WORKSHOP PROGRAMME

Departure from Irkutsk at 12:00
Arrival in the Baikalsk and registration of participants

OPENING CEREMONY

SESSION 1

1. Situational awareness and a value driven approach to address misinformation / **Komendantova Nadejda** *(International Institute for Applied Systems Analysis, Laxenburg, Austria)*

2. On integrated approach to the retrieval of information on critical situations / **Tuchkova Natalia** *(Dorodnicyn Computing Center of FRC CSC RAS, Moscow)*

3. About geographical search for information based on zoospace platform, taking into account time changes / **Leonova Yuliya**, Zhizhimov Oleg *(Institute of Computational Technologies SB RAS, Novosibirsk)*

March 26, 20:00   Welcome Party

SESSION 2

1. Critical Infrastructures: What, Why and What for? / **Voropai Nikolai** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

2. Digital twins as one of the trends in energy digitalization / **Massel Liudmila** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

3. Architecture of information system for analysis of big data in energy sector research / **Kopaygorodsky Aleksei,** Khairullin Ilya *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

4. Virtualization in building of digital twins and digital images / **Massel Aleksei** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

5. The approach to developing digital twin of solar power plant / Massel Aleksei, **Tsybikov Aleksey**, Shchukin Nikita *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

6. The digital twin development of a solar power plant / Massel Aleksei, **Shchukin Nikita,** Tsybikov Aleksey *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

7. Data emulation for Scada virtual standas a stage of digital twin building / **Losev Aleksey,** Massel Aleksei *(Irkutsk National Research Technical University, Melentiev Energy Systems Institute SB RAS, Irkutsk)*

8. Information protection in cloud data storages / **Arshinsky Leonid**, Shurkhovetsky Georgy *(Irkutsk State Transport University, Irkutsk)*

9. Ecological blocs engineering in thermodynamics-circuit modelling of integrated energy systems / **Zarodnyuk Maxim**, Kaganovich Boris, Stennikov Valery, Barakhtenko Evgeny *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

DISCUSSION

March 27, 17:00

Round Table: « Digital Twins: Problems and Perspectives»
Keynote Speakers: **Massel Liudmila, Kolosok Irina**

SESSION 3

1. About of using the concept of scale in the design of a complex information system / **Erzhenin Roman** *(SPC «Gosuchet», Moscow)*

2. Network scope on complex sustainability of socio-economic and environmental systems in rural territories of Eastern Siberia / Berestneva Olga[1], **Trufanov Andrey**[2], Kuklina Maria[2], Kobylkin Dmitriy[3], Krasnoshtanova Natalia[3], Istomina Elena[3], Kuklina Vera[4], Tikhomirov Alexei[5], Rossodivita Alessandra[6], Kinash Irina[7]

   [1]Tomsk Polytechnic University, Tomsk, [2]Irkutsk National Research Technical University, Irkutsk, [3]V. B. Sochava Institute of geography SB RAS, Irkutsk, [4]George Washington University, Washington, D.C.,USA,[5]INHA University, Incheon, Republic of Korea,[6]Ospedale Luigi Sacco, Milan, Italy,[7]Irkutsk Scientific Centre of Surgery and Traumatology, Irkutsk

3. Optimization of agricultural production using a price forecasting model with a seasonal component / **Polkovskaya Marina,** Ivanyo Yaroslav *(Irkutsk State Agrarian University named after A.A. Ezhevsky, Irkutsk)*

4. Ecological-mathematical modeling in problems of planning of production of agricultural products in conditions of risks / Ivanyo Yaroslav, Kovaleva Evgeniya, **Petrova Sofia** *(Irkutsk State Agrarian University named after A.A. Ezhevsky, Irkutsk)*

5. Software complex "Forecasting of production and economic indicators for agricultural production" / Ivanyo Yaroslav, Romme Alexey, Varanitsa-Gorodovskaya Zhanna, **Barsukova Margarita** *(Irkutsk State Agrarian University named after A.A. Ezhevsky, Irkutsk)*

6. Automation of design and development of a database structure based on ontologies / **An Gleb** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

March 28, 17:00

Round table: «Independent examination as a tool for information support for assessing the effectiveness of budget IT investments»

Keynote Speaker: **Erzhenin Roman**

SESSION 4

1. An approach to assessing the impact of distributed generation development on regional energy supply systems / **Galperova Elena,** Kononov Yury *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

2. Multi-agent system to control voltage in mains with small distributed generation plants / **Shumanskii Eduard,** Bulatov Yurii *(Bratsk State University, Bratsk)*

3. DR Aggregator's Prosumer as a Cyber-Physical System / Kolosok Irina, **Korkina Elena** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

4. Vulnerability analysis of cyber-physical power system for state estimation / Kolosok Irina, **Gurina Liudmila** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

5. Methods, tools, and information technologies for energy sector impact assessement on geoecology / **Kuzmin Vladimir** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

6. The improvement of the software for creating maps of the different regions for analyzing of their energy infrastructure / **Trofimov Ivan,** Trofimov Leonid *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

