



## **Analysis of IRAN Geodynamic Network by Robustness Analysis**

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One of the applications of Geodesy in Geodynamic research is calculation of crustal Earth deformation. There are different methods for calculation of strain tensor. The Finite Element Method is not suitable because it is dependent on figure elements and usually its assumption (homogeneous elements) is not correct. We can use a method that uses a linear relation between geodetic observations and strain parameters. The method used for adjustment network is Robust Estimation. The method most commonly used is that of Least Squares Estimation, an optimal estimator for normally distributed measurements. In practical evaluation, however, there often occur some observations, which do not conform to the expected normal distribution. The classical adjustment method of Least Squares Estimation is extremely sensitive and quickly leads to unusable results when significant deviations from the normal distribution are present. Therefore, robust estimators are currently of considerable interest. When no outliers are present, this estimator gives the same results as the method of Least Squares Estimation; when this is not the case, the algorithm limits the influence of outliers by standardized residuals.

Here we focus on the Iran Network, which has three regional epochs in 1999, 2001, and 2005. Our results show that by changing the figure of elements, the calculated strain parameters will be changed. The result of Robust Estimation shows deformation for most of the stations in the Network is compression.