Homework 6

11610310 Lu Ning

Problem 1

Parameters:

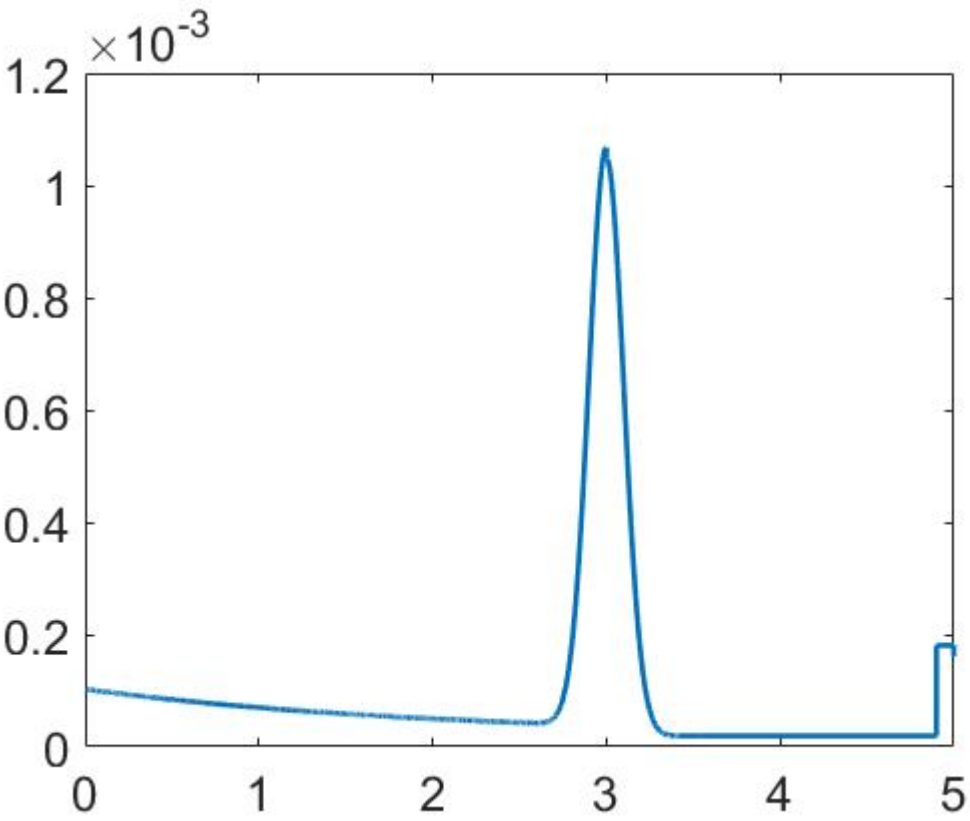
$z_{hit} = 0.4$

$z_{short} = 0.2$

$z_{max} = 0.25$

$z_{rand} = 0.15$

Sensor Number $K = 1$



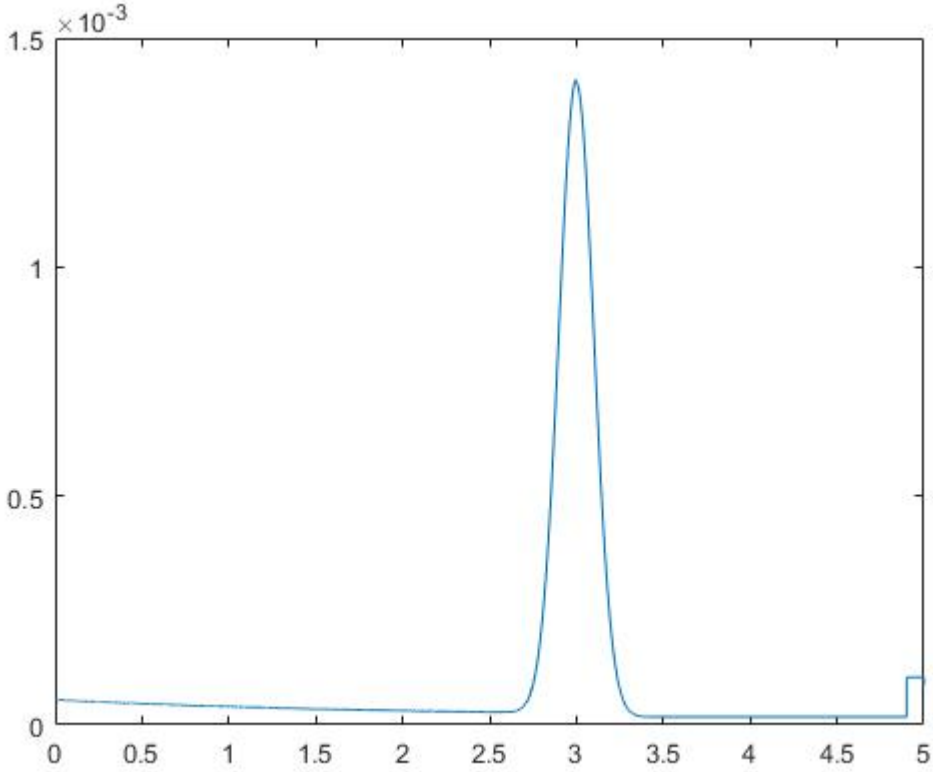
Parameters:

