

XII-th International Symposium "ACOUSTICS & VIBRATION OF MECHANICAL STRUCTURES" AVMS 2013



Timisoara, May 23-24, 2013

ORGANISERS



"POLITEHNICA" UNIVERSITY OF TIMIŞOARA

Acoustics and Vibration Laboratory



UNIVERSITY OF NIŠ

Faculty of Occupational Safety, Noise and Vibration Laboratory



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ROMANIAN ACOUSTICAL SOCIETY

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"Politehnica" University of Timişoara

Established in 1920, shortly after the union of Romanian territories, in a European context marked by the redefinition of states and by the aftermath of World War I, the Polytechnic School in Timisoara - as was originally called - was the answer to one of the requirements of the Romanian society of the time, namely the formation of engineers.

"Politehnica" University of Timisoara, a university of advanced research and education, is today one of the traditional Romanian schools and is recognized nationally and internationally both through the work of generations of teachers and the outstanding work of prestigious academics.

According to tradition, the mission of "Politehnica" University of Timisoara resides in meeting the competence requirements of the society by providing superior training at undergraduate, graduate, and postgraduate levels. Bearing fundamental values, the university mission reflects at the same time concern for the future of society, by tracing its development at local, regional, national, and international levels.

"Politehnica" University of Timisoara is recognized as an outstanding actor on the research stage both nationally and internationally. The existence and operation of an important number of research centers (25), in which research teams successfully put into practice the research strategy of the institution, offer the university its international prestige and at the same time, provide funding sources for its development. The materialization of the research results in scientific papers, patents or products constitutes a guarantee of the institutional competence, thoroughness and professionalism.

The didactic activity of "Politehnica" University of Timisoara is organized in line with the Bologna paradigm; the study programs correspond to three cycles, BACHELOR, MASTER and PhD. Interested in responding to the labor market demands and to the need for long-life training and development required by the complex challenges of the modern society, "Politehnica" University of Timisoara organizes POSTGRADUATE PROGRAMS, whose main objective is to update / develop / improve numerous academic qualifications. The portfolio of specializations offered by the "Politehnica" University of Timisoara meets the needs of contemporary society, reflecting the close relationship the university holds with the socio-economic environment. The specializations are continuously adapted to the latest trends in the field, and thus meet the

theoretical and practical training requirements needed by graduates on the labor market.

"Politehnica" University of Timisoara has an infrastructure which ensures best conditions for teaching and research. The excellent spaces and equipment which the university offers are a consequence of the last decade's modernization and investing concerns.

Fully consistent with its mission with the desire to assert itself internationally, "Politehnica" University of Timisoara is currently developing fruitful collaboration with many universities in Europe, USA, Canada, South America and Asia, resulting in over 190 cooperation agreements concluded directly or under European Union programs.

The university's campus includes 16 student hostels offering approximately 6500 beds, a student cafeteria, a student medical center and two modern sports centers.

Mechanics and Vibration Department

The "Mechanics and Vibrations" Department has been founded in 1957 as the Department of "Theoretical Mechanics". Head of Department was appointed Professor George Silas, who was a mathematician and engineer, which later becomes a member of the Romanian Academy. He was Vice-Rector of the Polytechnic Institute of Timisoara for 21 years.

In the autumn of 1972 the Department of Theoretical Mechanics has been united with the Department of Strength of Materials such that a new Department was born: the "Department of Mechanics and Strength of Materials". Teachers in the new Department were enthusiastically involved in theoretical and experimental study of linear and nonlinear vibrations, vibroimpacts, parametric vibration and self-excited vibration, with major implications for industry.

In 1981 the Department of Mechanics and Strength of Materials received its current location. The spaces assigned for the Mechanical collective ensured optimal conditions for teaching and research activities. As a result, starting from 1981 these activities have grown and diversified, and between 1982 and 1989 students directed by the members of this group have obtained good results to contests organized for students at national level. In 1990, the Department has been divided into two smaller departments: the Department of "Mechanics and Vibrations" and the Department of "Strength of Materials", until 2005 when they are re-united again.

Romanian Academy

Setting of the supreme cultural and science institutions of Romania was preceded by constant and sustained effort whose beginnings appear in the sixteenth century, the time of the Petru Cercel and Despot Voda, who first sought to create "academies" in the two capitals - in Targoviste, respectively, in Suceava. Attempts were made in subsequent years, resulting in particular in organizing the Lordly Academy of Bucharest (1688) and Iasi (1707), which will become, in the nineteenth century, the first universities in Romania.

