



TC17



Advancing Technology  
for Humanity  
Galveston Bay Section

# ISMCR 2023

25<sup>th</sup> International Symposium on Measurement and Control in Robotics  
Iasi, Romania, September 21 – 22, 2023

# SYMPOSIUM PROGRAM



Organized by:

Department of Mechanical Engineering, Mechatronics and Robotics at “Gheorghe Asachi” Technical University of Iasi, Romania (TUIASI), and  
Technical Sciences Academy of Romania - ASTR

Under the Patronage of IMEKO – TC17

International Measurement Confederation, Technical Committee 17 – Measurement in Robotics

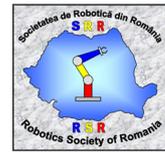
With the support of:

International CBRN Institute  
CLAWAR Association

Romanian Association of Mechanism and Machine Science - ARoTMM  
Robotics Society of Romania– SRR  
IEEE Galveston Bay Section



TC17



Advancing Technology  
for Humanity  
Galveston Bay Section

## ISMCR 2023

25<sup>th</sup> International Symposium on Measurement and Control in Robotics  
Iasi, Romania, September 21 – 22, 2023

### SYMPOSIUM PROGRAM OUTLINE

#### Wednesday, September 20, 2023

18:00 – 20:00 Get Together (Moldova hotel)

#### Thursday, September 21, 2023

09:00 – 09:30 Participants registration

09:30 – 10:00 Welcome, Opening Addresses

10:00 – 13:00 Plenary Session (TUIASI Aula)

1. **Robotics assistance in risky or conflictual situations: may the European Defence effectively contribute to such aims?**  
*Yvan BAUDOIN, Jean MARSIA, Belgium*
2. **Autonomous Shuttle for Pedestrian Zones**  
*Karsten BERNS, Germany*
3. **Advances Representation of Higher-Order Kinematics of Motion. Hypercomplex Lie Groups and Lie Algebras**  
*Daniel CONDURACHE, Romania*

12:15 – 12:45 Visit to Central Library of TUIASI

13:30 – 14:30 Lunch Break (Eden restaurant)

15:00 – 16:20 Onsite Sections Session (Mechanical Engineering, Mechatronics and Robotics Department - IMMR Dep., 1<sup>st</sup> floor; for location, see detailed program)

16:20 – 16:40 Coffee Break

16:40 – 18:00 Onsite Sections Session (IMMR Department)

19:00 Conference Gala Dinner (Ramada hotel)

#### Friday, September 22, 2023

08:45 – 09:30 Online Plenary Session (for onsite authors, M3, IMMR Dep.)

4. **Recent Advances in Medical Robotics**  
*Doina PISLA, Romania*

09:30 – 10:50 Online Sections Session (for onsite authors, M3, IMMR Dep.)

10:50 – 11:10 Coffee Break for onsite authors (IMMR Department)

11:10 – 12:50 Online Sections Session (for onsite authors, M3, IMMR Dep.)

12:50 – 13:00 Conference Closing Ceremony (for onsite authors, M3, IMMR Dep.)

13:30 – 14:30 Lunch (Eden restaurant)

15:00 – 17:00 Visit to the Culture Palace of Iasi

**Symposium Chair**

Prof. Ioan Doroftei (Romania)

**Symposium Co-Chair**

Prof. Yvan Baudoïn (Belgium)

**Program Chair**

Prof. Alexandru Salceanu (Romania)

**Publication Chair**

Assoc. Prof. Balint Kiss (Hungary)

**Financial Chair/Treasurer**

Assoc. Prof. Ana Tufescu (Romania)

**Logistic Chair**

Dr. Cristina-Magda Cazacu (Romania)

**Logistic Co-Chair**

Prof. Simone Keller F uchter (Brazil)

**Executive Chair**

Dr. Zafar Taqvi (USA)

**International Scientific Committee**

Dr. Zafar Taqvi (USA)

Prof. Yvan Baudoïn (Belgium)

Assoc. Prof. B alint Kiss (Hungary)

Prof. Simone Keller F uchter (Brazil)

Dr. Fumihiko KATO (Japan)

Prof. Susumu Tachi (Japan)

Prof. Masahiko Inami (Japan)

Prof. Jaromir Volf (Czech Republic)

Prof. C. Ferrero (Italy)

