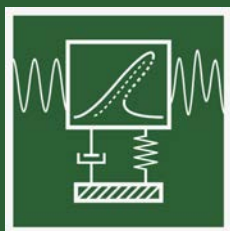


The 39th International JVE Conference

St. Petersburg, Russia
June 25-26, 2019



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The 39th International JVE Conference

Nonlinear Dynamics and Chaos in Engineering Applications

June 25-26, 2019 in St. Petersburg, Russia



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The 39th International JVE Conference will be held St. Petersburg, Russia. Its purpose is to provide a platform for scientists, engineers and practitioners throughout the world to exchange ideas and present their latest research results in order to further promote the Vibroengineering and its applications to the aerospace, automobile, energy and other industries. The Conference is organized by **JVE International** in partnership with **Saint-Petersburg Electrotechnical University “LETI”**, **Saint Petersburg State Marine Technical University (SMTU)** and **Mechanical Engineering Research Institute of the Russian Academy of Sciences (IMASH RAN)**.

The main theme of the conference focuses on (but not limited to):

Nonlinear Dynamics and Chaos in Engineering Applications

General Topics of the Conference:

- Materials and Measurements in Engineering
- Mathematical Models in Engineering
- Acoustics, Noise Control and Engineering Applications
- Mechanical Vibrations and Applications
- Fault Diagnosis Based on Vibration Signal Analysis
- Vibration Generation and Control
- Seismic Engineering and Applications
- Modal Analysis and Applications
- Vibration in Transportation Engineering
- Flow-induced Structural Vibrations
- Biomechanics and Biomedical Engineering
- Chaos, Non-linear Dynamics and Applications
- Dynamics and Oscillations in Electrical and Electronics Engineering
- Fractional Dynamics and Applications
- System Dynamics in Manufacturing System Modeling
- Dynamics of Smart and Functionally Graded Materials

Internationally renowned invited speakers and contributing authors from all over the world will present the latest advances in the area of Vibroengineering. This conference will feature a broad range of high-level technical presentations including invited distinguished experts. The conference will provide an opportunity to communicate your recent research advances, exchange ideas in innovative engineering technologies, meet old friends and make new business partners in the area of Vibroengineering. With your participation, this Conference will prove to be an exciting scientific event, a fruitful opportunity to promote scientific research and technological development of Vibroengineering and its applications.

With your participation, this conference will prove to be a very exciting event, a fruitful opportunity, to promote scientific research and technological development of vibration engineering and its applications.

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 and CNKI Scholar.

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 Vibroengineering (indexed in Web of Science, EI Compendex, EBSCO, Gale Cengage and Inspec), Journal of Measurements in Engineering (indexed in Web of Science, EI Compendex, EBSCO, Gale Cengage and Inspec) and Journal of Mathematical Models in Engineering (indexed in EBSCO, Gale Cengage).

The Conference Venue is at:

Saint Petersburg Electrotechnical University “LETI”

Ulitsa Professora Popova 5, 197376, St. Petersburg, Russian Federation

On behalf of the Organizing Committee, we would like to welcome the delegates to the 39th International JVE Conference. We hope that you would enjoy the conference and find the program of the Conference exciting. We look forward to meeting you in June 2019 in St. Petersburg.



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Chair:

Prof. **M. Kupriyanov** St. Petersburg Electrotechnical University (ETU-LETI), Russia
Prof. **Anton A. Zhilenkov** St. Petersburg State Marine Technical University (SMTU), Russia
Prof. **Minvydas Ragulskis** JVE International, Lithuania

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Viktor Tupik Strategic Development, Russia
Yulia Shichkina Department of Computer Engineering, Russia
Yana Bekeneva Department of Computer Engineering, Russia
Anton Zhilenkov St. Petersburg State Marine Technical University (SMTU), Russia
Elena Schislyayeva St. Petersburg State Marine Technical University (SMTU), Russia
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J. Wallaschek Leibniz University Hannover, Germany
Mao Yuxin Zhejiang Gongshang University, China
M. Zakrzhevsky Riga Technical University, Latvia



Conference Program

Day 1: June 25

Location: Room 1207, “LETI”

09:00-10:00	Registration
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Day 1: June 25

Location: Room 1207, “LETI”

