

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

Spectral Analysis of Electric Guitar Playing E2

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Read Audio File

```
[y, Fs] = audioread('Etest.WAV');
```

Perform FFT

```
x = fft(y);
```

Get length of audio signal

```
L = length(y);
```

Convert indices to frequency values

```
f = Fs*(0:(L/2))/L;
```

Calculate 2-sided Power Spectrum

```
P2 = abs(x/L);
```

Calculate 1-sided Power Spectrum

```
P1 = P2(1:L/2+1);  
P1(2:end-1) = 2*P1(2:end-1);
```

Plot Audio Signal

```
subplot(2,1,1)  
plot((1:length(y))/Fs, y, 'b-')  
  
% format time domain plot  
ax=gca;  
ax.XLabel.String = 'Time (S)';  
ax.XLabel.FontSize = 16;  
ax.YLabel.String = 'Voltage';  
ax.YLabel.FontSize = 16;
```

Plot Power Spectrum of Audio Signal

```
subplot(2,1,2)
plot(f(1:25000),P1(1:25000),'r-', 'LineWidth', 2);

% format frequency domain plot
ax=gca;
ax.XLabel.String = 'Frequency (Hz)';
ax.XLabel.FontSize = 16;
ax.YLabel.String = 'Power';
ax.YLabel.FontSize = 16;
```