Prof. Toshio Fukuda (Japan)

Prof. Kenneth Thomas Victor Grattan (UK)

Prof. Andrej Maslowski (Poland)

Dr. Zi Xue (China)

Prof. Andrej Babinec (Slovakia)

Prof. Ioan Doroftei (Romania)

Prof. Jean-Guy Fontaine (Italy)

Prof. Lino Marques (Portugal)

Prof. Giovanni Muscato (Italy)

Prof. Jurek Z. Sasiadek (Canada)

Jagdish Shukla (India)

Prof. A. Vimala Juliet (India)

Prof. Yanhe Zhu (China)

Dr. Geert De Cubber (Belgium)

Dr. Gokcen Bas (Austria)

Prof. Gregory Ya. Panovko (Russia)

Prof. Sang-Youn Kim (Korea)

Prof. Daniele Fontanelli (Italy)

Dr. Trung T. Pham (USA)

**Organizing Committee**

Assoc. Prof. Emil Budescu

Dr. Florentin Buium

Dr. Eugen Merticaru

Dr. Cristina-Magda Cazacu

## Session 1 (onsite)

Thursday, September 21, 2023

**Chairmen:** *Dr. Zafar TAQVI* and *Assoc. Prof. Gincsaíné SZÁDECZKY-KARDOSS*

Paper no.	Title of the papers and authors	Hours	Room
003	<b>Measurement of Loading Characteristics of Conductive Inks at a Robotized Workspace and Development of a Flexible Tactile Sensor</b> <i><sup>1</sup>V. NOVAK, <sup>1</sup>J. VOLF<sup>1</sup>, <sup>2</sup>D. NOVÁK and <sup>1</sup>V. RYŽENKO,</i> <sup>1</sup> Czech University of Life Sciences Prague, Czech Republic, <sup>2</sup> Matej Bel University Banská Bystrica, Slovakia	15.00 - 15.20	<b>M3 IMMR Dep.</b>
015	<b>Sensor Selection for Mechatronic Systems Based on Closed-Loop Control Simulations</b> <i><sup>1</sup>E. GINCRAINÉ SZÁDECZKY-KARDOSS, <sup>1</sup>T. VARGA-BERTA, <sup>1</sup>B. KISS and <sup>2</sup>C. FAZEKAS,</i> <sup>1</sup> Budapest University of Technology and Economics, Hungary, <sup>2</sup> Thyssenkrupp Components Technology Hungary	15.20 - 15.40	
017	<b>Equivalent control of a 2D crane and a 2D drone using exact linearization based on differential flatness</b> <i>B. FINTA and B. KISS,</i> Budapest University of Technology and Economics, Hungary	15.40 - 16.00	
018	<b>LPV-based adaptive control of a 2-DOF robotic arm</b> <i>Z. TÉCZELY and B. KISS,</i> Budapest University of Technology and Economics, Hungary	16.00 - 16.20	

**COFFEE BREAK: 16.20 – 16.40**

## Session 2 (onsite)

Thursday, September 21, 2023

**Chairmen:** *Dr. Jean MARSIA* and *Prof. Adrian BURLACU*

Paper no.	Title of the papers and authors	Hours	Room
025	<b>Human-Machine Interfaces for Industrial Robot Control: A Comprehensive Review of the State of the Art</b> <i>R. KRISTOF and C. MOLDOVAN,</i> Politehnica University Timisoara, Romania	16.40 - 17.00	<b>M3 IMMR Dep.</b>
014	<b>An evaluation of the dual vectors based solutions for robot-world/hand-eye calibration</b> <i>A. GANCIU and A. BURLACU,</i> “Gheorghe Asachi” Technical University of Iasi, Romania	17.00 - 17.20	
012	<b>Soft Robotics: A Numerical Evaluation of Model-Based PneuNet Simulation</b> <i>F.A. BRASOVEANU and A. BURLACU,</i> “Gheorghe Asachi” Technical University of Iasi, Romania	17.20 - 17.40	
023	<b>A simplified-model Predictive Controller Design for a Four-wheel Omnidirectional Robot</b> <i>R. MOCANU, S. ACHIREI, C. DOSOFTEI and T. POPOVICI,</i> “Gheorghe Asachi” Technical University of Iasi, Romania	17.40 - 18.00	

