



Unbalanced robust ANOVA for the estimation of measurement uncertainty at reduced cost

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Abstract: This paper describes a new method for the estimation of measurement uncertainty at reduced cost. The method is based on a 22T design and a robust ANOVA. The method is compared with a standard ANOVA and a 22T design. The results show that the proposed method is more efficient than the standard ANOVA and the 22T design. The method is also more robust than the standard ANOVA. The method is easy to implement and can be used in a wide range of applications. The method is described in detail in the paper. The method is based on a 22T design and a robust ANOVA. The method is compared with a standard ANOVA and a 22T design. The results show that the proposed method is more efficient than the standard ANOVA and the 22T design. The method is also more robust than the standard ANOVA. The method is easy to implement and can be used in a wide range of applications. The method is described in detail in the paper.

Background – classical ANOVA

Consider a classical ANOVA with k groups and n observations per group. The total number of observations is $N = kn$. The total sum of squares is $TSS = \sum_{i=1}^k \sum_{j=1}^n (y_{ij} - \bar{y})^2$. The between-group sum of squares is $BSS = \sum_{i=1}^k n(\bar{y}_i - \bar{y})^2$. The within-group sum of squares is $WSS = \sum_{i=1}^k \sum_{j=1}^n (y_{ij} - \bar{y}_i)^2$. The F-statistic is $F = \frac{BSS/k}{WSS/(N-k)}$. The F-distribution is used to test the null hypothesis of equal group means. The F-distribution is also used to estimate the measurement uncertainty. The F-distribution is a function of the F-statistic and the degrees of freedom. The F-distribution is used to estimate the measurement uncertainty at reduced cost.

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