Stability and dynamic characteristics of the one-dimensional elements in the design of tools for materials cutting

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A one-dimensional model application to study stability and natural vibrations of tensioning cutting tools structural elements for determination of their permissible mode of use is considered. Such studies are also important for use of the method of harmonic influence factors, when examining the dynamics of complex construction and its model can be presented in the form of several interacting subsystems. The article provides an analysis of structural elements in a form of a flat curved bar, stiffness in its principal plane in many times higher than the stiffness of the second main plane. A problem is formulated for the calculation of frequencies and forms of such a model, with the consideration of preload power factors and its configuration, including the complete system of differential equations and the chosen boundary conditions.

Keywords: *stability, frequency, natural vibrations, curved bar, construction of saws and milling cutters*

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