex technical system designed for simulation purposes</i> Speaker: <i>Malinowski Jacek</i>
13 <sup>00</sup> – 15 <sup>00</sup>	<b>Lunch (Hotel Restaurant)</b>
	<b>Plenary Session 4</b>
15 <sup>00</sup> – 15 <sup>30</sup> (Mexico City time: 8 <sup>00</sup> – 8 <sup>30</sup> )	Chair: <i>Kołowrocki Krzysztof</i> Title: <i>Multi-objective evolutionary algorithms and some of their applications in reliability</i> Speakers: <i>Coello Coello Carlos A., Castillo Tapia Ma Guadalupe</i>
15 <sup>30</sup> – 18 <sup>00</sup>	<b>Free Time</b>
18 <sup>00</sup> – 19 <sup>00</sup>	<b>Dinner (Hotel Restaurant)</b>

Tuesday, 7.09.2021

TIME	SEMINAR EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	<b>Breakfast (Hotel Restaurant)</b>
10 <sup>00</sup> – 10 <sup>30</sup>	<b>Plenary Session 5</b>
	Chair: <i>Malinowski Jacek</i> Title: <i>Combinations of fires with other types of hazards in nuclear and process industry installations</i> Speakers: <u>Berg Heinz-Peter</u> , <u>Röwekamp Marina</u>
10 <sup>30</sup> – 11 <sup>00</sup>	<b>Seminar Session 1</b> <b>Reliability and safety of transportation and industrial systems and processes</b>
	Chair: <i>Lubośny Zbigniew</i> Title: <i>Protecting critical infrastructure of water supply in interests of consumer safety</i> Speakers: <u>Tchórzewska-Cieślak Barbara</u> , <u>Pietrucha-Urbanik Katarzyna</u> , <u>Rak Janusz Ryszard</u> Title: <i>Statistical analysis of passenger transport in European countries with large gross domestic product</i> Speakers: <u>Seta Filip</u> , <u>Tomaszewska Justyna</u> , <u>Woch Marta</u> , <u>Zieja Mariusz</u>
11 <sup>00</sup> – 11 <sup>30</sup>	<b>Coffee/Tea Break (Seminar Room)</b>
11 <sup>30</sup> – 12 <sup>30</sup>	<b>Seminar Session 2</b> <b>Environmental pollution modelling</b>
	Chair: <i>Torbicki Mateusz</i>
	Title: <i>Risk of heavy metals and their compounds pollution in Port Gdynia waters</i> Speakers: <u>Popek Marzenna</u> , <u>Dereszewska Alina</u> , <u>Dembska Grażyna</u>
	Title: <i>Short-term forecasting of accidental oil spill movement in harbours</i> Speaker: <u>Dąbrowska Ewa</u> Title: <i>Semi-markovian approach to modelling air pollution</i> Speaker: <u>Bogalecka Magdalena</u> Title: <i>Maximization problem of three tasks operation process subject to constraint of availability in semi-Markov reliability model</i> Speakers: <u>Grabski Franciszek</u> , <u>Rutkowska Maria</u>
13 <sup>00</sup> – 15 <sup>00</sup>	<b>Lunch (Hotel Restaurant)</b>
15 <sup>00</sup> – 17 <sup>30</sup>	<b>Free Time</b>
17 <sup>30</sup> – 18 <sup>00</sup>	<b>Celebration of the Fiftieth Jubilee of Prof. Krzysztof Kołowrocki scientific and research work</b>
	Moderators: <i>Bogalecka Magdalena</i> , <i>Dąbrowska Ewa</i> , <i>Torbicki Mateusz</i>
18 <sup>00</sup> – 22 <sup>00</sup>	<b>Seminar Dinner (Hotel Restaurant)</b>

Wednesday, 8.09.2021

TIME	SEMINAR EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	<b>Breakfast (Hotel Restaurant)</b>
10 <sup>00</sup> – 10 <sup>30</sup>	<b>Plenary Session 6</b>
	Chair: <i>Dąbrowska Ewa</i> Title: <i>Business continuity management framework for Industry 4.0 companies regarding dependability and security of ICT and ICS/SCADA system</i> Speaker: <i>Kosmowski Kazimierz</i>
10 <sup>30</sup> – 11 <sup>00</sup>	<b>Seminar Session 3 COVID-19 pandemic human safety modelling</b>
	Chair: <i>Woch Marta</i> Title: <i>Forth industrial revolution and new challenges in post-pandemic world</i> Speaker: <i>Kosmowski Kazimierz</i>  Title: <i>Preliminary general approach to modelling COVID-19 pandemic sufferer safety impacted by human living conditions</i> Speakers: <i>Kołowrocki Krzysztof, Bogalecka Magdalena, Dąbrowska Ewa, Torbicki Mateusz, Magryta-Mut Beata, Cichocka Oliwia</i>
11 <sup>00</sup> – 11 <sup>30</sup>	<b>Coffee/Tea Break (Seminar Room)</b>
11 <sup>30</sup> – 12 <sup>00</sup>	<b>Plenary Session 7</b>
	Chair: <i>Berg Heinz-Peter</i> Title: <i>Safety analysis of critical infrastructure impacted by operation and climate-weather changes – theoretical backgrounds</i> Speaker: <i>Kołowrocki Krzysztof</i>
12 <sup>00</sup> – 12 <sup>30</sup>	<b>Seminar Session 4 System safety impacted by climate and weather change modelling</b>
	Chair: <i>Malinowski Jacek</i> Title: <i>Identification of climate-weather change processes at Baltic Sea water area impacted on critical infrastructure safety and their accident consequences</i> Speakers: <i>Dąbrowska Ewa, Torbicki Mateusz</i>  Title: <i>Safety of critical infrastructure exposed to operation and weather condition changes</i> Speakers: <i>Torbicki Mateusz, Raith Dominik</i>
13 <sup>00</sup> – 15 <sup>00</sup>	<b>Lunch (Hotel Restaurant)</b>
15 <sup>00</sup> – 18 <sup>00</sup>	<b>Free Time</b>
18 <sup>00</sup> – 19 <sup>00</sup>	<b>Dinner (Hotel Restaurant)</b>

