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DISSERTATION PROPOSAL

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Re-sampling Approaches for High-dimensional Test

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ABSTRACT

We consider an L^2 norm based test for mean vectors of high-dimensional data. An invariance principle for the L^2 norm can be derived under Lyapunov-type conditions that involve a delicate interplay between the dimension p , the sample size n and the moment assumption. Under proper normalization, central and non-central limit theorems are obtained. To obtain cutoff values of our tests, we consider a plug-in Gaussian multiplier calibration method. We also propose a subsampling procedure to approximate the distributions of the L^2 norms that bypasses the estimation of the covariance matrix.

Future work concerns the subsample size selection for the subsampling procedure. We propose to take the subsample size to be $n/2$, which is called a *Half-sampling* procedure. Simulation results show that half-sampling is capable in estimating the sampling distribution.