Tarjeta de audio

Escanear dispositivos de audio

```
audioInfo=audiodevinfo
```

```
audioInfo = struct with fields:
     input: [1×3 struct]
    output: [1×2 struct]
```

Crear el objeto de audio

```
Id=-1;
fs=44100;
CH_No=1;
BitDepth=16;
recordObject=audiorecorder(fs,BitDepth,CH_No,Id)
```

```
recordObject = 
  audiorecorder with properties:

       SampleRate: 44100
    BitsPerSample: 16
      NumChannels: 1
         DeviceID: -1
    CurrentSample: 1
     TotalSamples: 0
          Running: 'off'
         StartFcn: []
          StopFcn: []
         TimerFcn: []
      TimerPeriod: 0.0500
              Tag: ''
         UserData: []
             Type: 'audiorecorder'
```

Grabación

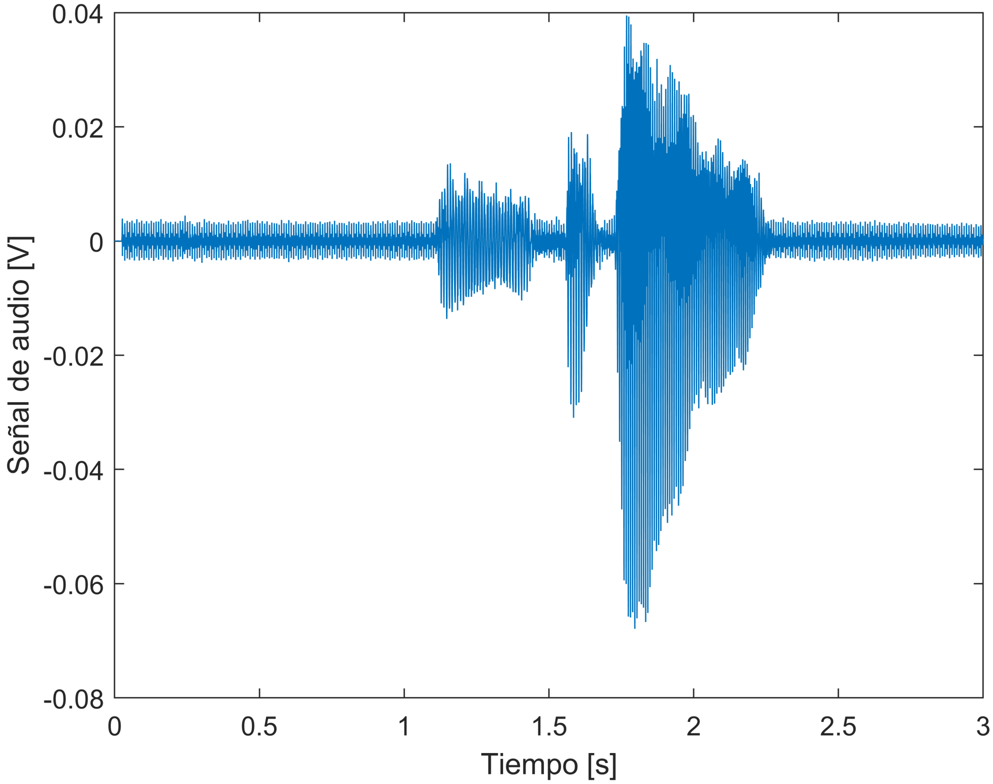
```
T=3;
recordblocking(recordObject,T);
```

Ploteo

```
data_grabacion=getaudiodata(recordObject);
%Vector de tiempo
%Ts=1/fs
t=1/fs:1/fs:T
```

```
t = 1×132300
    0.0000    0.0000    0.0001    0.0001    0.0001    0.0001    0.0002    0.0002 ⋯
```

```
plot(t,data_grabacion)
xlabel("Tiempo [s]")
ylabel("Señal de audio [V]")
```

