Minimally Changed Run Sequence for Third Order Response Surface Design

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Abstract

Randomization of run sequence is commonly employed in experimentation to avoid bias in the response. Since the randomization of run sequences may induce frequent changes in the factor levels which makes it difficult or expensive for the experimenter especially when hard-to-change factors are involved in the experiment. Response surface designs with minimally changed run sequences are useful for process/product optimization in agricultural, post-harvest and processing, fisheries, engineering and industrial experiments whenever the process of changing the levels of input factors is time consuming and expensive or the system requires more time to return to the steady state following a change in input factor level. In this paper, we have discussed methods to obtain minimally changed run orders for third order response surface designs for cost effective experimentation.

Keyword: Response surface, third order, sequential, minimum run, minimum level change

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