

Possibilities of Precise Determining of Deformation and Vertical Deflection of Structures Using Ground Radar Interferometry

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SUMMARY

The paper describes possibilities of the relative new technics – ground based radar interferometry for precise determining of deformation of structures. Special focus on the vertical deflection of bridge structures is also presented. The technology of ground based radar interferometry can be used in practice to the contactless determination of deformations of structures with accuracy up to 0.01 mm in real time. It is also possible in real time to capture oscillations of the object with a frequency up to 50 Hz. Deformations can be determine simultaneously in multiple places of the object, for example a bridge structure at points distributed on the bridge deck at intervals of one or more meters. This allows to obtain both overall and detailed information about the behavior of the structure during the dynamic load and monitoring the impact of movements either individual vehicles or groups. In addition to the necessary theory are given basic principles of using radar interferometry for determining of deformation of structures. Practical examples of determining deformation of bridge structures, water towers and wind power plants are also given.