INFLUENCE OF THE CONFIGURATION OF FINAL ELEMENTS ON THE ACCURACY OF DETERMINATION OF THE COMPONENTS OF DEFORMATION

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One of the most fundamental issues in the study of modern horizontal movements of the earth's crust is the observance of the principles of invariance in the interpretation of the results of geodetic measurements. The most realistic patterns and structure of modern movements of the earth's crust should be free from the influence of the choice of coordinate system. This approach to the processing of geodetic measurements is fundamental in determining the components of the deformation that use the finite element method to approximate the study area. In the present work the analysis of the influence of the configuration and the area of the finite element on the accuracy of determining the deformation components on the example of the geodynamic polygon of the « Polotsk hydroelectric power station». The results of the simulation of standard errors of strain determination showed that with changes in the configuration and size of the network element, the accuracy of strain determination changes. The configuration of the network elements close to an equilateral triangle is optimal for the equality of mean square errors ($mx=my$) in each measurement cycle and tends to an elongated isosceles triangle with a deviation of the ratio (mx/my) from one.

Key words: deformation components, deformation tensor, simplex in two-dimensional space, configuration, area, finite element network, geodynamic polygon.

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