Geophysical Research Abstracts,
Vol. 12, EGU2010-16, 2010
EGU General Assembly 2010

About Correction by the Dimention of Dinamic Coefficient in Transiet Oscillations

Galyna Sokol and Elizaveta Gorbenko

Dnepropetrovsk National University, Physic and Technic facultet, kafedra of technical mechanic, Dnepropetrovsk, Ukraine (gsokol@ukr.net, +38(0562)3749841)

About the Correction by the Dimension of Dynamic Coefficient in Transient Oscillations

Galyna I. Sokol, Elizaveta V. Gorbenko

The methodic for describe transient oscillations of Professor I.K. Kosko was carried out. He was an outstanding Ukrainian scientist, doctor of technical sciences. I.K. Kosko developed methodology for determining vibrations at the time of unsteady motion of mechanisms such as aircrafts, machine tools, etc. This paper is devoted to the investigations of dynamic processes at airplane landing.
According to I.K. Kosko methods any system can be represented in the form of n masses, linked by elastic connections, which are employed for design scheme development. N masses form in a system described of n-1 equations. These equations determine the relationship at force moments of elasticity and reduced moment of external forces. The procedure design scheme development is elaborated to be simpler and easier in comparison to the previous ones due to recurrent form of the frequency equations. This procedure includes the work with determinants for a definite system of differential equations. When the determinants are found the characteristic equation is formulated. This allows determination of equation for vibration frequencies of the system.
The inhomogeneous equation is solved by the amount of static component plus dynamic additive. In first time the vibration motion with static component may be determined by amplitude of oscillations during the steady motion. In second time the assessment of the dynamic impact of external disturbing moments may be carried out. The maximum value of moments at the dynamic processes and the amplitude value of this component at steady motion are determined. The dynamic coefficient is introduced into the methodology for determining vibrations of unsteady motion and find out. The time when transformation processes occur mechanism is working.
By selecting the appropriate modes of changes of disturbing forces moments dynamic component may be reduced to static. Similar studies of dynamic processes in mechanisms links make it possible to assign stress correctly, choose the most suitable places for safety devices, as well as to establish the gaps in moving joints correct.