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Latest Advances in Acoustics & Music

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**Proceedings of the 13th WSEAS International Conference on
Acoustics & Music: Theory & Applications (AMTA '12)**

"G. Enescu" University, Iasi, Romania, June 13-15, 2012

**Hosted & Supported by:
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Mathematics and Computers in Science and Engineering Series | 2

Published by WSEAS Press

www.wseas.org

ISSN: 2227-4588

ISBN: 978-1-61804-096-1

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www.wseas.org

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All papers of the present volume were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.
See also: <http://www.worldses.org/review/index.html>

ISSN: 2227-4588

ISBN: 978-1-61804-096-1



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Preface

This year the 13th WSEAS International Conference on Acoustics & Music: Theory & Applications (AMTA '12) was held at "G. Enescu" University, Iasi, Romania, June 13-15, 2012. The conference provided a platform to discuss mathematical models in acoustics, architectural acoustics, space acoustics, electronics for sound art and technology, ambiophonics, mathematical models in music, computers in music composition, biological effects of music etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conference such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Integrated Methods for Road Traffic Noise Pollution



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Abstract: Road vehicular traffic is one of the most important noise sources in urban environment, together with railways and industries. The annoyance produced by exposure to road traffic noise has been deeply investigated in scientific literature, resulting to affect mental and physical health in terms of sleep and/or conversation disturbance, hearing loss, cardiovascular problems, anxiety and stress, etc.. Thus, the need for modelling of acoustical noise produced by road vehicular traffic is a significant issue nowadays. Usually Traffic Noise predictive Models (TNMs) are adopted to monitor the equivalent noise level at the receivers and to define risk classes for each area, according to the purpose of the activities therein. If possible, experimental measurements are performed, in order to tune models parameters and to verify noise predictions. These models are generally based on a statistical approach and give an evaluation of the equivalent noise level in a certain point, with a given flow of vehicles. The shortcomings of these models are highlighted and discussed on a review process and experimental data comparison basis. Different theoretical approaches can be adopted in the modelling of the source and in the description of the propagation, resulting in interesting elements to be considered in the model build up. Experimental measurement campaigns are presented and results are used to check the theories and to plot interesting parameters. An additional comparison with predictive software is performed.

Brief Biography of the Speaker: Dr. Claudio Guarnaccia is post-doc researcher in the Physics Department "E.R. Caianiello", University of Salerno. He graduated in 2004 and he took the PhD in 2008 in Nuclear Physics, at the University of Salerno, after a period spent at CERN (European Organization for Nuclear Research), in Geneva (Switzerland). Since 2005 he had teaching assistance activities at the Engineering Faculty of University of Salerno. He is assistant in all the Physics courses and he has been advisor in several thesis.

He has a scientific association with the Italian Association of Acoustics (AIA), with the International Commission for the Occupational Health (ICOH), with the World Scientific and Engineering Academy and Society (WSEAS), and with the National Institute for Nuclear Physics (INFN), in the Salerno's group. He is "main researcher" in the "modelling and simulation" research group of WSEAS. He has been elected member of several conferences scientific committees.

His research interests are focused on the application of the modern Physics methods to engineering, environmental and bio-mathematical problems, in the "Applied Physics" research group headed by Prof. Joseph Quartieri.

He is author of more than sixty papers in international journals and conference proceedings.

Plenary Lecture 2

Advanced Integrative Strategy of Analyzing the Sound and Vibration Effects on Human Bio-Behavior and Handling



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Abstract: Human bio-behavior in technical and social activities is very often affected by several external factors developed within the classical system, man-machine-environment.

Some of the human activities, using tools or machinery can induce a cumulative series of events in the upper or lower limbs and can change the rate of alertness and precision.

There is a wide range of methods, tools or methodologies to study of these qualitative values of human activities and this paper comes to integrate a new integrative analyze strategy.

Thus, in this research were taken into account aspects of the effect sounds and vibrations (controlled) degree on handling and postural stability in order to be integrated into the strategy of correlation with other structural factors.

In this respect, a series of tests were conducted on a sample of human subjects who were investigated and determined the bio-behavior degree (BBD) related to the structural factors.

The results of these tests come to confirm the assumptions of these correlative studies at which we were applied theory of analyze of variance (ANOVA) and allow the development of advanced integrative strategy for achieving rapid and highlight sounds and vibration effects on human bio-behavior.

Brief Biography of the Speaker: Dr. Mihaela Ioana Baritz is professor in the Product Design, Mechatronic and Environment Department, at University Transilvania from Brasov Romania. She activates in this university over 30 years and she took the PhD diploma in precision mechanics field. Since 1997 she had teaching activities especially in optometry area, image processing and biomechanical investigations. She is scientific coordinator of optometry in teaching activities with students and she is biomedical engineering researches coordinator in Advanced Mechatronic Systems Center from Research Institute of University Transilvania. Also she has been advisor in several license projects and doctoral thesis.

She is member in different national and international scientific associations - IAENG, EOS, AEOO, ECOO, Patronatul OPTICA, SIROMECA, AGIR, HFES etc. She has been elected member of several conferences scientific committees. Her research interests are focused on the application of the modern methods for investigations in optometry, image processing and biomedical engineering.

She is author of more than 100 papers in international conference proceedings and journals.