PSEUDONORMAL OPTIMIZATION METHOD AND GEODESIC EQUATION CALCULATIONS

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The purpose of this paper is a comparative analysis of the methods of least squares and pseudonormal optimization on the example of equalization and estimation of the accuracy of the first-class triangulation link. Pseudonormal optimization is radically different from the traditional method of least squares optimization, since it leads to complex and cumbersome procedures for equalizing and evaluating the accuracy of the results of processing geodesic constructions due to complex formulas. A recurrent method of sequential formation of a pseudoinverse matrix of parametric correction equations is presented, which allows avoiding the time-consuming computational process of composing and solving normal equations. A mathematical algorithm for estimating the accuracy of the equalized parameters is considered. The analysis of the equation works has shown that the pseudonormal optimization method allows calculating the values of the equalized coordinates 4 times more accurately than the least squares optimization.

Key words: first class triangulation link, basis side, degenerate matrix, correction equation, least squares method, pseudonormal optimization method, origin of the network coordinates, rank defect of the matrix, Euclidean norm.

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