

**INSTITUT SAINS MATEMATIK
UNIVERSITI MALAYA
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TAJUK:

**Unreplicated Factorial Design: Application of Robust Methods
in Identifying Significant Effects**

OLEH:

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(calon MSc(Statistik) secara berkursus)

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Abstract

In a wide range of engineering and industrial experiments, a large number of factors may have influence on the response of the process. Experiments are run to identify which ones of the effects are significant. The identified significant effects, also called active effects, will then be considered for further investigations. The process of identifying active and inert factors is deemed essential as initial steps in many research problems. The unreplicated factorial experiment is usually adopted due to problems that arise relating to the cost of experimentation, time, effort as well as limitation of resources. The difficulty that arises in unreplicated factorial experiments is that the usual ANOVA is no longer appropriate for usage, unless we are willing to assume that high order interactions are negligible. Thus, one need to look for other alternatives such as the methods proposed by Lenth (1989), Juan and Pena (1992), Le and Zamar (1992) and Abokalam and Al-Shiha (2001). This study will revisit four different types of procedures proposed in identifying significant effects. The methods of interest are the ones that were developed within the robust framework. Comparisons and further investigations of these studies will be done via computer simulations.

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