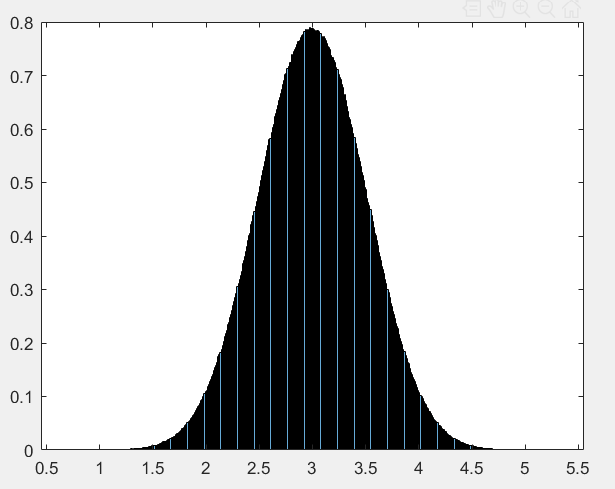
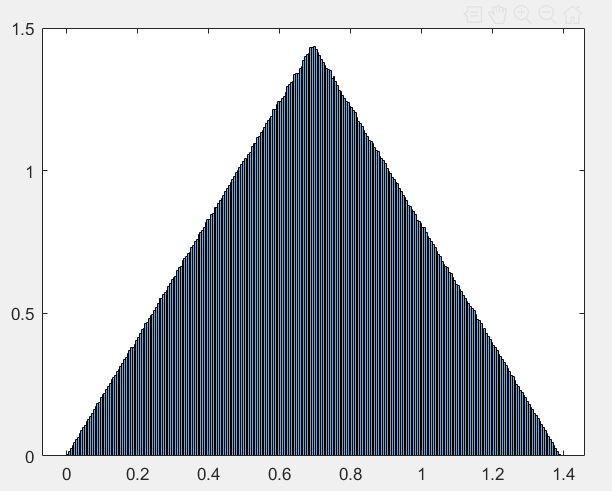
**1.**

(1) plot normal distribution:

