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# PROGRAMME

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of the  
**5<sup>th</sup> ECCOMAS Thematic Conference on  
Inverse Problems Methods, IPM 2019**  
and the  
**XVI Symposium on Structural Dynamics  
DYNKON 2019**

22–24 May 2019, Rzeszów–Kombornia, Poland



## CONFERENCE SCHEDULE

| Time & Date   | Wednesday, 22 May 2019                |
|---------------|---------------------------------------|
| 08:15 – 17:45 | Registration                          |
| 09:00 – 09:15 | Opening ceremony                      |
| 09:15 – 09:55 | Plenary lecture P-1                   |
| 10:00 – 11:00 | Session A-1 (3)    Session B-1 (3)    |
| 11:00 – 11:30 | <i>Coffee break</i>                   |
| 11:30 – 12:50 | Session A-2 (3)    Session B-2 (4)    |
| 13:00 – 14:00 | <i>Lunch, coffee and sweet course</i> |
| 14:30 – 15:10 | Plenary lecture P-2                   |
| 15:15 – 16:15 | Session A-3 (3)    Session B-3 (3)    |
| 16:15 – 16:45 | <i>Coffee break</i>                   |
| 16:45 – 17:45 | Session A-4 (3)    Session B-4 (3)    |
| 19:30 – 22:00 | <i>Welcome reception</i>              |
| Time & Date   | Thursday, 23 May 2019                 |
| 09:15 – 12:30 | <i>Conference tour to Krosno</i>      |
| 13:30 – 14:30 | <i>Lunch, coffee and sweet course</i> |
| 15:00 – 15:40 | Plenary lecture P-3                   |
| 15:40 – 16:40 | Session A-5 (3)    Session B-5 (3)    |
| 16:40 – 17:10 | <i>Coffee break</i>                   |
| 17:10 – 18:10 | Session A-6 (3)    Session B-6 (3)    |
| 19:30 – 22:00 | <i>Conference Dinner</i>              |
| Time & Date   | Friday, 24 May 2019                   |
| 09:00 – 09:40 | Plenary lecture P-4                   |
| 09:45 – 10:45 | Session A-7 (3)    Session B-7 (3)    |
| 10:45 – 11:15 | <i>Coffee break</i>                   |
| 11:15 – 11:55 | Session A-8 (2)    Session B-8 (2)    |
| 11:55 – 12:10 | Closing cerem.    Closing cerem.      |
| 12:10 – 13:30 | <i>Lunch, coffee and sweet course</i> |