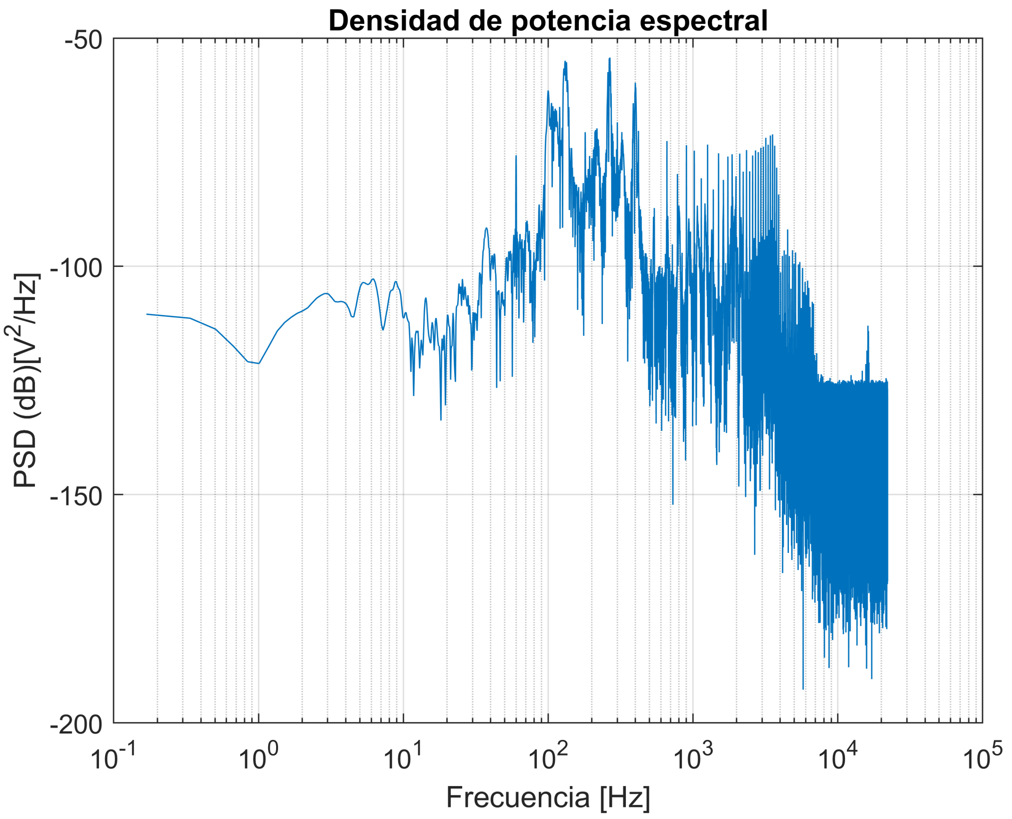


Reproducción

```
sound(data_grabacion,2*fs)
```

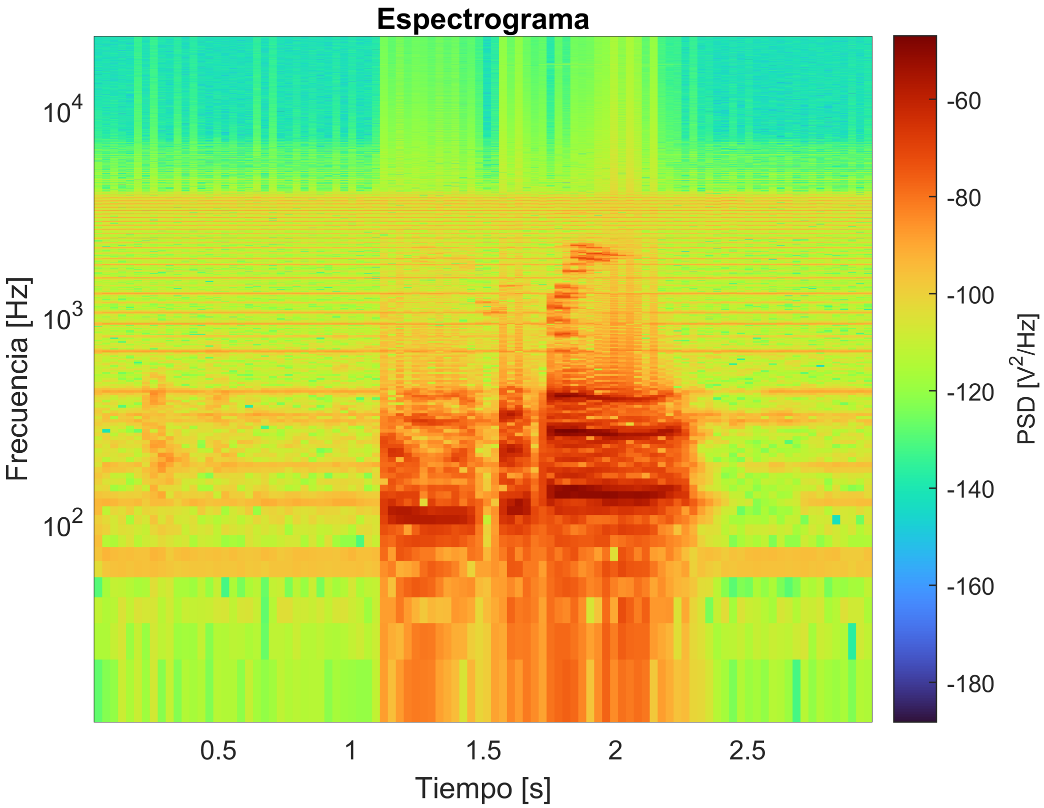
Espectro

```
%Parámetros importantes
N=numel(data_grabacion);
N_spect=N/50;
%Funciones de descomposición espectral
[Pxx_per,F_Pxx]=periodogram(data_grabacion,rectwin(N),[],fs);
[~,F_Spec,T_Spec,Pxx_Spec]=spectrogram(data_grabacion,rectwin(N_spect),[],[],fs);
%Periodograma
figure
semilogx(F_Pxx,10*log10(Pxx_per))
title("Densidad de potencia espectral")
xlabel("Frecuencia [Hz]")
ylabel("PSD (dB)[V^2/Hz]")
grid on
```



```
%Espectrograma
figure
p=pcolor(T_Spec,F_Spec,10*log10(Pxx_Spec));
set(p,'EdgeColor','none')
xlabel("Tiempo [s]")
ylabel("Frecuencia [Hz]")
title("Espectrograma")
c=colorbar;
c.Label.String="PSD [V^2/Hz]";
colormap('turbo')

set(gca,'YScale','log')
```



Guardar audio

```
audiowrite("voz.wav",data_grabacion,fs)
```