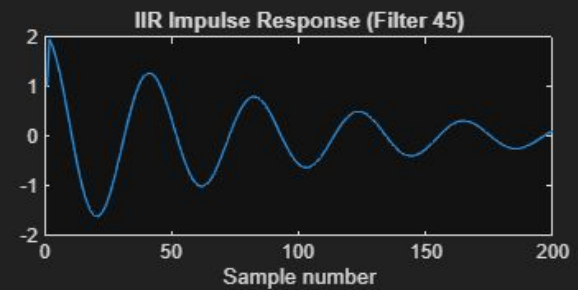
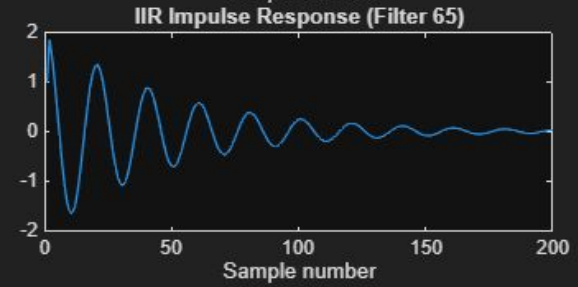
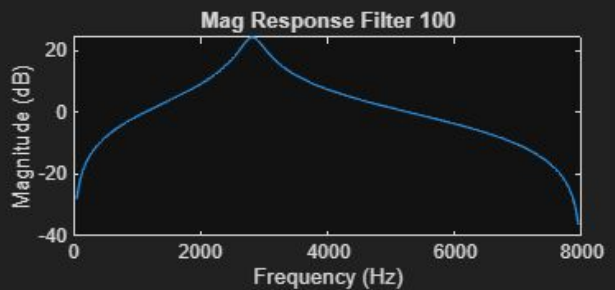
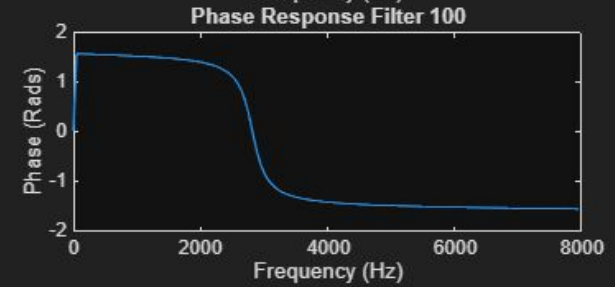
Elec3104 :(

