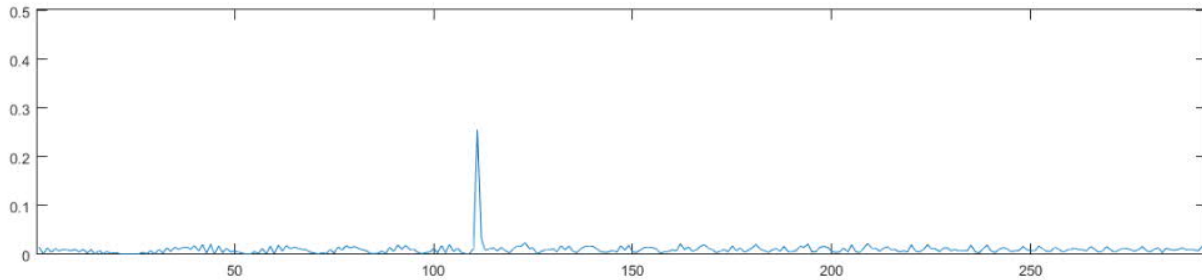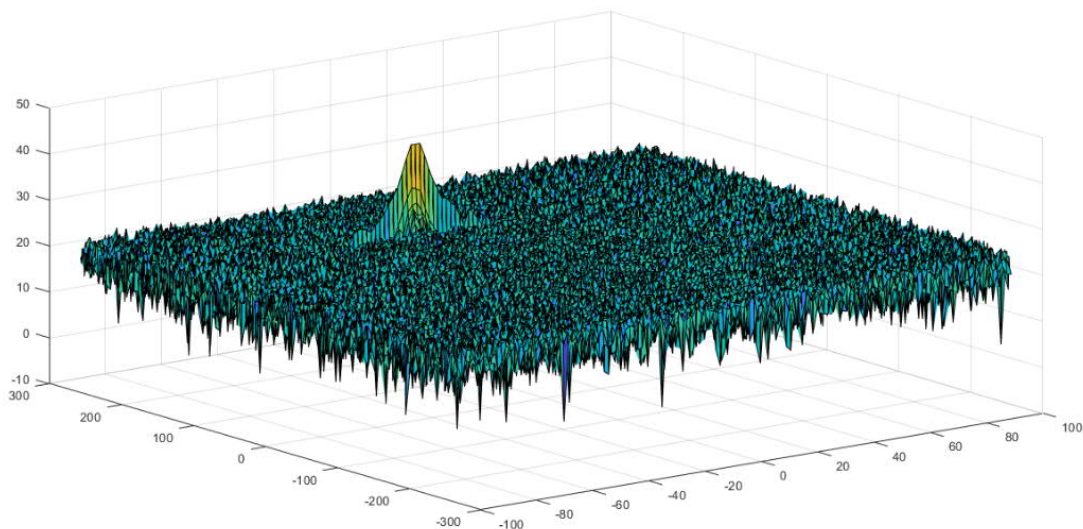# 1. Range FFT (1st FFT)

The initial target position and velocity were set to be 110 m and -20 m/s. The range FFT result is shown as below:

The 2D FFT Range Doppler Map is shown as below:

2. 2D CFAR

## 2.1 Implementation steps for the 2D CFAR process.

The outer "For" loop iterated over all cell under test (CUT), and the inner "For" loop iterated all training cells in the current sliding window. The "If" statement excluded the guard and CUT cells when computing the sum of the noises. The threshold was then calculated and compared against with the corresponding value in the Range Doppler Map (RDM), the result was stored in a new data structure that has the same size as RDM. The margin areas were overridden with zeros at last.

2.2 Selection of Training, Guard cells and offset.

The training cells parameters were set as: Td = 8, Tr = 10;

The guard cells parameters were set as: Gd = 4, Gr = 4;

Upon examination of the noise level matrix, the average training cells' noise level was around 20 dB, the threshold offset was set to 8 dB. The CFAR result is shown as below:
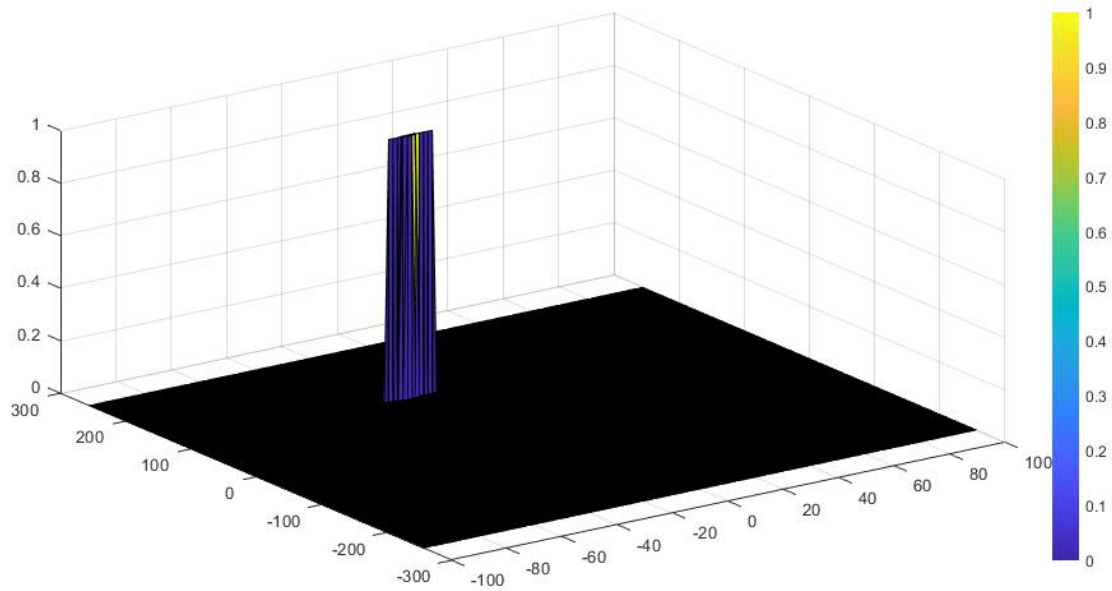
2.3 Steps taken to suppress the non-thresholded cells at the edges

Another "For" loop was implemented at the end to override margin areas with zeros.