## DETAILED PROGRAMME

IPM 2019

DYNKON 2019

JOINT MEETINGS

Wednesday, 22 May 2019

|                      |  |
|----------------------|--|
| <b>8:15 – 17:45</b>  | <b>Registration (main hall of the conference centre)</b>   |
| <b>Session P-1</b>   | <b>ROOM A</b>  |
| <b>9:00 – 9:15</b>   | <b>Opening ceremony</b>  |
| <b>9:15 – 9:55</b>   | <i>Plenary lecture:</i><br>Felipe S. Nunes, <b>Helcio R.B. Orlande</b> , Andrzej J. Nowak: Estimation of the ischemic brain temperature with the particle filter method                          |
| <b>Session A-1</b>   | <b>ROOM A</b>  |
| <b>10:00 – 10:20</b> | Dominika Bandola, Ziemowit Ostrowski, Marek Rojczyk, Wojciech Walas, Zenon Halaba, <b>Andrzej J. Nowak</b> : Inverse estimation of model parameters for newborn brain cooling proces simulations |
| <b>10:20 – 10:40</b> | <b>Marek Rojczyk</b> , Marcelo J. Colaço, Ryszard Bialecki, Andrzej J. Nowak, Ziemowit Ostrowski, Helcio R. B. Orlande: Inverse bioheat transfer for the detection of skin cancer                |
| <b>10:40 – 11:00</b> | <b>Ewa Majchrzak</b> , Łukasz Turchan: Identification of external heat source causing the assumed destruction of biological tissue   |
| <b>Session B-1</b>   | <b>ROOM B</b>  |
| <b>10:00 – 10:20</b> | <b>Roman Lewandowski</b> , Przemysław Wielentejczyk: Free vibration of frame structures made of Zener type viscoelastic material   |
| <b>10:20 – 10:40</b> | <b>Ryszard Hołubowski</b> : Application of the two-parameter single shooting method for natural vibration analysis of Euler-Bernoulli beams  |
| <b>10:40 – 11:00</b> | <b>Zdzisław Pawlak</b> , Dawid Zwoliński: Damping parameters of steel structure with a viscoelastic layer in the base node   |
| <b>11:00 – 11:30</b> | <b>Coffee break</b>  |
| <b>Session A-2</b>   | <b>ROOM A</b>  |
| <b>11:30 – 11:50</b> | Wojciech Adamczyk, Ziemowit Ostrowski, <b>Ryszard Bialecki</b> : Novel nondestructive technique of measurement of heat conductivities based on active thermography                               |
| <b>11:50 – 12:10</b> | <b>Ziemowit Ostrowski</b> , Wojciech Adamczyk, Ryszard Bialecki: Advances in a non-destructive method and algorithm of estimation of solid samples heat diffusivity by means of IHTP solution    |
| <b>12:10 – 12:30</b> | <b>Iwona Nowak</b> , Ryszard Buchalik, Grzegorz Nowak: Reconstruction of selected operating parameters of a thermoelectric device  |

## Wednesday, 22 May 2019

| Session B-2   | ROOM B   |
|---------------|--|
| 11:30 – 11:50 | Sebastian Uzny, <b>Lukasz Kutrowski</b> : Stability of a hydraulic telescopic cylinder subjected to generalised load by a force directed towards the positive pole   |
| 11:50 – 12:10 | Mariusz Pawlak, <b>Sebastian Slawski</b> , Sławomir Duda: Numerical model of tracked vehicle crossing inland water obstacle  |
| 12:10 – 12:30 | <b>Waldemar Łatas</b> : Optimal positions of translational vibration absorbers in vibroisolation of mechanical press   |
| 12:30 – 12:50 | <b>Wojciech Danek</b> , Damian Gąsiorek: Comparison of the value of passive safety coefficients for car crash with lighting column made of aluminum or composite material based on numerical simulation          |
| 13:00 – 14:00 | <b>Lunch, coffee and sweet course</b>  |
| Session P-2   | ROOM A   |
| 14:30 – 15:10 | <i>Plenary lecture:</i><br>Krzysztof Wilde, A. Tilsen, S. Burzyński, <b>Wojciech Witkowski</b> : On estimation of occupant safety in vehicular crashes into roadside obstacles using non-linear dynamic analysis |
| Session A-3   | ROOM A   |
| 15:15 – 15:35 | <b>Tadeusz Burczyński</b> , Marcin Maździarz, Adam Mrozek, Waclaw Kuś: Designing of new 2D semiconducting carbon allotrope as an inverse problem   |
| 15:35 – 15:55 | Margarita O. Salosina, Oleg M. Alifanov, <b>Aleksey V. Nenarokomov</b> : Optimal design of thermal protection based on materials morphology  |
| 15:55 – 16:15 | <b>Krzysztof Rykaczewski</b> , Jan Nikadon, Włodzisław Duch, Tomasz Piotrowski: A new toolbox for EEG/MEG inverse problem  |
| Session B-3   | ROOM B   |
| 15:15 – 15:35 | Tomasz Wiczenbach, <b>Tomasz Ferenc</b> , Łukasz Pyrzowski, Jacek Chróścielewski, Dynamic tests of composite footbridge segment – experimental and numerical studies   |
| 15:35 – 15:55 | Tomasz Siwowski, <b>Mateusz Rajchel</b> , Dynamic performance of a vehicular bridge with lightweight FRP composite structural elements   |
| 15:55 – 16:15 | <b>Jarosław Bęc</b> , Ewa Błazik-Borowa, Dynamic properties of façade frame scaffoldings   |
| 16:15 – 16:45 | <b>Coffee break</b>  |