$z_{hit} = 0.6$

$z_{short} = 0.1$

$z_{max} = 0.15$

$z_{rand} = 0.15$



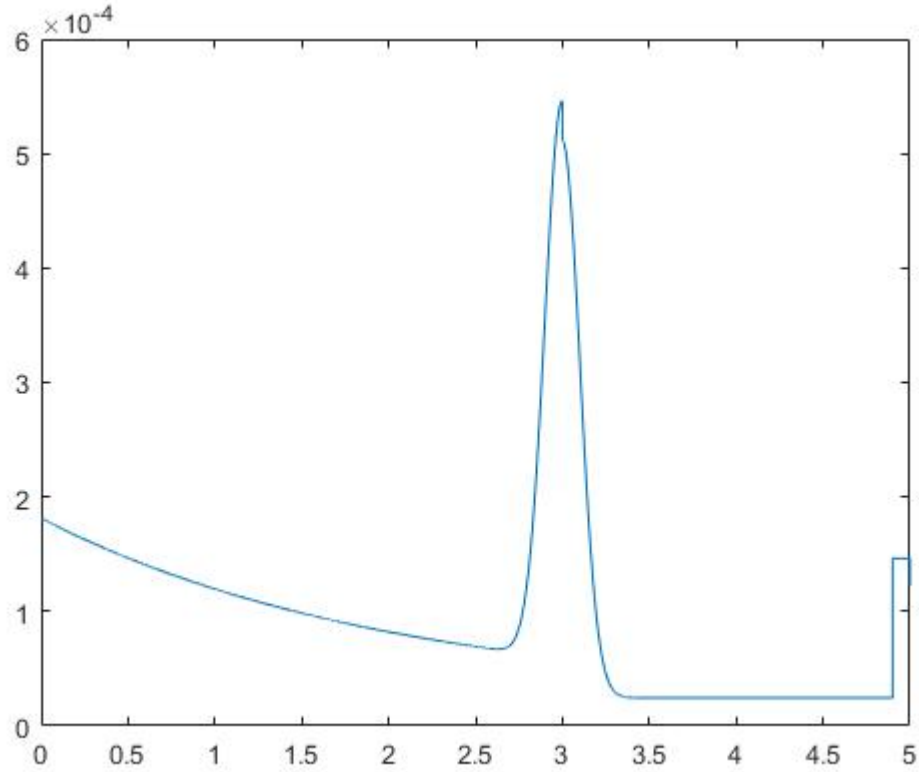
Parameters:

$z_{hit} = 0.2$

$z_{short} = 0.4$

$z_{max} = 0.2$

$z_{rand} = 0.2$



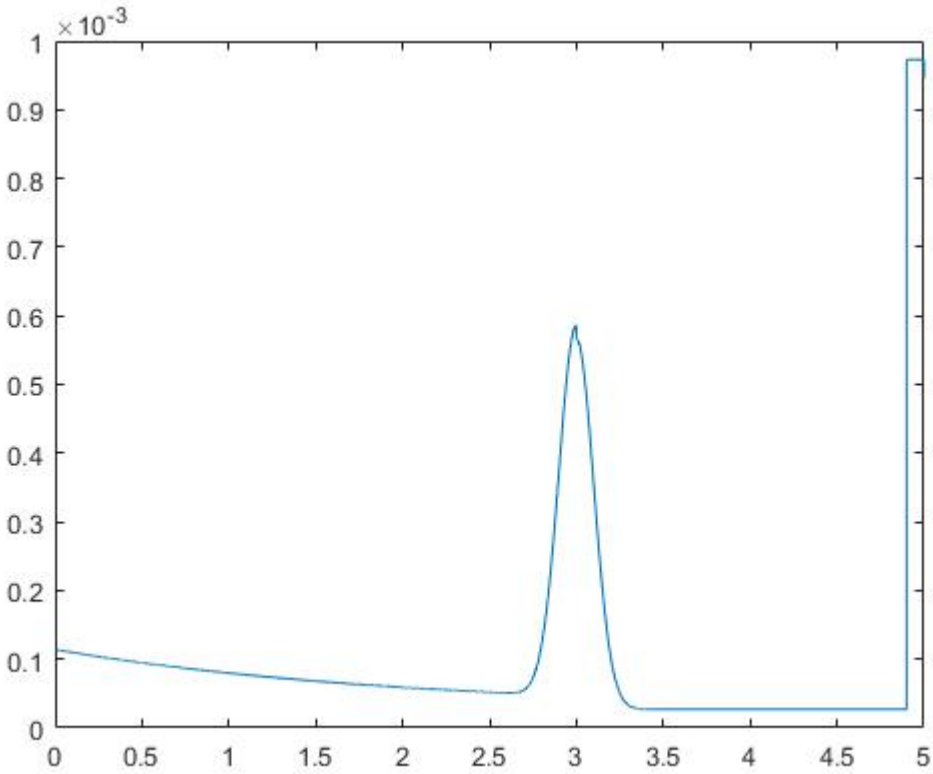
Parameters:

$z_{hit} = 0.1$

$z_{short} = 0.1$

$z_{max} = 0.7$

$z_{rand} = 0.1$



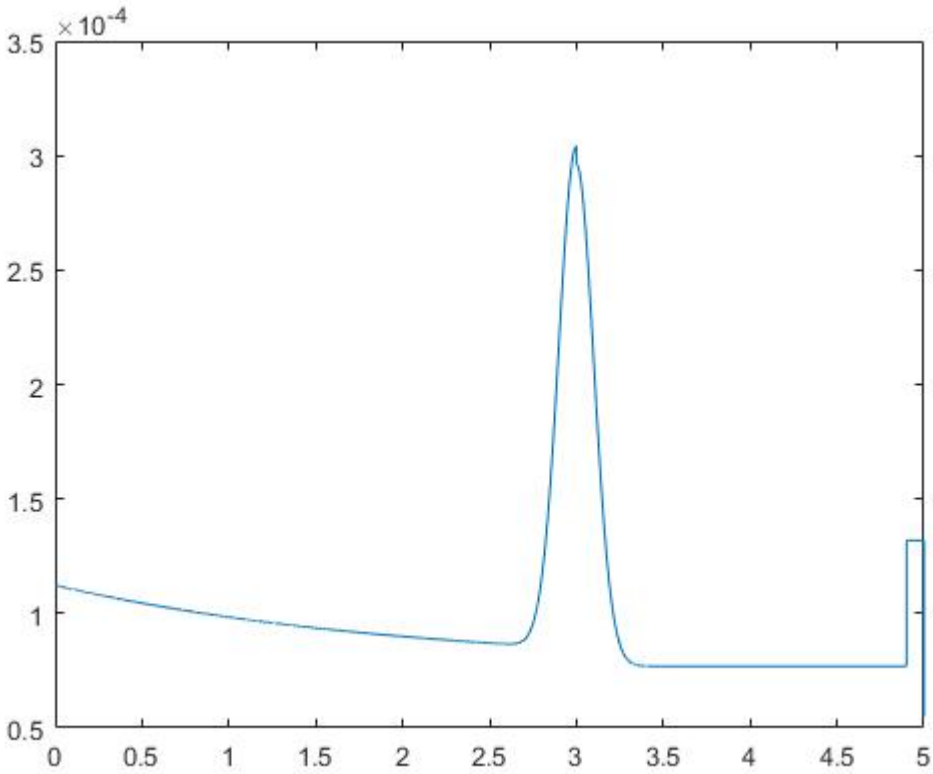
Parameters:

$z_{hit} = 0.1$

$z_{short} = 0.1$

$z_{max} = 0.1$

$z_{rand} = 0.7$



Problem 2

Parameters:

$z_{hit} = 0.6$

$z_{max} = 0.3$

$z_{rand} = 0.1$

Robot Pose

$[\,0 \quad 0 \quad \frac{\pi}{2}\,]$

Sensor Pose (in robot coordinates)

$[\,0 \quad 0 \quad 0\,]$

Obstacles

- point1

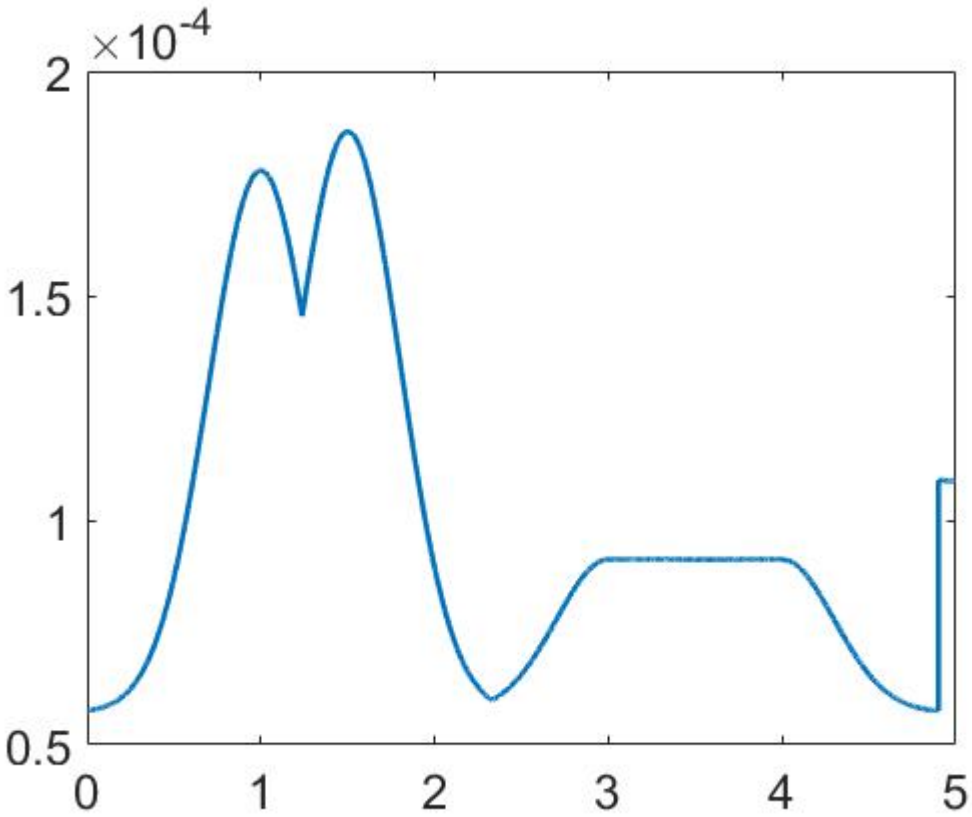
  $[\,0.1 \quad 1.5\,]$
- point2

$[\ -0.15 \quad 1\ ]$

- rectangle

  $[\ -0.5 \quad 3\ ], [\ -0.5 \quad 4\ ], [\ -2.5 \quad 3\ ], [\ -2.5 \quad 4\ ]$

beam measurement probability model



Problem 3

Landmarks

- (0, 0)
- (2, 0)
- (2, 2)

Robot Position

(1, 4)

Noise

normal distribution with $\sigma = 0.02$

Sample Times

1000

Result