



Monitoring of the Earth's surface deformation in the area of water dam Zarnowiec

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Mathematical and physical research directly motivates geodetic community which can provide very accurate measurements for testing of the proposed models Earth's surface motion near the water dams should be monitored due to the security of the area. This is a process which includes testing of existing models and their physical parameters. Change of the models can improve the practical results for analyzing the trends of motion in the area of upper reservoir of water dam Zarnowiec. Since 1998 Warsaw University of Technology realized a research focused on the horizontal displacements of the upper reservoir of water dam Zarnowiec. The 15 selected control points located on the upper reservoir crown of the water dam were monitored by classical distance measurements. It was found out that changes in the object's geometry occur due to the variation of the water level. The control measurements of the changes in the object's geometry occurring during the process of emptying and filling of the upper reservoir of water dam were compared with the deformations computed using improved Boussinesque's method programmed in the software MATLAB and ANSYS for elastic and isotropic half space as derivation of suitable potentials extended to the loaded region. The details and numerical results of this process are presented This presentation was prepared within the project "National Centre for Diagnostic of the Earth's Surface Deformations in the Area of Slovakia", ITMS code: 26220220108.