

**Meeting:** 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-62-1163      **Wiebke S. Diestelkamp\*** ([wiebke@udayton.edu](mailto:wiebke@udayton.edu)), University of Dayton, 300 College Park, Dayton, OH 45469-2316, and **Jay H. Beder**. *Strength and resolution of arbitrary fractional factorial designs*. Preliminary report.

In a 1961 paper, Box and Hunter defined the *resolution* of a regular fractional factorial design, that is, a fraction given by defining relations over a finite field. They indicated that the maximum resolution is equal to the minimum length of a defining word.

Since then, various approaches have been offered to generalize the concept of resolution to arbitrary (possibly mixed-level) fractions. The original definition was based directly on aliasing, and makes no reference to estimability or to the absence of high-order interactions. It is therefore natural to seek a generalization satisfying the same conditions.

Using a definition by Beder (based on an idea of Rao), we show that in an arbitrary fraction of maximum strength  $t$  and maximum resolution  $R$ , we have  $R = t + 1$ . (Received October 04, 2004)