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Tests of Some Hypotheses on Characteristic Roots of Covariance Matrices Not Requiring Normality Assumptions.

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Abstract: Test statistics for testing some hypotheses on characteristic roots of covariance matrices are presented, their asymptotic distribution is derived and a confidence interval for the proportional sum of the characteristic roots is constructed. The resulting procedures are robust against violation of the normality assumptions in the sense that they asymptotically possess chosen significance level provided that the population characteristic roots are distinct and the covariance matrices of certain quadratic functions of the random vectors are regular. The null hypotheses considered include hypotheses on proportional sums of characteristic roots, hypotheses on equality of characteristic roots of covariance matrices of the underlying populations or on equality of their sums.

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