Normal approximations to noncentral Wishart matrices

Célia Nunes[1], Sandra S. Ferreira[1], Dário Ferreira[1], Manuela M. Oliveira[2] and João T. Mexia[3]

[1] *Department of Mathematics and Center of Mathematics and Applications, University of Beira Interior, Portugal*
[2] *Department of Mathematics and CIMA - Center for Research on Mathematics and its Applications , University of Évora , Portugal*
[3] *Center of Mathematics and its Applications, Faculty of Science and Technology, New University of Lisbon, Portugal*

Abstract

The normal approximations we present hold when the norm of the non centrality parameters diverges to $+\infty$. Thus we have an attraction to the normal model, not for increasing predominance of the mean vectors over the constant variance-covariance matrices.

Keywords

Asymptotic linearity, Limit normal distributions, Noncentral Wishart distributions.

Acknowledgements

This work was partially supported by national founds of FCT-Foundation for Science and Technology under UID/MAT/00297/2013 and UID/MAT/00212/2013.

References

[1] Nunes, C., D. Ferreira, S.S. Ferreira, J.T. Mexia (2012). F-tests with a rare pathology. *Journal of Applied Statistics 39(3)*, 551-561.

[2] Anderson, T.W. (1946). The noncentral Wishart distributions and certain problems of multivariate statistics. *Ann. Math. Statist. 17*, 409-431.

[3] Areia, A., Oliveira, M.M. and Mexia, J.T. (2007). Models for a series of studies based on geometrical representation. *Statistical Methodology.* doi:10.1016/j.stamet.2007.09.001

[4] Mexia J.T. and Oliveira M.M. (2010). Asymptotic linearity and limit distributions, approximations. *J. Stat. Plan. Infer.* 140*(2)*, 353-357.

[5] Mexia J.T., Nunes, C. and Oliveira M.M. (2011). Multivariate Application Domains for the Delta Method. Numerical Analysis and Applied Mathematics, ICNAAM 2011. AIP Conference Proceedings, 1389, pp. 1486-1489.

[Nunes et al.(2013)] Nunes C., Oliveira M.M. and Mexia J.T. (2013). Application domains for the Delta method. *Statistics.* 47*(2)*, 317-328.