2019-2020 Bahar Yarıyılı

Sayısal İşaret İşleme
Ödev – 3
Konu : Symmetry Property of DTFT
15011702 - ÖZGÜR KAN

MATLAB KODLAR

```matlab
clc;
clear all;
close all;

W = -pi:pi/2:pi;                % define W, F1(W), F2(W)

a1=0.1;
F1 = 1./(1 - a1*exp(-1j*W));

a2=0.3;
F2 = 1./(1 - a2*exp(-1j*W));

a3=0.5;
F3 = 1./(1 - a3*exp(-1j*W));

a4=0.7;
F4 = 1./(1 - a4*exp(-1j*W));

a5=0.9;
F5 = 1./(1 - a5*exp(-1j*W));

F6 = ((0.2).*(0.2).*(0.2).*(0.2).*exp(-1j*4*W))./(1-0.2.*exp(-1j*W))+(2.5./(1-
0.4.*exp(-1j*W))));

figure(1); clf;                 % open and clear figure 1

subplot(2,1,1);                 % plot |F1(W)|
figure(1)
plot(W,abs(F1)); grid;
hold on
plot(W,abs(F2)); grid;
plot(W,abs(F3)); grid;
plot(W,abs(F4)); grid;
plot(W,abs(F5)); grid;
hold off
xlabel('\Omega rad'); ylabel('|F_1(\Omega)|');
title('Magnitude (Amplitude) Spectra of f_1[n]');

subplot(2,1,2);                 % plot /_F1(W)
figure(1)
plot(W,angle(F1)*4/pi); grid;
hold on
plot(W,angle(F2)*4/pi); grid;
plot(W,angle(F3)*4/pi); grid;
plot(W,angle(F4)*4/pi); grid;
plot(W,angle(F5)*4/pi); grid;
hold off
xlabel('\Omega rad'); ylabel('\angle(F_1(\Omega)) ^o');
title('Phase Spectra of f_1[n]');


figure(2); clf;                 % open and clear figure 2
subplot(2,1,1);
plot(W,abs(F6)); grid;
hold on
subplot(2,1,2);
plot(W,angle(F6)*4/pi); grid
hold off
```

Figure 1: Magnitude (Amplitude) Spectra of $f_1[n]$ and Phase Spectra of $f_1[n]$

Figure 2