

Ministry of Education and Science of Ukraine  
National University of Water and Environmental Engineering  
Taras Shevchenko National University of Kyiv  
National Technical University of Ukraine  
«Igor Sikorsky Kyiv Polytechnic Institute»  
National University of Ostroh Academy  
V.M. Glushkov Institute of Cybernetics of NAS of Ukraine  
Lviv Polytechnic National University  
Pidstryhach Institute for Applied Problems of Mechanics and  
Mathematics of NAS of Ukraine  
Liverpool John Moores University (Great Britain)  
University of Technology and Sciences in Bydgoszcz (UTP), Poland  
Lublin University of Technology  
Wroclaw University of Science and Technology

## PROGRAM

OF V INTERNATIONAL SCIENTIFIC AND  
PRACTICAL CONFERENCE

*«Modeling, control and information  
technologies»*



Rivne, Ukraine  
November 4-6, 2021



## INTERNATIONAL PROGRAMME COMMITTEE

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**Mariusz Kaczmarek**, Ph.D., Professor, Kazimierz Wielki University in Bydgoszcz, Poland

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**Safonyk Andrii**, Dr. Sc., Technical Sciences, Professor of the Department of Automation, Electrical Engineering and Computer-Integrated Technologies of the National University of Water and Environmental Engineering, Ukraine (Chair)

**Burduk Anna**, Dr. Sc., Technical Sciences, Associate Professor, Department of Laser Technology, Automation and Production Organization of Wroclaw University of Science and Technology, Poland

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## CONFERENCE SECTIONS

**SECTION 1. Mathematical and computer modeling of objects and processes.**

**SECTION 2. Computational methods.**

**SECTION 3. Robotics, automation and control.**

**SECTION 4. Internet of Things (IoT) and artificial intelligence.**

**SECTION 5. Software development.**

**SECTION 6. Smart grids and smart consumers.**

**SECTION 7. Information Technology.**

### Thursday, 4th November 2021

09:00-09:30	Conference Opening	<a href="#">ZOOM online room</a>
09:30-13:00	Regular Sessions	<a href="#">ZOOM online room</a>
13:00-13:30		Lunch
13:30-17:00	Regular Sessions	<a href="#">ZOOM online room</a>

### Friday, 5th November 2021

09:00-13:00	2nd International Workshop (CITCM 2021)	ZOOM online room
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**All schedules of the conference are based on Eastern European Time (UTC+2) (Kyiv)**



## PARTICIPANTS INSTRUCTION

The conference will be held online using online room in the software ZOOM. The software will install once before using it, by clicking the link to the zoom room. It is not necessary to create an account in zoom for joining the conference.

Either use the link or copy the Meeting ID to your Zoom-Software:

<https://zoom.us/j/96297912311?pwd=K1JPczh0R1haU1RjTklnRXhiL1JzQT09>

Meeting-ID: 962 9791 2311

Access code: 531305

## CONFERENCE SCHEDULE

**Thursday, 4th November 09:00 - 09:30**

Location: [ZOOM online room](#)

### Conference opening

**Prof. Viktor Moshynskyi**, Rector of the National University of Water and Environmental Engineering (Ukraine)

*Welcome Speech and Participants Congratulation*

**Prof. Ibraim Didmanidze**, Dr. Sc., Physics and Mathematics, Professor, Georgia Shota Rustaveli State University of Batumi, Georgia

*Welcome Speech and Participants Congratulation*

**Prof. Safonyk Andrii** Dr. Sc., Technical Sciences, Professor of the Department of Automation, Electrical Engineering and Computer-Integrated Technologies of the National University of Water and Environmental Engineering, Ukraine

