



**Patronat Honorowy JM Rektora**  
**Politechniki Częstochowskiej**  
 dra hab. inż. Marka Warzechy, prof.PCz



**Częstochowa**  
**University**  
**of Technology**



**Faculty of Mechanical**  
**Engineering**



## Programme of 31<sup>st</sup> French-Polish Seminar of Mechanics

### 15.05.2025 (Thursday)

- 9:00 – 10:30 Registration
- 10:30 – 10:45 Opening Ceremony of 31<sup>st</sup> French-Polish Seminar of Mechanics
- 10:45 – 11:25 Inaugural Lecture
- 11:25 – 11:50 Coffee break
- 11:50 – 12:30 Scientific Session A (2 Lectures)
- 12:30 – 13:50 Lunch
- 13:50 – 14:50 Scientific Session B (3 Lectures)
- 14:50 – 15:10 Coffee break
- 15:10 – 16:10 Scientific Session C (3 Lectures)
- 16:10 – 17:00 Poster Session and Coffee break
- 17:30 Dinner

### 16.05.2025 (Friday)

- 9:30 – 10:10 Scientific Session D (2 Lectures)
- 10:10-10:30 Coffee break
- 10:30 – 11:10 Scientific Session E (2 Lectures)
- 11:10 – 11:20 Closing Ceremony
- 11:20 – 13:00 Lunch
- 13:15 – 16:15 Guided tour (Jasna Góra)

*All lectures will take place*  
*Częstochowa University of Technology,*  
*Faculty of Mechanical Engineering,*  
*Al. Armii Krajowej 21,*  
*42-201 Częstochowa.*  
*Room B1 – ground floor*

*Time limit for presentation with discussion – 20 min.*

**Projekt dofinansowany ze środków Polskiej Akademii Nauk**  
**Conference is co-financed by the Polish Academy of Sciences**

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| <b>15.05.2025 (Thursday)</b>                                                            |                                                                                                                                                                                                                                                                                                  |
| <b>9:00 – 10:30</b>                                                                     | <b>Registration</b>                                                                                                                                                                                                                                                                              |
| <b>10:30 – 10:45</b>                                                                    | <b>Opening Ceremony of 31<sup>st</sup> French-Polish Seminar of Mechanics</b>                                                                                                                                                                                                                    |
| <b>Inaugural Scientific Session (Chairperson: Paweł Kłosowski)</b>                      |                                                                                                                                                                                                                                                                                                  |
| <b>10:45 – 11:25</b>                                                                    | <b>A history-dependent elastic contact problem</b><br><b><u>Mircea Sofonea</u></b> , Mikael Barboteu                                                                                                                                                                                             |
| <b>11:25 – 11:50 Coffee break</b>                                                       |                                                                                                                                                                                                                                                                                                  |
| <b>11:50 – 12:50 Scientific Session A (Chairperson: Quentin Serra)</b>                  |                                                                                                                                                                                                                                                                                                  |
| <b>11:50 – 12:10</b>                                                                    | <b>Optimisation of differently oriented implants used in ventral hernia repair</b><br><b><u>Szymon Kalinowski</u></b> , Katarzyna Szepietowska, Éric Florentin, Izabela Lubowiecka                                                                                                               |
| <b>12:10 – 12:30</b>                                                                    | <b>Uncertainty of geometry by statistical shape modelling of the abdominal wall and polynomial chaos expansion method</b><br><b><u>Katarzyna Szepietowska</u></b> , Wiktoria Korbut, Aleksandra Kondrusik, Zuzanna Iwicka, Julia Niemierko, Mateusz Zamkowski, Maciej Śmiałowski, Éric Florentin |
| <b>12:30 – 13:50 Lunch (College restaurant)</b>                                         |                                                                                                                                                                                                                                                                                                  |
| <b>13:50 – 14:50 Scientific Session B (Chairperson: Mircea Sofonea)</b>                 |                                                                                                                                                                                                                                                                                                  |
| <b>13:50 – 14:10</b>                                                                    | <b>High-resolution simulation of a differentially heated cavity flow with conjugate heat transfer at <math>Ra=2 \times 10^9</math></b><br>Mélanie Dreina, <b><u>Martin David</u></b> , Stéphane Abide                                                                                            |
| <b>14:10 – 14:30</b>                                                                    | <b>Comparison of laboratory tests and numerical calculations of corner log joints</b><br><b><u>Paweł Kłosowski</u></b> , Anna Pestka                                                                                                                                                             |
| <b>14:30 – 14:50</b>                                                                    | <b>Stochastics models of damaged interfaces: a numerical study</b><br><b><u>Serge Dumont</u></b> , Frederic Lebon, Caroline Bauzet, Flore Nabet                                                                                                                                                  |
| <b>14:50 – 15:10 Coffee break</b>                                                       |                                                                                                                                                                                                                                                                                                  |
| <b>15:10 – 16:10 Scientific Session C (Chairperson: Stéphane Abide)</b>                 |                                                                                                                                                                                                                                                                                                  |
| <b>15:10 – 15:30</b>                                                                    | <b>A primal–dual active set method for superelasticity and finite-strain elastoplasticity</b><br><b><u>Francesco Bonaldi</u></b> , Mikael Barboteu, Serge Dumont, Franck Jourdan, Rawane Mansour, Thach-Hoang Nguyen                                                                             |
| <b>15:30 – 15:50</b>                                                                    | <b>Uncertainty quantification in acoustic muffler performance</b><br><b><u>Quentin Serra</u></b> , Éric Florentin                                                                                                                                                                                |
| <b>15:50 – 16:10</b>                                                                    | <b>Mechanical problems with uncertainties on data: approximate solution and Its quality</b><br>Quentin Serra, Alexandre Pescador, <b><u>Éric Florentin</u></b>                                                                                                                                   |
| <b>16:10 – 17:00 Poster Session (Chairperson: Sebastian Uzny) List of posters below</b> |                                                                                                                                                                                                                                                                                                  |
| <b>17:30 Dinner (College restaurant)</b>                                                |                                                                                                                                                                                                                                                                                                  |

