ACOUSTICS, APPLIED MECHANICS AND CAD RESEARCH LABORATORY

Contact details

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Acronym	**AMAC**
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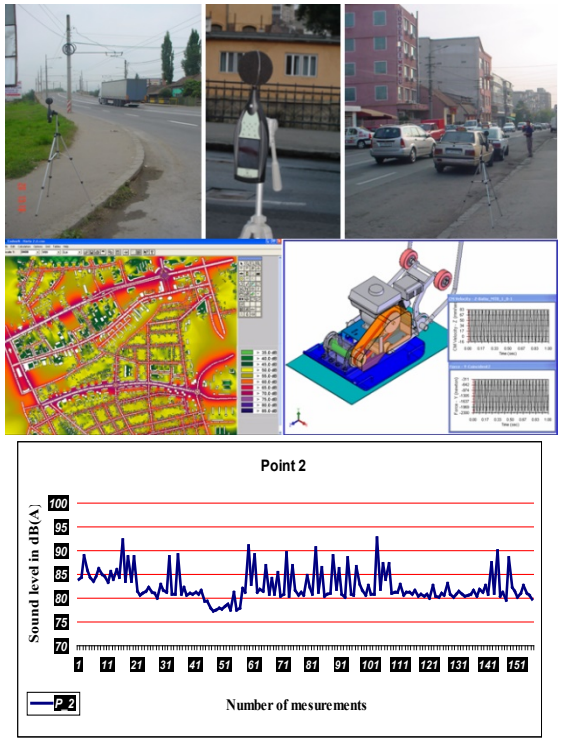

Areas of expertise

Acoustics
- Physical acoustics, Industrial/Environmental noise and vibration control, Urban acoustics, Bioacoustics

Applied mechanics
- Mechanical vibrations, Machine dynamics, Analytical mechanics, Computational mechanics, Biomechanics

Computer Aided Design
- Surface and solid modeling, Parametric modeling, Theoretical foundation of CAD, Mechanical drafting, CAE

Team

Prof.Dr.Eng. Diana Ioana Popescu, Prof.Dr.Ing.Math. Nicolae Ursu-Fischer, Şl. Dr. Ing. Lucia Margareta Ghiolțean, Conf.Dr.Eng. Radu-Mircea Morariu-Gligor, Assist.Dr.Ing. Luminiţa Pleşa, Şl.Dr.Ing. Iuliana Fabiola Moholea, Drd.Ing. Viorel Aşchilean

Representative projects

"Modelling, simulation and precision in the study of mechanical systems vibrations, with applications for crankshafts of internal combustion engines and piston compressors", CNCSIS A41-1049, (2004-2005)
"Modelling, algorithms and precision in the study of mechanical systems vibrations", CNCSIS A-1259, Ministry of Education and Research, (2006)
"Development of engineering models and methods for assessment and prediction of the environmental noise", PNII-Idei, (2007-2010)
"Fundamental and applied research on the modernization of the vibrating plate compactors - design and execution", Managerial Agency for Scientific Research, Innovation and Technological Transfer, RELANSIN, (2001-2003)
"Research and studies on perception, assessment, control and prediction of industrial noise", CNCSIS, A33, Ministry of Education and Research, (2004-2005)

Significant results

The most representative publications of the past years:
- Popescu, D.I., *A study of the Romanian framework and the challenges in implementing the noise mapping legislation*, Archives of Acoustics ,Vol. 48, No. 2, pp. 273–280, 2023.
- Morariu-Gligor, R.M. The Study of the Dynamic Behavior for a Tamping Rammer, *Symmetry*, 2022, 14, 980.
- Plesa, L., Manea, L.D., Istoan, R., Recycling plastic wastes in order to obtain new building materials, *Journal, IOP Conference Series: Materials Science and Engineering*, Vol. 1251, Issue 1, Pages 012013, IOP Publishing, 2022.

