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EDITORIAL

ARTICLES

Considerations about the Noise and Vibration Generated by Internal Combustion Engines

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A high level of noise characterizes internal combustion engines. This problem primarily affects the environment. In this work, the most important sources of noise for internal combustion engines and their characteristics are presented. Based on experimental measurements, performed in testing laboratory conditions, the variation of noise levels in terms of the parameters that characterize the working of the engine was studied.

Dynamic Behavior Of Helical Gear-Pair Systems Non-Linear Parametrically Excited

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The increased interest for improved gear design has led to extensive research into the field of non-linear dynamics of such systems. The paper reveals a complex dynamic model to study the behavior in a gear-pair system taking into consideration backlash and time-dependent mesh stiffness and mesh damping. In many applications including turbo machinery, machine tools and diesel engines non-linearity's are present due to tooth stiffness, damping and backlash that induced micro-vibrations of non-linear parametric type. In the mean time the input link of the driver ax and the output link of the driven ax induce non-linearity's. The paper presents the use of asymptotic method in order to compute the amplitude, the phase angle of steady state motion. In the mean time were determined the frontiers of instability. By this way the paper reveals the phenomena's characteristics of multiple jumps specific to the non-linear dynamic behavior of gear-pair due to: non-linearity's of the input-output linkages, backlash and self-induced parametric excitations, caused by the tooth stiffness and damping. It was highlighted the interaction between fundamental resonance and the principal parametric resonance.

About the "Pressure Resonance" Phenomenon in the Hydraulic Driving Systems with Rotative Motor

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In this paper it is present an possible case of dynamic instability of the hydraulic driving systems with rotative motor, that is similar with the resonance from the mechanical systems with harmonical excitation. The source of the excitation for the hydro-mechanical system is the own volumic pump. It was putting into the evidence the dynamic characteristics of the systems, and it was defined the "pressure resonance" of the system, that are characterized by the instant growing up of the pressure, when the angular velocity at the pump axis come to the eigen value of the system. Althrough, it was evaluated the conditions for appearing of the magnitude and phase resonances, for the driving pressure.

About of the Differentiation Between the Theory and Practically in the Use of the Fourier's Transformations

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The work presents the uses of the Fourier's transformation on analyse of the signals. Because a real signal has a finite length in time, mostly a very short length, on a few periods, this analyse can give results that apparently not correspond with the reality. The authors present and explain this behaviour.

About of the Hysteresis-Loop of the Oscillators

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The work presents the representation of the Hysteresis-loop as curve of the friction and elastic forces dependant from displacement and as curve of the excitation dependant from displacement. The axis of the loops can described elastic and friction properties .

The Manifold Degeneracy in a Square Shaped Membrane Vibration

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In this work I have presented the degeneracy phenomenon in connection with a square shaped membrane vibration. A figurative representation of the degeneracy level is given in order to support the mathematical model. The mathematical topology (knot, links and braid theory) could become every fruitful instrument in the study of our problem A brief description of how topology, bifurcation theory and degeneracy are connected is presented in the last part of the paper as an announcement of my future work.