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Prof. Jun Yang
Institute of Acoustics, Chinese Academy of Sciences, China

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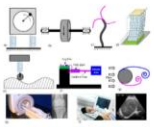
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Volume Arrangement

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Open Access Article Article ID: 4406 PDF

The Effect of music genre on work productivity in repetitive tasks: An experimental study for sound and vibration applications

by Heri Setiawan, Pawenary, Micheline Rinamurti, Sani Susanto

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4406

The physical work environment significantly influences worker performance, with workplace acoustics playing an important role in cognitive functioning and productivity. This study investigated the effect of music genre as an engineered acoustic intervention on productivity during repetitive industrial tasks. Unlike previous studies emphasizing psychological outcomes, this research integrates occupational acoustics, industrial ergonomics, and productivity engineering to evaluate music as...

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Influence of parameter changes on honeycomb structure debonding detection based on band gap method

by Ye Yuan, Bin Liu, Chengyou Lei, Zhiguo Zhang

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv2029

Honeycomb structures have been widely used in many industrial fields due to their excellent properties. However, it is always challenging to rapidly and accurately detect defects such as debonding in the structure, especially in the in-service situation. In response to this, we have proposed an acoustic testing method without coupling agents based on the acoustic band gap feature in the structure. However, the influence of test parameters such as signal excitation and reception on t...

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A practical approach for improving the robustness of MVDR beamformers

by Nguyen Thi Huyen Chau, Quan Trong The, Pham Van Ha

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4413

Microphone array (MA) owns the convenience of alleviating the background noise field, interference, and third-party speakers while preserving the original speech component with a high directivity index perspective. MA beamforming utilizes prior spatial information about the direction of arrival of useful signals, the characteristics of the surrounding noise field, the designed geometry of MA, and the obtained parameters after processing received array signals to achieve the advantag...

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Meta-lens for acoustic concentration and enhanced sensing via transformation acoustics

by Botao Yang, Li Cai, KunSheng Xing, Shixin Yu, Huajie Hong

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4458

Detecting weak acoustic signals requires broadband energy concentration, but the acoustic power coupled into a device can be strongly curtailed by impedance mismatch at the inlet. Here, we develop a transformation-acoustics-based acoustic meta-lens in which a rectangular virtual domain is mapped to a trapezoidal physical domain, directing incident energy toward a narrow output aperture. In contrast to an air-filled trapezoidal horn with the same outer envelope, the meta-lens reshap...

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Acoustic characterization and modeling of padel courts in urban residential environments

by Aracelly Núñez-Naranjo, Jose Gabriel Vasquez, Paulina Ayala, Marcelo V. Garcia

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4407

Padel courts are now common in many residential and mixed-use projects, but the published measurement base for their outdoor noise impact is still small. Recent work has flagged siting conflicts and padel-related acoustic concerns, yet few studies place padel and tennis side by side under the same site conditions. This paper addresses that gap through field measurements and acoustic modeling at one mixed-use development in Abu Dhabi, United Arab Emirates. A padel court a...

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Weak fault feature extraction and system fault analysis under strong noise

by Tiejun Cui, Zijian Cui, Shasha Li

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4224

To tackle the intractable problems including weak fault feature extraction and evolution uncertainty quantification for complex systems in strong noise environments, a novel method for weak fault diagnosis and evolution analysis is proposed. This method integrates the fuzzy structured element (FSE), cloud model (CM), and Space Fault Network (SFN). The method centers on adaptive wavelet denoising, fault feature cloudification, and SFN probability propagation. The fault signal und...
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(This article belongs to the Special Issue Vibration and System Fault Analysis)

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Audio signal approximation and fuzzy logic-based acoustic noise-risk assessment using Fourier–Dirichlet analysis and hyperbolic series representations

by Yogeesh Nijalingappa, Asokan Vasudevan, Soon Eu Hui, Zetty Pakir Mastan, Choo Wou Onn, Mohammed Almakki

