

Bayesian optimal designs for the Rasch model

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When calibrating tests, optimal design provide means for an efficient procedure. In this contribution, optimal designs for the Rasch model will be presented for estimating the difficulty parameters, when abilities are assumed to be known. It is well-known that a design is locally D-optimal for the Rasch model if the ability and difficulty coincide. However, locally optimal designs require that the difficulties to be estimated are known. Prior knowledge on the difficulty may be incorporated within a Bayesian approach to attenuate this very restrictive assumption. Several symmetric weight distributions, e. g. uniform, normal and logistic distributions are considered. Furthermore, maximin efficient designs will be presented where the minimal efficiency is maximized over a specified range of difficulties.