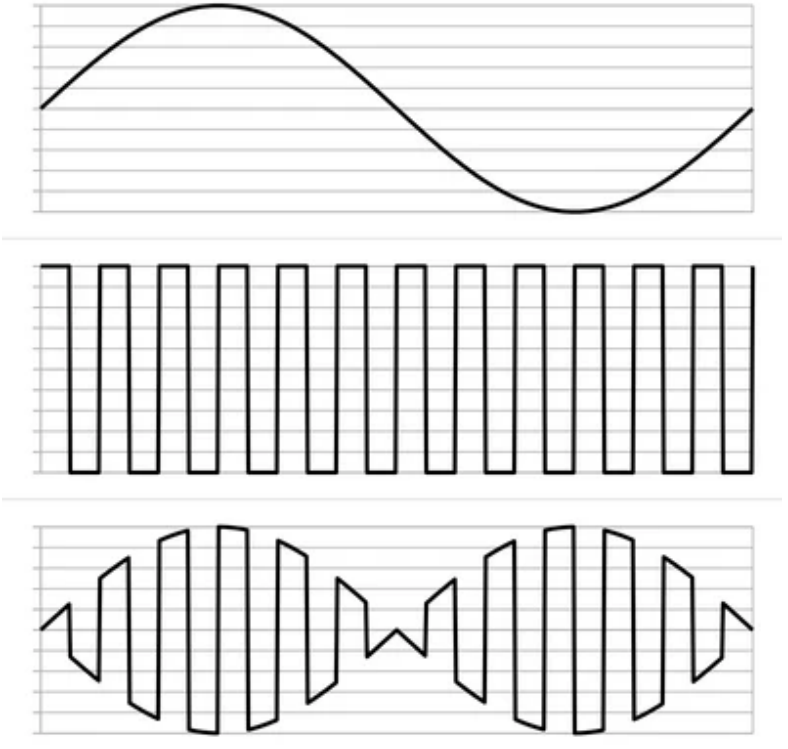
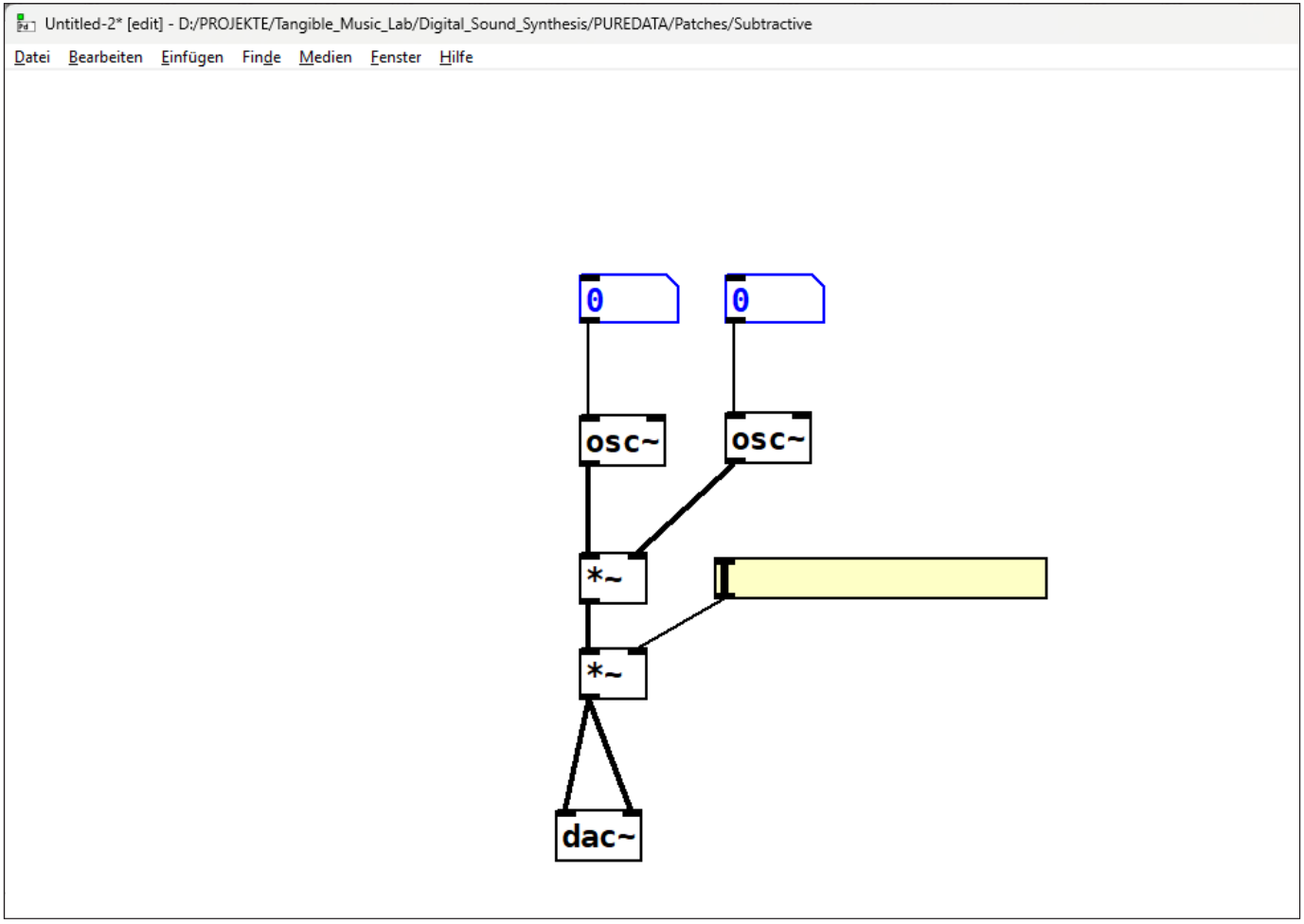
