

(a) Ablation test for Nyström approximation. The *MMDGP-nyström* represents our method with Nyström estimator, *MMDGP-raw-S* employs an empirical MMD estimator with a sampling size that has the same complexity as the *MMDGP-nyström* while the *MMDGP-raw-L* employs a larger sampling size, and *GP* combines a noisy GP with an UCB acquisition.

(b) Optimization performance on 10D Bumped-Bowl problem with a composite circular input uncertainty. The left figure shows the mean values of robust regret and their standard deviations are reported in the right plot.

Figure 7: **New experiments:** a) ablation test for Nyström approximation, and b) optimization performance on HD problem.

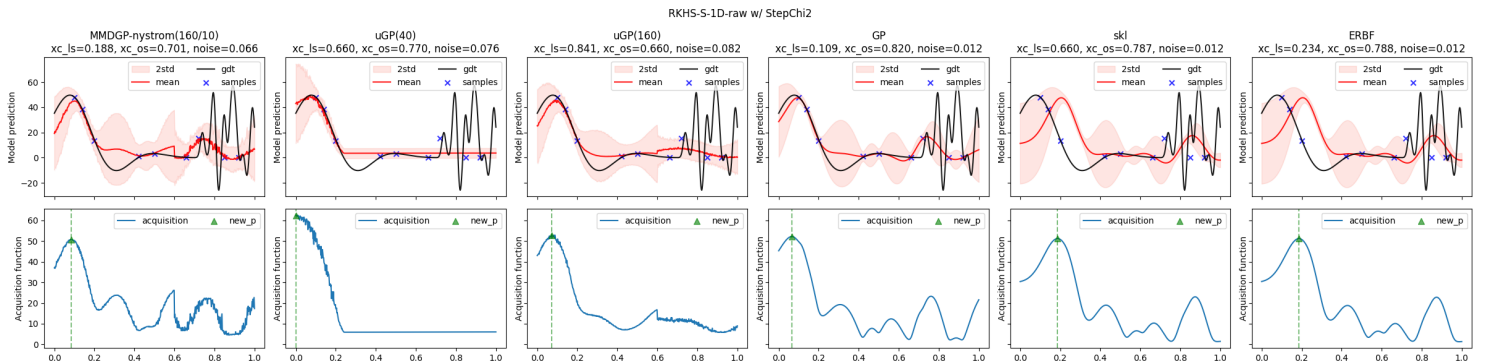
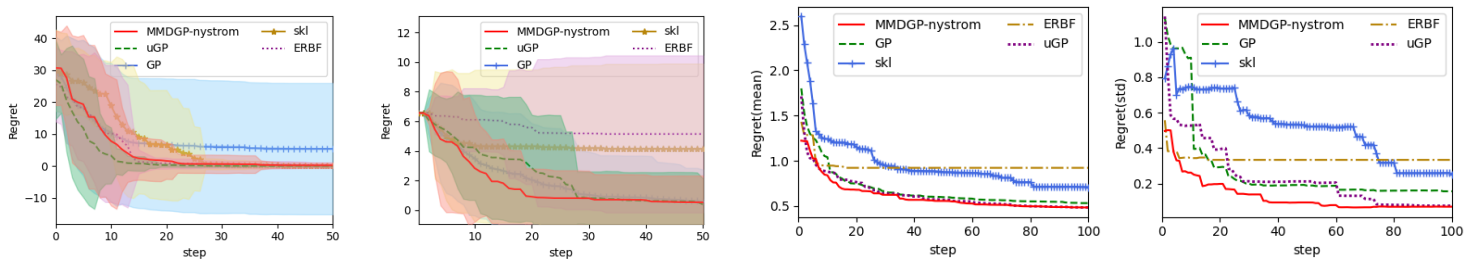
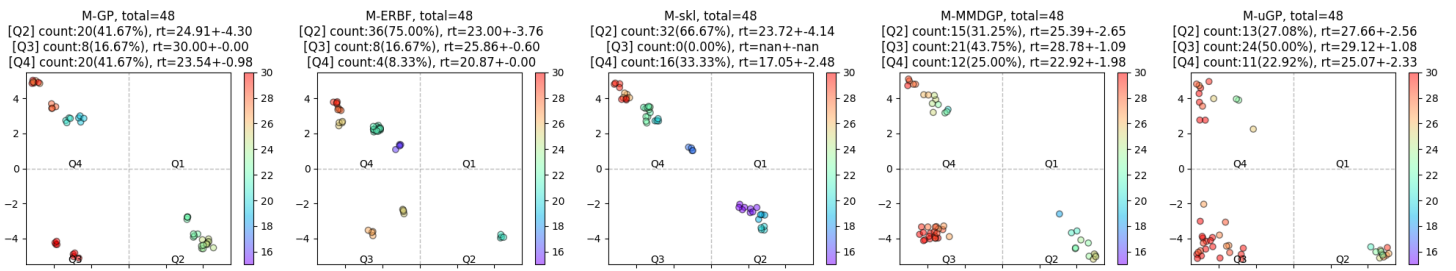


Figure 8: **New experiment:** modeling performance under step-changing  $\mathcal{X}^2$  distribution.



(a) Performance on 1D RKHS with a Gaussian input uncertainty. (b) Performance on 1D double-peak function with a beta input uncertainty.

(c) Optimization performance on the robot pushing problem under Gaussian mixture distribution. The left figure shows the mean values of robust regret while the left one reports their standard deviations.



(d) Visualization of optimized push configurations from different methods.

Figure 9: **Updated experiments:** a) RKHS@Gaussian, b) Double-Peak@beta, c-d) Robot push problem@GMM.