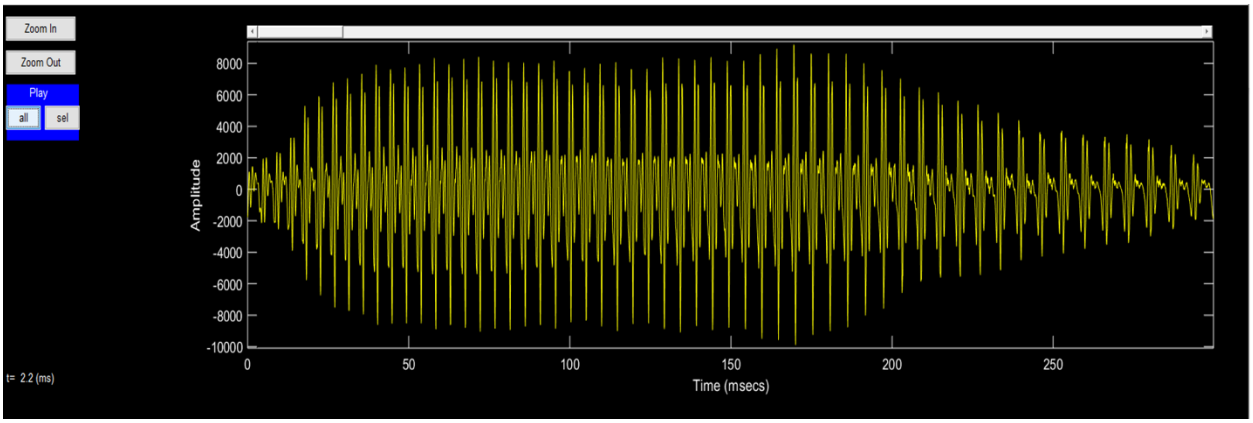
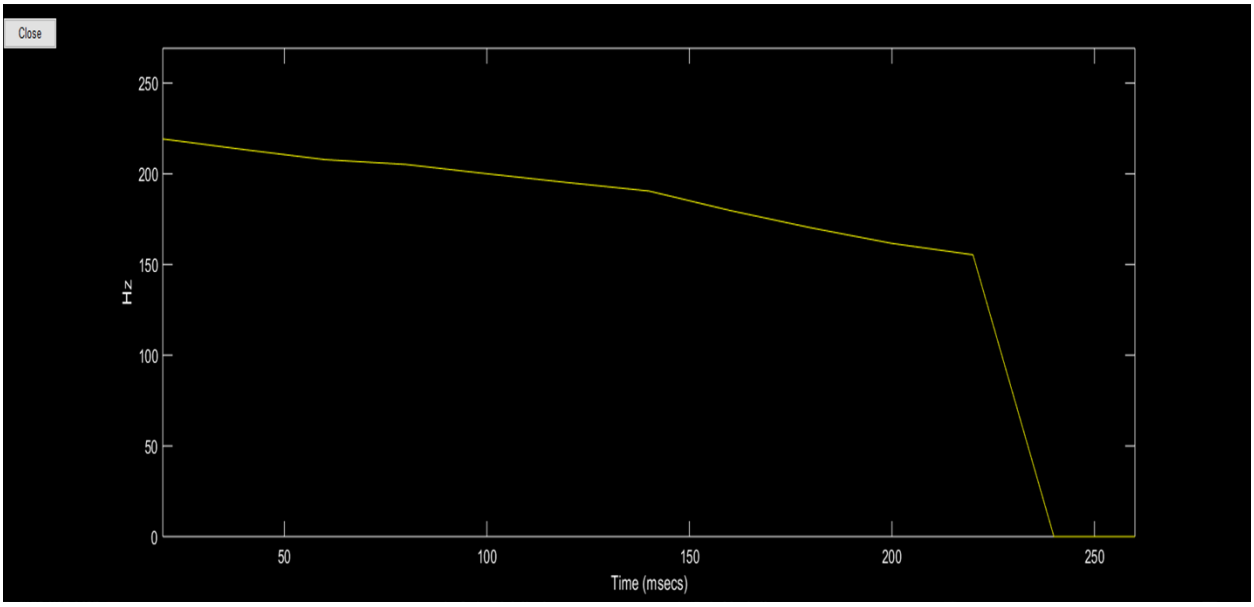
Gal Oscar – Laborator 3

