

ROMANIAN ACADEMY



INSTITUTE OF SOLID MECHANICS,
ACADEMY OF TECHNICAL SCIENCES,
COMMISSION OF ACOUSTICS
OF THE ROMANIAN ACADEMY

SISOM 2025 and Session of the Commission of Acoustics

September 11th - 12th, 2025

SYMPOSIUM PROGRAM

Thursday, September 11th

Room A

Zoom link: <https://us06web.zoom.us/j/89381985205?pwd=QlOxLGV6L2aexUAxa3yBSNITaD55A.1>

Plenary session

Chair: CSI.dr.mat. Tudor Sireteanu, MC

9:00 Registration

9:20 Opening speech: CSI.dr.mat. Tudor Sireteanu, MC

9:40 *Correlative Study of Ultrasonic and Structural Properties in $\text{Ge}_2\text{Sb}_2\text{Te}_6$ Phase-Change Materials*

Ethan Williams, Nicoleta Nedelcu, Dylan Webb, Nicoleta Stan, Veturia Chiroiu, Cristian Rugină, Arcadie Sobetskii

10:00 *Characterization of Indium Tin Oxide (ITO) Coatings on PZT and Quartz Substrates for Optical and Piezoelectric Applications*

Fred Harford, Nicoleta Nedelcu, Dylan Webb, Cristian Rugină, Ana-Maria Mitu, Arcadie Sobetskii

10:30 *MELDOG Type Equipment for Visually Impaired People*

Ionel Starețu

11:00 *Natural Language Processing Techniques and Applications*

Andreea Griparis, Svetlana Segărceanu, Inge Gavăt

11:30 *Structural Optimization in the Latent Space of a Two-Phase Composite Using a Variational Autoencoder*

Iulian Constantin Coropețchi, Dan Mihai Constantinescu, Alexandru Vasile, Ștefan Sorohan, Dragoș Alexandru Apostol

12:00 *Identification of Resonant Regimes with Modal Analysis for Linear Viscoelastic Dynamic Systems Excited with Harmonic Forces*

Polidor Bratu, Ovidiu Vasile, Cornelia Dobrescu, Adrian Leopa, Mihaela Iliescu, Marilena Cristina Nițu

12:30 *Ensuring Equity in Noise-Induced Annoyance and Sleep Disturbance from Different Sources*

Matteo Bolognese, Elena Ascari, Giulia Crifaci, Gianmarco Stasi, Gaetano Licitra, Luca Fredianelli

Coffee Break: 13:00 – 13:20

13:20 *Firefighting Mobile Intelligent Robots Navigation in Firefighting and Terrorist Actions Scenarios*

Ana Maria Travediu, Luige Vlădăreanu, Victor Vlădăreanu, Marcel Migdalovici, Bianca-Rodica Ghinoiu, Daniel-Octavian Melinte, Sang Lingfeng, Wang Zhengcai, Ionel Pușcașu

13:40 *Prediction of Noise Emission from a Cogeneration Power Plant – Petromidia*

Mihai Zaplaic, Toma Zaplaic, Sorina Iliuta, Ioan Magheți

14:00 *Investigations on Sustainable Soundproofing Capability of Cellulose Fibers-Based Foams*

Silviu Nastac, Mihai Seciureanu, Petronela Nechita, Maria Violeta Guiman

14:20 *Evaluation of the Effect of Reducing Seismic Action by Additional Equipping with High-Performance Devices*

Polidor Bratu, Andrei Tudor

14:40 *Comparative Study for Road Traffic Noise Modelling in Romania and Italy. Conclusions of a Bilateral Research Project*

Cătălin Andrei Neagoe, Elena Ascari, Tudor Sireteanu, Ana-Maria Mitu, Daniel Cătălin Baldovin, Luca Fredianelli, Mauro Cerchiai, Gaetano Licitra

15:00 *Sound Event Detection in Environmental Scenarios using Transfer Learning with CLAP Model*

