Ann. Inst. Statist. Math.
Vol. 56, No. 1, 101–125 (2004)

ESTIMATION OF THE EIGENVALUES OF NONCENTRALITY PARAMETER IN MATRIX VARIATE NONCENTRAL BETA DISTRIBUTION

YO SHEENA[1]*, A. K. GUPTA[1] AND Y. FUJIKOSHI[2]

[1] *Department of Mathematics and Statistics, Bowling Green State University, Bowling Green, OH 43403, U.S.A.*
[2] *Department of Mathematics, Graduate School of Science, Hiroshima University, Higashi Hiroshima, Hiroshima 739-8526, Japan*

(Received August 15, 2002; revised January 31, 2003)

Abstract. We consider the problem of estimating the eigenvalues of noncentrality parameter matrix in a matrix variate noncentral beta distribution, also known as multivariate noncentral F distribution. A decision theoretic approach is taken with square error as the loss function. We propose two types of new estimators and show their superior performance theoretically as well as numerically.

Key words and phrases: Unbiased estimator, empirical Bayes estimator, zonal polynomial, orthogonally invariant estimator, Monte Carlo simulations.

*Now at Department of Economics, Shinshu University, Asahi 3-1-1, Matsumoto, Nagano 390-8621, Japan.