# RANM 2019 Technical Programme

## Monday, 6th May 2019

**18:30 – 22:00** **Welcome Reception (Lobby of 'Fabryka Inzynierow' Building A18)**

## Tuesday, 7th May 2019

**08:00 – 19:10** **RANM 2019 Day 1 ('Zatoka Sportu' Building B28)**

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| 08:00 – 09:00 | **Registration** (Lobby) |
| 09:00 – 09:30 | **Opening Ceremony** (Room **1**): RANM 2019 Chairs, TUL ME Dean, TUL Principal) |
| 09:30 – 10:20 | **Music Interlude** (Room **1**) |
| **10:20 – 11:20** | **Opening Lecture: Michael D Gilchrist** (University College Dublin, Ireland): Forensic biomechanics: Constitutive data for accident reconstruction simulations<br>**Chair: Przemyslaw Perlikowski** (Lodz University of Technology, Poland) |
| 11:20 – 11:40 | **Coffee Break** |
| **11:40 – 13:00** | **Dynamics Symposium: Part 1** (Room **1**)<br>**Chair: Jerzy Warminski** (Lublin University of Technology, Poland) |
| 11:40 – 12:00 | **Piotr Przybylowicz** (Warsaw University of Technology, Warsaw, Poland): Stability and bifurcation analysis of a rigid rotor with electromagnetic actuators |
| 12:00 – 12:20 | **Pawel Baranowski** (Military University of Technology, Warsaw, Poland): Rock blasting and fragmentation: modelling, simulation and experimental testing |
| 12:20 – 12:40 | **Krzysztof Kęcik** (Lublin University of Technology, Poland): Energy recovery from a pendulum vibration absorber using two harvesting sources |
| 12:40 – 13:00 | **Janos Lelkes** (Budapest University of Technology and Economics, Budapest, Hungary): Bifurcation analysis of aeroelastic system with a linear tuned vibration absorber |
| 13:00 – 14:00 | **Lunch Break** |
| **14:00 – 14:50** | **Plenary Lecture: Giuseppe Rega** (University of Rome 'La Sapienza', Italy): Modelling and nonlinear dynamics of thermomechanical composite plates<br>**Chair: Marian Wiercigroch** (University of Aberdeen, UK) |
| **14:50 – 16:30** | **Dynamics Symposium: Part 2** (Room **1**) *Parallel to Dynamics and Nonlinear Physics Session*<br>**Chair: Jerzy Wojewoda** (TU Lodz, Poland) |
| 14:50 – 15:10 | **Silvio de Souza** (Federal University of Sao Joao del-Rei, Divinopolis, Brazil): Evaluation of controlling chaos performance in bi-parameter space scenario |
| 15:10– 15:30 | **Rafal Rusinek** (Lublin University of Technology, Lublin, Poland): Effect of transducer fixation in the human ear |
| 15:30– 15:50 | **Ferenc Hegedűs** (Budapest University of Technology and Economics, Budapest, Hungary): Solving large number of independent ODE systems on GPUs |
| 15:50– 16:10 | **Zofia Szmit** (Lublin University of Technology): Dynamics of rotating hub with composite beams - numerical and experimental approach |
| 16:10 – 16:30 | **Zhi Zhang** (University of Exeter): Lyapunov exponents of an impact oscillator with delayed feedback control |