Thursday, 9.09.2021

TIME	SEMINAR/WORKSHOP EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	<b>Breakfast (Hotel Restaurant)</b>
10 <sup>00</sup> – 10 <sup>30</sup>	<b>Seminar Session 5</b> <b>Critical infrastructure safety and operation cost optimization</b>
	Chair: <i>Lubośny Zbigniew</i>
	Title: <i>Operation cost and safety optimization of maritime transportation system</i> Speakers: <i>Kołowrocki Krzysztof, <u>Magryta-Mut Beata</u></i>  Title: <i>Safety and operation cost optimization of port oil terminal critical infrastructure</i> Speakers: <i>Kołowrocki Krzysztof, <u>Magryta-Mut Beata</u></i>
10 <sup>30</sup> – 10 <sup>45</sup>	Moderator: <i>Kołowrocki Krzysztof</i>
	<i>Discussion on the subject and organization of SSARS 2022</i>
10 <sup>45</sup> – 11 <sup>00</sup>	Title: <i>Closing words</i> Speaker: <i>Kołowrocki Krzysztof</i>
11 <sup>00</sup> – 12 <sup>00</sup>	<b>SSARS Participants Departure</b>
11 <sup>00</sup> – 11 <sup>30</sup>	<b>Coffee/Tea Break (Seminar Room)</b>
11 <sup>30</sup> – 12 <sup>30</sup>	<b>Post-SSARS Workshop – Training Course 1</b>
	Moderators: <i>Kołowrocki Krzysztof, Bogalecka Magdalena, Torbicki Mateusz</i>
	Title: <i>Modelling critical infrastructure safety</i> Speaker: <i>Dąbrowska Ewa</i>
13 <sup>00</sup> – 15 <sup>00</sup>	<b>Lunch (Hotel Restaurant)</b>
15 <sup>00</sup> – 18 <sup>00</sup>	<b>Free Time</b>
18 <sup>00</sup> – 19 <sup>00</sup>	<b>Dinner (Hotel Restaurant)</b>

Friday, 10.09.2021

TIME	WORKSHOP EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	Breakfast (Hotel Restaurant)
10 <sup>00</sup> – 11 <sup>00</sup>	Post-SSARS Workshop – Training Course 2
	Moderators: <i>Bogalecka Magdalena, Dąbrowska Ewa, Torbicki Mateusz</i>
	Title: <i>Modelling critical infrastructure operation process</i> Speaker: <i>Kołowrocki Krzysztof</i>
11 <sup>00</sup> – 11 <sup>30</sup>	Coffee/Tea Break (Seminar Room)
11 <sup>30</sup> – 12 <sup>30</sup>	Post-SSARS Workshop – Training Course 3
	Moderators: <i>Kołowrocki Krzysztof, Bogalecka Magdalena, Dąbrowska Ewa</i>
	Title: <i>Modelling climate-weather change process</i> Speaker: <i>Torbicki Mateusz</i>
13 <sup>00</sup> – 15 <sup>00</sup>	Lunch (Hotel Restaurant)
15 <sup>00</sup> – 18 <sup>00</sup>	Free Time
18 <sup>00</sup> – 19 <sup>00</sup>	Dinner (Hotel Restaurant)



Saturday, 11.09.2021

TIME	WORKSHOP EVENTS (SEMINAR ROOM)
7 <sup>45</sup> – 10 <sup>00</sup>	Breakfast (Hotel Restaurant)
10 <sup>00</sup> – 11 <sup>00</sup>	Post-SSARS Workshop – Training Course 4
	Moderators: <i>Kołowrocki Krzysztof, Dąbrowska Ewa, Torbicki Mateusz</i>
	Title: <i>Modelling critical infrastructure accident consequences</i> Speaker: <i>Bogalecka Magdalena</i>
11 <sup>00</sup> – 11 <sup>30</sup>	Coffee/Tea Break (Seminar Room)
11 <sup>30</sup> – 13 <sup>00</sup>	POLISH SAFETY AND RELIABILITY ASSOCIATION MANAGEMENT BOARD MEETING (SEMINAR ROOM)
13 <sup>00</sup> – 15 <sup>00</sup>	Lunch (Hotel Restaurant)
15 <sup>00</sup> – 18 <sup>00</sup>	Moderator: <i>Kołowrocki Krzysztof</i>
	<i>Discussion on preparing project proposals to apply for grants in the Horizon Programme 2021-2027</i>
18 <sup>00</sup> – 19 <sup>00</sup>	Dinner (Hotel Restaurant)

**Sunday, 12.09.2021**

<b>TIME</b>	<b>WORKSHOP EVENTS (SEMINAR ROOM)</b>
<b>7<sup>45</sup> – 10<sup>00</sup></b>	<b>Breakfast (Hotel Restaurant)</b>
10 <sup>00</sup> – 10 <sup>30</sup>	Title: <i>Closing words</i> Speaker: <i>Kołowrocki Krzysztof</i>
<b>10<sup>30</sup> – 12<sup>00</sup></b>	<b>Post-SSARS Workshop Participants Departure</b>

**Gdynia, 31.08.2021**