Romanian society undergoing modernization needed a different kind of academy, organized on the model of Western Europe, that is a forum of eminent personalities of intellectual life, that contribute to the overall progress of society through science and culture. The first imagined form to the concentration of scholars have been societies, in general literary and cultural, first appearing in local initiatives in Brasov (1821), Bucharest (1844), Sibiu (1861). Their success has encouraged efforts to create a central institution for the promotion of literary and scientific, but especially for the preparation of a dictionary and a glossary of Romanian language. This institution was established at 1 / 13 April, 1866 - Romanian Literary Society, who began working the following year, however, as the Romanian Academic Society.

In 1879 the Romanian Academic Society was declared national institute, and changed its name into "Romanian Academy".

Despite all the vicissitudes specific to different political regimes and historical periods, Romanian Academy's activity continued. Progresses have been made in each area of research, as they are obtained not only with devotion and application, but boldly and often with many risks. Thus, researchers have sought to maintain contacts with the global scientific achievements through participation in international meetings, correspondence and exchange of publications, direct links with foreign specialists by organizing international scientific meetings in all areas of science, some having high visibility.

In 1990, the Romanian Academy becomes the supreme forum of science and culture of the country has returned to its original purpose.

University of Niš, Faculty of Occupational Safety

The University of Niš was incorporated as an independent level-granting institution on June 15, 1965. The University started its independent life with 234 fulltime teaching staff and 10500 students. The increase of the student population, the development of new disciplines and the rising needs of the immediate and broader industrial and social environment brought about a reorganization of the existing faculties and foundation of new ones.

The University of Niš is a state-governed educational and research institution. At present, the University comprises 13 faculties. In the academic 2012/2013 year, the University of Niš numbers 27884 students at all study levels. There are 22531 students at the basic professional, the basic academic and the integrated studies, 60 of them are foreign students. 1719 students attend master academic studies, 52 specialist professional studies, 10 specialist academic studies and 1377 doctoral academic studies. The teaching process at the University is covered by 1594 teaching staff members.

Faculty of Occupational Safety

The idea about the founding of the institution whose interest would be prevention in the domain of occupational safety appeared in 1955, first with the founding of the department of occupational safety. In September 1968, the first generation, with 67 students enrolled. In 1972/73, from the Occupational Safety department of Civil Engineering, the faculty grows into the separate faculty - The Faculty of Occupational Safety.

Today, Faculty is modern, dynamic academic institution. Faculty organizes accredited basic, master and doctoral academic studies and educates experts who work in enterprises, business systems, ministries, inspectorates, institutes, educational institutions, insurance companies, etc. Faculty has an important and significant role in an organized system of occupational and environmental safety, fire protection, emergency management, and municipal system management in the country and abroad. Faculty is accredited to carry out scientific research in the field of occupational and environmental safety technologies. In the academic 2012/2013 year, Faculty numbers 27884 students at all study levels. The teaching process at the Faculty is covered by 58 teaching staff members.

PROGRAM

Faculty of Mechanical Engineering Timisoara, Bd. Mihai Viteazu, 1

Thursday, 23.05.2013

8.00-9.00 Registration of participants, B1, Room 150

9.00-9.30 Opening ceremony, B1, Room 150

9.30-11.30 Plenary lectures

- Plenary speaker 1

Livija Cveticanin

On the Van der Pol oscillator: An overview

- Plenary speaker 2

Polidor Bratu

Physical Instability and Functional Uncertainties of the Dynamic Systems in Resonance

- Plenary speaker 3

Ivana Kovacic

Nonlinear Oscillators with a Power-Form Restoring Force: Non-Isochronous and Isochronous Case

- Plenary speaker 4

Zlatan Šoškić

Development of Methodologies and Means for Noise Protection of Urban Areas

11.30-12.00 Coffee break, refreshment

Session 1 – Vibrations I

Thursday, 23.05.2013, 12.00-14.00, B1, Room 150

Chairman: Polidor BRATU

P. BRATU

Corrective Analysis of the Parametric Values from Dynamic Testing on Stand of the Antiseismic Elastomeric Isolators in Correlation with the Real Structural Supporting Layout

P. BRATU

Modification of the Dual Kelvin-Voigt/Maxwell Rheological Behavior for Antiseismic Hydraulic Dampers

Carmen ALEXANDRU

Analysis of the Dynamic Behavior of the Antiseismic Elastomeric Isolators Based on the Evaluation of the Internal Dissipated Energy

I. KEPPLER

Failure Analysis of Pebble Bed Reactors during Eartquake

V. IANCU, G.R. GILLICH, C.M. IAVORNIC, Nicoleta GILLICH

Some Models of Elastomeric Seismic Isolation Devices

O. VASILE

Experimental Evaluation of the Hysteretic Damping of Elastomeric Systems at Low-Cyclic Harmonic Kinematic Displacements

O. VASILE

Experimental Evaluation of the Damping Variation of an Elastomeric Device Harmonically Excited

Bojana M. ZLATKOVIĆ, Bilijana SAMARDZIĆ

Vibrations Modeling and Simulation Using Stochastic Bondsim Elements

B. CVETANOVIĆ, Mladen TOMIĆ

Effect of the Suspension in Agricultural Tractors on the Reduction of Whole Body Vibration