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| **14:50 – 16:30** | **Dynamics and Nonlinear Physics Symposium: Part 1** (Room **2**) *Parallel to Dynamics Session 2*<br>**Chair: Krzysztof Kęcik** (Lublin University of Technology, Poland) |
| 14:50 – 15:10 | **Yuri V. Mikhlin** (National Technical University Kharkov, Ukraine): Resonance behavior of the systems with Limited power supply having nonlinear absorbers |
| 15:10– 15:30 | **Magdalena Gregorczyk** (Lublin University of Technology): Bifurcation vs recurrensivity in the Rossler system |
| 15:30– 15:50 | **Robert Zalewski** (Warsaw University of Technology, Warsaw, Poland): Preliminary research of the symmetrical controllable granular damper prototype |
| 15:50– 16:10 | **Takumi Tokami** (Tokyo University of Science, Tokyo, Japan): Spatiotemporal behaviour of a flow velocity field during a buoyancy-driven turbulent fire |
| 16:10 – 16:30 | **Shuya Kandani** (Tokyo University of Science, Tokyo, Japan):Dynamic behavior of $H_2/O_2$ coaxial jet in a rocket model combustor analyzed by statistical complex-based approach |
| 16:30 – 16:50 | **Coffee Break** |
| **16:50 – 19:10** | **Dynamics Symposium: Part 3 (**Room 1) *Parallel to Solid Mechanics Symposium*<br>**Chair: Stefano Lenci** (Polytechnic University of Marche, Ancona, Italy) |
| 16:50 – 17:10 | **Jerzy Warminski** (Lublin University of Technology, Poland): Nonlinear vibrations of the extensible rotating beam |
| 17:10 – 17:30 | **Yong Xu** (Northwestern Polytechnical University, Xi'an, China): Primary resonance responses of a viscoelastic aerofoil model under a narrow-band excitation |
| 17:30 – 17:50 | **Ferenc Hegedűs** (Budapest University of Technology and Economics, Budapest, Hungary): Direct selection between attractors of subharmonic resonances via a non-feedback technique to control multistability |
| 17:50 – 18:10 | **Yi Ji** (Beihang University, Beijing, China): Application of composite time integration method in nonlinear dynamics |
| 18:10 – 18:30 | **Aasifa Rounak** (IIT Madras, India): On the phase responses and isochrons of a bilinear impact oscillator |
| 18:30 – 18:50 | **Masahito Watanabe** (Waseda University, Tokyo, Japan): Chaotic mixing in two-dimensional Rayleigh-Bernard convection with periodic perturbations |
| 18:50 – 19:10 | **Rami Faraj** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland): Ball-screw inerter for optimal impact mitigation |
| **16:50 – 19:10** | **Solid Mechanics Symposium: Part 1 (**Room 2) *Parallel to Dynamics Symposium*<br>**Chair: Tomasz Kubiak** (Lodz University of Technology, Poland) |
| 16:50 – 17:10 | **Maria Kotełko** (Lodz University of Technology, Poland): Application of the yield line theory in load-capacity estimation for thin-walled members subject to combined load |
| 17:10 – 17:30 | **Sung Yi** (Portland State University, USA): Nonlinear time dependent mechanical behaviors of polyimide films |
| 17:30 – 17:50 | **Marek Klimczak** (Cracow University of Technology, Cracow, Poland): Viscoelastic analysis of asphalt concrete by multiscale FEM |
| 17:50 – 18:10 | **Dominik Banat** (Lodz University of Technology, Poland): Multiple-criteria failure analysis of thin-walled FML profiles subjected to compression |
| 18:10 – 18:30 | **Paweł Wawrzyniak** (Warsaw University of Technology, Warsaw, Poland):Experimental and FEM analysis of the SBM process |
| 18:30 – 18:50 | **Radosław Ciepielewski** (Military University of Technology, Warsaw, Poland): Experimental investigation on hexagonal, aluminum honeycomb out-of-plane crushing under various velocities impact loading |
| 18:50 – 19:10 | **Devin Singh** (The University of the West Indies, St. Augustine Campus, Trinidad and Tobago): Nonlinear response of an elastic spherical cap to a descending rigid plate |

