A Powerful Test for Normal Variance about Order Hypotheses

Huimei Liu
Department of Statistics, National Chengchi University, Taipei, Taiwan

Chia-Hao Chan
Department of Statistics, National Cheng-Kung University, Tainan, Taiwan

Let X have a multivariate p-dimensional normal distribution ($p > 2$) with unknown mean μ and unknown diagonal covariance matrix Σ. Consider testing H_0 : not H_1 versus H_1: $\sigma_1^2 < \sigma_2^2 < \cdots < \sigma_p^2$. Based on Liu and Berger's[*Ann. Stat.* 23 (1995):55–72] idea, we construct a test that has the same size as the likelihood ratio test(LRT) and is uniformly more powerful than LRT.

[Huimei Liu, No.64, Sec.2, ZhiNan Rd., Taipei, Taiwan (R.O.C); hliu@nccu.edu.tw]

[Chia-Chao Chan, No.1, University Rd., Tainan, Taiwan (R.O.C.) ; chchan@stat.ncku.edu.tw]