

## **Building an Efficient Median**

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By the way it is computed, the resistance of the median to large positive or negative values is immediately clear to beginning statistics students. A closer look at the median reveals, however, that it is often not very precise and more complex, but much better, estimators can be found. We will revisit this question in the context of very small samples, which occur in diverse applications, either because the observations are expensive to obtain or because a rough screening is all that is intended. We relate the median to poly-optimal estimators, that is, estimators that are as precise as possible for a set of model densities. If time permits, we will also consider the extension to the linear regression model.

**Key Words:** Fractional factorial designs, multi-phase optimization, screening experiments, response surface designs