## Wednesday, 8th May 2019

**08:30 – 13:00** **RANM 2019 Day 2 ('Zatoka Sportu' Building B28)**

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| 08:30 – 09:25 | **Plenary Lecture: Lukasz Jankowski** (Polish Academy of Sciences, Poland): Controllable transmission of moments for semi-active damping of structural vibrations<br>**Chair: Zuzanna Dmitrovova** (Nova University of Lisbon and Instituto Superior Tecnico, Universidade de Lisboa, Lisbon, Portugal): |
| **09:25 – 11:05** | **Dynamics Symposium: Part 4** (Room 1)<br>**Chair: Jerzy Warminski** (Lublin University of Technology, Poland) |
| 09:25 – 09:45 | **Stefano Lenci** (Polytechnic University of Marche, Ancona, Italy): Nonlinear oscillations of a beam with an inclined roller |
| 09:45 – 10:05 | **Lukasz Kloda** (Polytechnic University of Marche, Ancona, Italy): Hardening vs softening dichotomy of a hinged-simply supported beam with one end axial linear spring: an experimental study |
| 10:05 – 10:25 | **Arkadiusz Syta** (Lublin University of Technology): Numerical investigations of nonlinear systems with insensitive and sensitive friction models by the 0-1 method |
| 10:25 – 10:45 | **Olga Pogorelova** (Kyiv National University, Ukraine): Observing intermittent transition to chaos in vibro-impact system with wavelet transform |
| 10:45 – 11:05 | **Charlelie Bertrand** (Universite de Lyon / ENTPE, France): Nonlinear dynamics of a translating cable |
| 11:05 – 11:20 | **Coffee Break** |
| **11:20 – 13:00** | **Nonlinear Physics Symposium: Part 1** (Room **2**) *Parallel to Dynamics Symposium 5*<br>**Chair: Hong Ling** (Xian Jiaotong University, Xian, China) |
| 11:20 – 11:40 | **Norbert Marwan** (Potsdam Institute for Climate Research, Potsdam, Germany): Entropies from recurrence plots |
| 11:40 – 12:00 | **Andrzej Rysak** (Lublin University of Technology, Lublin, Poland): Recurrensivity in chaotic dynamics - a rough estimate or a sensitive measure? |
| 12:00 – 12:20 | **Miroslav Kures** (Brno University of Technology, Czechia): Rossby wave resonant triads: Graphs with vertices on quartics |
| 12:20 – 12:40 | **Vladimir Maksimenko** (Innopolis University, Innopolis, Tatarstan 420500, Russia): Biomechanical EEG+EMG Data Analysis During Voluntary Movements |
| 12:40 – 13:00 | **Estelle Temgoua** (University of the Western Cape, Bellville, South Africa): Robustness of rogue waves to nonlinear effects in non-paraxial and chiral media |
| **11:20 – 13:00** | **Dynamics Symposium: Part 5 (**Room **1**) *Parallel to Nonlinear Physics Symposium 2*<br>**Chair: Vahid Vaziri** (University of Aberdeen, UK) |
| 11:20 – 11:40 | **Marcin Kapitaniak** (University of Aberdeen, UK): Helical buckling of rods: FE modelling |
| 11:40 – 12:00 | **Anna Mackojc** (Warsaw University of Technology, Warsaw, Poland)): 3-DOF model of offshore lifting dynamics |
| 12:00 – 12:20 | **Krzysztof Siczek** (Lodz University of Technology, Lodz, Poland): Dynamics of the cam-tappet-piston assembly in compressor of cooling aggregate |
| 12:20 – 12:40 | **Yang Liu** (University of Exeter, Exeter, UK): Experimental study of a vibro-impact capsule system with two-sided constraints |
| 12:40 – 13:00 | **Zuzanna Dimitrovova** (Nova University of Lisbon and Instituto Superior Tecnico, Universidade de Lisboa, Lisbon, Portugal): Instability of proximate oscillators traversing a beam on an Elastic continuum with partial shear resistance |
| 13:00 – 13:30 | **Lunch Break** then **Excursion to Lowicz and Maurzyce (field workshops)** |

