Loading the wideband SNR data. All values are in dB

```
load('WidebandSNRs.mat')
```

Checking total number of trajectories, # of TX beams, RX beams, BSs and Time samples (20 ms apart)

```
num_trajs = size(SNRs,1)
```

```
num_trajs = 100
```

```
num_BS = size(SNRs,2)
```

```
num_BS = 4
```

```
num_TXBeams = size(SNRs,3)
```

```
num_TXBeams = 64
```

```
num_RXBeams = size(SNRs,4)
```

```
num_RXBeams = 8
```

```
num_Timesamples = size(SNRs,5)
```

```
num_Timesamples = 3000
```

Let's see what the SNR on all TX/RX beams looks like from a particular base station at a particular time instance in a chosen trajectory

```
chosen_traj = randi([1 num_trajs])
```

```
chosen_traj = 4
```

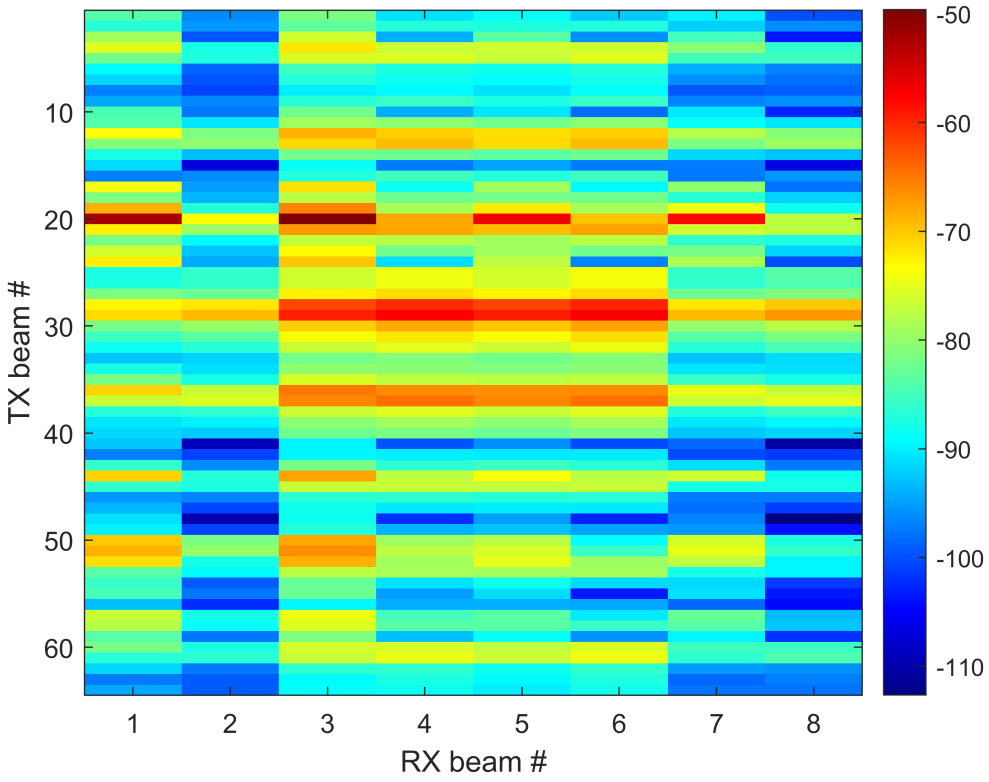
```
chosen_time_instance = randi([1 num_Timesamples])
```

```
chosen_time_instance = 207
```

```
chosen_BS = randi([1 num_BS])
```

```
chosen_BS = 2
```

```
extracted_snr_grid = SNRs(chosen_traj,chosen_BS,:,:,chosen_time_instance);
extracted_snr_grid = reshape(extracted_snr_grid,num_TXBeams,num_RXBeams);
imagesc(extracted_snr_grid); colormap jet; colorbar; xlabel('RX beam #'); ylabel('TX beam #')
```



Now let us look at evolution of SNR with time from a particular TX RX beam pair

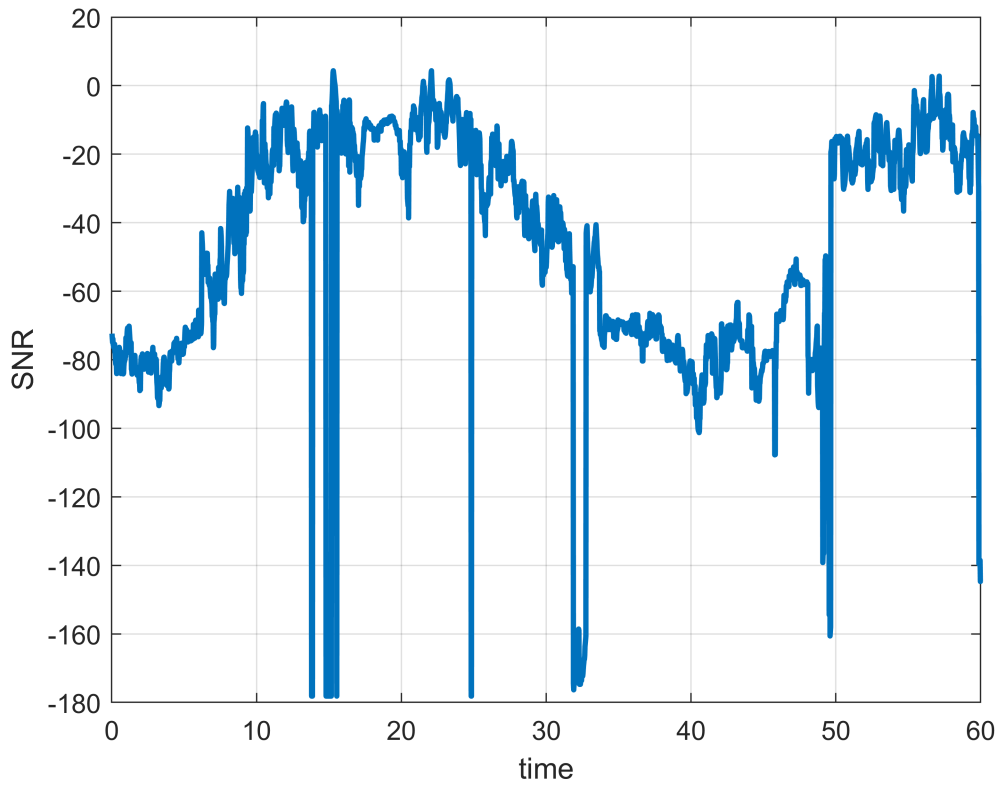
```
chosen_TXbeam = randi([1 num_TXBeams])
```

```
chosen_TXbeam = 34
```

```
chosen_RXbeam = randi([1 num_RXBeams])
```

