**Calculating Azimuth and Elevation Indeces:**

a.

Θ=-90,Φ=0

azm ≈ 1

Φ = -45 + 5.025\*eln

eln = (Φ+45)/5.025

eln = 45/5.025

eln ≈ 9

b.

Θ = 90, Φ=0

azm ≈ 25

eln ≈ 9

c.

Θ = 0, Φ= 90

azm = 13

eln = (Φ+45)/5.025

eln = 135/5.025

eln ≈ 27

d.

Θ = -90, Φ= 90

azm ≈ 1

eln ≈ 27

**MATLAB Code:**

a.

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_r') % Load HRIR for right channel

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_l') % Load HRIR for left channel

xster = wavread ('/Volumes/BOOTCAMP/socket\_bsck/LOOPS\_BIN/Organs Licks/Organ Lick 48-12.wav'); % Read mono wav file

x = xster(:,1);

hr = squeeze(hrir\_r(1,9,:)); % Create HRIR for right ear using azimuth and elevation indeces aproximating a sound directly left of a head

hl = squeeze(hrir\_l(1,9,:)); % Create same HRIR for left ear

yr = filter (hr,1,x); % Create right output channel

subplot(2,1,1);

plot(yr);

title('Right Channel Output');

yl = filter (hl,1,x); % Create left output channel

subplot(2,1,2);

plot(yl);

title('Left Channel Output');

y=[yl,yr];

soundsc(y, 44100); % Play stereo sound

b.

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_r') % Load HRIR for right channel

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_l') % Load HRIR for left channel

xster = wavread ('/Volumes/BOOTCAMP/socket\_bsck/LOOPS\_BIN/Organs Licks/Organ Lick 48-12.wav'); % Read mono wav file

x = xster(:,1);

hr = squeeze(hrir\_r(25,9,:)); % Create HRIR for right ear using azimuth and elevation indeces aproximating a sound directly left of a head

hl = squeeze(hrir\_l(25,9,:)); % Create same HRIR for left ear

yr = filter (hr,1,x); % Create right output channel

subplot(2,1,1);

plot(yr);

title('Right Channel Output');

yl = filter (hl,1,x); % Create left output channel

subplot(2,1,2);

plot(yl);

title('Left Channel Output');

y=[yl,yr];

soundsc(y, 44100); % Play stereo sound

c.

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_r') % Load HRIR for right channel

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_l') % Load HRIR for left channel

xster = wavread ('/Volumes/BOOTCAMP/socket\_bsck/LOOPS\_BIN/Organs Licks/Organ Lick 48-12.wav'); % Read mono wav file

x = xster(:,1);

hr = squeeze(hrir\_r(13,27,:)); % Create HRIR for right ear using azimuth and elevation indeces aproximating a sound directly left of a head

hl = squeeze(hrir\_l(13,27,:)); % Create same HRIR for left ear

yr = filter (hr,1,x); % Create right output channel

subplot(2,1,1);

plot(yr);

title('Right Channel Output');

yl = filter (hl,1,x); % Create left output channel

subplot(2,1,2);

plot(yl);

title('Left Channel Output');

y=[yl,yr];

soundsc(y, 44100); % Play stereo sound

d.

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_r') % Load HRIR for right channel

load('/Users/muestudent/Desktop/subject\_165/hrir\_final.mat','hrir\_l') % Load HRIR for left channel

xster = wavread ('/Volumes/BOOTCAMP/socket\_bsck/LOOPS\_BIN/Organs Licks/Organ Lick 48-12.wav'); % Read mono wav file

x = xster(:,1);

hr = squeeze(hrir\_r(1,27,:)); % Create HRIR for right ear using azimuth and elevation indeces aproximating a sound directly left of a head

hl = squeeze(hrir\_l(1,27,:)); % Create same HRIR for left ear

yr = filter (hr,1,x); % Create right output channel

subplot(2,1,1);

plot(yr);

title('Right Channel Output');

yl = filter (hl,1,x); % Create left output channel

subplot(2,1,2);

plot(yl);

title('Left Channel Output');

y=[yl,yr];

soundsc(y, 44100); % Play stereo sound