## Thursday, 9th May 2019

**08:30 – 18:00** **RANM 2019 Day 3 ('Zatoka Sportu' Building B28)**

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| **08:30 – 09:25** | **Plenary Lecture: Wojciech Sumelka** (Poznan University of Technology, Poznan, Poland): Fractional continuum mechanical models<br>**Chair: Przemyslaw Perlikowski** (Lodz University of Technology, Poland) |
| **09:25 – 11:05** | **Nonlinear Physics Symposium: Part 2** (Room **1**) *Parallel to Dynamics Symposium 6*<br>**Chair: Jurgen Kurths** (Humboldt University, Berlin, Germany) |
| 09:25 – 09:45 | **Frank Hellman** (Potsdam Institute for Climate Research, Potsdam, Germany): Sampling based methods for studying networked dynamical systems |
| 09:45 – 10:05 | **Sten Ponsioen** (Institute for Mechanical Systems, ETH, Zurich, Switzerland): Isolated Forced Response Curves from Non-Autonomous Spectral Submanifolds |
| 10:05 – 10:25 | **Paul Schultz** (Potsdam Institute for Climate Research, Potsdam, Germany): Solitary states in power systems |
| 10:25 – 10:45 | **Thomas Lilienkamp** (Max Planck Institute for Dynamics and Self-Organization, Gottingen, Germany): The final phase of transient chimera states |
| 10:45 – 11:05 | **Lijun Pei** (Zhengzhou University, Zhengzhou, China): Complex dynamics of the delayed feedback control system of the gut microbiota |
| **09:25 – 11:05** | **Dynamics Symposium: Part 6** (Room **2**) *Parallel to Nonlinear Physics Symposium 2*<br>**Chair: Mike Jeffrey** (University of Bristol, UK) |
| 09:25 – 09:45 | **Mate Antali** (Budapest University of Technology and Economics, Budapest, Hungary): Role of the limit directions in the nonsmooth dynamics of towed wheels |
| 09:45 – 10:05 | **Lucio Demeio** (Polytechnic University of Marche, Ancona, Italy): Periodic orbits of a bouncing mass on a flexible hinged-hinged beam |
| 10:05 – 10:25 | **Eduardo A.R. Ribeiro** (University of Sao Paulo, Sao Paulo, Brazil): A piezoelectric vibration controller in a parametrically-excited system with modal localisation |
| 10:25 – 10:45 | **Piotr Koziol** (Cracow University of Technology, Krakow, Poland): Dynamics of nonlinear double-beam system subjected to random moving load |
| 10:45 – 11:05 | **Guilherme Jorge Vernizzi** (University of Sao Paulo, Brazil): A comparison between reduced-order models for a vertical riser undergoing parametric excitation |
| 11:05 – 11:20 | **Coffee Break** |
| **11:20 – 13:00** | **Solid Mechanics Symposium: Part 2** (Room **2**) *Parallel to Dynamics Symposium 4*<br>**Chair: Maria Kotelko** (Lodz University of Technology, Poland) |
| 11:40 – 12:00 | **Tomasz Sadowski** (Lublin University of Technology, Poland): Description of continuous damage of thin-walled box beams under 3-point bending |
| 12:00 – 12:20 | **Holger Sparr** (Brandenburg University of Technology Cottbus-Senftenberg, Germany): Energy balance considerations in thermomechanical systems |
| 12:20 – 12:40 | **Paweł Czapski** (Lodz University of Technology, Lodz, Poland): Evaluation of residual stresses in GFRP laminates and its influence on buckling |
| 12:40 – 13:00 | **Paweł Dybcio** (Military University of Technology, Warsaw, Poland): Experimental validation of hard sphere impact on mild plate using SPH method |
| **11:20 – 13:00** | **Dynamics Symposium Part 7** (Room **1**) *Parallel to Solid Mechanics Session*<br>**Chair: Marcin Kapitaniak** (University of Aberdeen, UK) |
| 11:40 – 12:00 | **Anna Jablonka** (West Pomeranian University of Technology, Szczecin, Poland): Moment equations and quasi-moment neglect closure approximations for non-linear systems under Erlang renewal impulse process excitations |

