The Problem of Outliers in Experimental Design; Case of Central Composite Designs.

ABSTRACT

To rid of the problem of outlier here in this thesis the robust analysis have been developed which produced much better results compare to least squares estimation in the presence of outlier(s). Here M estimator (Huber, Hampel and Bi-square), MM estimator, LMS and LTS estimator are being used for this research. Density plots of parameter estimates are made with the help of Monte Carlo simulation to compare the OLS estimators to other robust methods which are used here in the presence of an outlier in these three designs rotatable, centered and orthogonal the rotatable central composite design. Similarly, table of parameter estimate made and their residual standard error are calculated to compare OLS and other robust methods in the presence of an outlier. Alphabetic optimality criterion also used to compare the efficiencies of these three designs rotatable, centered and orthogonal central composite design.