

## **Interactive Design of GPS Networks**

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### **ABSTRACT**

The word "optimization" has recently come into use in geodesy to indicate designing networks based on wellspecified quantitative considerations and techniques, it suggests planning for the best solution. In particular with respect to terrain difficulties and the choice of methods of measurement, the planning of networks means in practice that one starts with a solution that is feasible under the given circumstances and available material means, and then introduces improvement until the plan is not too expensive and good enough. However in the surveying engineering and geodetic science in order to mapping and staking out of civil engineering projects, GIS, earthquake and land slid hazard assessment, monitoring of deformation of civil structure such as dams and towers, aerial photography and in many other applications we need a framework of points that we called geodetic network (Kiamehr 2003).

The optimization of geodetic networks is one of the most difficult tasks for geodesists. It needs much knowledge and experience to design an accurate and reliable network which is easy to measure as well.

The main purpose of network optimization is designing an optimal network configuration and optimum-observing plan in the sense that they will satisfy the present network quality requirement at a minimum cost. In this case by avoiding any unnecessary observation we are saving considerable time and effort in the field. An optimized surveying scheme also will help in identifying and eliminating gross errors in observations as well as in eliminating the effects of undetectable gross errors existing in the observation (Kiamehr 2003).

Topic of this study is to configuration of GPS networks for carrying out optimal solution. In this frame, forming a network, using GPS technique, has investigated on precision and reliability of different network configurations. Obtained results and explanations have presented.

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