

The University of Chicago

Department of Statistics

Seminar

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**“Original Choice of Nonregular
Fractional Factorial Designs”**

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ABSTRACT

Fractional factorial designs have been successfully used in various scientific investigations for many decades. A fundamental and practically important question is the issue of optimal choice of fractional factorial designs. Minimum aberration, introduced by Fries and Hunter (1980), is the most popular criterion for choosing good fractional factorial designs. Research on minimum aberration designs has been very active in the last decade. However, minimum aberration is only defined for regular designs (those have defining relations among factors). In practice, many nonregular designs, such as Plackett-Burman designs, Taguchi designs L18 and L36, and many other orthogonal arrays, are widely used for run size economy and flexibility. This talk will introduce the concept of the generalized minimum aberration and minimum moment aberration as two extensions of the minimum aberration for general fractional factorial designs. These new criteria provide a unified and effective way for assessing regular and nonregular designs, symmetrical and asymmetrical designs, orthogonal and nonorthogonal designs, and nonsaturated and supersaturated designs. Algorithms are proposed for constructing optimal nonregular designs.