METHODOLOGY FOR DETERMINING HELMERT'S CONSISTENT PARAMETERS FOR LOCAL TERRITORIES

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A method for determining the Helmert matching parameters for converting the coordinates of points from the common terrestrial to the reference coordinate system has developed. The technique is based on the maximum alignment of the surfaces of the common terrestrial and reference ellipsoids within a certain local territory and does not imply knowledge of the heights of the quasigeoid. The radius of the local area is limited by a given methodological error in the transformation of coordinates from general terrestrial system to Gauss-Kruger projection. For a methodical error of ±2–3 cm, the radius of the local area is about 200 km. Two options for determining the Helmert matching parameters for the fourth three-degree zone of the MSC of the Novosibirsk region are given: according to the reconstructed coordinates and heights of the SDGN, and according to the catalog coordinates and heights of the SGN points located in the same territory.

Keywords: technique, Helmert matching parameters, local territory, coordinate transformation, general terrestrial and reference coordinate system, convergence of ellipsoid surfaces, quasigeoid heights, digital geoid model, geodetic and normal height, Gauss-Kruger projection, local coordinate system, transition key

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