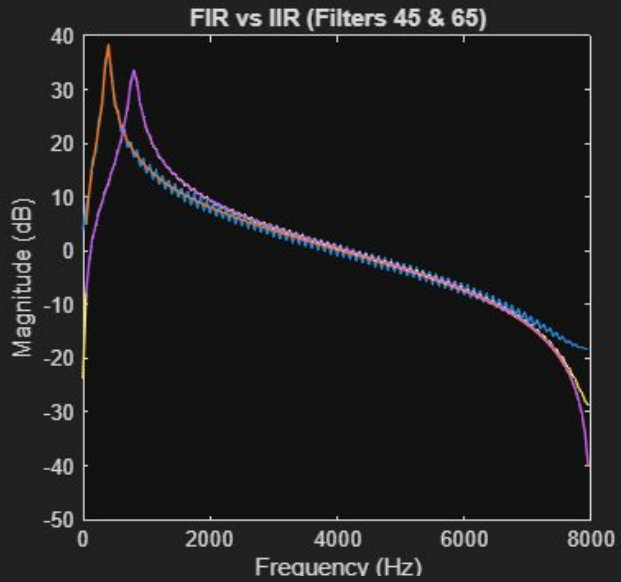
Neil Tharol z5592479

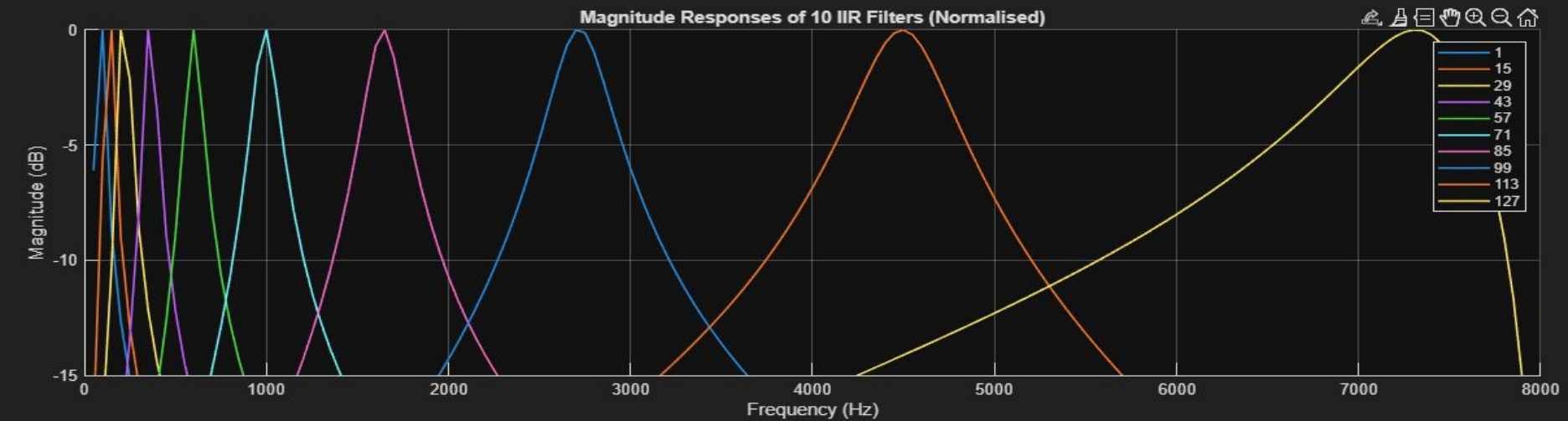

IIR Impulse Response (Filter 45)
Sample number