Central-limit theorem

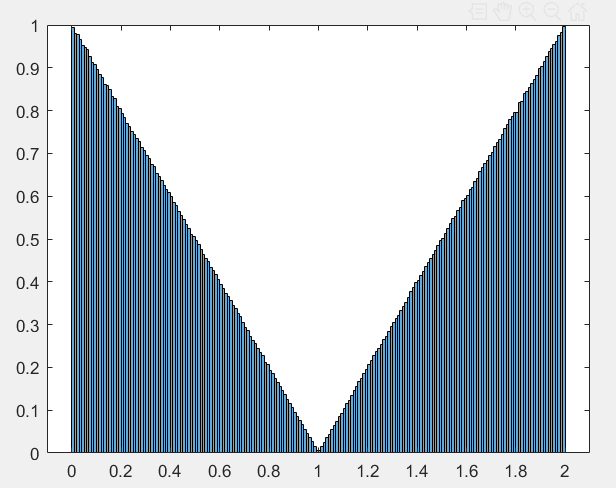


(2) plot triangle distribution

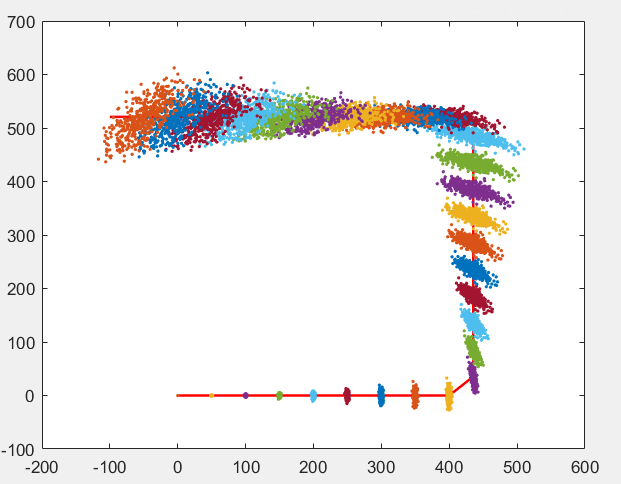


(3) plot abs distribution

**Rejection sampling** or **use Axisymmetric transformation of triangle sampling**

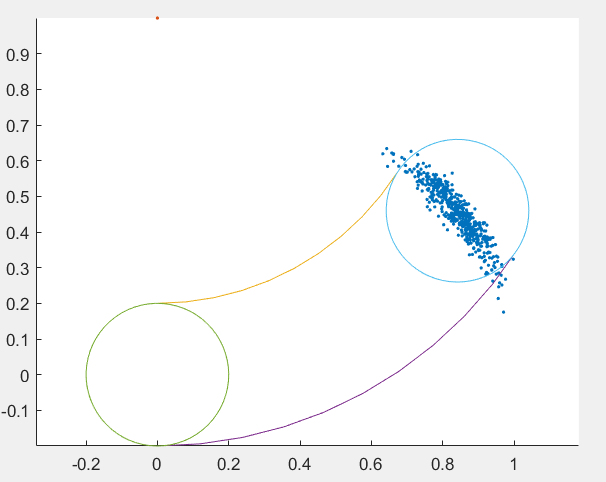


**2.** see the code

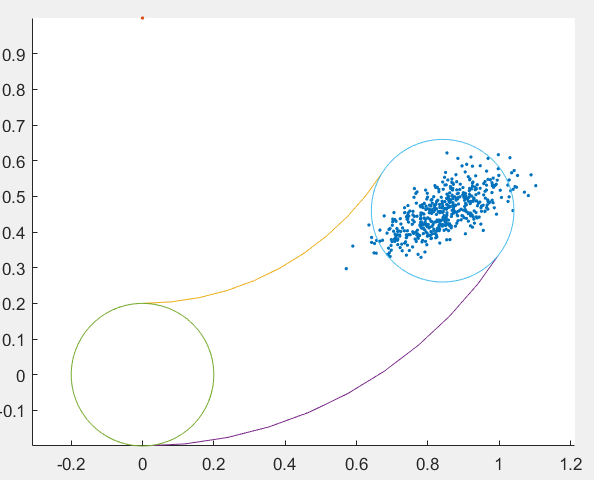


**3.**

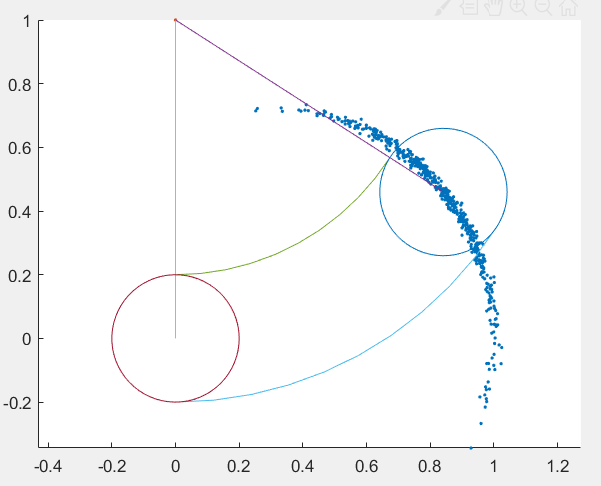
Case 1 **small velocity estimation error** and **large angular velocity estimation error**



Case 2 **large velocity estimation error** and **small angular velocity estimation error**

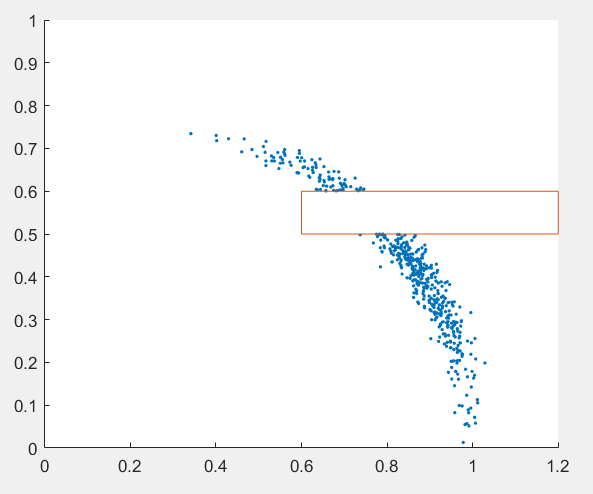


Case 3 **small velocity estimation error** and **very large angular velocity estimation error**



**4.**

Assume the machine driven in the obstacle is 0



**Addition chapter 5 exercise 7**

Assume is , is ,

1. State a mathematical model for such a robot, assuming that its controls are subject to independent Gaussian noise.

Replace above to such that

Where means sample from

1. Provide a procedure for calculating

Where

1. Provide a sampling procedure for sampling

sample algorithm, rejection sampling:

input

1. Repeat

4. Until ()
5. Return