Pentru acest laborator am folosit fisierul wav **hall.wav** din care am decupat cu ajutorul Audacity doar vocala ***a***

Colea

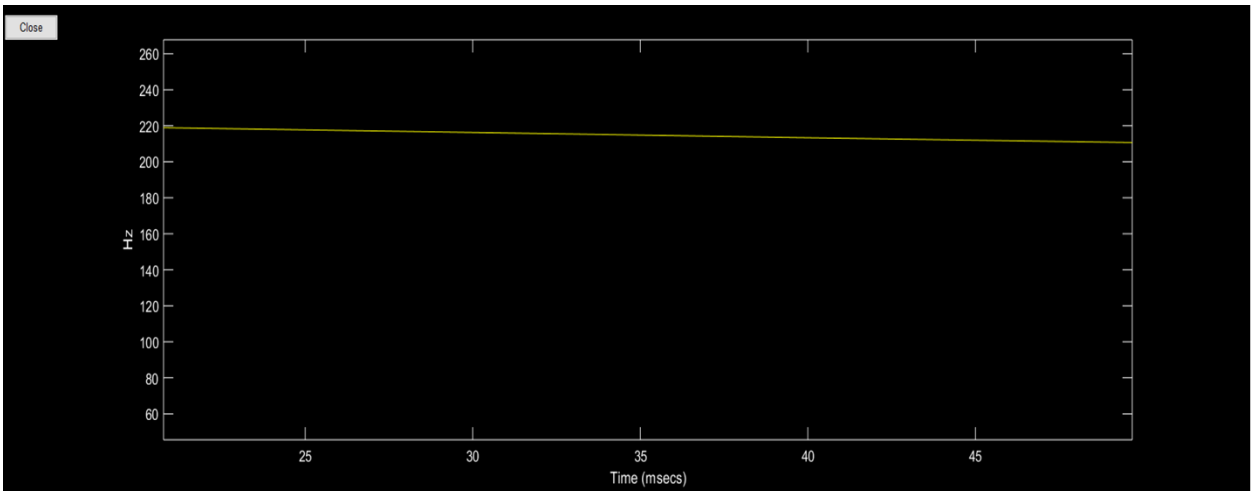


Se afiseaza cu aplicatia COLEA valorile FF pentru sectiunea aleasa/fisierul ales prin metoda cepstrala si se salveaza rezultatul.