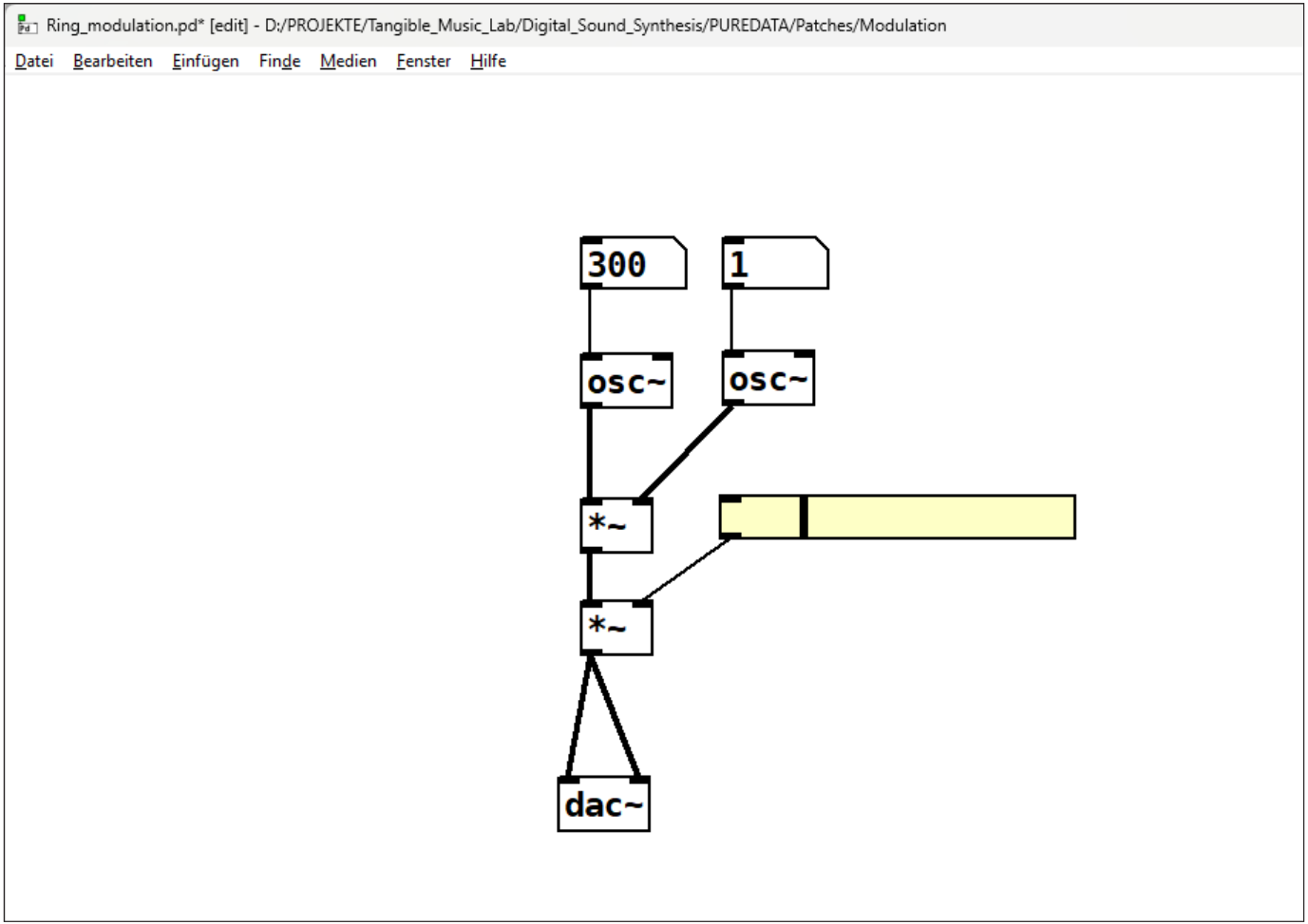
DIGITAL SOUND SYNTHESIS
05

