

## **Superiority Conditions of Shrinkage Estimator in Laplacian Class of Elliptical Models**

M. Arashi\* and A. Bekker

Department of Statistics, Faculty of Natural and Agricultural Sciences, University of Pretoria, Pretoria, 0002, South Africa [m\\_arashi\\_stat@yahoo.com](mailto:m_arashi_stat@yahoo.com)

Shrinkage estimation is a method that a naïve or target estimator is improved, in some sense, by combining it with other information. In this paper, we are basically discussing on the performance of a class of Baranchik type shrinkage estimators for the vector location parameter in a location model, when it is assumed that both location and scale parameters are unknown. Since the assumption of normality restricts the range of possible applications, especially in flatter densities, the errors of the location model are further assumed to belong to a sub-class of elliptically contoured distributions, namely Laplacian as an extension to the multivariate normal distribution. Sufficient conditions on dominant class of Baranchik type shrinkage estimators to outperform the usual James-Stein shrinkage estimator are established. It is nicely presented that the dominant properties of the class of estimators are robust truly respect to departures from normality.

**Key Words:** James-Stein estimator, Jeffreys' prior, robustness, Schwartz space.