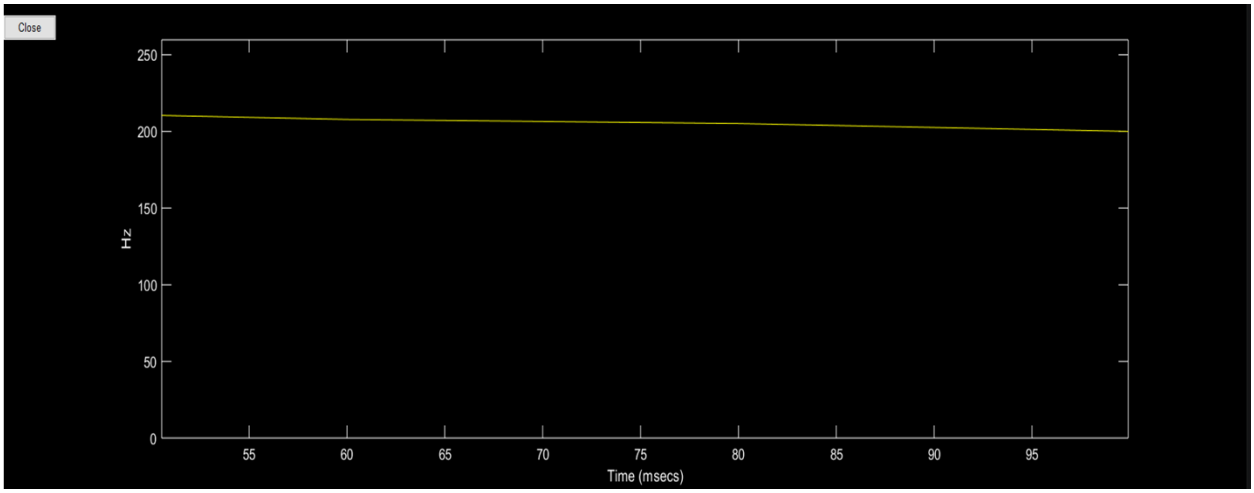
Cadrul 0-50 ms

Gal Oscar – Laborator 3



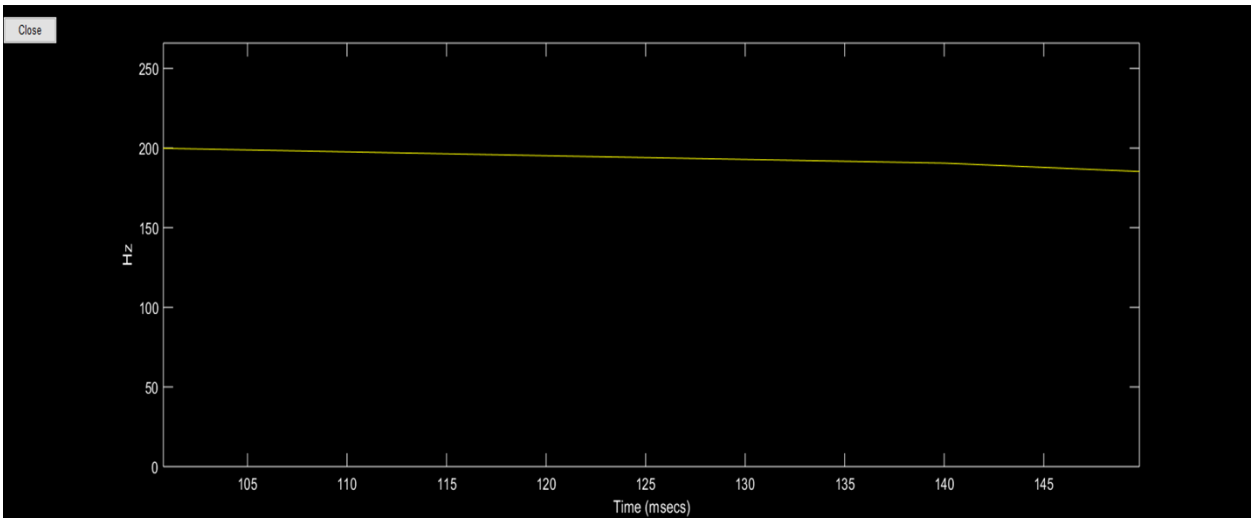
F0: 220 hz

Cadrul 50-100 ms



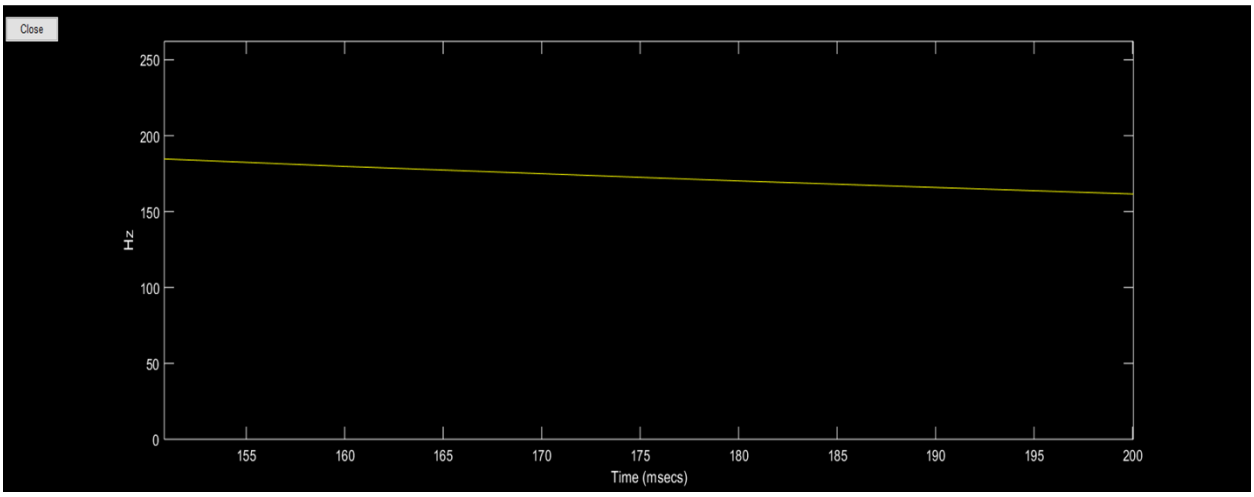
F0: 210 Hz

Cadrul 100-150 ms