7. Multi-agent software package "INTEC-A" for researching the directions development of the fuel and energy complex / **Mamedov Timur** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

DISCUSSION

March 29, 17:00

8. Algebraic means of generative design and verification of power systems / **Kovalyov Serge** *(Institute of Control Sciences, Russian Academy of Sciences, Moscow)*

Round table: «Informatization, automation, digitalization: what are the differences»

Keynote Speakers: **Massel Liudmila, Vorozhtsova Tatiana**

SESSION 5

1. Resilience research of energy and socio-ecological systems: problem and decision ways / **Massel Liudmila,** Pesterev Dmitriy *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

2. Integration of geological data as a knowledge graph /**Cherkashin Evgeny,** Lunina Oksana, Gladkov Anton, Cherkashina Tatiana, Pellinen Vadim *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Institute of the Earth's Crust SB RAS, Irkutsk)*

3. Cognitive engineering / **Massel Aleksei** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

4. Integration of the components of ontological knowledge space to assess the impact of energy sector on the quality of life of the population / **Vorozhtsova Tatiana,** Ivanova Irina, Maysyuk Elena *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

5. Ontological and cognitive modeling of socio-ecological aspects of energy research / **Pesterev Dmitriy** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

6. Hierarchical overview of energy technology research trends using ontology models / **Alexey Mikheev** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

7. Prelimitary prediction of a road capacity due to an accident based on neural networks / **Kharakhinov Vladimir,** Sosinskaya Sofya *(Irkutsk National Research Technical University, Irkutsk)*

8. Object detection in digital video streams / Gerget Olga, **Laptev Nikita,** Laptev Vladislav *(Tomsk Polytechnic University, Tomsk)*

9. Modeling and visualization of natural hazards and their effect on the region's economic security and ecological safety / **Kuklin Egor** *(Irkutsk National Research Technical University, Irkutsk)*

DISCUSSION

March 30, 17:00

Round table: «Ideal artificial intelligence - requirements and opportunities to achieve them»
Keynote Speakers: **Massel Liudmila, Tuchkova Natalia**

SESSION 6

1. Cybersecurity of prognostic control algorithms distributed generation plant / **Bulatov Yurii,** Kryukov Andrey *(Bratsk State University,Bratsk; Irkutsk State Transport University, Irkutsk National Research Technical University, Irkutsk)*

2. Cyber situational awareness in energy facilities / **Gaskova Daria** *(Melentiev Energy Systems Institute SB RAS, Irkutsk)*

3. Infrastructure for transmission of critical data over open communication channels / **Duga Sergey[1],** Trufanov Andrey[2]

   [1]Investigative Committee of the Russian Federation

   [2]Irkutsk National Research Technical University, Irkutsk

4. Multicomponent dynamic model of information security threats / **Gorbylev Alexander** *(Irkutsk National Research Technical University, Irkutsk)*

DISCUSSION

March 31, 17:00

1. Challenges of proactive threat intelligence in critical information infrastructure operating systems / **Meshcheryakov Roman,** Iskhakov Sergei *(Institute of Control Sciences, Russian Academy of Sciences, Moscow; Tomsk State University of Control Systems and Radioelectronics, Tomsk)*

2. Algorithmic software for multi-threaded analysis of malicious requests / Iskhakova Anastasia, **Iskhakov Andrei** *(Institute of Control Sciences, Russian Academy of Sciences, Moscow)*

3. Cybersecurity aspects of anomaly search methods in unmanned vehicle object measurement systems / **Romanova Maria,** Iskhakov Andrei *(Institute of Control Sciences, Russian Academy of Sciences, Moscow)*

DISCUSSION

SESSION 7

1. Mathematical modeling of plasma flow at low pressures in vacuum chamber with charged body / **Shemakhin Aleksander** *(Kazan Federal University, Kazan)*

2. Experience in solving applied optimization problems / **Gornov Alexander**, Tyatyushkin Aleksander, Zarodnyuk Tatiana, Anikin Anton, Sorokovikov Pavel, Madjara Taras *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Irkutsk)*

3. Multi-stage technology for constructing mathematical models / Gornov Alexander**, Sorokovikov Pavel** *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Irkutsk)*

4. Numerical solution of Keating potential minimization problems with dimensions up to 300 million variables / **Anikin Anton** *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Irkutsk)*

5. Approaches to studying controlled processes described by systems of functional differential equations / Gornov Alexander, **Zarodnyuk Tatiana,** Anikin Anton, Tyatyushkin Aleksander *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Irkutsk)*

6. Application of mathematical simulating and data approximation methods in laboratory diagnostics / **Kuzmenko Vladimir**[1]**,** Zarodnyuk Tatyana[2], Gornov Alexander[2]
   [1]*ISMAPgE – Branch Campus of the FSBEI FPE RMACPE MOH Russia, Irkutsk*
   [2]*Matrosov Institute for System Dynamics and Control Theory SB RAS, Irkutsk*

Round table: «Science 2.0 as the basis for a new critical infrastructure»
Keynote Speaker: **Mikheev Alexey**

FINAL DISCUSSION

CLOSING CEREMONY

Departure of the participants to Irkutsk