Session 2 – Acoustics I

Thursday, 23.05.2013, 12.00-14.00, B2, Room 111

Chairmen: Momir PRAŠĆEVIĆ, Dragan CVETKOVIĆ

M. PRAŠĆEVIĆ, A. GAJICKI, D. MIHAJLOV, N. ZIVKOVIC, Ljiljana ZIVKOVIC

Application of the Prediction Model "SCHALL 03" for Railway Noise Calculation in Serbia

M. PRAŠĆEVIĆ, D. MIHAJLOV, D. CVETKOVIĆ, A. GAJICKI, N. HOLEČEK

Acoustic Zoning and Noise Assessment

Ramona NAGY, D. SOMOIU, K. MENYHARDT, L. BERETEU

Noise Source Monitoring in Industrial and Residential Mixed Areas

S. SIMION, C. VREME, M. KOVACS, L. TOTH

Exposure of Workers to Noise in Mining Industry

V. BACRIA, N. HERISANU

Noise Control in an Industrial Hall

N. HERIŞANU, V. BACRIA

The Influence of Rubberized Asphalt on Decreasing the Phonic Pollution

G. KELEMEN

A Comprehensive Transdisciplinary Approach to Nonlinear Phenomena in Fluids Induced by Acoustic Stimulation Consonant Proto-Languages and the Hierarchy of Biomorphic Standing Waves

E. JEBELEAN, C. BADEA, Liana IURES, C. JIVA, I. BORZA

Acoustical Methods Used in the Study of the Durability of Concrete

Delicia ARSENE, Claudia BORDA, Larisa BUTU, Marinela MARINESCU, V. POPOVICI, M. ARSENE

Experimental Research and Modeling of the underwater sound in marine environment

Session 3 – Biomechanics

Thursday, 23.05.2013, 12.00-14.00, B3, Room 223

Chairmen: Mirela TOTH-TAŞCĂU, LIVIU BERETEU

Mirela TOTH-TAŞCĂU, Flavia BĂLĂNEAN, D.I. STOIA

Particularities of Upper Limb Movements of Healthy and Pathologic Subjects

D.I. STOIA, Oana PAŞCA, Cosmina VIGARU, Mirela TOTH- TAŞCĂU

Plantar Pressure Improvement after Correction of Hallux Valgus Condition. Static and Dynamic Approach

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Mihaela PICU

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R. PANAITESCU-LIESS

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L. RUSU, Mirela TOTH-TASCĂU, C. TOADER-PASTI

Dynamic Analysis of a Lower Limb Prosthesis

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Chairmen: Gilbert-Rainer GILLICH, Ninoslav ZUBER

N. ZUBER, D. CVETKOVIĆ, R. BAJRIĆ

Multiple Fault Identification Using Vibration Signal Analysis and Artificial Intelligence Methods

N. ZUBER, D. CVETKOVIĆ

Rolling Element Bearings Fault Identification in Rotating Machines, Existing Methods of Vibration Signal Processing Techniques and Practical Considerations

Z. ŠOŠKIĆ, Jelena TOMIĆ, N. BOGOJEVIĆ, Snežana ĆIRIĆ KOSTIĆ Influence of Heavy Data Transmission Losses on Spectra of Signals

P.F. MINDA, G.R. GILLICH, Andrea Amalia MINDA, Z.I. PRAISACH Methods of Interpreting the Results of Vibration Measurements to Locate Damages in Beams

Z.I. PRAISACH, G.R. GILLICH, Carla PROTOCSIL, F. MUNTEAN

Evaluation of Crack Depth in Beams for Known Damage Location Based on Vibration Modes Analysis

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Assessment of Corrosion Damages with Important Loss of Mass and Influences on the Natural Frequencies of Bending Vibration Modes

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R. CURTEAN, I. LUPEA

Random Excitation of a Car Component from the Road

R. BAJRIĆ, N. ZUBER, S. ISIĆ

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Session 5 – Vibration III

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Chairmen: Liviu BERETEU, Vasile MARINCA

A. CRAIFALEANU, C. DRAGOMIRESCU, N. ORĂSANU, A. COSTACHE

Study on Vibration Transmission, with Application to the Calibration of a Measuring Stand

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Approximate Solutions to a Cantilever Beam Using Optimal Homotopy Asymptotic Method

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Optimal Homotopy Asymptotic Approach to Self-Excited Vibrations

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Iolanda Gabriela CRAIFALEANU

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Chairman: Nicolae Doru STĂNESCU, Nicolae HERIŞANU

N.D. STĂNESCU, D. POPA

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N.D. STĂNESCU, D. POPA

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Layout of buildings at Mechanical Engineering Faculty

