**EECS 363: Digital Filtering**

**Mathlab Code 1- 1/29/2017**

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**Code:**

% A bandstop filter has specs stopband at [0.11, 0.14]; passbands at

% [0,0.06] and [0.19,0.5]. This requires length 81 filter for Hamming

%window.

clc;

close all;

clear all;

m=0:80;

lambda=40;

hideal=0.16\*cos(0.25\*pi\*(m-lambda)).\*sinc(0.08\*(m-lambda));

h=hideal.\*hamming(81)';

figure(1);

zplane(h);

hold on;

grid on;

[f,H1]=freqzdB(h,1,501,0.19,0.5);

figure(2);

subplot(2,2,1);

plot(f,H1)

title('Magnitude Response for frequency range 0.19 to 0.5 using Hamming Window')

hold on;

grid on;

Hpass2=[H1(1:226) H1(227:350) H1(351:501)];

pass2\_Hamming=max(Hpass2)

[f,H2]=freqzdB(h,1,501,0.11,0.14);

subplot(2,2,2);

plot(f,H2)

title('Magnitude Response for frequency range 0.11 to 0.14 using Hamming Window')

hold on;

grid on;

Hstop=[H2(1:226) H2(227:350) H2(351:501)];

stop\_Hamming=max(Hstop)

[f,H3]=freqzdB(h,1,501,0.0,0.06);

subplot(2,2,3);

plot(f,H3)

title('Magnitude Response for frequency range 0.0 to 0.06 using Hamming Window')

hold on;

grid on;

Hpass1=[H3(1:226) H3(227:350) H3(351:501)];

pass1\_Hamming=max(Hpass1)

[f,H4]=freqzdB(h,1,501,0.0,0.5);

subplot(2,2,4);

plot(f,H4)

title('Magnitude Response for frequency range 0.10 to 0.5 using Hamming Window')

hold on;

grid on;

Hstop1=[H4(1:226) H4(227:350) H4(351:501)];

stop81Hamming=max(Hstop1)

%

**Output:**

pass2\_Hamming =

-54.6785

stop\_Hamming =

0.0213

pass1\_Hamming =

-54.6731

stop81Hamming =

0.0220