

# README

October 5, 2021

This code plots the MSE in  $P$  and records the relative error in gain and cost as produced by the EnKF.

The code is written in Python 3 and there are four files: `constants_enkf.py`, `enkf.py`, `enkf-time.py` `LQSys.py`. The steps for running the code are as follows:

1. In `constants_enkf.py`, set the desired variables as per the modelling and simulation parameters, see Table 1 and Table 2 respectively for location of these variables in the code.
2. Run `enkf.py`
3. To get the simulation times, run `enkf-time.py`

Table 1: Modelling parameters in `constants_enkf.py`

Modelling parameter	Variable name in code	Line number in code	
		$d/2 = 1$	$d/2 \geq 2$
$C^\top C$	<code>Q</code>	26	43
$R$	<code>R</code>	27	44

Table 2: Simulation parameters in `constants_enkf.py`

Modelling parameter	Variable name in code	Line number in code
Total simulation time ( $T$ )	<code>T</code>	4
Stepsize ( $\Delta t$ )	<code>STEP</code>	5
Number of repetitions for averaging	<code>NAVG</code>	7
Vector of number of particles	<code>NVEC</code>	9
Length of vector of number of particles	<code>NSIM</code>	8
Seed for RNG	<code>SEED0</code>	14