Wednesday, 22 May 2019

| Session A-4   | ROOM A  |
|---------------|---|
| 16:45 – 17:05 | Michał Gawlicki, <b>Łukasz Jankowski</b> : Identification of a moving load 2D path under insufficient instrumentation   |
| 17:05 – 17:25 | <b>Dominik Pisarski</b> , Łukasz Jankowski: Distributed control of modular structures based on the identification of the interaction forces   |
| 17:25 – 17:45 | Dominika Ziaja, <b>Piotr Nazarko</b> : Anomaly detection in the concrete arch girder subjected to fatigue test  |
| Session B-4   | ROOM B  |
| 16:45 – 17:05 | Daniel Szynal, <b>Lucjan Janas</b> : Vibration damping in road bridges – two case studies of full scale experiments   |
| 17:05 – 17:25 | <b>Lucjan Janas</b> : Experimental characterization of the vibro-acoustic behaviour of a plate girder bridge  |
| 17:25 – 17:45 | <b>Elena E. Smirnova</b> , Sergey N. Savin, Denis V. Larin: Research of influence of vibrational impacts of chimes on the steeples of St. Isaac's Cathedral (Saint Petersburg) after reconstruction thereof |
| 19:30 – 22:00 | <b>Welcome reception (barbecue dinner)</b>  |

**Thursday, 23 May 2019**

|                      |  |
|----------------------|--|
| <b>9:15 – 12:30</b>  | <b>Conference tour to Krosno city</b>  |
| <b>13:30 – 14:30</b> | <b>Lunch, coffee and sweet course</b>  |
| <b>Session P-3</b>   | <b>ROOM A</b>  |
| <b>15:00 – 15:40</b> | <i>Plenary lecture:</i><br><b>Tomasz Szolc</b> , Robert Konowrocki, Andrzej Pochanke: On dynamic interaction between mechanical systems and selected electric motors   |
| <b>Session A-5</b>   | <b>ROOM A</b>  |
| <b>15:45 – 16:05</b> | <b>Adam Długosz</b> , Tomasz Schlieter: Evolutionary identification for a two-scale model of thermoelastic porous material   |
| <b>16:05 – 16:25</b> | <b>Zbigniew Buliński</b> , Helcio R.B. Orlande, Tomasz Krysiński <sup>1</sup> , Sebastian Werle, Łukasz Ziółkowski: Application of the coupled POD-MCMC to estimate parameters of the non-equilibrium model of heat and mass transfer in the porous material |
| <b>16:25 – 16:45</b> | <b>Michał Bereta</b> : Evolutionary approach to optimizing local patterns-based descriptors in face recognition problems   |
| <b>Session B-5</b>   | <b>ROOM B</b>  |
| <b>15:45 – 16:05</b> | <b>Stanisław Wolny</b> : Parametric vibrations in mechanical systems on the example of a mining hoist installation   |
| <b>16:05 – 16:25</b> | Stanisław Wolny, <b>Agata Drzewosz</b> : The effects of irregularities and misalignments of the guide strings on stress levels in selected load-bearing elements of a conveyance   |
| <b>16:25 – 16:45</b> | <b>Filip Matachowski</b> , Sławomir Badura: Dynamic problems in the operation of overresonant vibrating screens  |
| <b>16:45 – 17:15</b> | <b>Coffee break</b>  |
| <b>Session A-6</b>   | <b>ROOM A</b>  |
| <b>17:15 – 17:35</b> | <b>Yuri Menshikov</b> : Indirect measurements  |
| <b>17:35 – 17:55</b> | <b>Paweł Jarosz</b> , Piotr Łabędź, Paweł Ozimek: Multicriteria analysis on spatial data of the landscape  |
| <b>17:55 – 18:15</b> | <b>Anna Prokop</b> , Piotr Nazarko, Leonard Ziemiański: 3D modeling of the structure historical buildings from laser-scanned point clouds  |
| <b>Session B-6</b>   | <b>ROOM B</b>  |
| <b>17:15 – 17:35</b> | <b>Bartłomiej Dyniewicz</b> , Czesław I. Bajer: The GAO beam under a moving inertial load and harmonic compression   |
| <b>17:35 – 17:55</b> | <b>Krzysztof Kozioł</b> : Historical church diagnostic with regards to impact of traffic included vibrations   |
| <b>17:55 – 18:15</b> | <b>Krzysztof Kozioł</b> : Reduction of vibration in railway surfaces   |
| <b>19:30 – 22:00</b> | <b>Conference Dinner</b>   |

