# Analysis of the influence of geometric and material parameters of fixing edge layers on the modal properties of plate structures.

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The appropriate vibroacoustic properties, such as natural frequencies and mode shapes, are very important conditions for the required behaviour of mechanical structures. It is clear that these properties are dependent on the so-called spatial properties, which consist of mass, stiffness and damping properties of the given mechanical structure. In many cases, when the dynamic properties of these structures are unsatisfactory, it is necessary to vary the structural behaviour to solve noise and vibration problems. The technique by which it is possible to achieve the required dynamic properties consists mainly in changing the mass, stiffness and damping properties of the structure, is called structural dynamic modification. The plate structures can be considered as important building components of many technical equipment. These plate structures are very often exposed to periodically repeating dynamic loads and in the case of inappropriately designed parameters of plate structures, these loads lead to the resonant states. This state is inappropriate and the structural modifications of plate structures are necessary. One of the very effective methods of plate structural modification is the method edge fixing of plate and also change of fixation parameters at the edges of the plate structure. The modification of dynamical properties of plate structures using fixing edge layers is presented in this paper. Structural modification of the selected geometrical shapes of plate structures is based on the shapes and geometrical parameters of the layers. By changing the width, thickness and slope of the fixing edge layers is possible to achieve modification of modal properties (especially natural frequencies and mode shapes) of the given plate structures. The results obtained by computer simulations using the ANSYS program confirm that this method of structural modification provides a suitable tool for the so-called ”dynamic tuning” of plate structures.

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