PRAKTIKUM-PSD

PERTEMUAN KE : 7 (23 APRIL 2025)

INSTRUKSI PARKTIKUM

1. Ketiklah code program pada matlab
2. Simpan di Direktori/folder yang sdh kalian buat pada pertemuan sebelumnya dan disimpan dengan nama file(contoh Praktikum ke 1) : **Prak-fourier** (nama file tdk ada spasi)***dan diisesuaikan dengan judul praktikum***
3. Running (Screenshot Hasil Running)
4. Jelaskan maksud/arti pada tiap Line Code
5. Format Laporan Praktikum sama dengan pertemuan minggu ke 5

Contoh

% Sine signal sound (**Suara Sinyal Sinus)**
fy=300; %signal frequency in Hz **(Sinyal Frekuensi dalam Hz)**
fy=300; %signal frequency in Hz **Sinyal Frekuensi dalam)rad/s**
fs=6000; %sampling frequency in Hz **(Frekuensi Sampling dalam Hz)**

1. Signal Fourier Transform

```
%Fourier Transform of sawtooth signal
fy=1; %signal frequency in Hz
wy=2*pi*fy; %signal frequency in rad/s
Ty=1/fy; %signal period in seconds
N=256;
fs=N*fy; %sampling frequency in Hz
tiv=1/fs; %time interval between samples;
t=0:tiv:(Ty-tiv); %time intervals set
y=sawtooth(wy*t); %signal data set
fou=fft(y,fs); %Fourier Transform (set of complex numbers)
hmag=imag(fou); bh=hmag/N; %get set of harmonic amplitudes
stem(0:9,bh(1:10)); %plot of first 10 harmonics
axis([0 10 0 1]);
xlabel('Hz'); title('sawtooth signal harmonics');
```

2. Signal Triangular

```
%triangular signal to be analyzed
fy=1; %signal frequency in Hz
wy=2*pi*fy; %signal frequency in rad/s
Ty=1/fy; %signal period in seconds
N=256;
fs=N*fy; %sampling frequency in Hz
tiv=1/fs; %time interval between samples;
t=0:tiv:((3*Ty)-tiv); %time intervals set (3 periods)
y3=-sawtooth(wy*t,0.5); %signal data set
plot(t,y3'k');
xlabel('seconds'); title('triangular signal (3 periods)');
```

3. Signal Fourier Transform-Signal Sinus Rectified

```
%Fourier Transfom of rectified sine signal
fy=1; %signal frequency in Hz
wy=2*pi*fy; %signal frequency in rad/s
Ty=1/fy; %signal period in seconds
N=256;
fs=N*fy; %sampling frequency in Hz
tiv=1/fs; %time interval between samples;
t=0:tiv:(Ty-tiv); %time intervals set
y=abs(sin(wy*t)); %signal data set
fou=fft(y,fs); %Fourier Transform (set of complex numbers)
hmag=real(fou); ah=hmag/N; %get set of harmonic amplitudes
stem(0:9,ah(1:10)); hold on; %plot of first 10 harmonics
plot([0 10],[0 0],'k');
xlabel('Hz'); title('rectified sine signal harmonics');
```

4. Signal Fourier Transform-Triangular

```
%Fourier Transfom of triangular signal
fy=1; %signal frequency in Hz
wy=2*pi*fy; %signal frequency in rad/s
Ty=1/fy; %signal period in seconds
N=256;
fs=N*fy; %sampling frequency in Hz
tiv=1/fs; %time interval between samples;
t=0:tiv:(Ty-tiv); %time intervals set
y=-sawtooth(wy*t,0.5); %signal data set
fou=fft(y,fs); %Fourier Transform (set of complex numbers)
hmag=real(fou); ah=hmag/N; %get set of harmonic amplitudes
stem(0:9,ah(1:10)); hold on; %plot of first 10 harmonics
plot([0 10],[0 0],'k');
xlabel('Hz'); title('triangular signal harmonics');
```

Selamat Mengerjakan…..