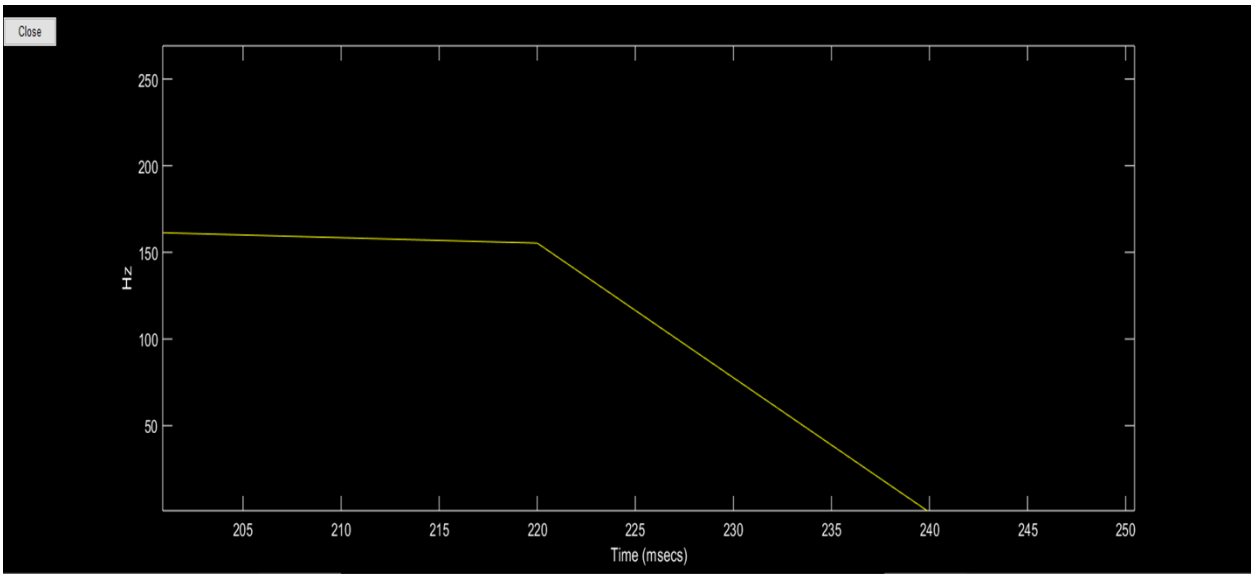
=> F0=200 Hz

150-200 ms



=> F0=190 Hz

200-250 ms



=> F0 = 160 Hz pana la 220 ms dupa care scade drastic

- **Realizati implementarea proprie pe baza modelului sau folosind functia rceps**