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4180

This paper presents an acoustics-oriented study that combines classical Fourier–Dirichlet signal approximation with a fuzzy logic-based noise-risk interpretation layer. The harmonic-analysis part revisits Fourier series for periodic and quasi-periodic audio waveforms under classical Dirichlet conditions and restates these conditions in a form that is practically checkable on sampled audio segments; no new convergence theorem is claimed. A complementary hyperbolic-series representation...
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Thermoacoustic loss-of-chaos in large diesel engines: Case study on long-timescale events

by Alice Elizabeth González, Pablo Gianoli-Kovar, Héctor Campello-Vicente

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4463

This work aims to analyze the occurrence of anomalous acoustic emissions that appeared after the modification of the combustion chambers of eight reconverted four-stroke diesel engines (10 MW each, urban installation). Large variability of the sound pressure levels emitted by the same engine under nominally identical operating conditions was recorded. The phenomenon was interpreted at first as thermoacoustic instability developing inside the combustion chambers, support...
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Broadband vibration suppression of a nonlinear beam using a fractional-order inerter-assisted tuned mass damper

by Yogeesh Nijalingappa, Suleiman Ibrahim Mohammad, Tarun Madan Kanade, Asokan Vasudevan, P. William, Mohammad Faleh Ahmmad Hunitie

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4497

This study presents an analytical method for reducing broadband vibration in a simply supported nonlinear beam fitted with an inerter-assisted tuned mass damper. The first bending mode is obtained by Galerkin projection, geometric nonlinearity is represented by a cubic stiffness term, and beam damping is described by a fractional-order derivative. A single-harmonic balance formulation converts the coupled equations into an amplitude-dependent cubic equation that is solved directly ov...
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Study on the vibration transmission speed and damping characteristics of piano soundboard

by Jinyi Chen, Guanzheng Wan, Lan He, Jing Zhou, Haotian Cui, Zhenbo Liu

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4326

The piano soundboard converts string vibrations into radiated sound, affecting tonal quality. However, the propagation and energy dissipation of vibration waves along different grain directions remain insufficiently studied. To study vibration wave propagation and dissipation in piano soundboards of different composite processes, four quarter-size soundboards (moisture content 7%–9%) were selected: one tone-wood soundboard (T) and three laminated boards (L90 with vertical cor...
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LBM-IBM simulation of aeolian vibration of a stranded overhead conductor with resolved cross-sectional geometry

by Xiaoyu Luo, Yunfeng Zou, Ming Nie, Ganyu Wang, Yongchun Liang, Zejia Yang

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4449

The outer surface of overhead transmission conductors is formed by wound aluminium strands, exhibiting a corrugated geometric profile. However, aerodynamic analyses typically simplify this geometry to a smooth cylinder. How this simplification influences the fluid-structure coupled vortex-induced vibration response remains unclear. This paper addresses this research gap through comparative numerical simulations between a geometrically refined strand...
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Closed-form topological and spectral invariants for periodic ladder-based vibration networks

by Suleiman Ibrahim Mohammad, Yogeesh Nijalingappa, Asokan Vasudevan, P. William, Jonathan Lee, Tarun Madan Kanade , Mohammad Faleh Ahmmad Hunitie

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4498

This paper investigates two closely related network families, the open ladder graph and the cylindrical ladder graph, as exact test beds for degree-based, eccentricity-based, distance-based, and spectral descriptors. The two graphs can be seen as graph-theoretic two-rail models with and without periodic closure, allowing an exact comparison boundary effects versus cyclic-closure-effect. We obtain closed expressions for the Sombor index, reduced Sombor index, Sombor coindex, reduc...
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Condition-based maintenance threshold determination for gearbox fault progression using vibration envelope features and ac

by Asokan Vasudevan, Suleiman Mohammad, Mohammad Ahmmad Hunitie, Gui Jie, Jonathan Lee, Mbiatke Andrew

