In this folder contains 4 different experiment settings on Branin-Hoo function.

**What I have done:**

1. Remove unnecessary variables and codes.
2. Add different flags for rho reparameterization trick, exponential prior, absolute sample process trick.

**What I found out during experiments:**

1. In theory, wrapping GP as a class should not make difference, but I find my original code without wrapping GP gives better performance, and I did not figure out why. Thus in the final version of code, I just wrap slice sampler.
2. During sampling hyperparameter step, the straight forward way is to use one burning phase and sample multiple samples at one time. But I found out, each time sample one hyperparameter at each step and iteratively conduct burn-in delivers better result. The reason may be in this way, the samples are less correlated. Thus, in final version of code, I conduct multiple times sampling (and the operation time does not increase too much).

**Experiment Setup:**

1. In BH-EXP-OPT: the GP-EI-OPT experiment is conducted.
2. In Branin-Hoo Function Exp 0.ipynb: Normal prior is used. During sampling time, I reject negative samples and only accept positive one, in which case I did not use absolute operation. **(This setting gives best performance, but it is extremely slow, 1.5 hour per episode). I show the first episode result in jupyter and the rest part of experiment is still running and I will update it once finished.**
3. In Branin-Hoo Function Exp 2.ipynb: normal prior distribution and absolute value of samples are used. This has much faster speed comparing to previous experiment setup. But delivers worse performance.
4. In Branin-Hoo Function Exp 3.ipynb: Exponential prior and absolute value of samples are used.
5. In Branin-Hoo Function Exp 4.ipynb: normal prior and rho reparameterization trick are used.

All results are summarized in Plot Result jupyter and corresponding data is stored in .pkl files. You can access it as you wish