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| 12:00 – 12:20 | **Marcin Gołąbczak** (Lodz University of Technology): Asymptotic tolerance model of dynamic thermoelasticity problems for thin micro-periodic cylindrical shells |
| 12:20 – 12:40 | **Pedro Ribeiro** (Porto University, Portugal): Transition to chaos in nonlinear flutter of variable stiffness composite laminates |
| 12:40 – 13:00 | **Cezary Graczykowski** (Polish Academy of Sciences, Warsaw, Poland): Model identification adaptive control of fluid based shock absorbers for impact mitigation |
| 13:00 – 14:00 | **Lunch Break** |
| **14:00 – 14:50** | **Plenary Lecture: Awadhesh Prasad** (University of Delhi, Delhi, India): An introduction to perpetual points in nonlinear dynamical systems and its applications<br>**Chair: Ulrike Feudel (**ICBM Carl von Ossietzky University Oldenburg, Germany) |
| **14:50 – 16:30** | **Dynamics Symposium Part 8** (Room **1**) *Parallel to Dynamics Session 8*<br>**Chair: Pedro Ribeiro** (Porto University, Portugal) |
| 14:50 – 15:10 | **Victoria Kurushina** (Industrial University of Tyumen, Russia): Calibrating wake oscillators for VIVs of rigid structures |
| 15:10 – 15:30 | **Marian Wiercigroch** (University of Aberdeen, UK): Wake oscillator model for VIV of flexible structures |
| 15:30 – 15:50 | **Hanna Weber** (West Pomeranian University of Technology, Szczecin, Poland): Nonlinear dynamic response of a cable system with a tuned mass damper to stochastic base excitation via equivalent linearization technique |
| 15:50 – 16:10 | **Vahid Vaziri** (University of Aberdeen, UK): Drill-string stick-slip vibration in presence of the delay |
| 16:10 – 16:30 | **Emil Manoach** (Bulgarian Academy of Sciences, Bulgaria): Couette gas microflow with an elastic obstacle |
| **14:50 – 16:30** | **Nonlinear Physics Symposium: Part 3** (Room **2**) *Parallel to Dynamics Session 7*<br>**Chair: Norbert Marwan** (Potsdam Institute for Climate Research, Potsdam, Germany) |
| 14:50 – 15:10 | **Viet-Thanh Pham** (Thanh Tay University, Hanoi, Vietnam): On dynamics and control of the fractional form of Henon-Lozi type map |
| 15:10 – 15:30 | **Ulrike Feudel** (ICBM Carl von Ossietzky University Oldenburg, Germany): Extreme events in coupled relaxation oscillators |
| 15:30 – 15:50 | **Mateusz Ozimek** (Warsaw University of Technology): Dependence of ventricle repolarization on heart rate variability information flow and symbolic dynamics |
| 15:50 – 16:10 | **Leo Kingston** (Technical University of Lodz, Lodz, Poland): Bursting oscillations and mixed-mode oscillations in driven Lienard system |
| 16:10 – 16:30 | **Arindam Mishra** (Jadavpur University, India): Extreme events in coupled Josephson junction |
| 16:30 – 17:00 | **Coffee Break** |
| **17:00 – 18:00** | **Nonlinear Physics Symposium: Part 4 (**Room **1**)<br>**Chair: Yuri Maistrenko** (National Academy of Sciences, Ukraine) |
| 17:00 – 17:20 | **Karol Życzkowski** (Jagiellonian University, Kraków, Poland): Matrix logistic equation and chaos |
| 17:20 – 17:40 | **Nikolay V. Kuznetsov** (St-Petersburg State University, Russia): Hidden and self-excited attractors: localization, dimension characteristics and embedded unstable periodic orbits |
| 17:40 – 18:00 | **Ulrich Parlitz** (Max Planck Institute for Dynamics and Self-Organization, Gottingen, Germany): Cross estimation and prediction of spatio-temporal time series |
| **17:00 – 18:00** | **Dynamics Symposium: Part 9** (Room **2**) *Parallel to Nonlinear Physics Symposium 5*<br>**Chair: Rafal Rusinek** (Lublin University of Technology, Lublin, Poland) |