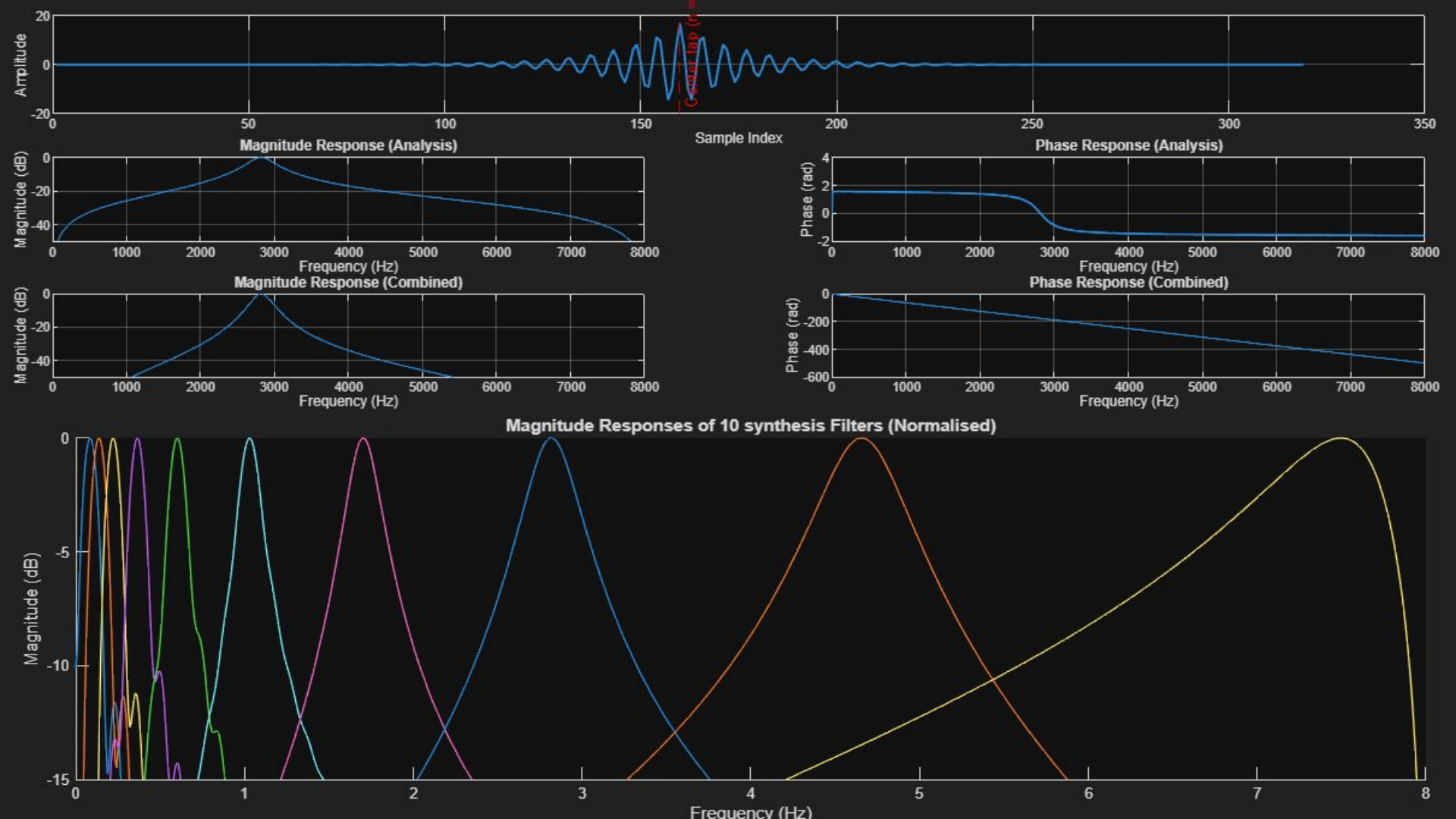

IIR Impulse Response (Filter 65)
Sample number

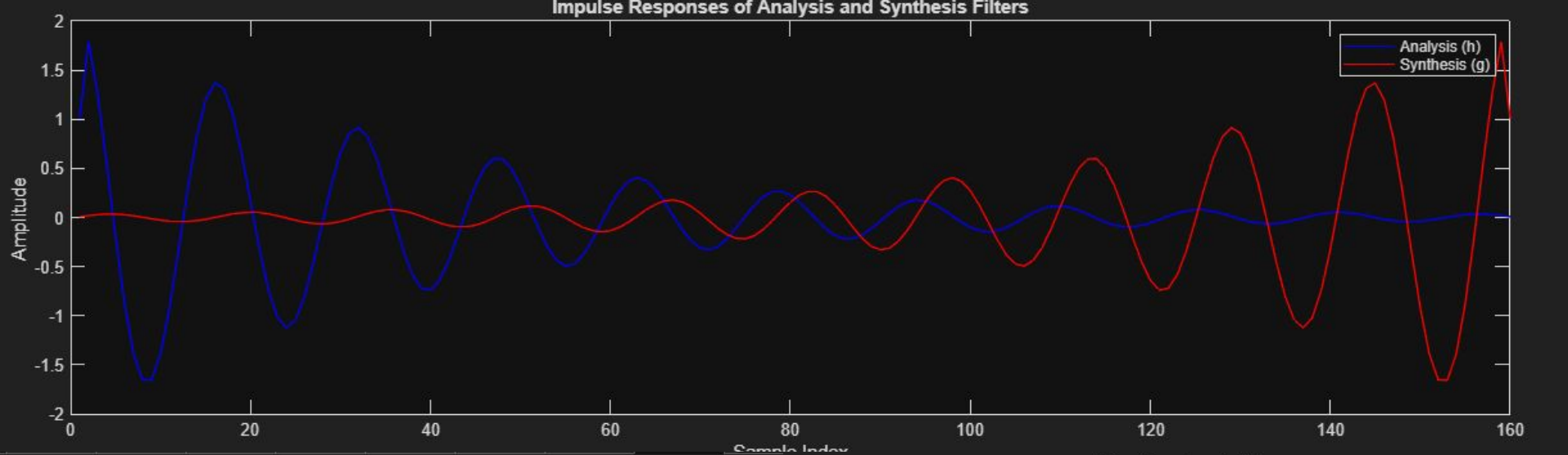

Mag Response Filter 100
Magnitude (dB)
Frequency (Hz)