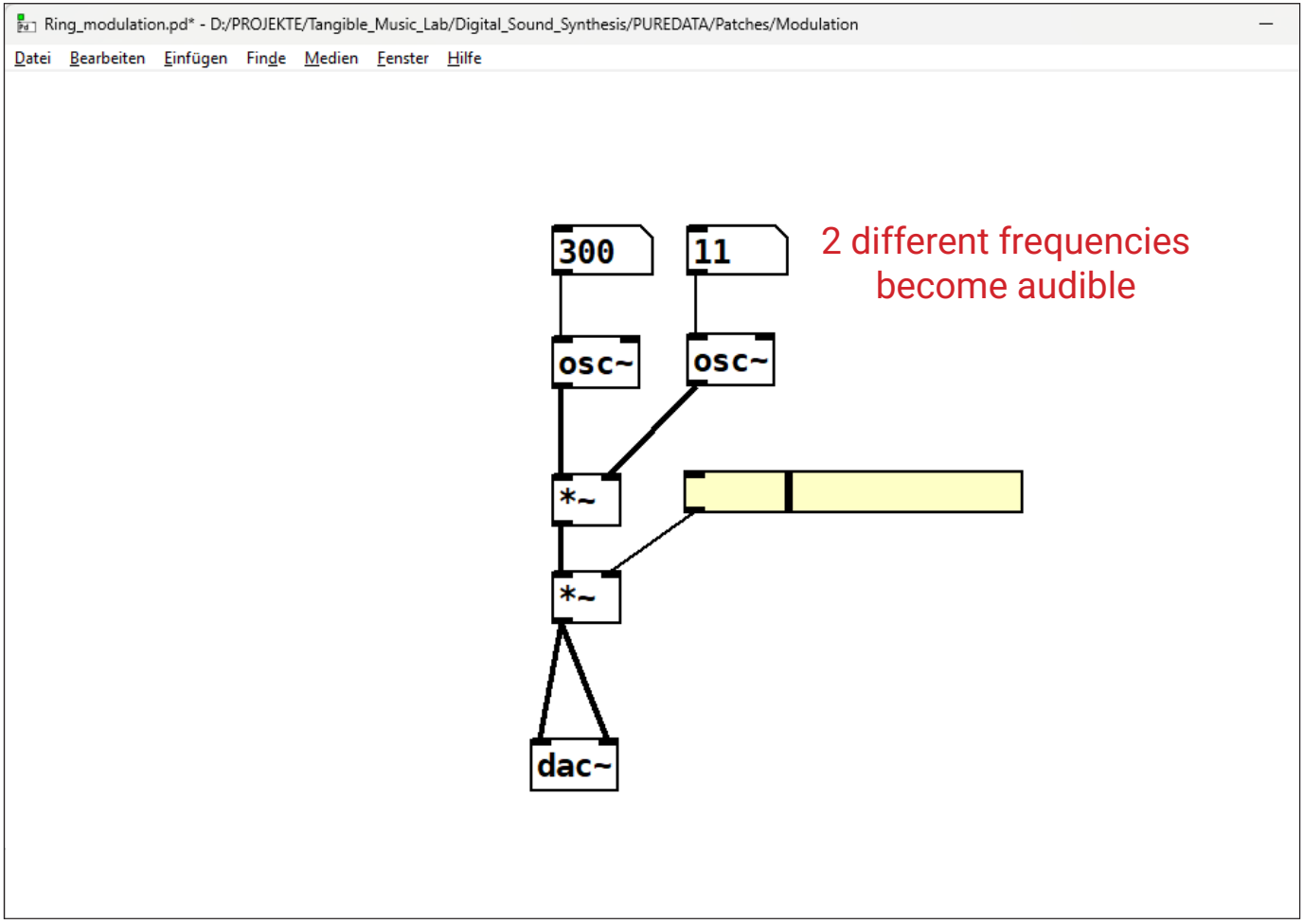


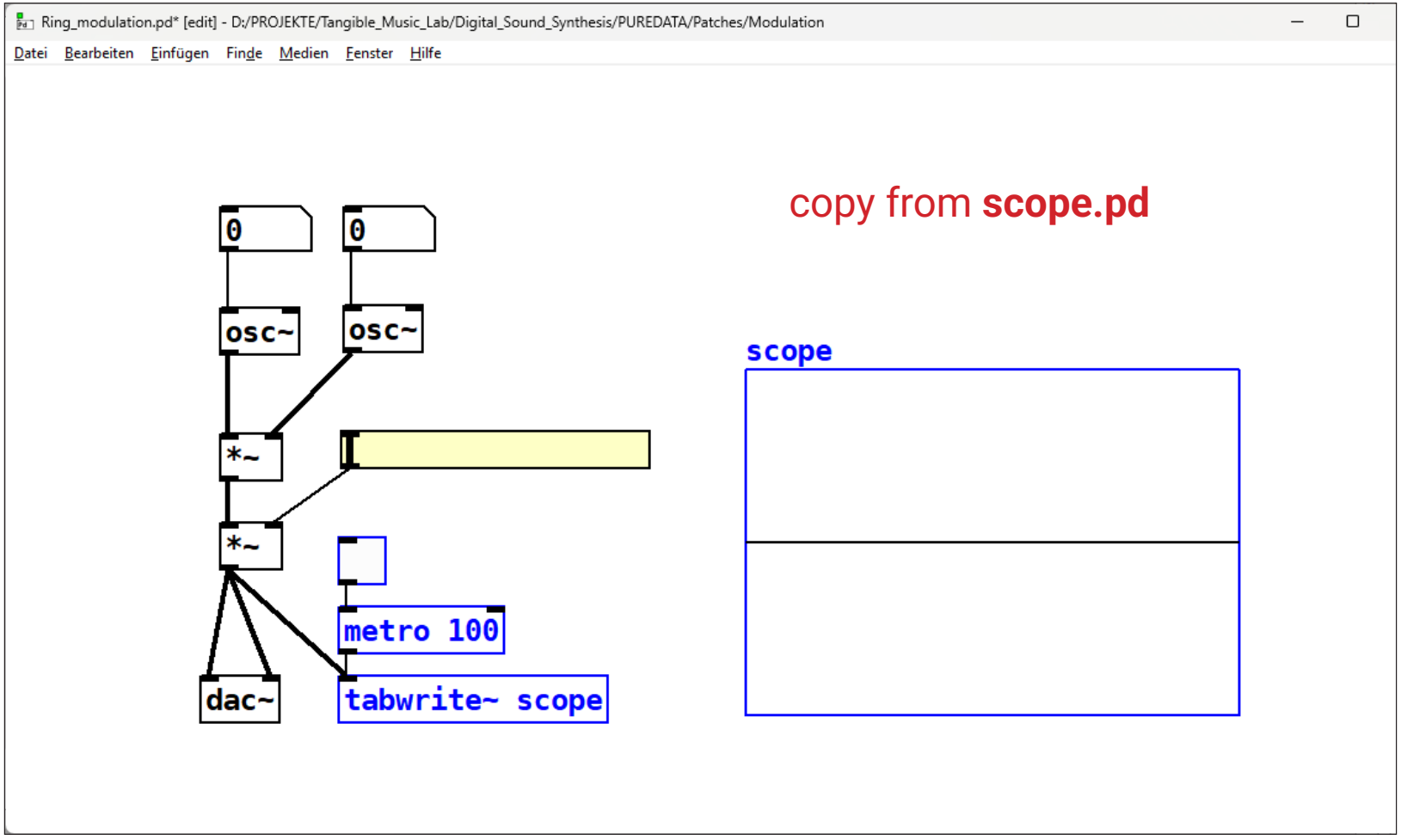
MODULATION SYNTHESIS

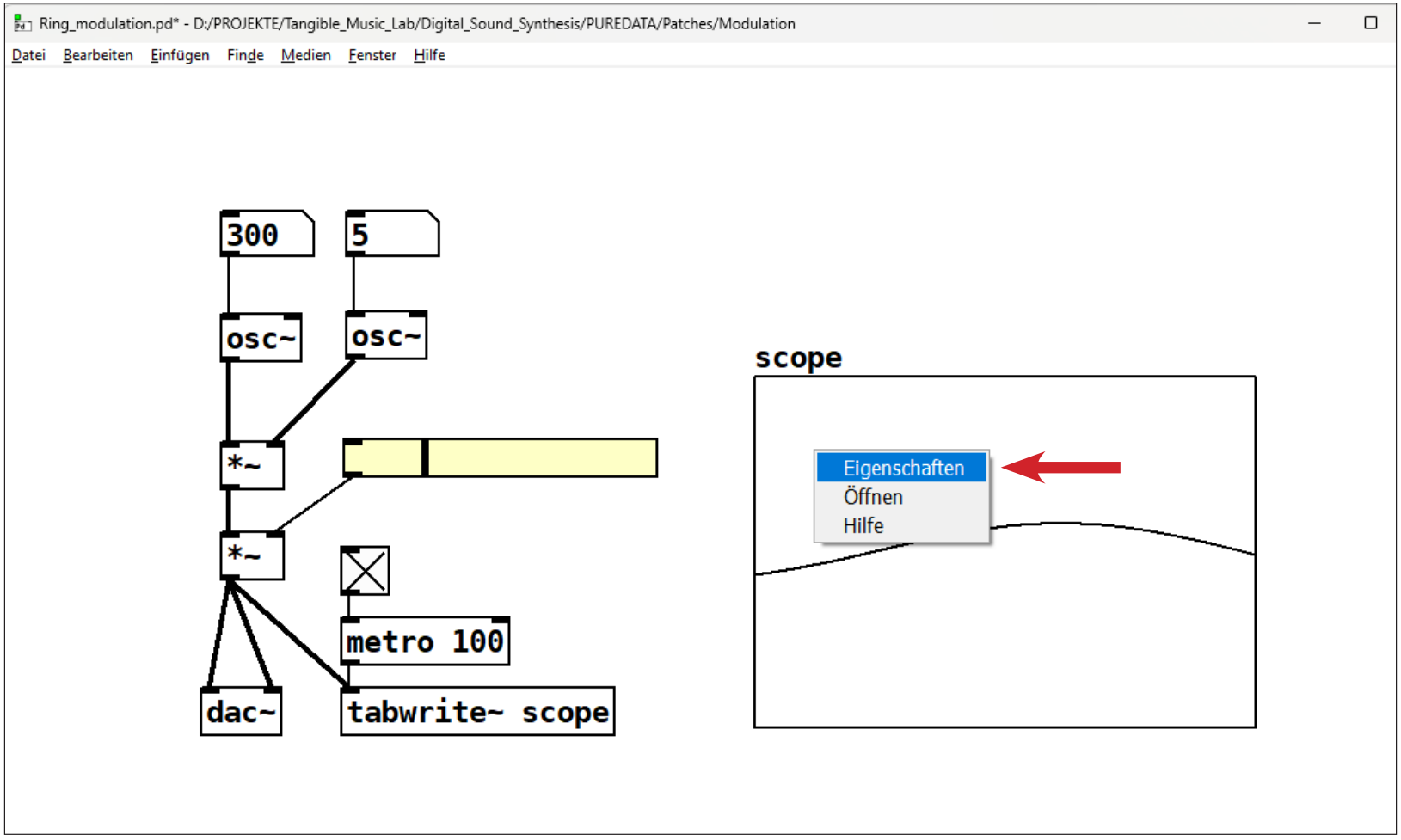
Ring modulation

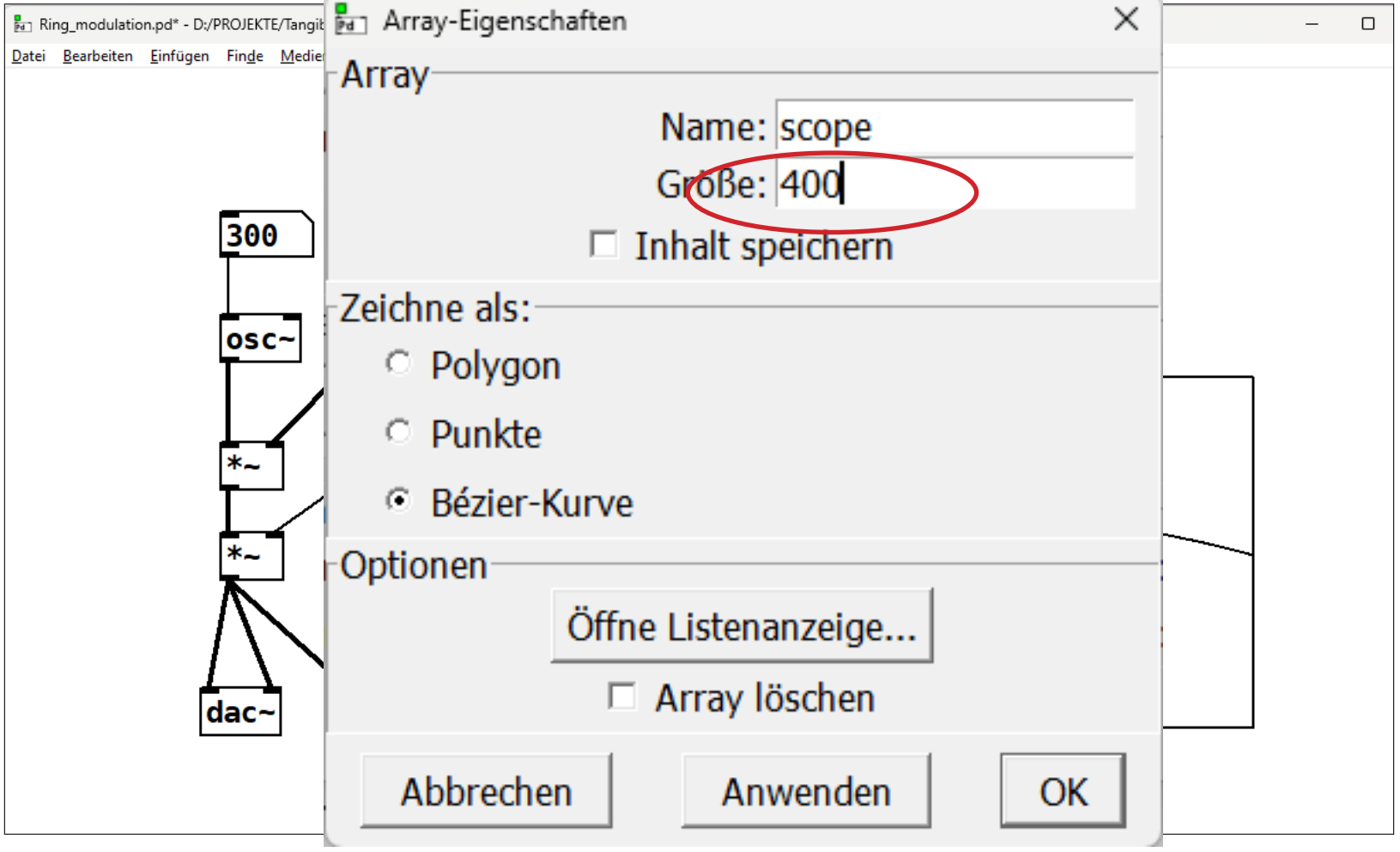

