



Quadratic forms on complex elliptical random variables and its applications

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Abstract

Quadratic forms on complex random elliptical matrices and their joint eigenvalue densities are derived, and these densities are represented by complex hypergeometric functions of matrix arguments which can be expressed in terms of complex zonal polynomials. An integral representation of this quadratic form is introduced. The connection between these densities and information theory is discussed. Special cases are described and select applications highlighted.

Keywords: eigenvalues; information theory; matrix variate complex elliptical distribution; Wishart distribution.