



## **DEVELOPMENT of OSCILLATIONS THEORY by PROFESSORS of S.N. KOZHEVNIKOV And I.K. KOSKO.**

Elizaveta Gorbenko and Galyna Sokol

Dnepropetrovsk National University named after Oles' Gonchar, Dnipro, Ukraine (lizaveta.tv@rambler.ru)

The theory of oscillations has taken the considerable interest of scientists because of both the modern machine's capacities and speeds increasing rapidly and the problems with their steady work and control. In certain cases, the oscillations may be extremely dangerous for various mechanisms and cause their improper work, rise their wear and noticeably decrease their dependability and therefore make an opportunity for breakages and accidents. At the beginning of 40th scientific Sergey Kozhevnikov was engaged in these questions, and from the beginning of 50th his student Igor Kosko was worked in this direction.

S.N. Kozhevnikov were developed by the method of research of dynamic loading, which is based on achievements of mathematics in area of decision of linear differential equalizations with permanent coefficients. Linear dependence of loading was used on deformation, that within smalls corresponded properties of basic machine-building materials in the area of resiliency. S.N. Kozhevnikov developed an idea about influence on the dynamic systems with the up-diffused parameters of links of accelerations second and more high order.

I.K. Kosko investigated oscillations in mechanisms at transformation processes [1]. The work of any machine may be divided into three periods: the period of a start, the period of a steady work and the period of deceleration [2]. The transformation processes occur in machines during the periods of their acceleration and deceleration. A transformation process can be defined as the changes of dynamic system oscillation amplitude per a unit of time which occur when the dynamic system changes the mode of its work.

Mechanism's steady motion is a rather long period of time. On the contrary, transformation processes are short periods and last fractions of seconds, but stresses at these periods may be much greater than those at steady work. Therefore, it is important to calculate transformation processes and check the dependability of details each time when a new system is developed. Such calculations also help to find the maximum impact on people who work within the machines (miners, pilots and astronauts).

Birth, development and becoming of professor S.N. Kozhevnikov and professor I.K. Kosko is considered. Their contribution to the theory of transients does not cause a doubt.