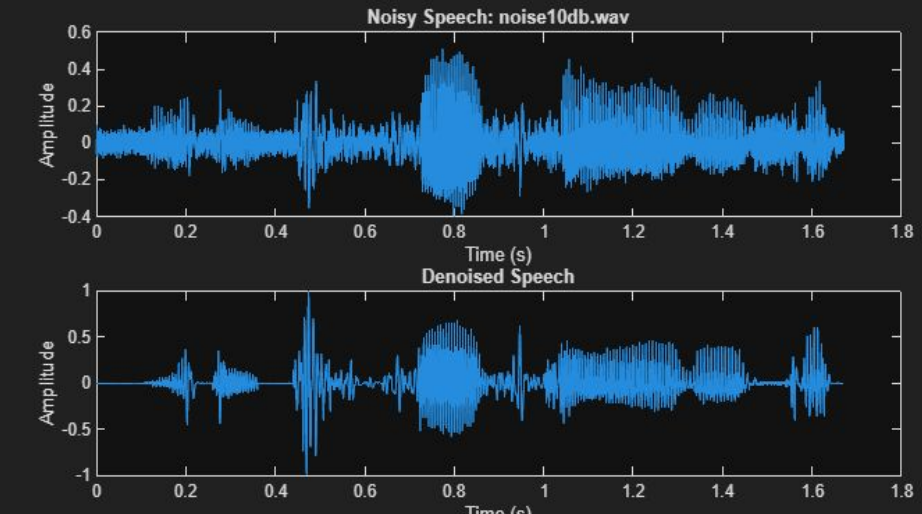

Phase Response Filter 100
Phase (Rads)
Frequency (Hz)

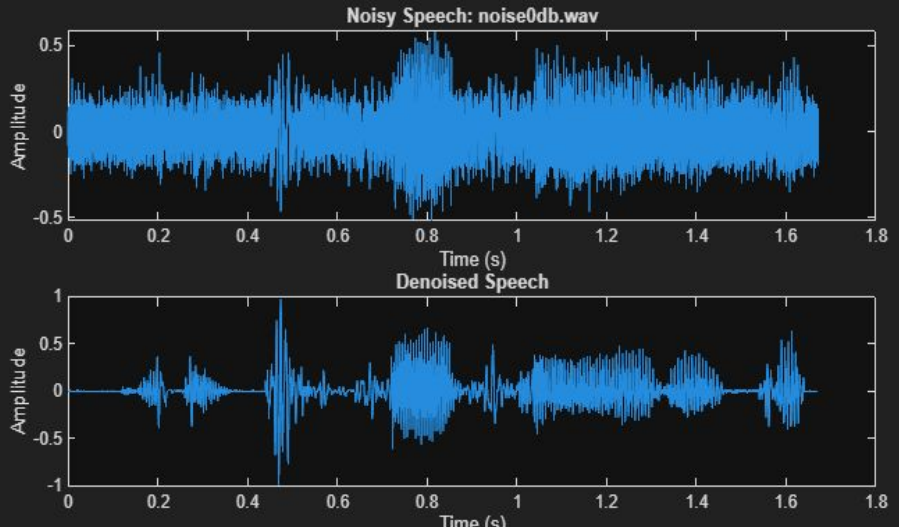

FIR vs IIR (Filters 45 & 65)
Magnitude (dB)
Frequency (Hz)