*Welcome Speech and Participants Congratulation*

**Thursday, 4th November 09:30 - 13:00**

Session Chairs: Andrii Safonyk, Olena Prysiazhniuk

1	<i>Mamenko Pavlo, Zinchenko Serhii, Nosov Pavlo, Kyrychenko Kostiantyn, Popovych Ihor, Nahrybelnyi Yaroslav, Kobets Vitaliy</i> <b>Research of Divergence Trajectory with a Given Risk of Ships Collisions</b>
2	<i>Mateichuk Vadym, Zinchenko Serhii, Tovstokoryi Oleh, Nosov Pavlo, Nahrybelnyi Yaroslav, Popovych Ihor, Kobets Vitaliy</i> <b>Automatic Vessel Control in Stormy Conditions</b>
3	<i>Didmanidze Ibraim, Geladze Darejan, Motskobili Ia, Akhvlediani Diana, Koridze Lili</i> <b>Follow digitally by using a blog</b>
4	<i>Didmanidze Manana, Chachanidze Guram, Didmanidze Tengiz</i> <b>Modern trends in unemployment</b>
5	<i>Bagrationi Irma, Zaslavski Vladimir, Didmanidze Ibraim, Yamkova Olga</i> <b>Ethics of Information Technology in the Context of a Global Worldview</b>
6	<i>Didmanidze Didar, Zoidze Ketevan, Akhvlediani Neli, Tsitskishvili Givi, Samnidze Nino, Diasamidze Medea</i> <b>Use of computer teaching systems in the learning process</b>
7	<i>Beridze Zebur, Shavadze Jumber, Imnaishvili Giorgi, Geladze Miranda</i> <b>Concept and functions of building a private network (VPN)</b>
8	<i>Makaradze Nana, Nakashidze-Makharadze Tatia, Zaslavski Vladimir, Gurgenidze Marine, Samnidze Nino, Diasamidze Medea</i> <b>Challenges of Using Computer-Based Educational Technologies in Higher Education</b>

9	<i>Ткачук Валерій</i> <b>Квантовий генетичний алгоритм та його реалізація на квантовому комп'ютері</b>
10	<i>Prokip Volodymyr</i> <b>On the semi-scalar equivalence of polynomial matrices</b>
11	<i>Bardan Andrii, Bihun Yaroslav</i> <b>Computer modeling of differential games</b>
12	<i>Волощук Володимир, Некрашевич Олена, Гікало Павло</i> <b>Доцільність застосування критеріїв ексергетичного аналізу для оцінювання ефективності об'єктів теплоенергетики</b>
13	<i>Реут Дмитро, Древецький Володимир, Матус Світлана</i> <b>Застосування комп'ютерного зору для автоматичного вимірювання швидкості рідин з тонкодисперсними домішками</b>
14	<i>Sandrakov Gennadiy, Hulianytskyi Andrii, Semenov Vladimir</i> <b>Modeling of filtration processes in periodic porous media</b>
15	<i>Gamzayev Rustam, Shkoda Bohdan</i> <b>Development and Investigation of Adaptive Micro-Service Architecture for Messaging Software Systems</b>
16	<i>Bomba Andrii, Klymiuk Yurii</i> <b>Computer prediction of technological modes of rapid cone-shaped adsorption filters with automated discharge of part of heat from separation surfaces in filtering mode</b>
17	<i>Denysov Serhii, Semenov Vladimir, Vedel Yana</i> <b>A novel adaptive method for operator inclusions</b>
18	<i>Vinnychenko Dmytro, Nazarova Natalia, Vinnychenko Iryna</i> <b>The Dependence of the Deviation of the Output Stabilized Current of the Resonant Power Supply during Frequency Control in the Systems of Materials Pulse Processing</b>

19	<i>Бомба Андрій, Бойчура Михайло, Мічута Ольга</i> <b>Ідентифікація параметрів структури ґрунтових криволінійних масивів числовими методами квазіконформних відображень</b>
20	<i>Sharko Oleksandr, Petrushenko Natalia, Mosin Mikhailo, Sharko Marharyta, Vasylenko Natalia, Belousov Alexey</i> <b>Information Control Systems And Technologies For Assessing The Degree Of Preparedness Of Enterprises For Innovative Activities With The Help Of Markov Chains</b>
21	<i>Anikuhyn Andrii, Zhyvolovych Oleksandra</i> <b>Generalized solvability and optimal control for an integro-differential equation of a hyperbolic type</b>
22	<i>Stepanchenko Olha, Shostak Liubov, Kozhushko Olena, Moshynskiy Viktor, Martyniuk Petro</i> <b>Modelling soil organic carbon turnover with assimilation of satellite soil moisture data</b>