Luca Fredianelli, Geremia Pompei, Gaetano Licitra, Francesco D'Alessandro, Andac Akbaba, Gino Iannace, Francesco Artuso, Francesco Fidecaro

Friday, September 12th

9:00 Registration

Room A

Parallel session: Acoustics

Chair: Prof.dr.ing. Polidor Bratu

09:20 *Acoustic Enclosures and Instrumental Equipment for Measuring the Performances of Acoustic Insulation and Reverberation*
Ovidiu Vasile, Dan Ion, Andrei Cotoban

09:40 *Eigenmodes and Excited Modes of Linear Dynamic Models for Technological Vibratory Technological Equipment*
Polidor Bratu, Cornelia Dobrescu, Nicușor Drăgan

10:00 *Experimental Investigations on Dynamics of Violin Body – From Initial Tone Wood to Final Useable Instrument*
Silviu Nastac, Mariana Domnica Stanciu, Maria Violeta Guiman

10:20 *Multiscale Assessments Regarding Fractional Calculus Within Simulation of Vibration Isolation Systems*
Florin Catalin Dabija, Silviu Nastac, Maria Violeta Guiman, Adrian Leopa

10:40 *Analysis of Noise and Vibrations in Tubular Fluid Transport Systems with Various Flow Regimes*
Dan Ion, Andrei Cotoban

11:00 *The Influence of Vibrations with Psychosensory Effects on Humans in the Case of Construction Equipment in the Technological Work Processes*
Mihaiela Iliescu, Marilena Cristina Nițu, Ligia Munteanu

11:20 *Electromechanical Impedance Method on Square Plates Subjected to Small Vibrations*
Cristian Rugină, Dan Dumitriu, Daniela Enciu, Mihai Tudose

11:40 *Biomechanical Effects of the Human Body to the Action of Vibrations Transmitted to the Driver in the Work Cabin*
Marilena Cristina Nițu, Mihaiela Iliescu, Marina Dogaru

12:00 *Road Traffic Noise Maps Based on Crowd Sourced Data on a Digital Twin Model*
Elena Ascari, Mauro Cerchiai, Antonella Longo, Gabriele Mencagli, Francesca Miccoli, Alberto Ottimo, Marco Salvatore Zappatore

12:20 *Towards Intelligent Traffic Noise Monitoring by Vehicle Instrumentation*
Daniel Cătălin Baldovin, Elena Ascari, Tudor Sireteanu, Ana-Maria Mitu, Cătălin Andrei Neagoe, Luca Fredianelli, Mauro Cerchiai, Gaetano Licitra

Coffee Break: 12:40 – 13:00

Parallel session: Dynamic Systems

Chair: CSI.dr.mat. Ana-Maria Mitu

13:00 *Severity Indices of Strong Earthquakes*

Tudor Sireteanu

13:20 *Static and Low-Cyclic Compression Response of Sandwich Structures with Novel TPMP Cores*

Alexandru Vasile, Dan Mihai Constantinescu, Iulian Constantin Coropetchi, Ștefan Sorohan, Andrei Ioan Indreș, Dragoș Alexandru Apostol

13:40 *Numerical Simulation of the Influence of the Volumetric Proportion of Natural Reinforcing Fibers on the Quasistatic Behavior of a Composite*

Nicolae Pop, Mirela-Roxana Apsan, Ana-Maria Mitu, Tudor Sireteanu, Cristian Rugină, Marcel Migdalovici, Vincentiu-Marius Maxim, Adrian Mușat

14:00 *Consideration of the Sleeve Inflection Area Influence in Sleeve Actuator Volume*

Adrian Ioan Niculescu

14:20 *Parametric Correlations for the Evaluation of Dominant Movements of a Rigid Building with Base Isolation Under the Action of Earthquakes in Romania*

Polidor Bratu, Ovidiu Vasile, Nicușor Drăgan, Daniela Dobre, Ligia Munteanu

14:40 *Determining the Response in Harmonically Excited Regime Using the Modal Analysis Method for a Multibody System with Linear Viscoelastic Links*

