Hi,

I have computed histograms for MMD under various settings, see the Figure below.

Let

$$\Sigma = \begin{pmatrix} 15.5 & 14.5 \\ 14.5 & 15.5 \end{pmatrix},$$

$P_0 = N([0 \quad 0], \Sigma)$, $P_1 = N([0 \quad 1], \Sigma)$ and $P_6 = N([0 \quad 6], \Sigma)$.

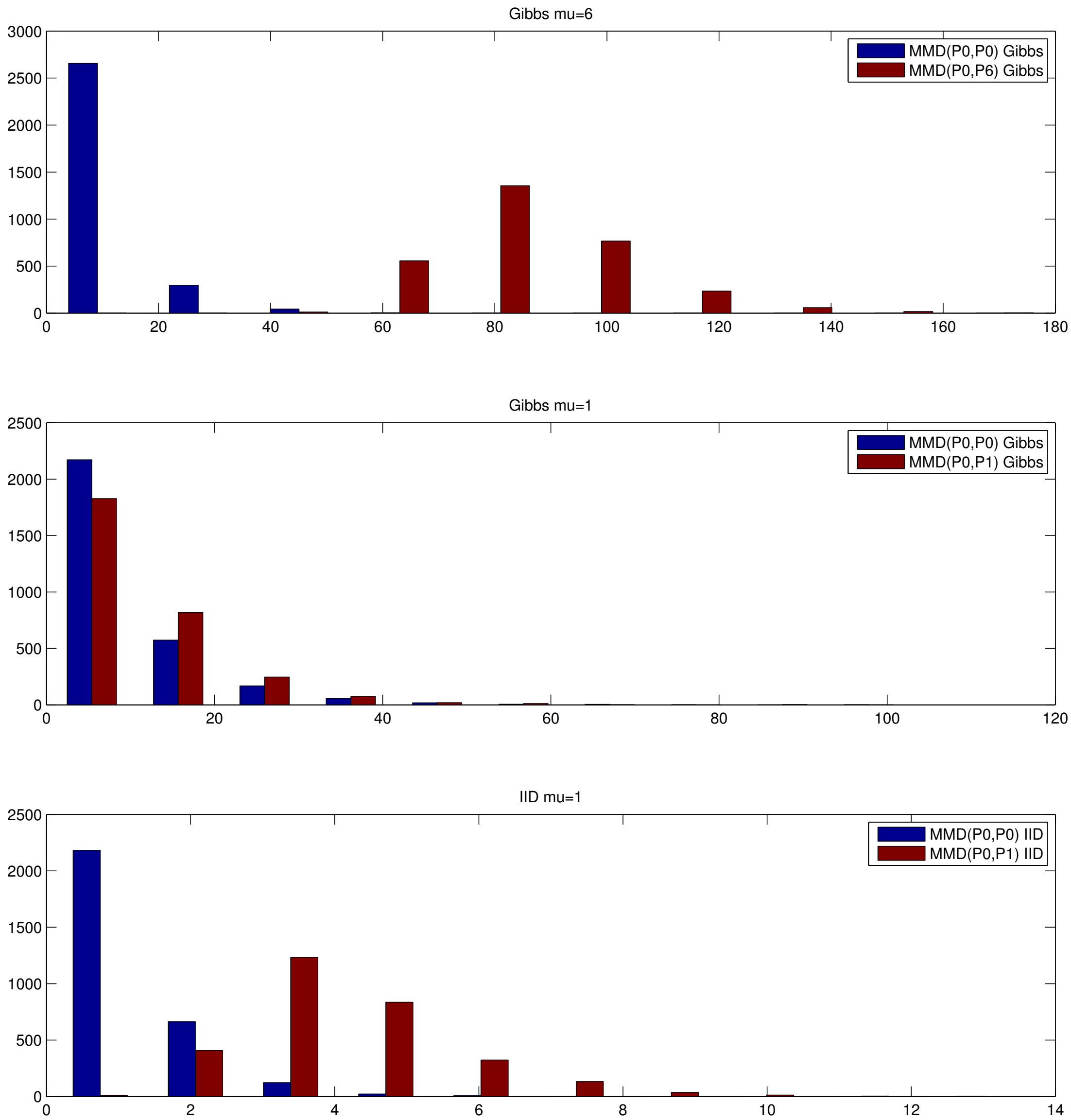
The top graph compares MMD estimator distribution calculated using samples from (P_0, P_0) and (P_0, P_6) i.e. $MMD(P_0, P_0)$ and $MMD(P_0, P_6)$. **The samples were obtained from Gibbs sampler, size of each sample was 200**. We see that the histograms are disjoint so we would expect test procedures to have 5% type one error and 0% type two error.

The wild bootstrap reports 17% type one error (I believe this is due to 'artificial degeneration' which does not converge very well) and 0% type two error.

Middle graph compares MMD estimator distribution calculated using samples from (P_0, P_0) and (P_0, P_1) i.e. $MMD(P_0, P_0)$ and $MMD(P_0, P1)$. The samples were also obtained form the Gibbs sampler. 95 percentile of the $MMD(P_0, P_0)$ distribution is 25.55. Empirical probability that $MMD(P_0, P1)$ estimator is smaller then 25.55 is 0.93. Therefore we expect type two error to be around 93%.

Finally the bottom graph compares MMD estimator distribution calculated using samples from (P_0, P_0) and (P_0, P_1), but the samples have no temporal dependence (they are IID, generated using Matlb function for multivariate Gaussian). **In this setting the expected type two error is** 14% **!**. This is inconsistent with the result obtained by Dino - he reported type two error around 1%. That means we have different MMD procedures or there is something going on with random variables generation (e.g. mistake in Σ) or some other bug.

All histograms were obtained from 2000 samples.


Gibbs mu=6
MMD(P0,P0) Gibbs
MMD(P0,P6) Gibbs
Gibbs mu=1
MMD(P0,P0) Gibbs
MMD(P0,P1) Gibbs
IID mu=1
MMD(P0,P0) IID
MMD(P0,P1) IID