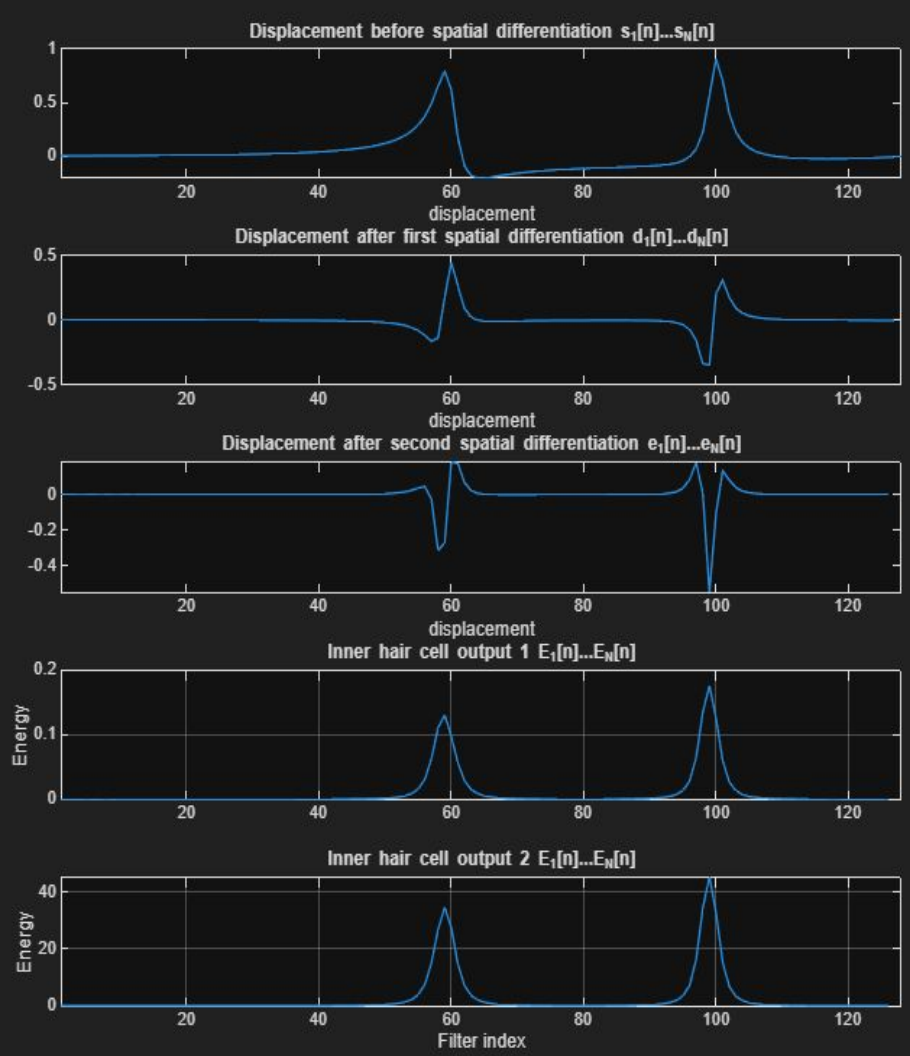

Magnitude Responses of 10 IIR Filters (Normalised)
Magnitude (dB)
Frequency (Hz)
1
15
29
43
57
71
85
99
113
127

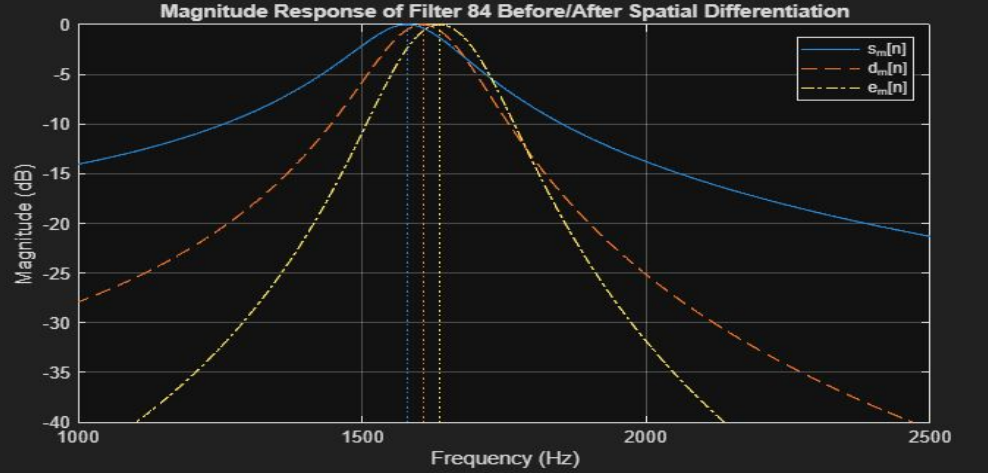

Amplitude
Sample Index
Magnitude Response (Analysis)
Magnitude (dB)
Frequency (Hz)
Phase Response (Analysis)
Phase (rad)
Frequency (Hz)
Magnitude Response (Combined)
Magnitude (dB)
Frequency (Hz)
Phase Response (Combined)
Phase (rad)
Frequency (Hz)
Magnitude Responses of 10 synthesis Filters (Normalised)
Magnitude (dB)
Frequency (Hz)

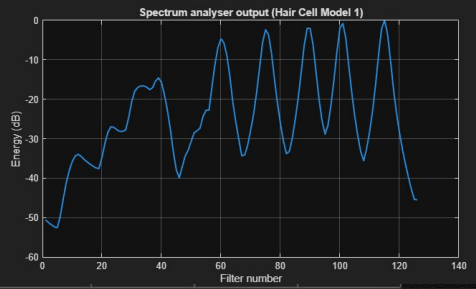

Impulse Responses of Analysis and Synthesis Filters
Analysis (h)
Synthesis (g)
Amplitude
Sample Index

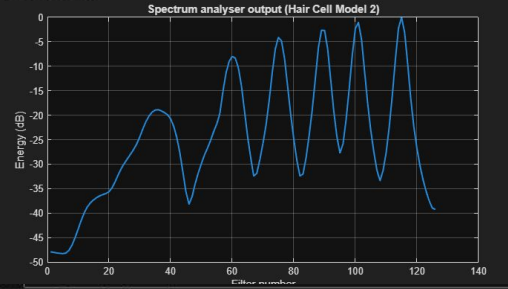

Noisy Speech: noise10db.wav
Amplitude
Time (s)
Denoised Speech
Amplitude
Time (s)