Polidor Bratu, Nicușor Drăgan, Cornelia Dobrescu, Veturia Chiroiu, Marilena Cristina Nițu

Friday, September 12th

Room B

Zoom link: <https://us06web.zoom.us/j/88416791035?pwd=Flws6f73TlEvJtJXERWUpqQZjkqzym.1>

Parallel session and workshop: Robotics and Mechatronics

Chair: CSI.dr.ing. Luige Vlădăreanu

09:20 *Design and Evaluation of Hierarchical Control for a Four-Wheeled Robot in First Responder Scenarios*

Daniel-Octavian Melinte, Bianca-Rodica Ghinoiu, Ionel-Alexandru Gal, Abigail Alexandra Pop, Luige Vlădăreanu, Victor Vlădăreanu, Ana-Maria Travediu

09:40 *Robotics for First Responders*

Ionel-Alexandru Gal, Daniel-Octavian Melinte, Luige Vladareanu, Victor Vladareanu, Bianca-Rodica Ghinoiu, Abigail Pop, Ana-Maria Travediu

10:00 *CAN-Based Motor Control Implementation for a Multi-Joint Lower-Limb Rehabilitation Robot*

Bianca-Rodica Ghinoiu, Luige Vlădăreanu, Victor Vladareanu, Abigail Pop, Ionel-Alexandru Gal, Yuansheng Ning, Ștefan Ghibanu

10:20 *Ultrasonic System for Affordable Environment Mapping*
Gabriel-Alexandru Soare, Victor Constantin, Daniel-Octavian Melinte

10:40 *Some Aspects Referred to Stability Control of Walking Robots Evolution and Application*
Marcel Migdalovici, Luige Vlădăreanu, Nicolae Pop, Victor Vlădăreanu

11:00 *Advances in Object Detection Using Artificial Intelligence*
Ciprian Dragne

11:20 *Autonomous Robot for Plastic Bottle Detection and Mapping*
Marius Ciobanu, Victor Vlădăreanu, Bianca-Rodica Ghinoiu, Abigail Pop, Daniel-Octavian Melinte

11:40 *Simultaneous Localization and Mapping for a Terrestrial Robot Vector in Rescue Missions*
Oana Maria Moceanu, Victor Vlădăreanu, Ana-Maria Travediu, Ștefan Ghibanu, Ionel-Alexandru Gal

12:00 *Distributed Control Systems (DCS) in Refineries: Onshore and Offshore Case Study*
Alexandru Gheorghită, Luige Vlădăreanu, Ionel Pușcașu, Alexandra Pîrvu, Victor Vlădăreanu

12:20 *Context-Aware Human–Robot Interaction: Integrating LLMs into NAO’s Speech Interface*
Traian Voicu, Daniel-Octavian Melinte, Luige Vlădăreanu

Coffee Break: 12:40 – 13:00

Parallel session: Mechanical Modeling and Advanced Materials

Chair: CSI.dr.mat. Veturia Chiroiu

13:00 *Synthetic Diamonds Versus Cubic Boron Nitride*
Florin Liviu Isvoranu, Marilena Cristina Nițu, Constantin Țigăneșteanu

13:20 *Parallel Gripper with Concave Jaws for Efficient Grasping of Oranges*
Dan Dumitriu, Marius Ionescu, Cristian Rugină

13:40 *A Mathematical Model of a Cold Plastic Deformation Process*
Rodica Ioan, Stefan Ioan, Veturia Chiroiu, Ligia Munteanu

14:00 *Constants of Elasticity in the Case of Polycrystalline Materials with Multiple Phases*
Marina Viorica

14:20 *Subharmonic Generation of Love Waves in Plates with Cantor-Like Structure*
Veturia Chiroiu, Ligia Munteanu, Rodica Ioan, Nicoleta Stan, Marius Ionescu

14:40 *On the Properties of Acoustic Metamaterials*
Veturia Chiroiu, Valerica Moșneguțu, Ligia Munteanu, Rodica Ioan, Marius Ionescu