	PLENARY SESSION Session Chairs: Prof. Minvydas Ragulskis and Prof. Mikhail Kupriyanov
10:00-10:10	Conference Opening Ceremony
10:10-10:25	Welcome Speech: Minvydas Ragulskis . Vibroengineering – past, present and the future
10:25-10:45	Invited Keynote Lecture: Prof. Muthukumaran Packirisamy , (Concordia University, Canada). Vibrations of microstructures subjected to fluid and field loading

Day 1: June 25

Location: Room 1207, “LETI”

10:45-11:00	Coffee Break
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Day 1: June 25

Location: Room 1207, “LETI”

	PARALLEL SESSION A1 Session Chairs: Prof. Minvydas Ragulskis and Dr. Mohammad Reza Bahrami
11:00-11:15	Aleksandra Tsodikova . Aero-hydrodynamic loads investigations for different constructions in turbulent flows with special verification approach
11:15-11:30	Grishchenko Dmitriy . Vibration diagnostics of equipment units with gas turbine engines
11:30-11:45	Ruslan Mokaev . Analysis of oscillations in discontinuous Lurie systems via LPRS method
11:45-12:00	Andrei Gerasimov . Vibration effects on colloidal gas-liquid systems
12:00-12:15	Margarita Cherkasova . Vibration technologies for producing metal powders



12:15-12:30	Grigory Panovko. Determination of mass-geometric characteristics of self-regulating debalance of an inertial vibration exciter
12:30-12:45	Natalia Ampilova. On a method of applied symbolic dynamics for investigation of dynamical systems

Day 1: June 25

Location: Room 2115, “LETI”

	PARALLEL SESSION A2 Session Chairs: Prof. Mikhail Kupriyanov and Prof. Alexander Shokhin
11:00-11:15	Alexander Gorbenko. Motion modes of the nonlinear mechanical system of the rotor autobalancer
11:15-11:30	Shravan Koundinya Vutukuru. Vibration analysis of perforated plate in non-stationary motion
11:30-11:45	Veronika Valaskova. FE modeling of moving load effect on two span bridge
11:45-12:00	Anton Mezenin. Vibration effects in conditioning of metal powders
12:00-12:15	Yuriy Semenov. On vibrotransportation of a material on a surface performing rotary oscillations
12:15-12:30	Vladimir Popov. Development of complex mathematical model of hydraulic drive, sensitive to the loading variations
12:30-12:45	Andrey Firsov. Mathematical analysis of transport systems modeled by the stationary Kolmogorov-Feller equation with a nonlinear drift coefficient

Day 1: June 25

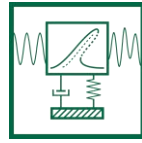
Location: Restaurant “Wasabi Rosario”, Medikov ave. 5

13:00-14:00	Lunch
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Day 1: June 25

Location: Room 1207, “LETI”

	PARALLEL SESSION B1 Session Chairs: Prof. Anton A. Zhilenkov and Dr. Andrei Gerasimov
14:00-14:15	Alexander Hvatov. The symmetrical cell eigenfrequency method for periodic structure stop-band definition
14:15-14:30	Valeriy Zakharo. Dynamic optimization mathematical model of the military subordinating interaction of two states
14:30-14:45	Leonid Kondratenko. Loss of stability of open two-link mechanisms
14:45-15:00	Maria Vasilyeva. Modeling of wave processes when the heterogeneous flow is moving in a low-frequency magnetic peristaltic pump of pulsating type
15:00-15:15	Evgeniy Shishkin. Vibrational dynamic system for the reduction of solid materials



15:15-15:30	Vladislav Myasnikov. Study of dynamic loads dependence on aircraft engine mount variant after fan blade-out event
15:30-15:45	Petr Morozov. Mathematical model of the vibration cone crusher with three degrees of freedom

Day 1: June 25

Location: Room 2115, "LETI"