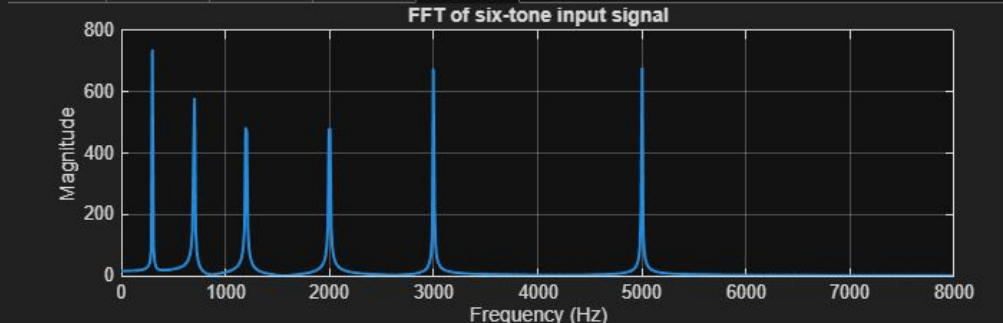

Noisy Speech: noise0db.wav
Amplitude
Time (s)
Denoised Speech
Amplitude
Time (s)

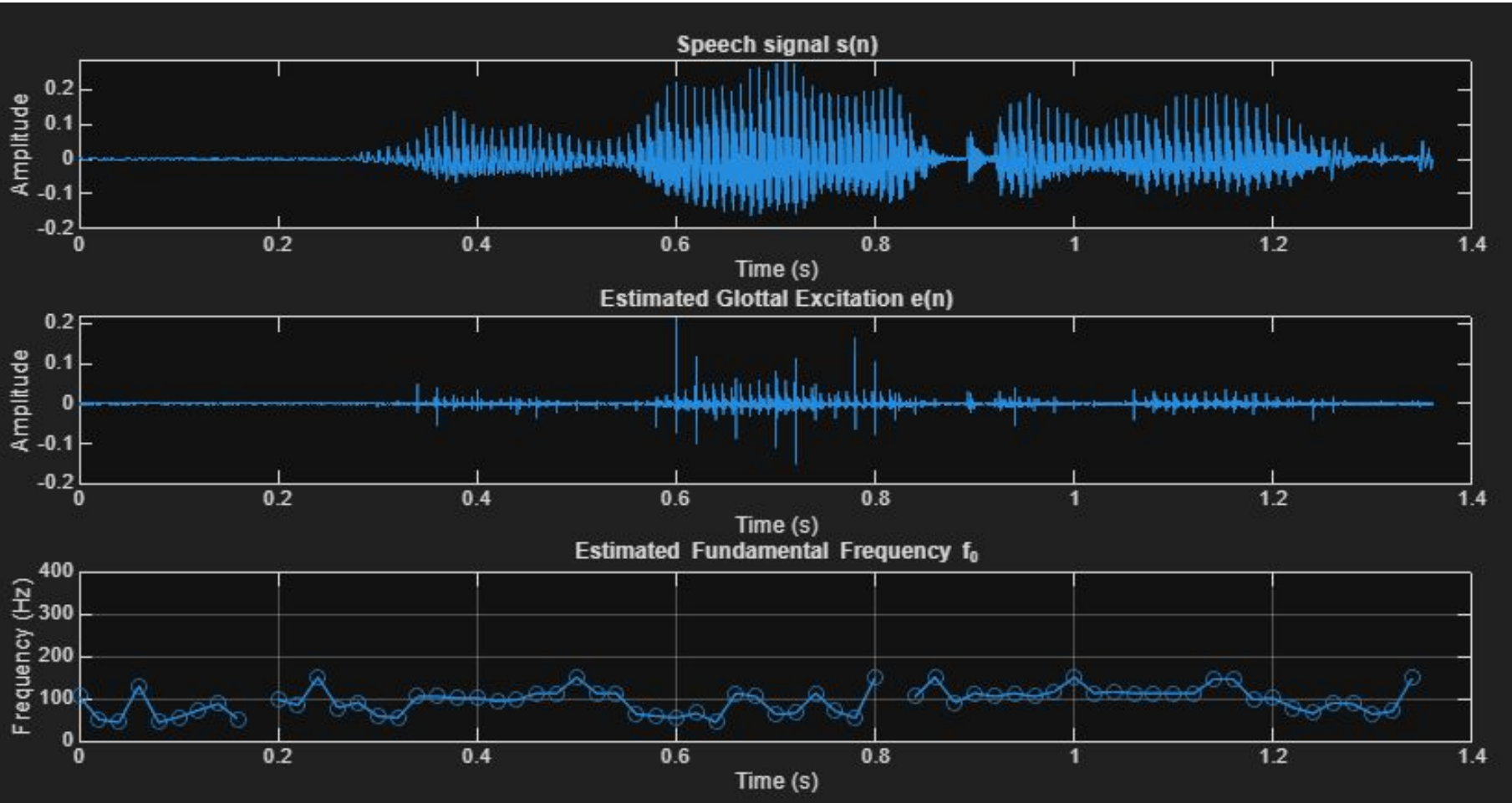

Displacement before spatial differentiation $s_1[n]...s_N[n]$
displacement
Displacement after first spatial differentiation $d_1[n]...d_N[n]$
displacement
Displacement after second spatial differentiation $e_1[n]...e_N[n]$
displacement
Inner hair cell output 1 $E_1[n]...E_N[n]$
Energy