Untitled-2* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Subtractive
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0
0
osc~
osc~
*~
*~
dac~

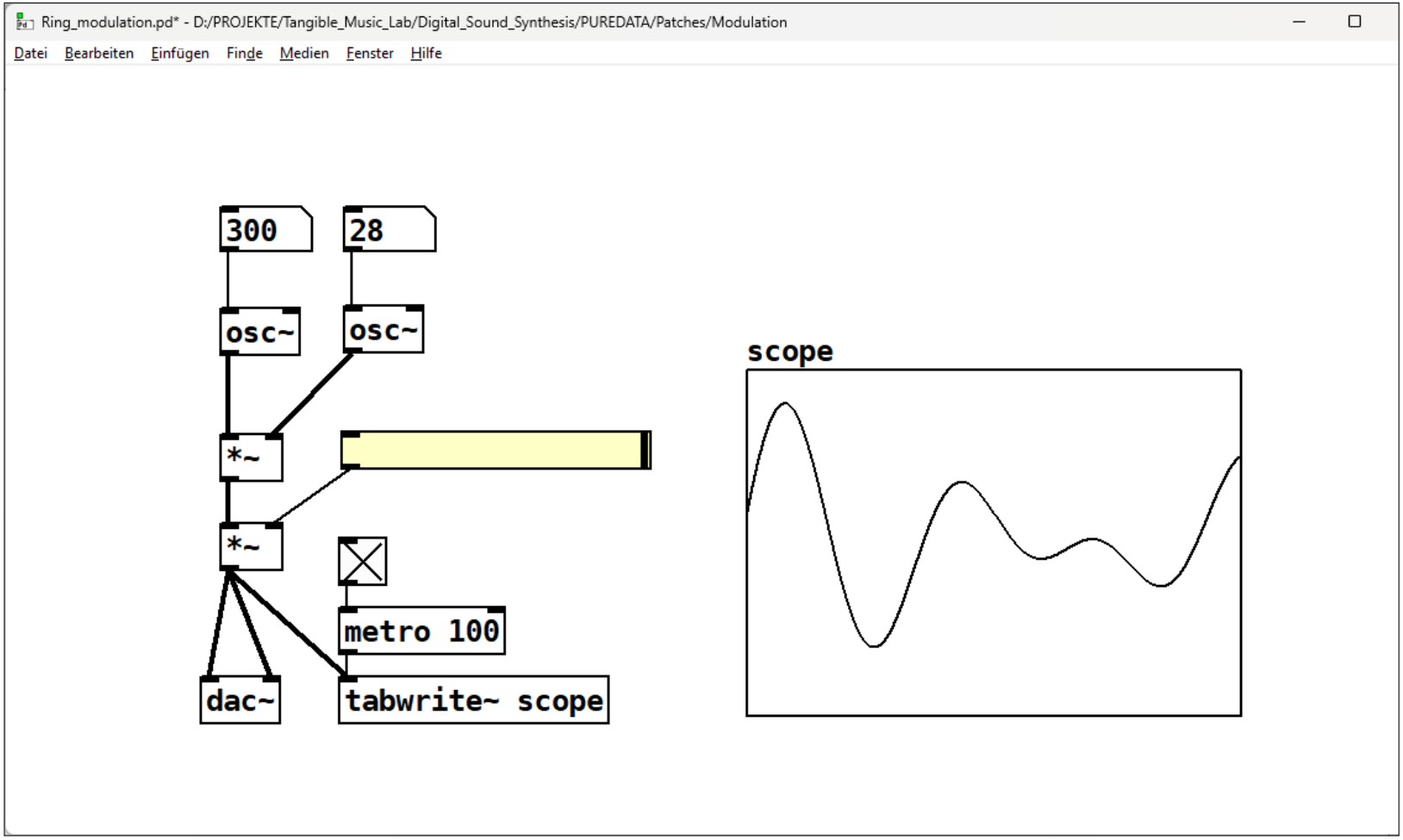

Ring_modulation.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
300
1
osc~
osc~
*~
*~
dac~


Ring_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
300
11
2 different frequencies become audible
osc~
osc~
*~
*~
dac~