### Session 3 (onsite)

Thursday, September 21, 2023

**Chairmen:** *Prof. Yvan BAUDOIN* and *Prof. Ioan DOROFTEI*

Paper no.	Title of the papers and authors	Hours	Room
010	<b>Kinematic performance analysis of the 3-U(RPRGR)RU parallel robot</b> <i>A. OARCEA, E.G. TULCAN and E.C. LOVASZ</i> , Politehnica University Timisoara, Romania	15.00 - 15.20	<b>M4 IMMR Dep.</b>
009	<b>Design of a 3D Printer with Five-Bar Linkage</b> <sup>1</sup> <i>D. TIVADAR</i> , <sup>1</sup> <i>E.C. LOVASZ</i> , <sup>2</sup> <i>M. CECCARELLI</i> , <sup>1</sup> <i>M. RUSSO</i> , <sup>1</sup> <i>E.G. TULCAN</i> and <sup>1</sup> <i>A. OARCEA</i> , <sup>1</sup> Politehnica University Timisoara, Romania, <sup>2</sup> University of Roma Tor Vergata, Italy	15.20 - 15.40	
011	<b>Workspace Analysis of a 3 RRR Planar Mechanism</b> <i>F. BUIUM</i> and <i>I. DOROFTEI</i> , "Gheorghe Asachi" Technical University of Iasi, Romania	15.40 - 16.00	
026	<b>Preliminary Functionality Tests of an Improved Ankle Rehabilitation Device</b> <i>C.M. CAZACU</i> and <i>I. DOROFTEI</i> , "Gheorghe Asachi" Technical University of Iasi, Romania	16.00 - 16.20	

**COFFEE BREAK: 16.20 – 16.40**

Friday, September 22, 2023

### Plenary Session (online)

08:45 – 09:30 Online Plenary Session (for onsite authors, M3, IMMR Department)  
**Recent Advances in Medical Robotics**  
*Doina PISLA, Romania*

## Session 4 (online)

Friday, September 22, 2023

Chairmen: *Prof. Balint KISS* and *Prof. Ioan DOROFTEI*

Paper no.	Title of the papers and authors	Hours	Room
002	<b>Enhancing Human Augmentation: Analysis of Behavior Change in Highly Efficient Three-Hand Body after Motor Skill Training</b> <i>P.H. CHEN, N. NISHIDA, Y. IWASAKI and H. IWATA, Waseda University, Tokyo, Japan</i>	09.30 - 09.50	Online
004	<b>NeRF-YOLO: Detecting Occluded Objects via Multi-View Geometric Aggregation</b> <i>M. SZEMENYEI and N. KŐFARAGÓ, Budapest University of Technology and Economics, Hungary</i>	09.50 - 10.10	
005	<b>A fast-acting gripper for Aerial Vehicles</b> <i>G. SUTERA, D.C. GUASTELLA and G. MUSCATO, University of Catania, Italy</i>	10.10 - 10.30	
016	<b>On the control architecture and functional validation of the control system for a lower limb rehabilitation robot</b> <i>P. TUCAN, B. GHERMAN, N. TOHANEAN, A. PISLA, O. VANTA, C. VAIDA and D. PISLA, Technical University of Cluj-Napoca, Romania</i>	10.30 - 10.50	