	PARALLEL SESSION B2 Session Chairs: Prof. Grigory Panovko and Dr. Muthukumaran Packirisamy
14:00-14:15	Margarita Cherkasova. Vibration recycling technologies for mining and mineral processing waste for construction purposes
14:15-14:30	Veronika Valaskova. Dynamic testing of the sub-base layer made from foam concrete using light weight deflectometer
14:30-14:45	Alexander Shokhin. On oscillations of a vibratory jaw crusher with asymmetric interaction of the jaws with the processed medium
14:45-15:00	Lubov Mironova. Method for the study of dynamic characteristics in the mechanisms of motion transmission
15:00-15:15	Mohammad Reza Bahrami. Mechanics of robot inspector on electrical transmission lines conductors: performance analysis of dynamic vibration absorber
15:15-15:30	Rakhmatdzhon Rakhmatov. Development of design solutions of exhaust system for gasdynamic noise reduction
15:30-15:45	Andrey Firsov. Construction of an algorithm for the analytical solution of the Kolmogorov-Feller equation Kolmogorov-Feller equation with a nonlinear drift coefficient

Day 1: June 25

Location: Room 1207, "LETI"

15:45-16:00	Conference closing ceremony
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Day 1: June 25

Location: Restaurant "Hitch", Medikov ave. 10

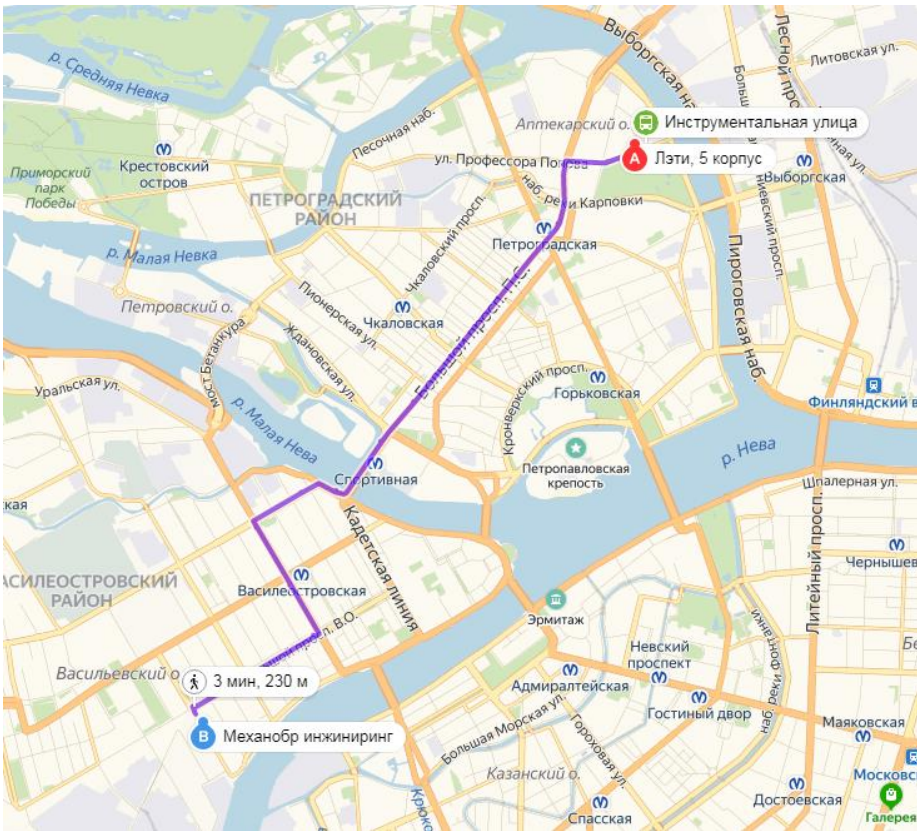
19:00	Dinner
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Day 2: June 26

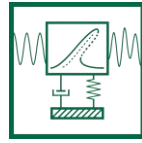
**Location: 22 Liniya Vasil'yevskogo Ostrova
22-я линия Васильевского острова, дом 3, корп. 7**

11:00-11:15	75th Anniversary of Prof. Vaysberg Leonid Abramovich by Prof. Grigory Panovko
11:15-13:00	Excursion around Mexhanobr



Day 2: June 26

22:00	St. Petersburg City White Night Tour
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UNIVERSITY

Saint Petersburg Electrotechnical University (ETU-LETI), founded in 1886, is one of the oldest higher education institutions in Saint Petersburg.

