Homework V

Implement a program to perform the following results.

1. (20%) Consider a uniform linear array (ULA) with $N = 16$ antenna elements and there are $L = 5$ signals coming from arbitrary random input directions. Show the channel steering vectors observed at the array for all the L signals.

Ref: Chapter 2: MIMO Channel Models

Fundamentals of Wireless Communication
D. Tse and P. Viswanath
Cambridge University Press, 2005 (Ch. 7)

2. (20%) Show the optimal beamforming vector for each of the L signals. Draw the radiation patterns of all the optimal beamforming vectors.
3. (20%) If all the incoming signals have the same signal power, simulate the average signal-to-interference power ratio of each of the desired signals. (Each incoming signal can be regarded as the desired signal and all other $L - 1$ signals are regarded as interferences.)
4. (20%) Repeat and compare the results obtained in Q.3 for the case with $N = 64$ antenna elements.

- 助教: EECS Room 605, TWNTHUCOM5170@gmail.com
- Due Date: **01/03** (You shall mail both your report and your program to the class mail account.)