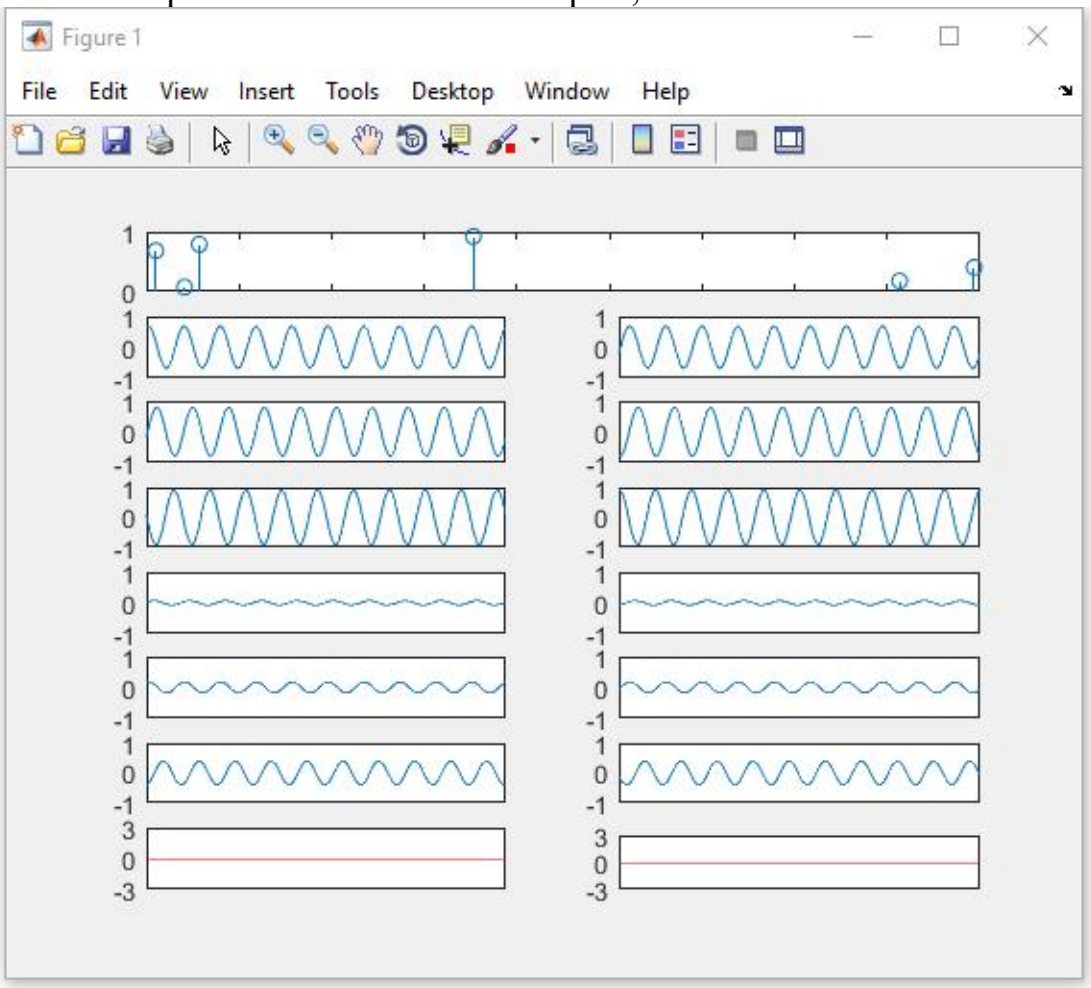
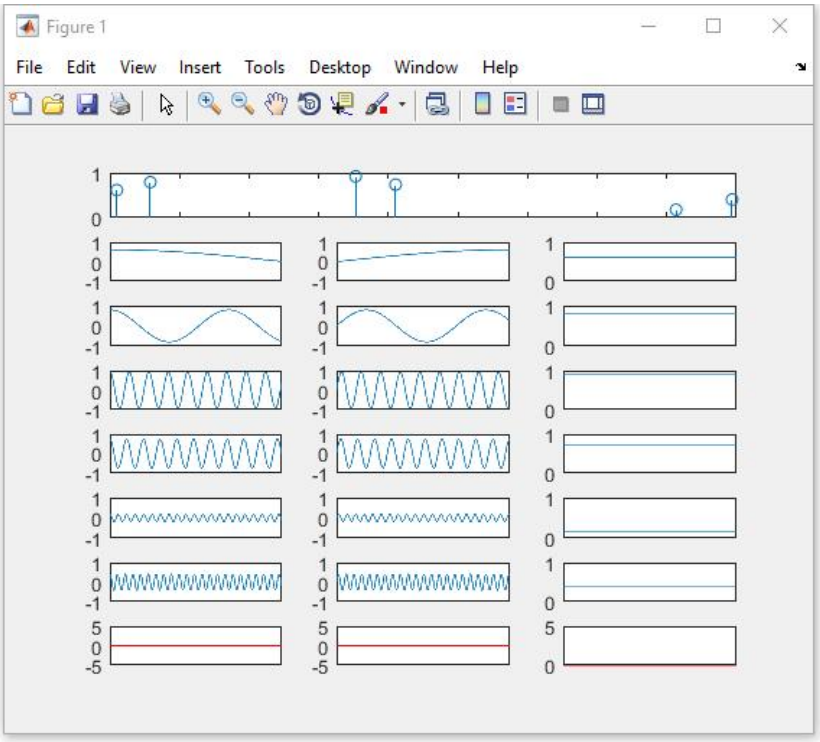
Alec Mabhiza Chirawu - 亚历克上 - M202161029

