INSENSITIVITY REGIONS AND THEIR PROPERTIES

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Experiments in chemistry, physics, biology, etc. are often modelled by a linear regression model with inaccurate variance components since variance components are known only approximately or they must be estimated. It is caused by the fact that different observations (e.g. distances, angles) are observed with different a priori unknown accuracy (dispersion).

Thus it seems to be important to study insensitivity regions. The insensitivity region is a region defined in the space of variance components in such a way that differences between approximate and true values of variance components inside this region do not destroy essentially the quality of statistical inferences, e.g. estimators, a confidence level of a confidence region, a power function of a test.

In the paper some properties of insensitivity regions are presented. There are discussed problems of geometrical characterization of insensitivity regions and their behaviour with respect to the multiple of the standard deviation of the observation vector and to the replication of the model.