

Numerical Study of the Angular Vibrations of Rotating in a Vertical Plane System in the Field of Matlab/Simulink

Peter Pavlov¹ Svetlana Lilkova-Markova² Simona Doneva³

The paper presents a study of the dynamic behavior of the vibrating system in the vertical plane, by various capabilities of the software package Matlab/Simulink. The system consists of a vertical joint supported rod, concentrated masses and elastic-viscous horizontal sets, located along the height of the rod. A program for direct integration of the differential equation of vibrations of the system is composed in the field of Matlab. A simulation model for study of the same vibrations is drawn by the basic toolbox for symbolic modeling - Simulink. Based on the capabilities of the latest version of Matlab, an animated model of the vibrations is made too. Finally, a graphical user interface of the motion is created, by graphical environment Matlab/guide. The models allow to study the free vibrations for the given initial rotation of the rod and forced vibrations of kinematic interferences - most often with zero initial conditions. The survey is a stages of a wider study of the dynamics of the vibrations of a rotary body, including analytical, numerical - in the field of Matlab/Simulink, numerical based on FEM in the field of Ansys and finally - experimental study. The numerical study in the field of Matlab/Simulink, object of investigation in the report, serves to refining of the parameters of the designed stand for testing vertical angular vibrations of body. All of the surveys - analytical, numerical and experimental are related to development of part of the components of a new dynamic lab that will be opened in the fall in the oldest technical university in Bulgaria.

References:

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¹ University of Architecture, Civil Engineering and Geodesy (UACEG), Bulgaria, Sofia 1046, 1 Hr. Smirnenski Blvd, UACEG, dep. Technical Mechanics,
pdp_mech_fhe@uacg.bg

² University of Architecture, Civil Engineering and Geodesy (UACEG),
lilkova_fhe@uacg.bg

³ University of Architecture, Civil Engineering and Geodesy (UACEG),
simona_doneva@mail.bg