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Method and Procedure for Soundproofing the Cabins of Mobile Machinery

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The problem of noise reduction in case of mobile machinery cabins is based on the use of materials and structures having proper parameters determined by means of calculus and experiments as well. Thus, the paper presents solutions for noise reduction inside the cabins of construction machinery and front loaders framed within the limits of C_z 85 curve.

Some Considerations on Elastic Waves Propagating in Anisotropic Solids

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The analysis of wave propagation in anisotropic solids is presented with more or less details in classical textbooks, from fundamental equations to specific conclusions. In the present study are deduced with all the mathematical details, the directions of propagation of pure longitudinal and pure transverse waves in an elastic solid of cubic symmetry. The elastic tensors are obtained in a rigorous manner and mathematical conditions are imposed for the existence of the fundamental longitudinal and the transverse waves. The obtained formulas are useful for inverse problems such as material elastic constants determination. It is thus obvious that the fundamental waves remain pure only along several directions of propagation, in the sense that it no energy transfer takes place among these types of waves. A practical example is given.

The Decrease of Noise with Acoustics Barriers

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In this paper is presented the effect of one barrier of length infinite, situated along the speedway, having effect of acoustics protection over a populated area situated behind it. The barrier doesn't cover up an area of acoustic shadow, due to sound diffraction over the superior edge. It's made a parallel between two choice variants of acoustics barriers using the sound damping calculation, from behind of barrier.

Noise at work. General problems. The impact on the workers. European legislation

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Every day, millions of employees in Romania and in Europe are exposed to noise at work and all the risks this can entail. Regarding the workshop ergonomics, the noise is most obviously a problem in industries such as manufacturing, mining and construction but it can also be an issue in a wide range of other working environments like energy, transports, call centers, schools, orchestra pits, bars and restaurants, entertainment. At the same time, the noise pollution is an element with a very important influence on the human life: in residential areas, schools, public institutions, hospitals, entertainment areas). About the impact of the noise at work, one in five of Europe's workers has to raise their voices to be heard for at least half of the time that they are at work and 7% suffer from work-related hearing difficulties. The most well-known effect of noise at work is loss of hearing, a problem observed among handworkers from beginning of 18-th century. Noise-induced hearing loss is the most common reported occupational disease in the European Union. However, it can also ex-acerbate stress and increase the risk of accidents. Exposure to noise at work can harm workers' health. This article describes the effects of workplace noise and outlines the key issues surrounding noise at work, including the risks, legal responsibilities and solutions.

About of the Non-Harmonic Periodical Signal Spectrum

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The spectral function of the non-harmonic and periodically signal can be determined virtually on two ways: direct from the signal equation with the Fourier's transformation or from his harmonic components determined with the Fourier's series. If the both forms - the pure signal equation and its Fourier's series components - describe correctly and completely the same signal on two different analytical ways, the spectrum in both cases must be the same. The work presents a comparative analysis of the spectrum in the both cases and an idea of Louis de Broglie.

On the advanced vibration damping of nanoropes subjected to twisting

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The focus in this paper is directed toward the discussing the damping across the length scales (the nanoscopic scale 10^{-10} - 10^{-9} m, mesoscopic scale 10^{-8} - 10^{-6} m, and macroscopic scale $>10^{-5}$ m), for the twist vibrations of a nanorope made from a polymeric matrix reinforced with single wall carbon nanotubes. The results demonstrate a 200% increase in the structural damping and 30% increase in stiffness.

Reduction Of Vibration Transmitted To The Operator By Means Of Cabin Passive Insulation

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This paper presents the calculus model for the four points elastic supported cabin having mass and geometrical symmetry related to a symmetry longitudinal plan. The vibration insulation level can be improved by reducing, at permissible values, the eigen frequencies in the three dynamic freedom degrees thus providing a better comfort for the operator inside the cabin.

On a Two Degrees of Freedom Non-Linear Neo-Hookean Oscillator

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In our paper we describe a two degrees of freedom non-linear neo-Hookean oscillator. For this system we obtain the equations of motion and the equilibrium points. We also discuss the stability of these equilibria.

On Fuzzy Logic Techniques for Vibration Isolation Active Systems

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The methods used at present for vibration isolation provided from different sources - technological, human, random activities - leaves from the basic hypothesis of the isolator working parameters perfect determination. Comparing with the human practice, when the protective actions have done according to the self-senses and the subjective and potential imminence of high admissible limit passing through, the fixed and determined algorithms for vibration isolation drivers seems to be more complicated at the same performances level. Hereby, the fuzzy logic theory and its algorithms could be solve this apparent problem. And this is possible by using of fuzzy logic basic controller on active vibration isolation driver. The initial rules for fuzzy controller could be obtained from the human operator experiences or from initial tests with manual controller of isolation driver. Then it could be possible to develop a neuronal network which assure the necessary adjustments. Or, based on the working observations, it could be tuning the fuzzy controller manually. As a final remark, it could be said that the most difficult on a fuzzy logic utilization is the initial settlement of the fuzzification rules. In this paper it is briefly described a basic way to fuzzy logic unit utilization on vibration isolation device driver development.

Forced Vibrations of the Rigid Hanged by Cinematic Elastic Chains. Determination of the Displacements in the Cinematic Joints

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We consider the rigid hanged by cinematic chains formed by linear elastic bars. A cinematic chain is characterized by the rigidity matrices of the bars and by the screws attached to the cinematic joints. From the conditions: a) the displacement of the rigid is given by the sum of the relative displacements at the ends of the bars at which we add the displacements in the cinematic joints, b) the force at the end of one bar is equaled with the rigidity matrix multiplied by the relative displacement at the ends of the bar, c) the screw which define the cinematic links are reciprocal to the displacement screws, one determines the rigidity matrix of the cinematic chains and then by summing he or she determines the rigidity matrix of the ensemble. Solving the differential equation of the vibrations, we determine the displacement six-dimensional of the rigid and then we determine the displacements in the cinematic joints. The effective working way is drawn in a numerical application.

Development clean technologies for industrial equipment

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These paper present dynamical behavior of the technological equipment foundation, which work in the production process with shock and vibration. In this way, will be identify the machine foundation dynamical response, in different case of duration and type of force loading.

The Phonic Isolation of the S1201 Excavator Cabin

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This work presents a study of the S1201 excavator cabin phonic isolation. There are two situations when it comes to the noise generated by construction equipment operating on the construction sites; the noise from the machine to the environment, on one hand, and the one received by the cabin and the operator, on the other hand. Therefore, operators are exposed not only to their own activity noise but also to environmental and other background construction equipment noise.