

## Aspects Regarding the Transformation of Gauss-Kruger Coordinates into Stereographical - 70

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### SUMMARY

This article aims to present two alternative coordinate transformations, referring to both calculus algorithms and how to use.

Transformation of rectangular coordinates, from a system to another is required to obtain the points coordinates in the imposed system, if they have been determined in other systems (Munteanu, 2003). In this case presents the transformation of Gauss – Kruger coordinates into Stereographical-70.

Depending on the accuracy required and the distance between points, for solving the problem, it is chosen a topographic or a geodesic solution (Ortelecan, 2010).

The topographic solution is chosen for small distances, where the curvature effect and the variation of linear deformations are neglected. The geodesic solution is chosen for large distances between the points of the geodesic networks, in which case it will take into account the effect of curvature and linear variation of strains.

The Gauss coordinates transformation into Stereographical 1970 is achieved by several methods of which can remember (Moldovan, 2002):

- orthogonal linear transformation between the two systems, in which case there are necessary minimum two points, preferably more, with known coordinates in both systems to determine the transformation parameters;
- transformation through geographical coordinates ( $\varphi$ ,  $\lambda$ ), using the constant coefficients method or variable coefficients method.

The article treats the transformation of Gauss rectangular coordinates into geographical coordinates and the geographical coordinates in Stereographical-70 rectangular coordinates, using the constant coefficients method.

The constant coefficients method, is applied to limited areas on the latitude, being independent on longitude. For our country was chosen the average latitude  $\varphi = 46^{\circ}$ .

The formulas are specific to each case of transformation containing two types of terms: functional terms, which are calculated using the data base and constant coefficients calculated using the average latitude.

**Keywords:** geographical coordinates, rectangular coordinates, coordinates transformation

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