Wishartness of Quadratic Forms: A Characterization Via Jordan Algebra Representations[*]

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Abstract

For a normal random variable Y with mean zero and general covariance matrix Σ_Y the Wishartness of a quadratic form $Q(Y)$ is characterized in terms of Jordan algebra representations. The framework of Jordan algebras provides a unified view since the cases where Y is a real, complex or quaternionic normal are encompassed under one general theory. A general version of Cochran's theorem is also presented.