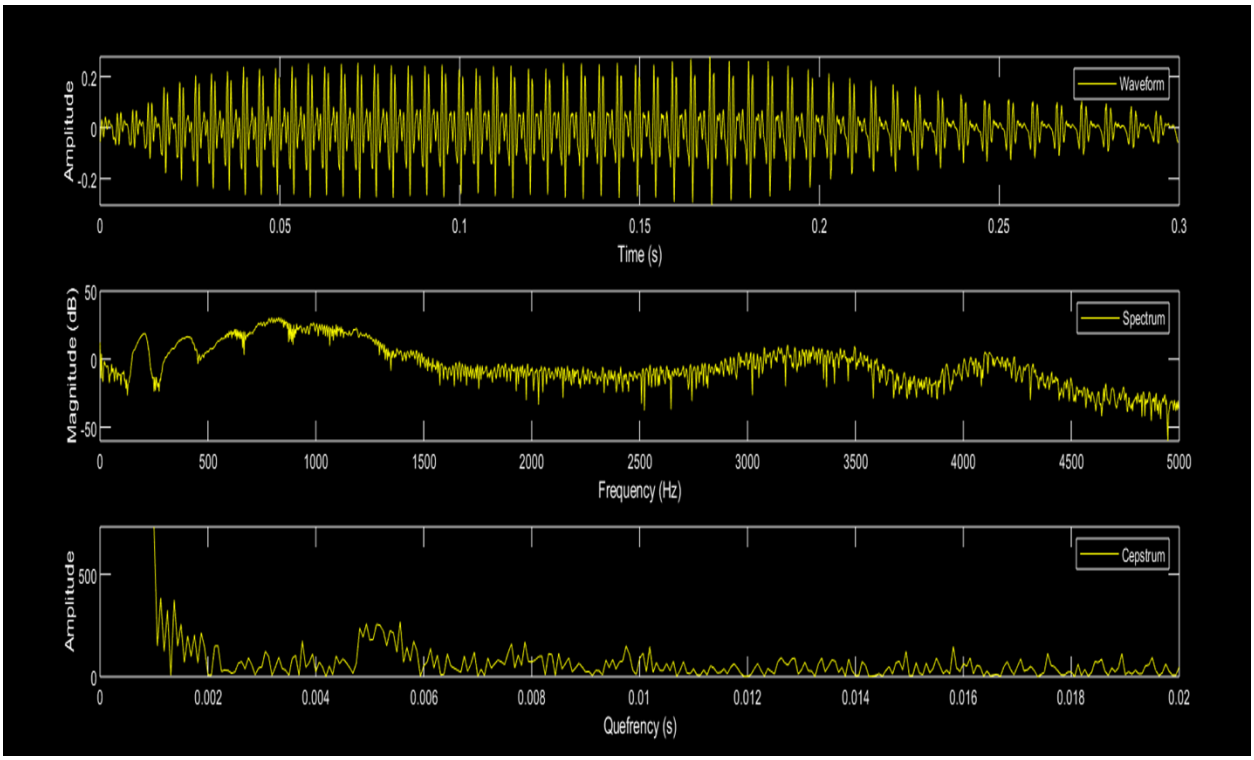
Pe baza modelului

```
%MODEL FF din CESPTRUM
% get a section of vowel
[x,fs]=audioread('a from hall.wav');
%[x,fs]=audioread('a.wav',[5894 6350]);
ms1=fs/1000; % maximum speech Fx at 1000Hz
ms20=fs/50; % minimum speech Fx at 50Hz
%
% plot waveform
t=(0:length(x)-1)/fs; % times of sampling instants
subplot(3,1,1);
plot(t,x);
legend('Waveform');
xlabel('Time (s)');
ylabel('Amplitude');
%
% do fourier transform of windowed signal
Y=fft(x.*hamming(length(x)));
%
% plot spectrum of bottom 5000Hz
hz5000=5000*length(Y)/fs;
f=(0:hz5000)*fs/length(Y);
subplot(3,1,2);
plot(f,20*log10(abs(Y(1:length(f)))+eps));
legend('Spectrum');
```

```
xlabel('Frequency (Hz)');
ylabel('Magnitude (dB)');
%
% cepstrum is DFT of log spectrum
C=fft(log(abs(Y)+eps));
%
% plot between 1ms (=1000Hz) and 20ms (=50Hz)
q=(ms1:ms20)/fs;
subplot(3,1,3);
plot(q,abs(C(ms1:ms20)));
legend('Cepstrum');
xlabel('Quefrency (s)');
ylabel('Amplitude');

[c,fx]=max(abs(C(ms1:ms20)));
fprintf('Fx=%gHz\n',fs/(ms1+fx-1));
```

Command Window

```
>> [c,fx]=max(abs(C(ms1:ms20)))
fprintf('Fx=%gHz\n',fs/(ms1+fx-1))

c =

  731.5752


fx =

     1

Fx=1000Hz
```



Se poate observa ca atat in experimetul Colea, cat si in implementarea realizata de noi, average f0 are aceeasi valoare, mai exact f0=190.72 Hz.