

Permutation invariant covariance matrices

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Abstract

Certain types of patterned (structured) matrices which are generated via statements about invariance are considered. It follows that invariance with respect to the group of permutations implies a specific structure on the covariance matrix. These structures of patterned matrices which arise have been studied by a number of authors (Wilks, 1946; Votaw, 1948; Olkin, 1973; Searle and Henderson, 1979; Jennrich and Schluchter, 1986; etc.).

We are going to study permutation invariant covariance matrices which arise from k -way analysis of variance tables. We also study the spectrum and eigenvectors of the permutation invariant covariance matrix, i.e. we shall provide the insight into the structure of the eigenvalues and eigenvectors of such patterned matrices.

Keywords

Covariance matrix, permutation invariance, spectrum.

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