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**GENERALIZED  $F$  TESTS AND SELECTIVE  
GENERALIZED  $F$  TESTS FOR ORTHOGONAL  
AND ASSOCIATED MIXED MODELS**

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**Abstract**

The statistics of generalized  $F$  tests are quotients of linear combinations of independent chi-squares. Given a parameter,  $\theta$ , for which we have a quadratic unbiased estimator,  $\tilde{\theta}$ , the test statistic, for the hypothesis of nullity of that parameter, is the quotient of the positive part by the negative part of such estimator. Using generalized polar coordinates it is possible to obtain selective generalized  $F$  tests which are especially powerful for selected families of alternatives.

We build both classes of tests for the orthogonal and associated mixed models. The associated models are obtained adding terms to the orthogonal models.

**Keywords:** selective generalized  $F$  tests, generalized polar coordinates, associated models.

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