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4490

Gearbox failures represent a critical problem faced by industrial machines, considering the impacts of such failures on machine reliability, efficiency, and maintenance cost. Despite the well-established use of vibration-based condition monitoring techniques for diagnosing the presence of faults, few attempts have been made in transforming information about fault progression into thresholds that could be used in making condition-based maintenance (CBM) decisions. In t...
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Simulation and algorithmic implementation of ultrasonic phased-array imaging for curved lead-seal surfaces

by Jian Cheng, Liguang Hu, Fengyin Zhang, Quan Zhang, Lianbing Wang

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4152

In ultrasonic phased-array sector scanning of lead-seal defects in high-voltage cable terminations, incomplete contact between the probe and the curved lead-seal surface may cause acoustic-beam spreading, focal shift, weak defect echoes, image distortion, and near-surface artefacts. To address these problems, this study proposes a curvature-adaptive ultrasonic phased-array imaging method for curved lead-seal surfaces. First, an acoustic-field simulation model of the curved lead-se...
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Study of the dynamic vertical interaction of multi-axle rolling stock with railway track

by Asel Abdullayeva, Aidos Toktamyssov, Gabit Bakyt, Muslim Aikumbekov, Amandyk Yelshibekov, Ayaulym Abylkhanova

Sound & Vibration, Vol.60, No.5, 2026;
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The continuous growth in the demand for increased capacity of the existing railway network of the Republic of Kazakhstan, particularly in regions bordering the Russian Federation and China, makes the issue of improving the operational safety of heavy-haul freight trains with increased mass and length especially relevant. The introduction of heavy trains represents a complex engineering and operational task that involves the use of more powerful locomotives, increased axle loa...
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Dynamic characteristics of a series-parallel-II inertial nonlinear energy sink for vibration control

by Ziying Wu, Rongxian Zhu, Yuanzhi Wang, Xi Guo, Jiyu Yan, Zizheng Wang

Sound & Vibration, Vol.60, No.5, 2026;
DOI: https://doi.org/10.59400/sv4418

This paper proposes a novel series-parallel-II inertial nonlinear energy sink (SPII-I-NES) integrated with Coulomb friction. The governing equations of motion are formulated for the primary system coupled with the SPII-I-NES under both harmonic excitation and Gaussian white noise. By combining the harmonic balance method with the arc-length continuation method (ALM), quasi-analytical amplitude response solutions are derived for the primary structure and the SPII-I-NES und...
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Nonlinear global dynamic characteristics and experimental validation of a cylindrical shell

by Haotian Song, Shufeng Lu

Sound & Vibration, Vol.60, No.5, 2026;
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Based on first-order shear deformation theory and the Rayleigh-Ritz method, this paper establishes the dynamic model for a cylindrical shell with various boundary conditions (fixed, simply supported, free or elastically supported etc.) by means of Chebyshev polynomials and the artificial boundary spring method. To validate the proposed approach, a comparative study is first conducted with existing literature, finite element simulations, and experimental modal tests. The results demonstra...
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Modeling and simulation of hybrid electric propulsion systems for amphibious vehicle

by Van-Tong Em Nguyen, Van-Trang Nguyen, Tat-Hien Le, Cao-Thanh Nhi Ninh, Thai-Nguyen Vo

Sound & Vibration, Vol.60, No.5, 2026;
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Amphibious vehicles operate across land and water, requiring stable environmental transitions. Although series hybrid electric propulsion systems (Series HEPS) offer flexible power distribution for these dual-environment demands, existing studies often limit dynamic analysis to individual environments. The transition phase, where buoyancy, hydrodynamic drag, and wheel loads vary simultaneously, lacks a unified mathematical framework. This study develops an integrat...
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Cooperative design of broadband vibration energy recovery and thermal management for structural-exhaust systems in intelligent connected vehicles: A review

by Chao Wang

Sound & Vibration, Vol.60, No.5, 2026;
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The rapid advancement of intelligent connected vehicles (ICVs) has placed new demands on distributed electronic systems and increased the number of on-board functions that involve sensing, communication, and control. Unlike conventional vehicles, ICVs have significantly higher energy demand, and real-time sensing, communication, and control capabilities are much more feasible and are key to enabling cooperative vibration-thermal design. Structural-exhaust systems are subject...
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