

Q_B -optimal saturated two-level main effects designs

Steven Gilmour¹ and Pi-Wen Tsai²

¹*University of Southampton, UK*

²*National Taiwan Normal University, Taiwan*

Abstract

We provide a general framework that incorporates experimenters' prior beliefs into the design selection process for the study of saturated two-level main effects designs, which are commonly used for screening experiments. We show that under the sets of priors with more weights on models of small size, p -efficient designs should be recommended; when models with more parameters are of interest, D -optimal designs would be better. Also, we present new classes designs which can be found between these two designs under different sets of priors. The way in which the choice of designs depends on experimenters' prior beliefs will be demonstrated for the cases when $N \equiv 2 \pmod{4}$. Some constructions using conference matrices will also be discussed.