Simulation of oscillations with the inertial perturbance

© V.V. Dubinin, V.V. Vitushkin

Bauman Moscow State Technical University, Moscow, 105005, Russia

The method of modeling of vibrations of various mechanical systems with inertial perturbance using worked out experimental setting is presented. The description of construction of this setting, theoretical bases of its work, techniques of carrying out researches of vibrations and creation of settlement and experimental amplitude-frequency (AFC) and phase- frequency (PFC) descriptions are provided. It is shown that, owing to similarity of the differential equations of movement of various real industrial facilities and this experimental setting, application of the last for process modeling of vibrations of the specified objects is possible. The similarity parameters, allowing to carry out such modeling are specified and to receive AFC and PFC of various industrial devices, and the example of creation of AFC of some system using the experiments made on this laboratory setting is given.

Keywords: *mechanical systems, inertia indignation, vibrations of the systems, frequency descriptions, laboratory setting, design of vibrations, parameters of similarity.*

Dubinin V.V. (b. 1937) graduated from Bauman Moscow Higher Technical School in 1961. Ph.D., Assoc. Professor of the Theoretical Mechanics Department named after Professor N.E. Zhukovsky at Bauman Moscow State Technical University. The author of over 250 papers in the field of applied and theoretical mechanics. e-mail: sovettm@bmstu.ru

Vitushkin V.V. (b 1942) graduated from Bauman Moscow Higher Technical School in 1968. Ph.D., Assoc. Professor of the Department of Theoretical Mechanics named after Professor N.E. Zhukovsky at Bauman Moscow State Technical University. Author of over 100 publications in the field of applied aerogasdynamics and theoretical mechanics. e-mail: vitushkin.fn-3.bmstu@yandex.ru