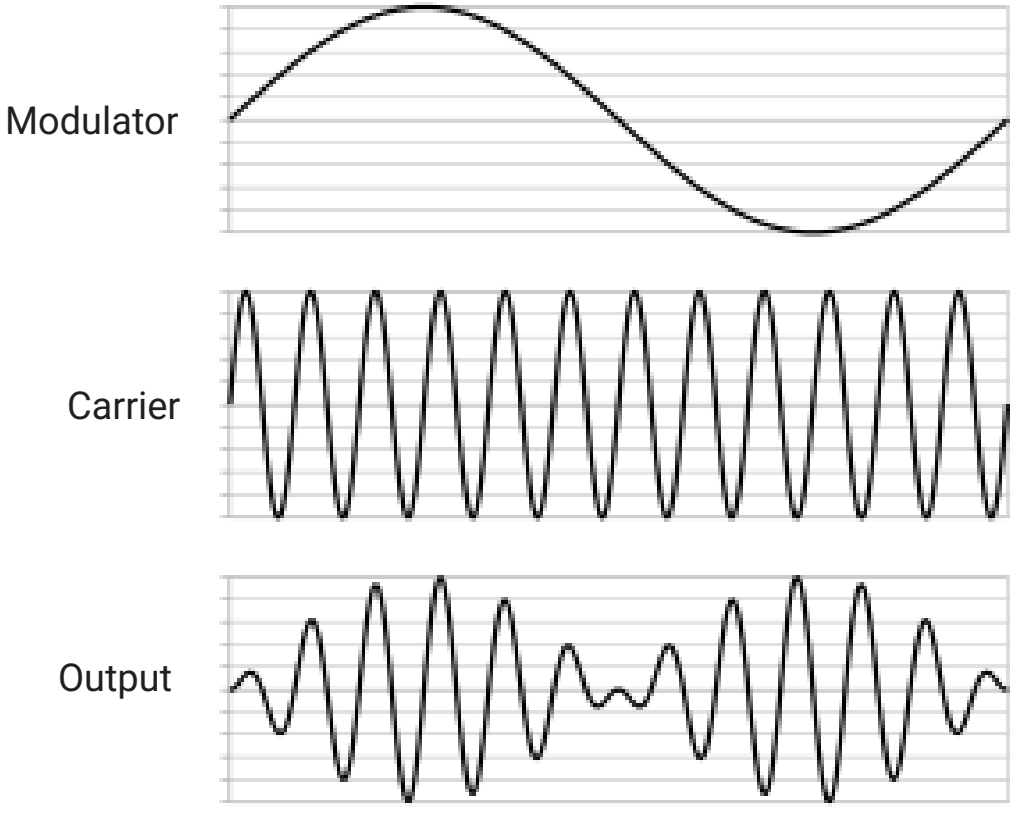

Ring_modulation.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0
0
osc~
osc~
*~
*~
metro 100
dac~
tabwrite~ scope
copy from scope.pd
scope


Ring_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
300
5
osc~
osc~
*~
*~
metro 100
dac~
tabwrite~ scope
scope
Eigenschaften
Öffnen
Hilfe


Ring_modulation.pd* - D:/PROJEKTE/Tangib
Datei Bearbeiten Einfügen Finde Medie
300
osc~
*~
*~
dac~
Array-Eigenschaften
Array
Name: scope
Größe: 400
Inhalt speichern
Zeichne als:
Polygon
Punkte
Bézier-Kurve
Optionen
Öffne Listenanzeige...
Array löschen
Abbrechen
Anwenden
OK

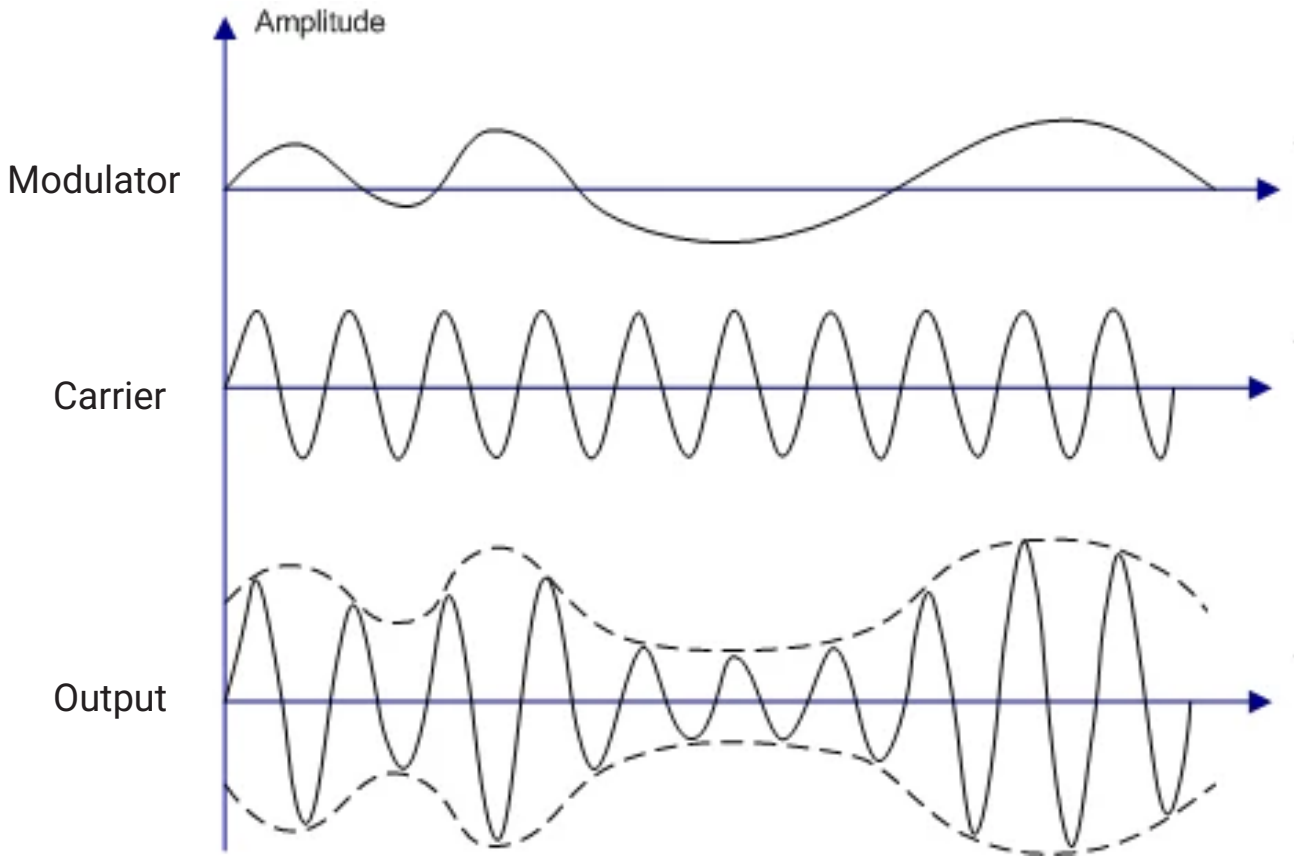

Ring_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
300
28
osc~
osc~
*~
*~
metro 100
dac~
tabwrite~ scope
scope

