**A Likelihood Ratio Test for high-dimensional MANOVA**

**able to outperform existing tests**

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A Likelihood Ratio Test is developed for the one-way high-dimensional MANOVA. This test is able to outperform in terms of power most existing tests in most situations, displaying an extraordinary behavior even for extremely skewed distributions as well as heavy tailed distributions, including those with no expected value, in which case it becomes a test for location. Still, it shows a better Type I error control than existing tests and non-inflated power values. Furthermore, the test presented is able to work with samples of size just 1, for all samples, except one of them, and its statistic has a very nice and simple asymptotic Normal distribution, which does not require any restrictions on sample sizes in order to hold. Extended simulation results are presented.

Keywords: **asymptotic Normal distribution, exact distribution, Generalized Integer Gamma distribution, Generalized Near-Integer Gamma distribution, product of Beta random variables.**