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| 17:00 – 17:20 | **Shivan Ramnrace** (The University of West Indies, St. Augustine Campus, Kingston, Jamaica): Periodic solutions of shape memory alloy spring system under harmonic excitation by an iterative method |
| 17:20 – 17:40 | **Andrzej Stefanski** (Division of Dynamics, Lodz University of Technology, Lodz, Poland): Synchronized chaotic swinging of parametrically driven pendulums |
| 17:40 – 18:00 | **TBA** |
| 19:00 – 22:00 | **Conference Dinner (Buses to La Vende Restaurant)** |

## Friday, 10th May 2019

**08:30 – 18:00** **RANM 2019 Day 4 ('Zatoka Sportu' Building B28)**

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| **08:30 – 09:20** | **Plenary Lecture: Serhiy Yanchuk** (Technische Universitat Berlin, Germany): Frequency clusters in adaptive networks of phase oscillators<br>**Chair: Yuri Maistrenko** (National Academy of Sciences, Ukraine) |
| **09:25 – 11:05** | **Nonlinear Physics Symposium: Part 5** (Room **1**) *Parallel to Dynamics Symposium 10*<br>**Chair: Nikolay V. Kuznetsov** (St-Petersburg State University, Russia) |
| 09:25 – 09:45 | **Syamal Dana** (Jadavpur University, India): Intermittent transition to large amplitude oscillations in dynamical systems: Routes to extreme events |
| 09:45 – 10:05 | **Michael Schiek** (Research Center Jueulich, Germany): Variation of phase-lags in coupled metronomes experiments |
| 10:05 – 10:25 | **Florian Stelzer** (Technische Universitat Berlin, Germany): Clock-cycle-dependent effects in time-delay reservoir computing |
| 10:25 – 10:45 | **Elbert Macau** (National Institute for Space Research, Brazil): The discrete complex wavelet approach to phase assignment |
| 10:45 – 11:05 | **Gil Ariel** (Bar-Ilan University, Israel): Chaos and levy walks in swarming bacteria |
| **09:25 – 11:05** | **Dynamics Symposium: Part 10** (Room **2**) *Parallel to Nonlinear Physics Symposium 5*<br>**Chair: Silvio de Souza** (Federal University of Sao Joao del-Rei, Divinopolis, Brazil) |
| 09:25 – 09:45 | **Paulo Goncalves** (Pontical Catholic University, Rio de Janeiro, Brazil): Nonlinear vibrations and instabilities of spherical hyperelastic membranes |
| 09:45 – 10:05 | **Margarita A. Kovaleva** (Semenov Institute of Chemical Physics, Moscow, Russia): Non-conventional synchronization in the system of coupled pendula with generators |
| 10:05 – 10:25 | **Csanad Arpad Hubay** (Budapest University of Technology and Economics, Hungary): Appearance of Poincare-Lyapunov constants in Carleman matrices |
| 10:25 – 10:45 | **Patrycja Jaros** (Lodz University of Technology, Lodz, Poland): Solitary states for coupled oscillators with inertia |
| 10:45 – 11:05 | **Eligiusz Postek** (Polish Academy of Sciences, Poland): Impact of Al2O3/ZrO2 composite, qualitative comparison of compositions |
| 11:05 – 11:20 | **Coffee Break** |