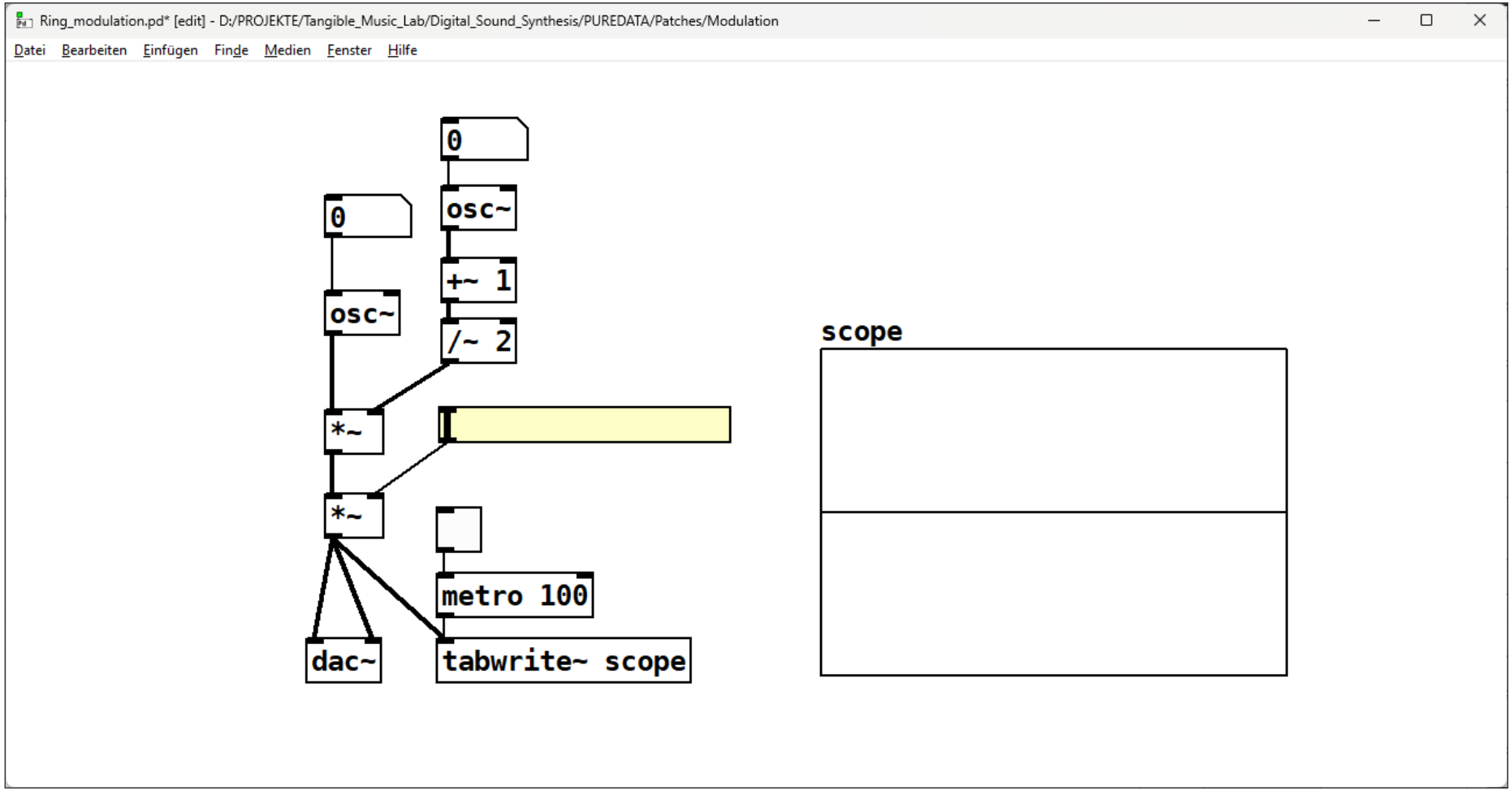
RING MODULATION

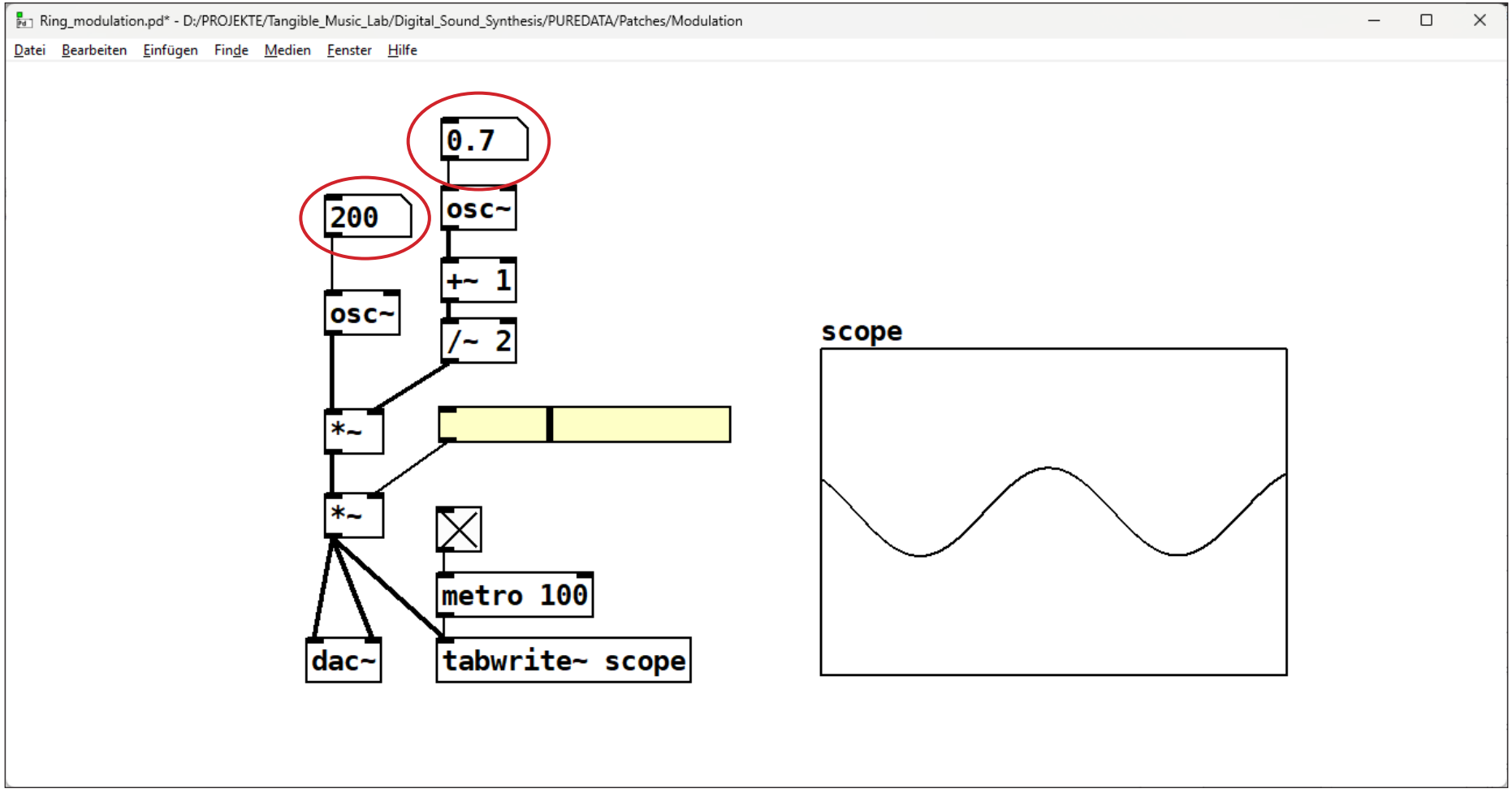