Wireless Communication - Assignment 2

Signal Presentation:
Different inputs results in different outputs,





Matlab code that calculate not only frequency shift but also the angle(theta) to figure out the location of the train more easily.

Doppler shift at specific time:

$$f_s(t) = f_d \cos\theta(t)$$

$$\cos(\theta(t_0)) = \frac{Ds/2}{\sqrt{D\min^2 + (Ds/2)^2}}$$

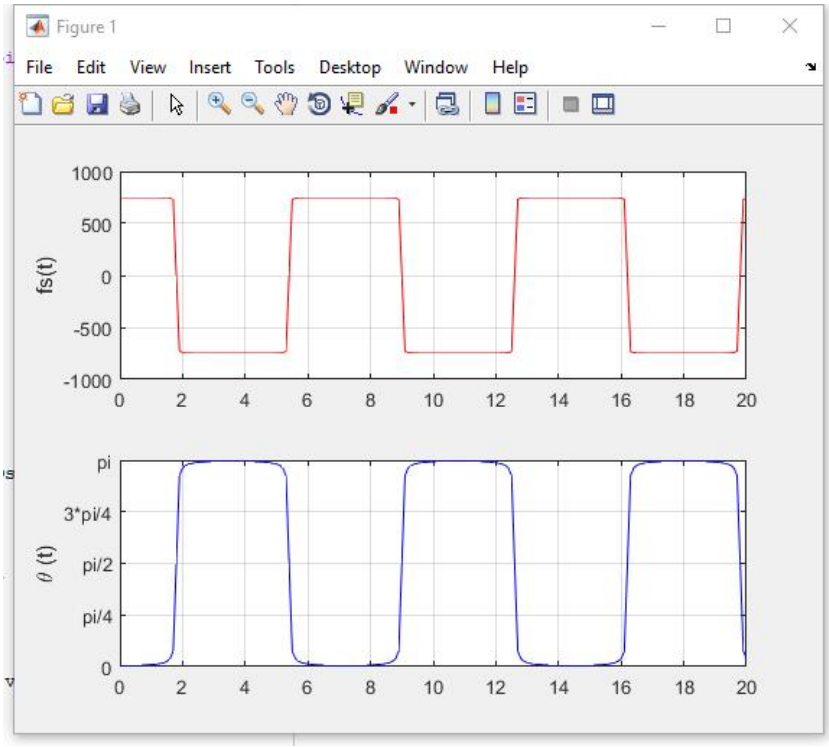


Figure 1
File Edit View Insert Tools Desktop Window Help
1000
500
0
-500
-1000
fs(t)
0 2 4 6 8 10 12 14 16 18 20
pi
3*pi/4
pi/2
pi/4
0
θ (t)
0 2 4 6 8 10 12 14 16 18 20