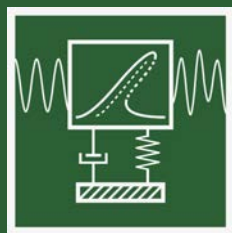


# The 40th International JVE Conference on Dynamics of Biological Systems

Kaunas, Lithuania  
September 26-28, 2019



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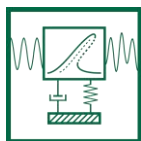


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**The 40th International JVE Conference on  
Dynamics of Biological Systems**

**September 26-28, 2019 in Kaunas, Lithuania**



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The 40th International JVE Conference on Dynamics of Biological Systems will be held Kaunas, Lithuania. The Conference is organized by JVE International in partnership with Lithuanian University of Health Sciences, Kaunas University of Technology, Vytautas Magnus University, Vienna University of Technology (Austria), Silesian University of Technology (Poland), Hohai University (China), Barcelona University (Spain) and HeartMath Institute (USA).

The main theme of the conference focuses on (but not limited to):  
**Biomedical Engineering of Dynamical Systems**

#### **General Topics of the Conference:**

- Medical Devices, Materials, Measurement and Instrumentation
- Health Care Technology (topics related to dynamics and oscillatory evolution)
- Medical Image and Signal Processing (topics related to dynamics, oscillations, wave propagation)
- Modelling, Simulation and Control (topics related to biomedical engineering)
- Biomechanics

Internationally recognized speakers and contributors to medical engineering progress will present the latest achievements in the field of dynamic systems in biomedical engineering. This conference will feature a wide range of technical presentations, including demonstrations by invited experts. The conference will provide an opportunity to become familiar with the latest findings in academic research, to exchange ideas with peers about innovative biomedical engineering technologies, to meet your old friends, and potentially meet new business partners in the field of biomedical engineering. The participation of internationally recognized scientists makes this conference a very interesting and significant event – a fruitful opportunity to promote research and development in biomedical engineering and its application in medicine and related fields.

All papers presented at JVE Conferences are published as short Conference papers in **Vibroengineering Procedia**. Conference papers published in **Vibroengineering Procedia** are indexed in EI Compendex, Scopus, Inspec, Gale Cengage, EBSCO, Google Scholar, CNKI Scholar, cnpLINKer and Ulrich's Periodicals Directory.

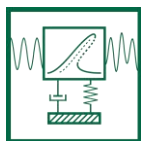
The authors of best papers presented at the Conference will be invited to prepare the extended version of their papers (10-20 pages) which will be considered for publication in **Journal of Complexity in Health Sciences** (indexed in DOAJ, Google Scholar, CNKI, BASE, JUFO Publication Forum, Ulrich's Periodicals Directory and cnpLINKer), **Journal of Vibroengineering** (indexed in Web of Science, EI Compendex, EBSCO, Gale Cengage, Inspec, and more), **Journal of Measurements in Engineering** (indexed in Web of Science, EI Compendex, EBSCO, Gale Cengage, Inspec and more) and **Journal of Mathematical Models in Engineering** (indexed in EBSCO, Gale Cengage, DOAJ, BASE, Ulrich's Periodicals Directory and cnpLINKer).



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The Conference Venue is at:  
Lithuanian University of Health Sciences (LUHS), Institute of Cardiology  
Sukilėlių pr. 15, Kaunas 50103, Lithuania

On behalf of the Organizing Committee, we would like to welcome the delegates to the 40th International JVE Conference on Dynamics of Biological Systems. We hope that you would enjoy the conference and find the program of the Conference exciting. We look forward to meeting you in September 2019 in Kaunas.



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#### **Chair:**

- Prof. **Eugenijus Kaniusas** TU Wien, Faculty of Electrical Engineering and Information Technology,  
Vienna, Austria
- Prof. **Minvydas Ragulskis** JVE International, Lithuania
- Prof. **Alfonsas Vainoras** Lithuanian University of Health Sciences, Lithuania

#### **Local Organizing Committee:**

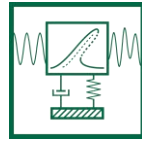
- Prof. Minvydas Ragulskis  
Dr. Vaiva Šiaučiūnaitė  
Prof. Alfonsas Vainoras  
Prof. Saulius Šatkauskas  
Prof. A. Ragauskas  
Prof. Vaidotas Marozas  
Dr. Aurelijus Domeika  
Prof. Jonas Poderys  
Prof. Renaldas Raišutis  
Acc. Prof. Mindaugas Štelemėkas  
Prof. habil. dr. Vaiva Lesauskaitė

