THREE-DIMENSIONAL MODELING OF DEFORMATIONS OF AN ENGINEERING OBJECT WITH SPLINE INTERPOLATION METHOD

Tatiana Yu. Bugakova
Siberian State University of Geosystems and Technologies, 10, Plakhotnogo St., Novosibirsk, 630108, Russia, Ph. D., Associate Professor, Department of Applied Informatics and Information Systems, phone: (383)343-18-53, e-mail: kaf.pi@ssga.ru

An example of using the spline interpolation method for determining and three-dimensional visualization of the deformation of an engineering structure is given. Simulation of deformation of an engineering object is carried out according to the simulation data given of two times $t = 0$ and $t = 1$, and is represented by stages: approximation of the set of control marks with coordinates X_i, Y_i, H_i, installed in the wall of the engineering structure by spline surface; combination of spline surfaces built at different times; determination of the permissible limits of change in the position of the surface; determination and visualization of the intersection areas of the spline surface of an object with valid boundaries.

There obtained the results of three-dimensional visualization of the engineering object deformation, as well as digital models of spline surfaces, which makes it possible to calculate the increments of the height coordinates at any degree of discretization of the surface grid and determine the deformation area in digital form.

Key words: deformation, three-dimensional modeling, spline interpolation, approximation, visualization of surface deformation.

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