

## A stochastic optimization method for constructing optimal block designs with linear constraints

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### Abstract

We propose a stochastic optimization method related to simulated annealing for constructing efficient designs of experiments under a broad class of linear constraints on the design weights. The linear constraints can represent restrictions on various types of “limits” associated with the experiment.

To illustrate the method we computed D-, A-, and E-optimal designs for estimating a set of treatment contrasts in the case of block size-two experiments with upper limits on the number of replications of each non-control treatment.

**Keywords:** stochastic optimization, design of experiments, linear constraints, block designs

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