- Moholea, Iuliana F., Determination and analysis of the coefficient of restitution in the case of some mechanical systems, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol.65, Issue IV, p.471-476, 2022.
- Ursu-Fischer, N., Popescu, D.I., Moholea, I.F., The accurate computing of clothoid coordinate values and of the distance between a point and a clothoid, *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 64, Issue 2, pag. 207-218, Jun. 2021.
- Ursu-Fischer, N., Popescu, D.I., A Geometric Method for Optimize the Ackermann-Type Steering Mechanism, *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering,* vol.64, Issue II, pag. 219-226, June 2021
- Popescu, D.I., Case Study of the Environmnetal Noise and its Perception in the City of Cluj-Napoca, Romania, *Archives of Acoustics*, Vol.45 No.4, pag. 625-631, 2020
- Popescu, D.I.,Popescu, A.D., Analysis of the Subjective Perception of Noise in Cluj-Napoca, Romania, *ICSV26 – The 26th International Congress on Noise and Vibration, Montreal, Canada*, 7-11 July 2019, Proceedings, Montreal bridges 2019, Edited by: ICSV26 Local Committe in Montreal, ISSN 2329-3675, ISBN 978-1-9991810-0-0, Published by: Canadian Acoustical Association, Copyright © International Institute of Acoustics and Vibration (IIAV), 2019, Paper no. 541, 6 pag.
- Popescu, D.I., "Environmental Noise in Urban Areas, between Acceptance and Taking Measures", *18th International Conference Noise Control , 26-29 May 2019*, Janow Podlaski, Poland, Conference Proceedings on CD, Central Institute of labour Protection – CiopPib, Polish Academy of Science, ISBN 978-83-7373-273-5, 10 pag.
- Crişan, A., Morariu-Gligor, R., A Study on the Impact Force in Case of Tamping Rammers, *Romanian Journal of Acoustics and Vibration*, Vol. 16 / I, 2019, pag. 78 – 83, 2019;
- Ursu-Fischer, N., Popescu, D.I., Radu, I., Moholea, I.F., "Multiple solutions of interpolation with second and third degree Bézier polynomials", *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering,* Vol. 61, Issue 2, pag. 159-166, Jun 2018.
- Ursu-Fischer, N., Popescu, D.I., Radu, I., "Spline interpolation with third-degree Bézier functions", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 61, Issue 2, pag. 167-174, Jun. 2018.
- Popescu, D.I., Ursu-Fischer, N., Moholea, I.F., "Road Traffic Noise in Cluj-Napoca City – Ten Years after the First Strategic Noise Map", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60, Issue 4, pag. 515-520, Nov. 2017.
- Morariu-Gligor, R.M.,Crisan, A.V., Serdean, F.M., "Optimal Design of an One-way Plat Compactor", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60 , Issue 4, pag. 557-564, Nov 2017.
- Popescu, D.I., "Study of Particle Motion on a Helical Vibrating Surface", *Trans Tech Publication: Current Solutions in Mechanical Engineering, Applied Mechanics and Materials*, vol. 823, pag. 13-16, Jan. 2016, DOI 10.4028/www.scientific.net/Amm.823.

Books:

- Ursu-Fischer, N., Popescu, D.I., "Elemente de statică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2024, 714 p.
- Morariu-Gligor, R.M., Șerdean, Florina M., Moholea, Iuliana F., Computer programming in C language with applications in mechanical engineering, vol. I, Editura Tehnica-Info, Chișinău, 2023, 223 p.
- Ursu-Fischer, N., "Elemente de cinematică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2021, 746 p.
- Șerdean, F.M., Moholea, I.F., Morariu-Gligor, R.M., Programare în limbajul Matlab cu aplicații în inginerie mecanică, vol. I, Ed. UTPRESS, Cluj-Napoca, 2021, 247 p.
- Morariu-Gligor, R.M., Moholea, I.F., Șerdean, F.M., Programare în limbajul C cu aplicații în inginerie mecanică, vol. I, Ed. UTPRESS, Cluj-Napoca, 2021, 225 p.
- Ursu-Fischer, N., Ursu M., "Metode numerice în tehnică", Ed.Casa Cărţii de Ştiinţă, Cluj-Napoca, 2019.
- Ursu-Fischer, N., "Elemente de mecanică analitică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2015.

Significant solutions:

Development of specific methods for assessment and prediction of urban noise
Assessment of environmental and industrial noise impact on human
Solutions to improve the urban acoustic environment and reduce the exposure to noise
Development of models, simulations and dynamical studies of vibrating machines: vibrating compactors, elevators, feeders and mills.
Theoretical and practical solutions on the field of mechanics (statics, kinematics, dynamics).

The offer addressed to the economic environment

Research and development	The research team is interested in new ideas for cooperation in the field of acoustics and vibrations, for completing projects aiming the assessment, prediction and reduction of pollution.
Consulting	Consulting in the fields of: Acoustics, Noise mapping Vibrations, Machine dynamics, Vibro-acoustic diagnostics Computer aided design and engineering graphics.
Applied engineering services	Assessment of noise and vibration Computer aided drafting, design and engineering 3D modelling

Last update on February 2024