Inner hair cell output 2 $E_1[n]...E_N[n]$
Energy
Filter index

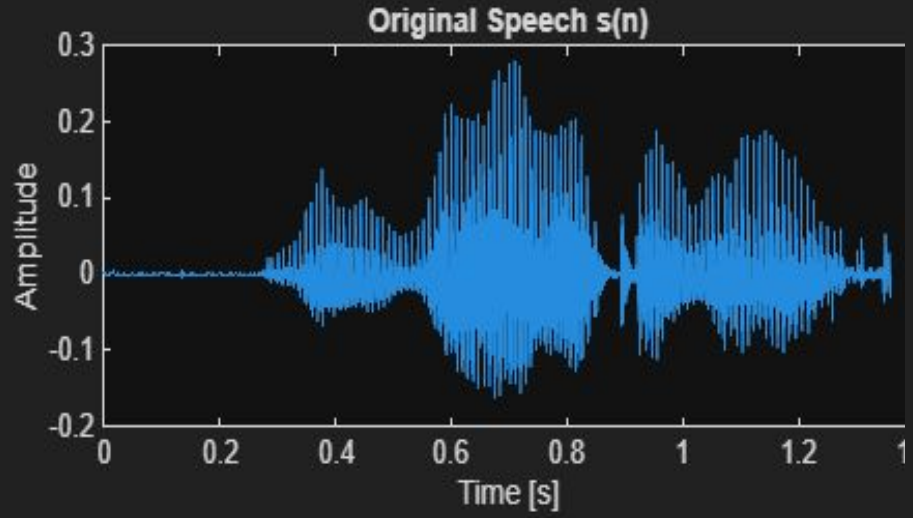

Magnitude Response of Filter 84 Before/After Spatial Differentiation
$s_m[n]$
$d_m[n]$
$e_m[n]$
Magnitude (dB)
Frequency (Hz)

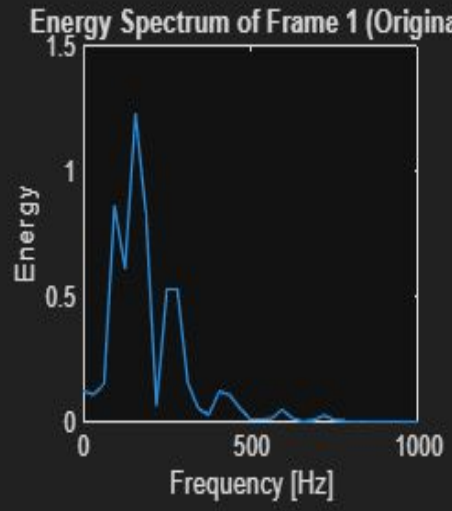

Spectrum analyser output (Hair Cell Model 1)
Energy (dB)
Filter number

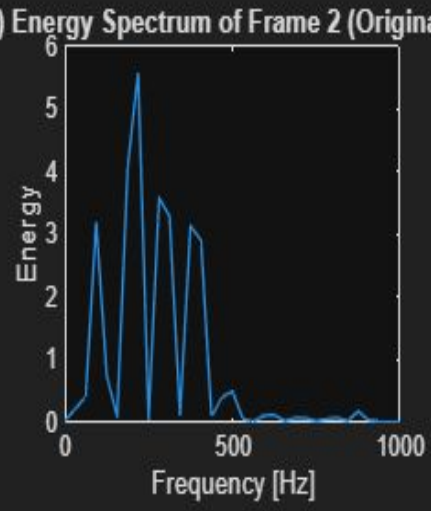

Spectrum analyser output (Hair Cell Model 2)
Energy (dB)

