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clc
clf
clear all
close all

M1 = dlmread('Metinggoed1.txt');
M3 = dlmread('Metinggoed3.txt');
M5 = dlmread('Metinggoed5.txt');

t_M1_init = M1(:,1);
t_M3_init = M3(:,1);
t_M5_init = M5(:,1);

Fs_1 = 1/(t_M1_init(2) - t_M1_init(1));
Fs_3 = 1/(t_M3_init(2) - t_M3_init(1));
Fs_5 = 1/(t_M5_init(2) - t_M5_init(1));

I_M1_init = M1(:,2);
I_M3_init = M3(:,2);
I_M5_init = M5(:,2);

tlim1 = [149073 152233];
tlim3 = [318828 321869];
tlim5 = [184266 187844];

t_M1 = (t_M1_init(tlim1(1):tlim1(2)) - t_M1_init(tlim1(1)))*1000;
t_M3 = (t_M3_init(tlim3(1):tlim3(2)) - t_M3_init(tlim3(1)))*1000;
t_M5 = (t_M5_init(tlim5(1):tlim5(2)) - t_M5_init(tlim5(1)))*1000;

I_M1 = I_M1_init(tlim1(1):tlim1(2));
I_M3 = I_M3_init(tlim3(1):tlim3(2));
I_M5 = I_M5_init(tlim5(1):tlim5(2));

maxI_M1 = max(I_M1);

for tt = 1 : length(t_M1)-1
    dI_M1(tt) = Fs_1*(I_M1(tt+1)-I_M1(tt));
end
or = find(abs(dI_M1)>5*10^6);

for nn = or(1):or(2)+1
    if I_M1(nn) == 8
        I_M1(nn) = maxI_M1;
    end
end

L1 = length(I_M1);
L3 = length(I_M3);
L5 = length(I_M5);

freq1 = (fft(I_M1));
freq3 = (fft(I_M3));
freq5 = (fft(I_M5));

P2_1 = abs(freq1/L1);
P1_1 = P2_1(1:L1/2+1);
P1_1(2:end-1) = 2*P1_1(2:end-1);
P1_1 = P1_1/max(P1_1);

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P2_3 = abs(freq3/L3);
P1_3 = P2_3(1:L3/2+1);
P1_3(2:end-1) = 2*P1_3(2:end-1);
P1_3 = P1_3/max(P1_3);

P2_5 = abs(freq5/L5);
P1_5 = P2_5(1:L5/2+1);
P1_5(2:end-1) = 2*P1_5(2:end-1);
P1_5 = P1_5/max(P1_5);

f1 = Fs_1*(0:(L1/2))/L1;
f3 = Fs_3*(0:(L3/2))/L3;
f5 = Fs_5*(0:(L5/2))/L5;

fig1 = figure(1);
fig1.Position = [435 488 512 512];
plot(f1,P1_1)
xlabel('f [Hz]','FontSize',14)
ylabel('Intensity','FontSize',14)
grid minor
xlim([0,5000])

fig2 = figure(2);
fig2.Position = [435 488 512 512];
plot(f3,P1_3)
xlabel('f [Hz]','FontSize',14)
ylabel('Intensity','FontSize',14)
grid minor
xlim([0,5000])

fig3 = figure(3);
fig3.Position = [435 488 512 512];
plot(f5,P1_5)
xlabel('f [Hz]','FontSize',14)
ylabel('Intensity','FontSize',14)
grid minor
xlim([0,5000])

print('Four1','-dpng')
print('Four3','-dpng')
print('Four5','-dpng')

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Warning: Integer operands are required for colon operator when used as index

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