#### **International Organizing Committee:**

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Prof. Natalia Balague Spain, Barcelona  
A/Prof. Joachim Sturmberg Australia, Newcastle  
Dr. Kamyar M. Hedayat USA, Chicago  
Prof. Robert Hristovskij Macedonia, Skopje

#### **Organizing Committee:**

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C. Torrens Leida University, Spain  
P. Vazquez Justes Barcelona University, INEFC, Spain  
V. Zaveckas Lithuania University of Health Sciences, Lithuania



## Conference Program

**Day 1: September 26**

**Location: “Rotunda” hall, LUHS**

|             |                     |
|-------------|---------------------|
| 16:00-18:00 | <b>Registration</b> |
|-------------|---------------------|

**Day 2: September 27**

**Location: “Rotunda” hall, LUHS**

|            |                     |
|------------|---------------------|
| 8:00-09:00 | <b>Registration</b> |
|------------|---------------------|

**Day 2: September 27**

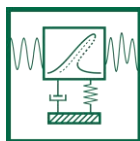
**Location: “Rotunda” hall, LUHS**

|             |   |
|-------------|---|
|             | <b>CONFERENCE OPENING CEREMONY</b>  |
| 09:00-09:10 | <b>Welcome Speech:</b><br>Speaker of the Seimas of the Republic of Lithuania,<br><b>Prof. Viktoras Pranckietis</b>  |
| 09:10-09:30 | <b>Opening Speech:</b><br>Kaunas Institute of Cardiology – 50 years anniversary, history, achievements,<br>future. LUHS Vice-Rector for Science, <b>Prof. Vaiva Lesauskaitė</b>           |
| 09:30-10:00 | <b>Opening Speech:</b><br>The role of complex systems theory in the bioscience field; the role of CHS<br>journal in the dissemination of complexity ideas. <b>Prof. Alfonsas Vainoras</b> |

**Day 2: September 27**

**Location: “Rotunda” hall, LUHS**

|             |  |
|-------------|--|
|             | <b>KEYNOTE SESSION</b><br>Session Chairs: <b>Prof. Alfonsas Vainoras</b> and <b>Prof. Minvydas Ragulskis</b>                               |
| 10:00-10:30 | <b>Prof. Eugenijus Kaniušas</b> , (TU Wien, Austria).<br>Hot topics in today’s science, relevant to the conference agenda                  |
| 10:30-11:00 | <b>Dr. Jozsef Constantin Széles</b> , (Medical University Vienna).<br>Innovative clinical medicine using auricular vagus nerve stimulation |



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**Day 2: September 27**

**Location: "Rotunda" hall, LUHS**

|             |                     |
|-------------|---------------------|
| 11:00-11:30 | <b>Coffee Break</b> |
|-------------|---------------------|

**Day 2: September 27**

**Location: "Rotunda" hall, LUHS**

|             |   |
|-------------|---|
| 11:30-12:00 | <b>KEYNOTE SESSION</b><br>Session Chairs: <b>Prof. Eugenijus Kaniušas</b> and <b>Prof. Minvydas Ragulskis</b>   |
| 12:00-12:30 | <b>Dr. Rollin McCraty</b> , (HeartMath Research Center, USA).<br>Physiological coherence: bridging personal, social and global synchronization  |
| 12:30-13:00 | <b>Dr. Kamyar Hedayat</b> ,<br>(Full Spectrum Health Center for Integrative Medicine, USA).<br>New approaches in medicine: endobiogeny – integrated physiology and systems analysis in the clinic |
| 13:00-13:30 | <b>Prof. Wolfgang Schoellhorn</b> ,<br>(Johannes Gutenberg University Mainz, Germany).<br>Effects of complex movements on the brain as a result of increased decision-making                      |

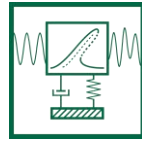
**Day 2: September 27**

|             |              |
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| 13:00-14:00 | <b>Lunch</b> |
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**Day 2: September 27**

**Location: "Rotunda" hall, LUHS**

|             |  |
|-------------|--|
| 14:00-14:30 | <b>KEYNOTE SESSION</b><br>Session Chairs: <b>Dr. Rollin McCraty</b> and <b>Dr. Kamyar Hedayat</b>  |
| 14:30-15:00 | <b>Prof. Shigeki Toyama</b> ,<br>(Tokyo University of Agriculture and Technology, Japan).<br>Development of intravascular stent robot with cross type receiver |



|             |   |
|-------------|---|
| 14:30-15:00 | <b>Dr. Marc Tittgemeyer</b> , (Max Planck Institute, Germany).<br>The brain as a dynamic system: a bottom-up perspective on cognitive processes underlying food intake regulation |
|-------------|---|