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| <b>16.05.2025 (Friday)</b>                                               |                                                                                                                                                                                                                                                                        |
| <b>9:30 – 10:30 Scientific Session D (Chairperson: Dawid Cekus)</b>      |                                                                                                                                                                                                                                                                        |
| <b>9:30 – 9:50</b>                                                       | <b>Free vibrations of geometrically nonlinear kolumn subjected to the generalized load directed towards the positive pole</b><br><u>Sebastian Uzny</u>                                                                                                                 |
| <b>9:50 – 10:10</b>                                                      | <b>Influence of rPET content and thermo-mechanical conditions on microcavitation and solid-state post-condensation in stretch blow molding process of PET blend</b><br><u>Paweł Wawrzyniak</u>                                                                         |
| <b>10:10-10:30 Coffee break</b>                                          |                                                                                                                                                                                                                                                                        |
| <b>10:30 – 11:10 Scientific Session E (Chairperson: Krzysztof Sokół)</b> |                                                                                                                                                                                                                                                                        |
| <b>10:30 – 10:50</b>                                                     | <b>Review on physics based digital twin technology with application on offshore wind market. Theoretical introduction, digital twin landscape, and examples of industrial applications</b><br><u>Anna Mackojć</u> , Krzysztof Mackojć, Nigel Barltrop, Richard McGowan |
| <b>10:50 – 11:10</b>                                                     | <b>Morphable soft robotic structures via liquid metal flexible electro-magnetically driven actuators</b><br>Piotr Bartkowski, <u>Łukasz Pawliszak</u> , Siddhi G. Chevale, Paweł Pełka, Yong Lee Park                                                                  |
| <b>11:10 – 11:20 Closing Ceremony</b>                                    |                                                                                                                                                                                                                                                                        |
| <b>11:20 – 13:00 Lunch (College restaurant)</b>                          |                                                                                                                                                                                                                                                                        |
| <b>13:15 – 16:15 Guided tour (Jasna Góra)</b>                            |                                                                                                                                                                                                                                                                        |

## **Poster Session:**

**The influence of the phase shift of the effective density vibrations of layers on the wave propagation in quasi one-dimensional binary phononic crystals**

**Sebastian Garus**

**Simulation tests of the fall of a container for transporting sensitive cargo**

**Dawid Cekus, Marcin Dudek**

**Free vibrations of a column with step-variable flexural stiffness in aspect of structural mounting damping and internal damping**

**Anna Jurczyńska, Janusz Szmidla**

**The dynamic stability of quasi-periodic and aperiodic multi-segment columns**

Sebastian Garus, **Wojciech Sochacki**, Damian Leśniak, Justyna Garus

**Simulation-based evaluation of support reactions in rotary crane**

**Paweł Kwiaton**

**Optimization of lattice structures for wheel construction**

**Krzysztof Sokół**, William Steingartner

**The influence of an implant on the mechanical response of the human abdominal wall with hernia—numerical study with plane strain finite element model**

**Aleksandra Kondrusik**, Julia Niemierko, Wiktoria Korbut, Zuzanna Iwicka, Mateusz Zamkowski, Maciej Śmietański, Katarzyna Szepietowska

**Theoretical analysis and empirical investigation of a concept of semi-active tuned mass damper**

**Karol Bugajewski**, Piotr Loch, Bogumił Chiliński

**Proposal of an numerical environment for investigation and aided design of electric vehicles**

**Karolina Ziabrowska**, Jakub Podgórzak, Bogumił Chiliński

**Influence of orientation of the lateral muscles on the passive behavior of the abdominal wall by finite element modelling**

**Wiktoria Korbut**, Aleksandra Kondrusik, Julia Niemierko, Zuzanna Iwicka, Katarzyna Szepietowska