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This monograph is a self-contained development of zonal polynomials in the framework of standard multivariate analysis. Except for the usual tools of multivariate normal distribution theory and linear algebra, no extensive mathematical background is assumed. This contrasts with earlier treatments of the theory of zonal polynomials. It is hoped that the present approach will make zonal polynomials and the theory of noncentral distributions in multivariate analysis accessible to a much wider audience.

#### **CONTENTS**

- 1. Introduction
- 2. Preliminaries on partitions and homogeneous symmetric polynomials Partitions

Homogeneous symmetric polynomials

- Derivation and some basic properties of zonal polynomials
   Definition of zonal polynomials
   Integral identities involving zonal polynomials
   An integral representation of zonal polynomials
   A generating function of zonal polynomials
- 4. More properties of zonal polynomials Majorization ordering Evaluation at identity matrices Coefficients of elementary symmetric functions Coefficients of monomial symmetric functions Coefficients of power sums Variations of the integral representation of zonal polynomials
- Complex zonal polynomials
   The complex normal and the complex Wishart distributions
   Derivation and properties of complex zonal polynomials
   Schur functions
   Relation between the real and the complex zonal polynomials

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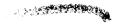
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Optimal simultaneous confidence bounds			
Short Communications			
Asymptotic equivalence between the Cox estimator and the general ML estimators of regression and survival parameters in the Cox model			
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