**Day 2: September 27**

**Location: “Rotunda” hall, LUHS**

|             |  |
|-------------|--|
|             | <b>ORAL SESSION</b><br>Session Chairs: <b>Prof. Minvydas Ragulskis</b> and <b>Dr. Marc Tittgemeyer</b>                                 |
| 15:00-15:20 | <b>Inga Timofejeva</b> . A technique for estimating geometrical synchronization of biomedical signals                                  |
| 15:20-15:40 | <b>Elena Schrödl</b> . Feasibility of pulse rate variability as feedback in closed-loop percutaneous auricular vagus nerve stimulation |
| 15:40-16:00 | <b>Lluc Montull</b> . Monitoring the dynamics of exhausting exercises: the time-variability of acceleration                            |

**Day 2: September 27**

**Location: “Rotunda” hall, LUHS**

|             |   |
|-------------|---|
| 16:00-16:15 | History of the Series of JVE International Conferences<br><b>Prof. Minvydas Ragulskis</b> |
|-------------|---|

**Day 2: September 27**

**Location: Restaurant “Fresh Buffet Medžiotojų užėiga”  
Jonavos g. 7, Kaunas LT-44279, Lietuva**

|       |   |
|-------|---|
| 19:00 | <b>Gala Dinner</b>  |
|       | All Keynote speakers and participant paying the full registration fee are welcome to Gala dinner. All other participants can purchase the Gala dinner ticket at the registration table in the morning hours of September 27. There will be no organised transportation to the location where Gala dinner will take place – all participants are expected to take a taxi individually. |





**Day 3: September 28**

**Location: “Rotunda” hall, LUHS**

| <b>KEYNOTE SESSION</b><br>Session Chairs: <b>Prof. Minvydas Ragulskis</b> and <b>Prof. Vaidotas Marozas</b> |   |
|---|---|
| 09:00-09:30   | <b>Prof. Srečko Gajovič</b> , (University of Zagreb, Croatia).<br>Multimodal in vivo imaging in preclinical evaluation of medical interventions in stroke (and its role in the digital society) |
| 09:30-10:00   | <b>Dr. Jian Ma</b> , (Beihang University, China).<br>A systematic thinking on data quality problem in practical cancer detection  |
| 10:00-10:30   | <b>Prof. Vaidotas Marozas</b> , (Kaunas University of Technology, Lithuania).<br>Personal health devices for unobtrusive monitoring of chronic diseases   |

**Day 3: September 28**

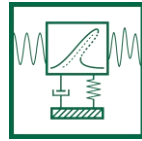
**Location: “Rotunda” hall, LUHS**

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| 10:30-11:00 | <b>Coffee Break</b> |
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**Day 3: September 28**

**Location: “Rotunda” hall, LUHS**

| <b>ORAL SESSION</b><br>Session Chairs: <b>Prof. Alfonsas Vainoras</b> and <b>Dr. Jian Ma</b> |   |
|--|---|
| 11:00-11:20  | <b>Mantas Landauskas</b> . Clustering of ECG segments for patients before sudden cardiac death based on Lagrange descriptors  |
| 11:20-11:40  | <b>Albert Guvenis</b> . Predicting the Polybromo-1 (PBRM1) mutation of a clear cell renal cell carcinoma using computed tomography images and KNN classification with random subspace |
| 11:40-12:00  | <b>Natalia Ampilova</b> . On application of dynamical system methods in biomedical engineering  |
| 12:00-12:20  | <b>Renaldas Raišutis</b> . Application of ultrasonic technologies for characterization and properties measurement of biological tissues and liquids                                   |
| 12:20-12:40  | <b>Joris Vėžys</b> . Effect of ultrasound waves on hematological parameters, behavior and conduction system of heart in vitro in BALB/c strain mouse                                  |
| 12:40-13:00  | <b>Sergey Gubkin</b> . Dynamic control of vestibular dysfunction in patients as a prognostic criterion for changing the cerebral bloodstream  |



**Day 3: September 28**

**Location: “Rotunda” hall, LUHS**

13:00-13:15

**CONFERENCE CLOSING CEREMONY**  
**Prof. Alfonsas Vainoras and Prof. Minvydas Ragulskis**

**Day 3: September 28**

**Location: “Rotunda” hall, LUHS**

14:15-15:00

**WORKSHOP**

Open discussion dedicated to the preparation of the book:  
“Methods Used in Complex Systems Theory: Applications in Biosciences”.

