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## M-aberration: a unified approach to select factorial designs

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## Abstract

Minimum aberration has been ubiquitously adopted for selecting fractional factorial designs. Much work has been done on its various extensions, from which many fields of experimental design have benefited, including multi-stratum designs, multi-group designs, and multi-platform designs. However, most of these extensions are ad hoc and are developed on case-by-case bases without strong statistical justifications and a unified rationale. In this talk, we develop a new criterion referred to as M-aberration, derived from good statistical properties. Our theory not only features a unified framework for minimum aberration and is easily applied to many situations, but also enables experimenters to derive their own aberration criteria.

Keyword: Multi-stratum experiment, Nonregular design, Supersaturated design, Optimal design, Functional prior distribution