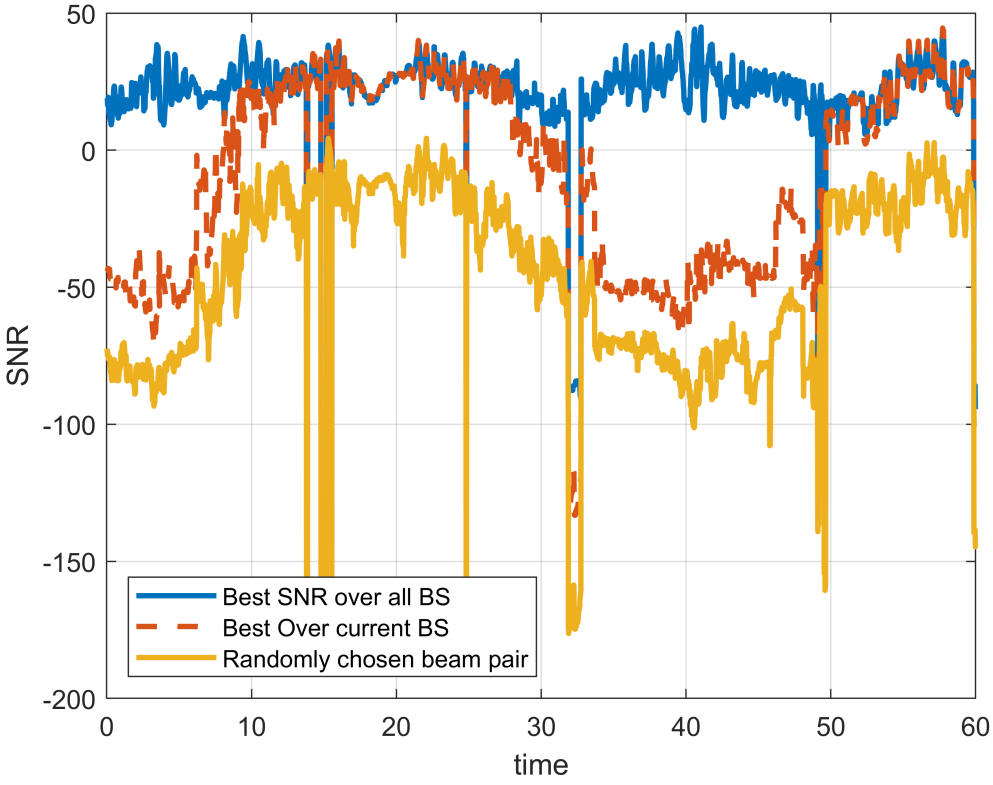
```
chosen_RXbeam = 6
```

```
extracted_snr_with_time = SNRs(chosen_traj,chosen_BS,chosen_TXbeam,chosen_RXbeam,:);
extracted_snr_with_time = extracted_snr_with_time(:);

plot((1:num_Timesamples)*2e-2,extracted_snr_with_time,'LineWidth',2) %2e-2 because of 20 ms sar
grid on
xlabel('time');ylabel('SNR')
```



Now let us see how this compares to the best possible SNR for the chosen trajectory and BS as well as the best SNR over all BS

```
best_snr_current_bs = SNRs(chosen_traj,chosen_BS,:,:,:);
best_snr_current_bs = reshape(best_snr_current_bs,num_TXBeams,num_RXBeams,num_Timesamples);
best_snr_current_bs = max(best_snr_current_bs,[],[1,2]);
best_snr_current_bs = reshape(best_snr_current_bs,1,num_Timesamples);
best_snr_all_bs = SNRs(chosen_traj,:,:,:,:);
best_snr_all_bs = reshape(best_snr_all_bs,num_BS,num_TXBeams,num_RXBeams,num_Timesamples);
best_snr_all_bs = max(best_snr_all_bs,[],[1,2,3]);
best_snr_all_bs = reshape(best_snr_all_bs,1,num_Timesamples);

plot((1:num_Timesamples)*2e-2,best_snr_all_bs,'LineWidth',2)
hold on
plot((1:num_Timesamples)*2e-2,best_snr_current_bs,'--','LineWidth',2)
plot((1:num_Timesamples)*2e-2,extracted_snr_with_time,'LineWidth',2) %2e-2 because of 20 ms sa
grid on
xlabel('time');ylabel('SNR')
legend('Best SNR over all BS','Best Over current BS','Randomly chosen beam pair','Location','s
```


50
0
-50
-100
-150
-200
SNR
0
10
20
30
40
50
60
time
Best SNR over all BS
Best Over current BS
Randomly chosen beam pair