**Friday, 24 May 2019**

|                      |   |
|----------------------|---|
| <b>Session P-4</b>   | <b>ROOM A</b>   |
| <b>9:00 – 9:40</b>   | <p><i>Plenary lecture:</i><br/> <b>Aleksey V. Nenarokomov</b>, Evgeny V. Chebakov, Sergey A. Budnik, Andrey B. Nadiradze, Dmitry L. Reviznikov, Dmitry M. Titov, Irina V. Krainova: System of a satellite orientation based on inverse radiative transfer problem</p> |
| <b>Session A-7</b>   | <b>ROOM A</b>   |
| <b>9:45 – 10:05</b>  | <b>Marek Słoński</b> : Comparison of deep convolutional neural networks for concrete crack detection  |
| <b>10:05 – 10:25</b> | <b>Artur Borowiec</b> , Leonard Ziemiański: Location of stiffness changes in the beam's numerical model using additional masses   |
| <b>10:25 – 10:45</b> | <b>Paweł Kisielewicz</b> , Elżbieta Czkwianianc, Anna Socha-Banasiak, Jarosław Woliński, Marek Pieszka: A design of hybrid algorithm for abnormalities detection in digestive system  |
| <b>Session B-7</b>   | <b>ROOM B</b>   |
| <b>9:45 – 10:05</b>  | <b>Adrian Pawelek</b> , Piotr Lichota: Arrival traffic separations modelling by using continuous probability distributions  |
| <b>10:05 – 10:25</b> | <b>Piotr Fedeliński</b> : Dynamic stress intensity factors of interacting branched cracks   |
| <b>10:25 – 10:45</b> | <b>Bartosz Miller</b> , Leonard Ziemiański; Frequency optimisation of composite cylinder using an evolutionary algorithm and neural networks  |
| <b>10:45 – 11:15</b> | <b>Coffee break</b>   |
| <b>Session A-8</b>   | <b>ROOM A</b>   |
| <b>11:15 – 11:35</b> | <b>Monika Zielińska</b> , Magdalena Rucka: Damage detection in a steel plate using Lamb wave tomography   |
| <b>11:35 – 11:55</b> | <b>Dominika Ziaja</b> , Piotr Nazarko: Anomaly detection in screw connections based on guided waves and neural networks   |
| <b>11:55 – 12:10</b> | <b>Closing ceremony</b>   |
| <b>Session B-8</b>   | <b>ROOM B</b>   |
| <b>11:15 – 11:35</b> | <b>Barbara Markiewicz</b> , Grzegorz Piątkowski, Łukasz Szyszka, Dominika Ziaja; Experimental verification of the numerical model of a reinforced concrete arch   |
| <b>11:35 – 11:55</b> | <b>Łukasz Szyszka</b> , Experimental study of girder-borne noise  |
| <b>11:55 – 12:10</b> | <b>Closing ceremony</b>   |
| <b>12:10 – 13:30</b> | <b>Lunch, coffee and sweet course</b>   |