Independent University Bangladesh (IUB)
School of Engineering, Technology and Sciences (SETS)
Department of Electrical and Electronic Engineering
Autumn 2020 EEE 321LAB

Lab 8: Study on DTFT, Circular Folding and Circular Convolution

Objectives:

1. To understand the discrete time Fourier transform of signal.
2. To understand the circular folding and circular convolution.

Labwork:

1. Design a MATLAB function to implement DFT.

2. Let $x(n)$ be an N-point sequence:

$$x(n)=\begin{cases}1, & 0\le n\le 3\\ 0, & \text{otherwise}\end{cases}$$

   (a) Compute the DTFT and plot its magnitude and phase.

   (b) Compute the 4-point DFT of $x(n)$.

3. Design a MATLAB function to implement an N-point circular folding operation $x_2(n) = x_1((-n))_N$.

4. Determine the circular folding of the sequence:

$$x(n) = \{1,3,5,7,9,-7,-5,-3,-1\}$$

5. Given that $x(n) = 10(0.9)^n$, $0 \le n \le 10$. Plot $x((-n))_{11}$.

Lab Assignment-8

Develop a MATLAB function to perform the circular convolution of a signal.