**Thursday, 4th November 13:30 - 17:00**

Session Chairs: Viktor Zhukovskyy, Olena Prysiazhnik

23	<i>Volodymyr Kyrylych, Olga Milchenko</i> <b>Optimal control of a hyperbolic system that describes Slutsky demand</b>
24	<i>Poliakov Vadim</i> <b>Calculation of Organic Substrate Decomposition in Biofilm and Bioreactor-Filter Taking into Account its Limitation and Inhibition</b>
25	<i>Шпортько Олександр, Бомба Андрій, Шпортько Леся</i> <b>Пристосування словникових методів компресії до прогресуючого ієрархічного стиснення зображень без втрат</b>
26	<i>Boyko Nataliya, Kulchytska Olena</i> <b>Analysis of Tumor Classification Algorithms for Breast Cancer Prediction by Machine Learning Methods</b>



27	<i>Boyko Nataliya, Dypko Oleksandra</i> <b>Analysis of Machine Learning Methods Using Spam Filtering</b>
28	<i>Gayev Yevgeny</i> <b>Student' own discoveries in information theory curriculum</b>
29	<i>Rybak Oleksandr, Tarasenko Stepan</i> <b>Sperner's Theorem</b>
30	<i>Babudzhan Ruslan, Isaienkov Kostiantyn, Krasii Danylo, Melkonian Ruben, Vodka Oleksii, Zadorozhnyi Ivan</i> <b>Collection and processing of bearing vibration data for their technical condition classification by machine learning methods</b>
31	<i>Цветкова Тетяна</i> <b>Комп'ютерна візуалізація гідродинамічного поля в області з криволінійними межами</b>
32	<i>Демидюк Мирослав</i> <b>Параметрична оптимізація циклічних транспортних операцій маніпуляторів з активними і пасивними приводами</b>
33	<i>Василець Катерина</i> <b>Метод оцінювання невизначеності вимірювання електроенергії вузлом комерційного обліку</b>
34	<i>Petrivskiy Yaroslav, Petrivskiy Volodymyr, Bychkov Oleksiy, Pyzh Oleksandr</i> <b>Some features of creating a computer vision system</b>
35	<i>Kunytskyi Sergiy, Ivanchuk Natalia</i> <b>Mathematical modeling of water purification in a bioplato filter</b>
36	<i>Клепач Микола, Клепач Марко</i> <b>Вейвлет аналіз температурних трендів днища скловарної печі</b>
37	<i>Pysarchuk Oleksii, Mironov Yurii</i> <b>A Proposal of Algorithm for Automated Chromosomal Abnormality Detection</b>

38	<i>Козирев Сергій</i> <b>Керування високовольтним імпульсним розрядом в екзотермічному середовищі</b>
39	<i>Барановський Сергій, Бомба Андрій, Прищета Оксана</i> <b>Модифікація моделі інфекційного захворювання для урахування дифузійних збурень в умовах логістичної динаміки</b>
40	<i>Stepanets Oleksandr, Mariiash Yurii</i> <b>Optimal control of the blowing mode parameters during basic oxygen furnace steelmaking process</b>
41	<i>Очко Олександр, Аврука Ірина</i> <b>Безпечне збереження конфіденційної інформації на серверах</b>
42	<i>Kirpichnikov Anton, Khrystyuk Andriy</i> <b>Automatic apiary care system</b>
43	<i>Сафоник Андрій, Грицюк Іванна</i> <b>Розроблення інформаційної системи для спектрофотометричного аналізу</b>
44	<i>Dobrydnyk Yurii, Khrystyuk Andriy</i> <b>Analysis of the elevator as an object of automation</b>
45	<i>Voloshchuk Volodymtr, Nekrashevych Olena, Gikalo Pavlo</i> <b>Exergy analysis of a reversible chiller</b>
46	<i>Polyakov Vadim</i> <b>Mathematical Modeling of Suspension Filtration on a Rapid Filter at an Unregulated Rate</b>
47	<i>Сафоник Андрій, Таргоній Іван</i> <b>Розробка системи керування напруженістю магнітного поля для процесу знезалізнення технологічних вод</b>