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| **11:20 – 13:00** | **Dynamics Symposium: Part 11** (Room **1**) *Parallel to Nonlinear Physics Symposium 6*<br>**Chair: Piotr Koziol** (Cracow University of Technology, Krakow, Poland) |
| 11:20 – 11:40 | **Mike Jeffrey** (Bristol University, UK): Local dynamic indeterminacy |
| 11:40 – 12:00 | **Dominik Rodak** (Warsaw University of Technology, Warsaw, Poland): The impact of using semi-active vibration eliminator on fatigue strength of drive systems |
| 12:00 – 12:20 | **Jan Freundlich** (Warsaw University of Technology, Warsaw, Poland): Analysis of dynamics of a coupled mechanical system contains a spherical pendulum with damping modelled by a fractional derivative |
| 12:20 – 12:40 | **Marcin Kowalczuk** (Lublin University of Technology, Poland): Dynamics and vibrations analysis of a cantilever active composite bimorph beam |
| 12:40 – 13:00 | **Kaja Wójcik** (AGH University of Science and Technology, Kraków, Poland): Modelling of the metal-elastomer joints in vibration machines suspensions |
| **11:20 – 13:00** | **Nonlinear Physics Symposium: Part 6** (Room **2**) *Parallel to Nonlinear Physics Symposium 11*<br>**Chair: Jan Żebrowski** (Warsaw University of Technology, Warsaw, Poland) |
| 11:20 – 11:40 | **Arun K. Manickavasagam** (University of Canterbury, Christchurch, New Zealand): Numerical and experimental investigations of hydrodynamic coupling effects in a two-beam array vibrating in close proximity to a surface |
| 11:40 – 12:00 | **Mateusz Żurawski** (Warsaw University of Technology, Warsaw, Poland): Mass redistribution as a method for changing beam dynamics |
| 12:00 – 12:20 | **Wiesław Urbaniak** (Kazimierz Wielki University of Technology, Kraków, Poland): Absorption of nano-H-BN sheets into phospholipid vesicles: experimental... |
| 12:20 – 12:40 | **Nadezhda Semenova** (Saratov State University, Russia): Coherence resonance chimera: Impact of time delayed feedback |
| 12:40 – 13:00 | **Vladimir V. Semenov** (CNRS & University Bourgogne Franche-Comte, France): Dissipative solitons in a bistable delayed-feedback oscillator |
| 13:00 – 14:00 | **Lunch Break** |
| **14:00 – 16:20** | **Dynamics Symposium Part 12** (Room **1**)<br>**Chair: Marian Wiercigroch** (University of Aberdeen, UK) |
| 14:00 – 14:20 | **Ewa Tuliszka-Sznitko** (Poznan University of Technology, Poznan, Poland): The flow dynamics in the short Taylor-Couette configurations |
| 14:20 – 14:40 | **Takahiro Ushioku** (Waseda University, Tokyo, Japan): Experimental observations of single bubble dynamics and induced shock waves |
| 14:40 – 15:00 | **Nina Yari** (University of Aberdeen, UK): Experimental study on rock cutting with PDC tool |
| 15:20 – 15:40 | **Krzysztof Marynowski** (Lodz University of Technology, Lodz, Poland) Identification of dynamic properties of an aluminum alloy based on tests of components in the temperature domain |
| 15:40 – 16:00 | **Hong Ling** (Xian Jiaotong University, Xian, China): Escape bifurcations of a forced triple-well potential Duffing oscillator with fuzzy uncertainty |
| 16:00 – 16:20 | **Thomas Breunung** (Institute for Mechanical Systems, ETH, Zurich, Switzerland): Existence of the steady-state response of periodically forced dissipative nonlinear mechanical systems |
| 16:20 – 16:40 | **Coffee Break** |
| **16:40 – 17:40** | **Closing Lecture: Hiroshi Yabuno** (University of Tsukuba, Tsukuba Science City, Japan): Applications of self-excited oscillation to ultrasensitive micro-sensors<br>**Chair: Marian Wiercigroch** (University of Aberdeen, UK) |

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| **17:40 – 18:00** | **Closing Ceremony (RANM 2019 Chairs)** |