Participants **Kamyar Hedaynat, Rollin McCraty, Wolfgang Schöllhorn,**  
**Minvydas Ragulskis, Alfonsas Vainoras.**

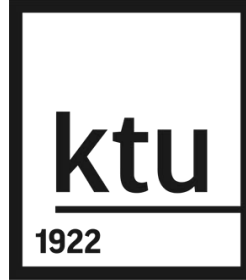
All other interested participants are invited to join the Workshop.



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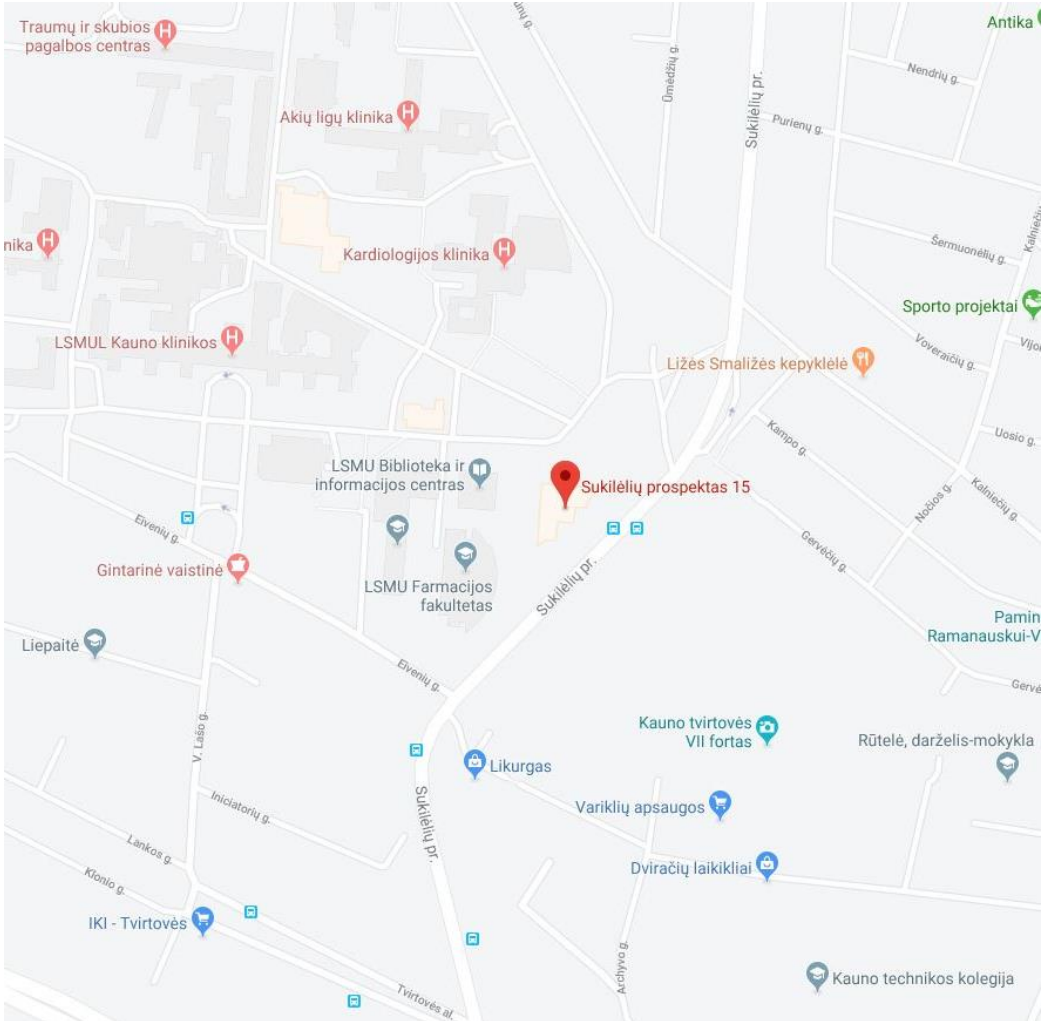
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## Conference Location



Lithuanian University of Health Sciences (LUHS), Institute of Cardiology  
Sūkilių pr. 15, Kaunas 50103, Lithuania