Optimum choice of covariates in BIBD setup

Ganesh Dutta and Nripesh K. Mandal

University of Calcutta, India

Abstract

The problem considered is that of finding optimum designs for the estimation of covariate parameters and the treatment and block-contrasts in a block-treatment design set-up in the presence of non-stochastic covariates. This is an extension of the work considered by Das et al. (2003). Here we deal with the situation wherein the block design setup admits existence of a balanced incomplete block design (BIBD) with parameters v, b, r, k and λ. It is very difficult to investigate the underlying combinatorial problems in the context of an arbitrary BIBD in order to accommodate maximum number of covariates in an optimal manner. Here we try to investigate the problem for some given series of BIBDs obtained through Bose's method of differences. Also we give some results for arbitrary BIBD and some particular BIBDs viz. resolvable BIBD, irreducible BIBD etc.

References:

Das, K., N.K. Mandal and Bikas K. Sinha (2003). Optimum experimental designs for models with covariates. *J. Statist. Plann. Infer. 115*, 273-285.