

# A review of Dempster's non-exact test for high-dimensional mean vector

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## Abstract

In this paper, we study the problem of testing for mean vectors with a particular focus on the so-called Dempster's non-exact test (Dempster 1958, 1960[1, 2]). The recent development around the topic is reviewed. The asymptotic null and alternative distributions of the test statistic are summarized. Dempster's test is applied to an empirical study - gene-set testing. Size and power simulation results are presented for the one-sample problem.

## Keywords

Dempster's test, High-dimensional data, Asymptotic distribution, Kolmogorov condition, MANOVA, Hypothesis testing.

## References

- [1] Dempster, A.P. (1958). A high dimensional two sample significance test. *The Annals of Mathematical Statistics*, 995–1010.
- [2] Dempster, A.P. (1960). A significance test for the separation of two highly multivariate small samples. *Biometrics*, 16(1), 41–50.