



# 3rd International Conference on Control Systems, Mathematical Modeling, Automation and Energy Efficiency

## SUMMA2021 CONFERENCE PROGRAM

November, 10-12 2021

Venue: Russia, Lipetsk (VIRTUALLY)



## SUMMA2021 CONFERENCE

The 3rd International Conference on Control Systems, Mathematical Modeling, Automation and Energy Efficiency (SUMMA2021) focuses on the wide range of topics related to Control Systems and Mathematical Modeling, Automation and using advanced knowledge in the Power Industry to solve scientific and practical production problems. Traditionally the conference is jointly organized by V.A. Trapeznikov Institute of Control Sciences RAS and the Department of Automation and Computer Science of Lipetsk State Technical University. The conference is dedicated to the 65 anniversary of Lipetsk State Technical University. Notably that 2021 is proclaimed as the Year of Science and Technology in Russia.

We hope, that the Conference will become a traditional place to discuss special issues of Control Systems and Mathematical Modeling, Automation and using advanced knowledge in the Power Industry to solve scientific and practical production problems.

## SUMMA2021 TOPICS

Scientific program includes topics of interest that consist of, but are not limited to:

I. Industrial Applied Mathematics and Modeling *Mathematical Foundations of Control Theory; Control of Organizational and Socio-Economic Systems; Machine Learning*

II. Automation *Industrial Automation and Control Theory applying to Technological Processes; Digitalization in Industrial, Economic and Social Systems; Metals and Mining Industry; Transportation Systems*

III. Industrial and Commercial Power and Power Conversion Systems *Energy Systems and Power Systems Engineering; Electric Machines and Industrial Drives; Power Electronic Devices and Components*

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## Wednesday, November, 10 2021

11:00 – 11:15 (MSK, UTC+3)	Opening Ceremony
	<p>Pavel SARAIEV, D.Sc., Prof. <i>Russia, Lipetsk, Lipetsk State Technical University</i></p> <p>Anatoly YAKUTIN <i>Russia, Lipetsk, Vice Governor of Lipetsk Region</i></p> <p>Dmitry NOVIKOV, Corresponding Member of RAS, D.Sc., Prof. <i>Russia, Moscow, V.A. Trapeznikov Institute of Control Sciences RAS</i></p> <p>Sergei CHEBOTAREV, Cand. Sc. <i>Russia, Novolipetsk Steel</i></p>
11:15– 13:15 (MSK, UTC+3)	Plenary Session <span style="float: right;">Chair Prof. Pavel SARAIEV</span>
	<p>Stanimir VALTCHEV, Prof. <i>Portugal, Universidade Nova de Lisboa</i></p> <p>Electrical Engineering, Industrial Production and the Future of IEEE</p>
	<p>Maria Cristina RECCHIONI, Prof. <i>Italy, Università Politecnica delle Marche</i></p> <p>A New Dynamic Clustering Approach to Tail-analysis: Application to Portfolio Optimization and Network Centrality</p>
	<p>Alexander KOLESHNIKOV, D.Sc., Prof. <i>Russia, Kaliningrad branch of the Federal Research Center "Computer Science and Control" RAS</i></p> <p>Research Prototype of the Cognitive Decision Support System for Information Preparation of Decisions of the Complex Task of Monitoring Situations and the State of a Control Object in Systems with a High Spatio-temporal Dynamics</p>
13:15 – 14:00 (MSK, UTC+3)	Virtual Coffee Break
14:00 – 16:00 (MSK, UTC+3)	Plenary Session <span style="float: right;">Chair Prof. Stanimir VALTCHEV</span>
	<p>Marek JASINSKI, Prof. <i>Poland, Warsaw University of Technology</i></p> <p>Energy and Information Processing in More Reliable Power Electronics</p>
	<p>Alexander KHOPERSKOV, D.Sc., Prof. <i>Russia, Volgograd State University</i></p> <p>Modeling the Dynamics of Shallow Water for Control Problems of Floodplain Areas</p>
	<p>Anton GLUSHCHENKO, D.Sc., Prof. <i>Russia, V.A. Trapeznikov Institute of Control Sciences RAS, Sary Oskol Technological Institute n.a. A.A. Ugarov (branch) of National Research Technological University "MISIS"</i></p> <p>Neural Networks to Control Nonlinear Underactuated Plants with Uncertainties</p>

## Thursday, November, 11 2021

9:30 – 12:00 (MSK, UTC+3)	Section Sessions
12:00 – 13:00 (MSK, UTC+3)	Virtual Coffee Break
13:00 – 15:00 (MSK, UTC+3)	Section Sessions
15:00 – 15:30 (MSK, UTC+3)	Virtual Coffee Break
15:30 – 17:00 (MSK, UTC+3)	Section Sessions

## Friday, November, 12 2021

9:30 – 12:00 (MSK, UTC+3)	Section Sessions
12:00 – 13:00 (MSK, UTC+3)	Virtual Coffee Break
13:00 – 16:00 (MSK, UTC+3)	Section Sessions
16:00 – 16:30 (MSK, UTC+3)	Virtual Coffee Break
16:30 – 17:00 (MSK, UTC+3)	Closing Ceremony

# DETAILED PROGRAM

## Thursday, November, 11 2021

### (Moscow time, UTC+3)

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10:00–10:15	<i>Svetlana Krivobokova and Vladimir Rodin</i> Analysis of expert opinions to reduce the dimensionality of vector optimization in the problem of determining the optimum set of security devices		26
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10:45–11:00	<i>Sergey Nikolaevich Kirillov and Vladimir Timurovich Dmitriev</i> Algorithm to Control Primary Codec Under the Influence of Interference in Communication Channel		54
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Session AM.2.1 Industrial Applied Mathematics and Modeling – Control of Organizational and Socio-Economic Systems (09:30–12:00)		Chairs  Room (zoom)  Session AM.2.1	ArtID
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10:00–10:15	<i>Vladislav Gusev</i> Analysis of Bottlenecks in the Model of Technological Structure of Economy		9
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