It is also one of the world's largest education centres specialising in radio engineering, electrical engineering, electronics and computer science, although it is also very strong in the areas of telecommunications, control processes, biomedical engineering, management and linguistics. Notable former staff members include A.S Popov, who invented the radio and for whom there is now a memorial museum on campus and Z.I Alferov, who was the Nobel Laureate in Physics for his achievements in the heterostructure field, also worked at the university.



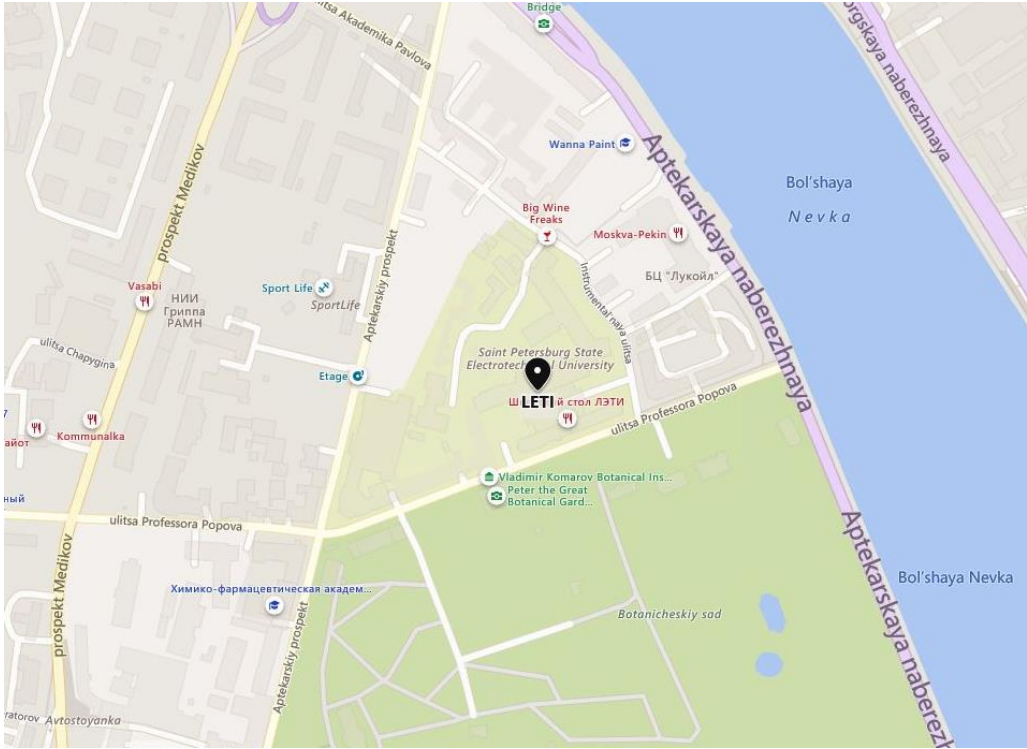
Saint Petersburg State Marine Technical University (SMTU) is a legendary University with deep traditions and dynamically growing prospects. SMTU is the only university in Russia that trains world-class engineers for all shipbuilding specialties and high-class economists, managers, lawyers and sociologists for business sphere. The main directions are the design, construction and technical operation of ships, surface warships and submarines, as well as technical means to ensure the exploration and production of oil, gas and other minerals on the seabed.



Mechanical Engineering Research Institute of the Russian Academy of Sciences (IMASH RAN), founded in 1938, located in Moscow, is the leading research institution in the field of machine science (mechanical engineering), separate fundamental science that is a theoretical base for the creation of machines of the future. IMASH RAN is engaged both in R & D and in commercial application of its developments in the following fields: structural materials science, advanced structure modelling; theoretical and applied acoustics, vibration suppression and mitigation; friction, wear and tear, lubrication, tribology; probabilistic risk analysis of machines and of critical infrastructure engineering facilities; machine strength, reliability, service life extension, survivability and safety; mechanics of machines and control over machines, CAD/CAM, theory of machines and mechanisms (TMM), mechatronics; vibrational biomechanics; vibrational acoustics of machines; wave mechanics of machines, development of novel technological solutions based on wave technology with application in petrochemical, oil-refining, medical, food and civil engineering industries.



Conference Location



Saint Petersburg Electrotechnical University “LETI”
Ulitsa Professora Popova 5, 197376, St. Petersburg, Russian Federation