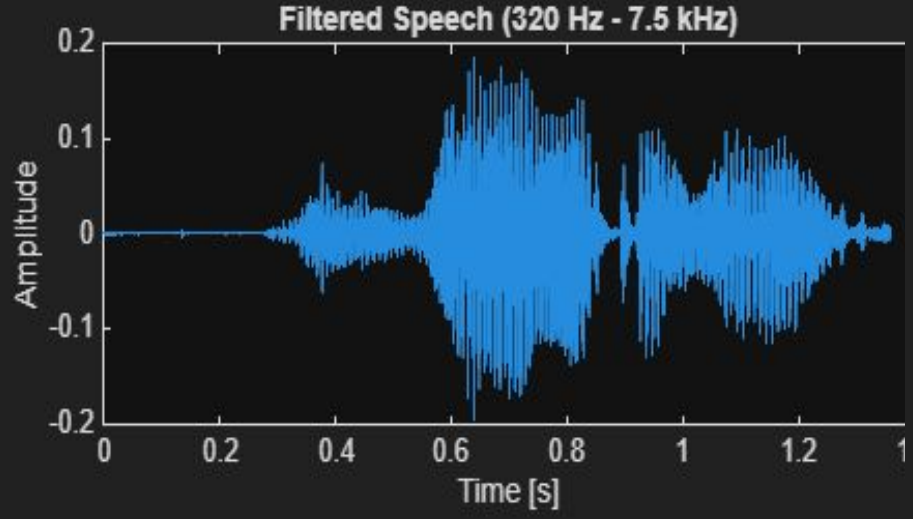

FFT of six-tone input signal
Magnitude
Frequency (Hz)

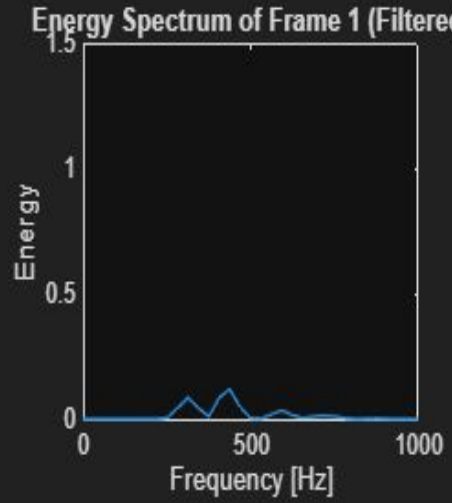

Speech signal s(n)
Amplitude
0.2
0.1
0
-0.1
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Time (s)
Estimated Glottal Excitation e(n)
Amplitude
0.2
0.1
0
-0.1
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Time (s)
Estimated Fundamental Frequency f_0
Frequency (Hz)
400
300
200
100
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Time (s)

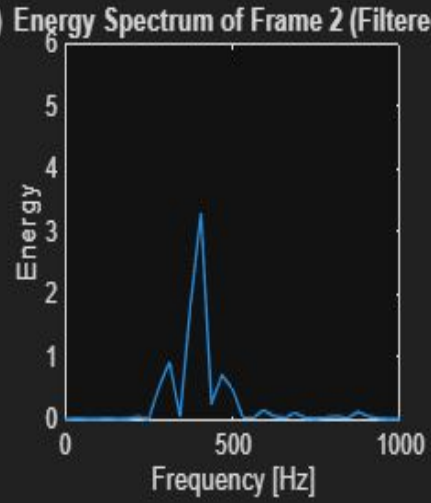

Original Speech s(n)
Amplitude
Time [s]


Energy Spectrum of Frame 1 (Original)
Energy
Frequency [Hz]


Energy Spectrum of Frame 2 (Original)
Energy
Frequency [Hz]


Filtered Speech (320 Hz - 7.5 kHz)
Amplitude
Time [s]


Energy Spectrum of Frame 1 (Filtered)
Energy
Frequency [Hz]


Energy Spectrum of Frame 2 (Filtered)
Energy
Frequency [Hz]