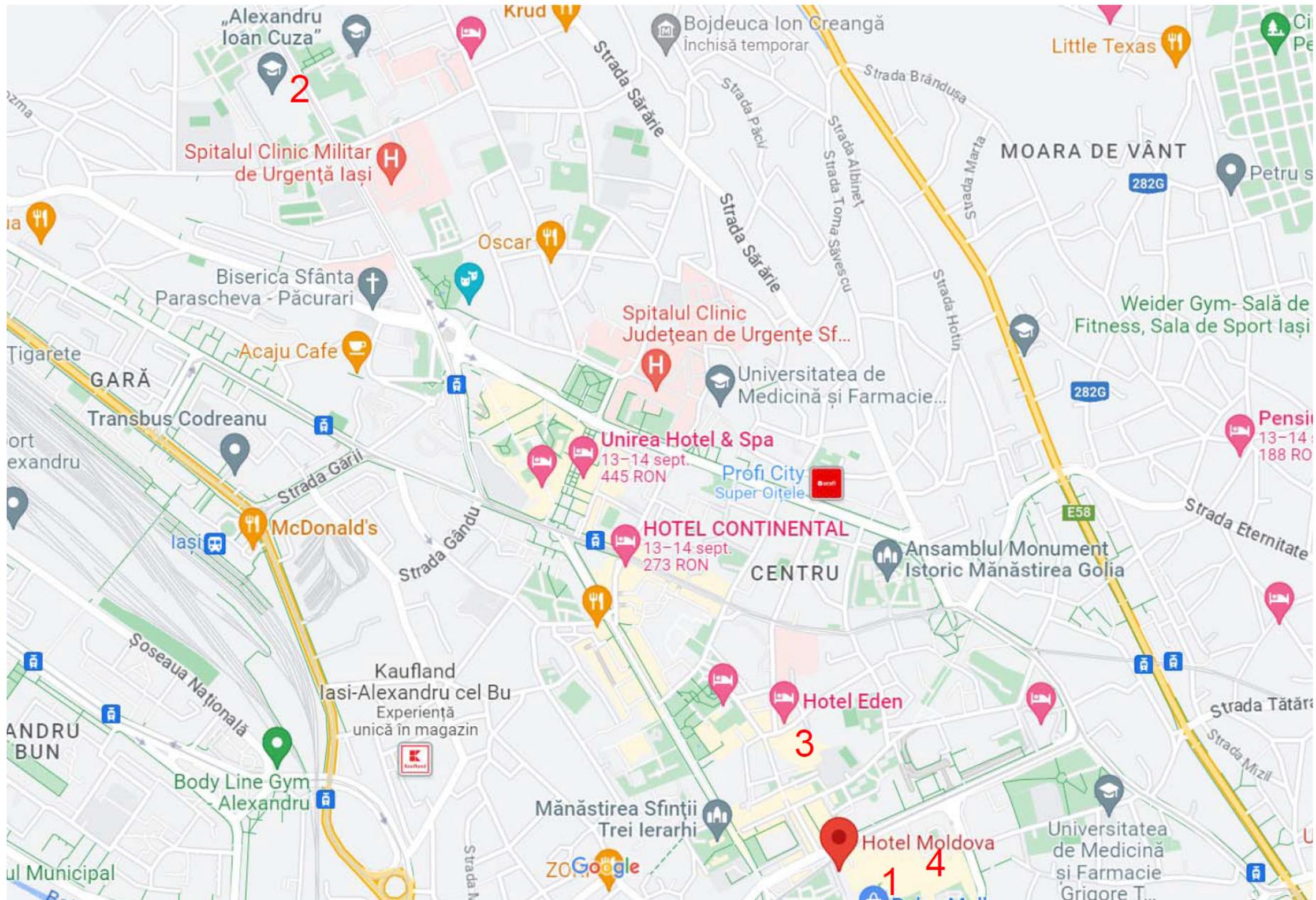
**COFFEE BREAK: 10.50 – 11.10**

## Session 5 (online)

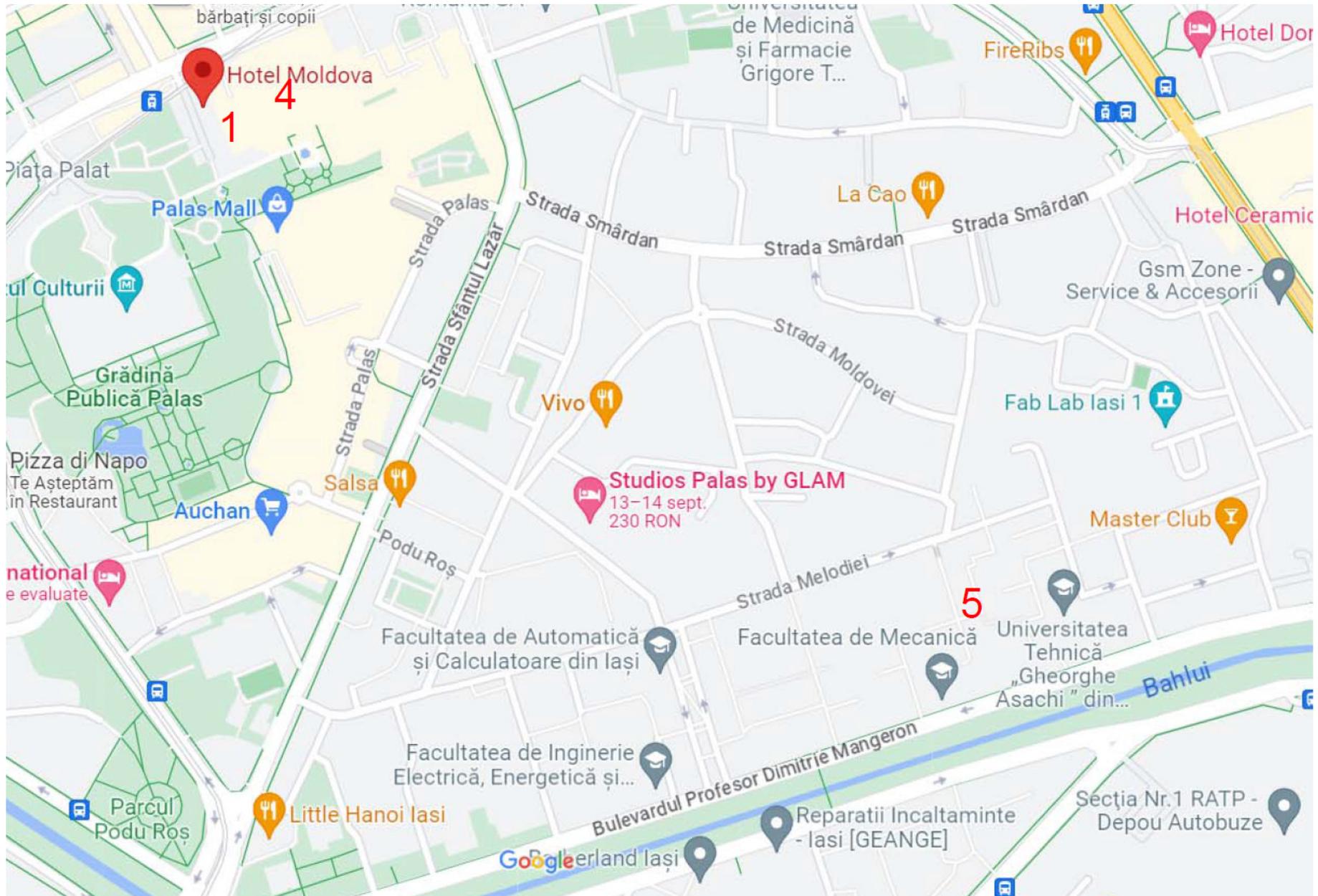
Friday, September 22, 2023

Chairmen: *Prof. Simone KELLER FÜCHTER* and *Dr. Florentin BUIUM*

Paper no.	Title of the papers and authors	Hours	Room
007	<b>Localization of Mobile Robots. Theoretical Aspects</b> <i>M. NITULESCU, University of Craiova, Romania</i>	11.10 - 11.30	Online
024	<b>Comparative Aspects Regarding the Similarities and Differences between Industrial and Collaborative Robots</b> <i>N. JONI, Robcon™ SRL, Timisoara, Romania</i>	11.30 - 11.50	
029	<b>Study of the Load-Response Effect on the Functioning Parameters of NiTi-Based Thermal Actuators (if accepted)</b> <i>A.P. TEODORIU, I. DOROFTEI B. PRICOP and L.Gh. BUJOREANU, "Gheorghe Asachi" Technical University of Iasi, Romania</i>	11.50 - 12.10	
030	<b>Design of a Hybrid Locomotion Mobile Manipulator for Agricultural Application (if accepted)</b> <i>I. DOROFTEI, C.A. MORAR and M.Gh. HAGAN, "Gheorghe Asachi" Technical University of Iasi, Romania</i>	12.10 - 12.30	
027	<b>Learning styles identification and implementation in learning processes using haptic devices (if accepted)</b> <i>E.F. COSNITA, I. TEMPEA and A.D. ALIONTE, Politehnica University of Bucharest, Romania</i>	12.30 - 12.50	



1 – Moldova Hotel; 2 – TUIASI Aula; 3 – Eden Restaurant; 4 – Ramada Hotel



1 – Moldova Hotel; 4 – Ramada Hotel; 5 - IMMR Department