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Ahmad Saeid Yasamin* (syasamin@samsi.info), 19 TW Alexander Drive, Durham, NC 27709. *MAXIMAL INVARIANTS OVER SYMMETRIC CONES.*

In this talk, we consider testing hypotheses for a statistical model, where the observation space and the parameter space are both a symmetric cone. In particular, we derive the joint density of the eigenvalues of the generalized Wishart distribution, and propose a test statistic analog to that of classical multivariate statistics for testing homoscedasticity of covariance parameter. This test extends Bartlett's test, which tests the equality of variances across a normally distributed population, to all types of Wishart distributions: namely, real, complex, quaternion, Lorentz and octonion types. Our main approach to these problems, based on the analysis of symmetric cones and Jordan algebras, is to decompose the probability distribution of the parametric model to the product of the transformed measure, under a maximal invariant statistic, and a quotient measure. We prove that the densities of these two measures, with respect to the restrictions of Lebesgue measures, are indeed functions of the eigenvalues of the Wishart distribution. (Received December 04, 2008)