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Land Slide Monitoring Using Geodetic Networks

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***LAND SLIDE MONITORING USING GEODETIC
NETWORKS***

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ABSTRACT

Landslide has the second rank in the amount of damages of natural hazards. This phenomenon in different areas e.g., roads, villages, power lines and so on, leaves its destructive effects and several organizations are engaging with it. Usually the main problems with the landslide are its area, velocity, and acceleration; because, their determination has an effective role in the estimation of damages and needed precautions.

The anatomy of a landslide is rather difficult. It needs a lot of observations of different kinds. Monitoring of landslide enables the evaluation of the amount of displacement in different areas, and then the knowledge of the landslide mechanism. Studying deep geological structure and groundwater distribution of area is so expensive. On the other hand, surface monitoring is useful for landslide control and to reduce the amount of damages. One of the best methods of surface monitoring is the geodetic control network, which also enables the operation analysis of preventive activities.

For these purposes, Surveying Department of Zanzan University performed a research under the name of "Control of Landslide with Geodetic Control Networks". In this project the definition of the landslide, causes and factors, as well as some statistics of damages in the world and in Iran especially in Zanzan province are given. Then, a brief outline of geodetic monitoring networks and their observational and computational recipes, which especially oriented to the landslide phenomenon, are represented. Finally, as a case study, in the Gholghati village that is under landslide in Southern part of Zanzan, a monitoring network is established and observations in two epochs are performed. All computation processes and results are available on demand.