



Contribution ID: 43

Type: **not specified**

## A Decoupling Method for Analyzing Fold-Over Designs

*Wednesday, 13 September 2023 08:50 (20 minutes)*

Fold-over designs often have attractive properties. Among these is that the effects can be divided into two orthogonal subspaces. In this talk, we introduce a new method for analyzing fold-over designs called “the decoupling method” that exploits this trait. The idea is to create two new responses, where each of them is only affected by effects in one of the orthogonal subspaces. Thereby the analysis of odd and even effects can be performed in two independent steps, and standard statistical procedures can be applied. This is an advantage compared to existing two-steps methods, where failing to identify active effects in one step may influence the variance estimate in the other step. An additional advantage of obtaining two independent variance estimates in separate steps is the opportunity to test for missing higher-order effects. In our paper, the method is successfully tested on two different types of designs, a fold-over of a 12 run Plackett-Burman design and a 17 run definitive screening design with one center run added. Furthermore, it is evaluated through a simulation study in which scenarios with different selection criteria and heredity conditions are considered. In this talk, the focus will be explaining the proposed method and demonstrating it through an example.

### Keywords

Fold-over, Plackett-Burman, DSD

### Classification

Mainly methodology

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**Session Classification:** CONTRIBUTED Design of Experiments 3

**Track Classification:** Design and analysis of experiments