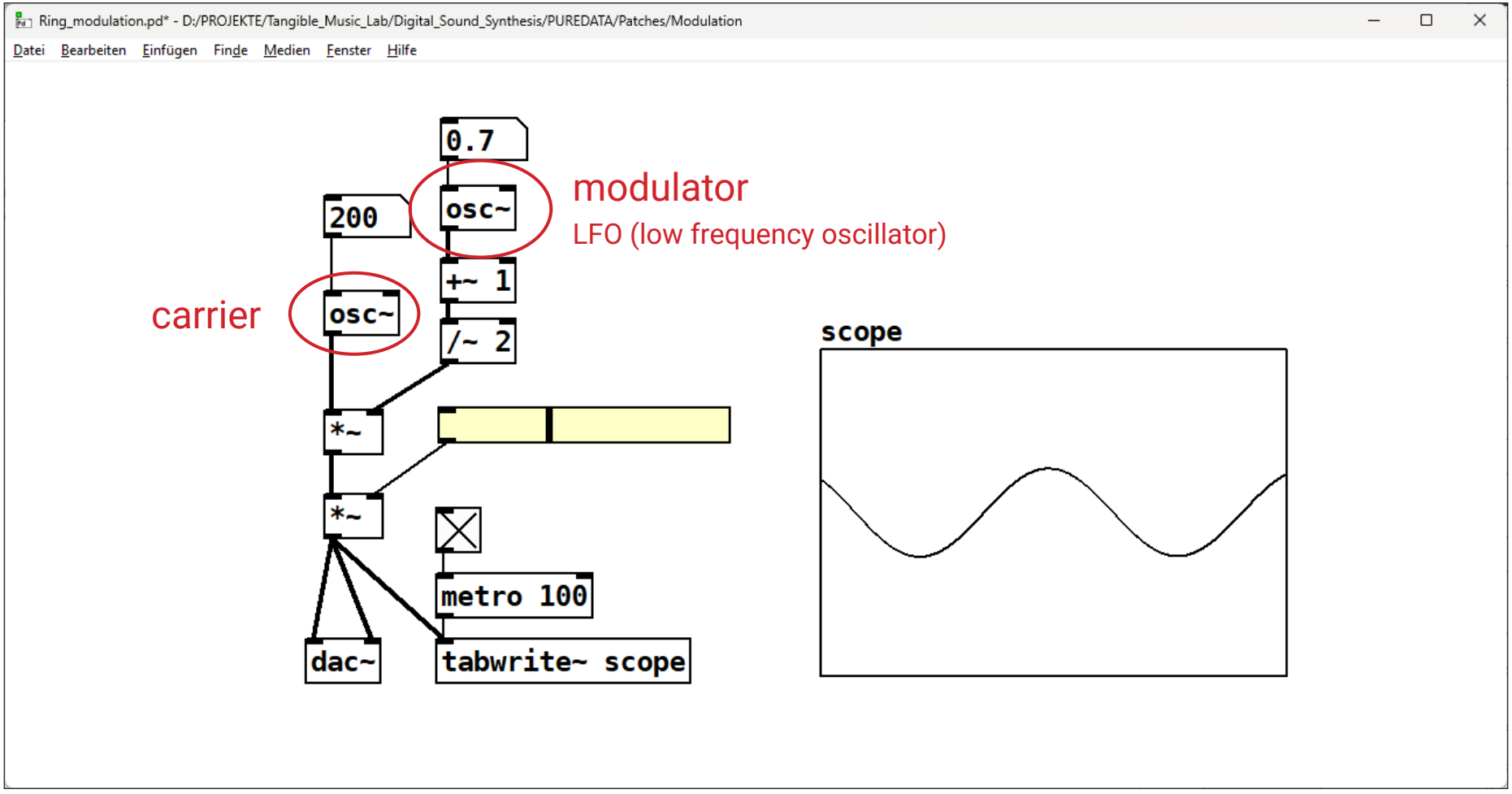
Amplitude modulation

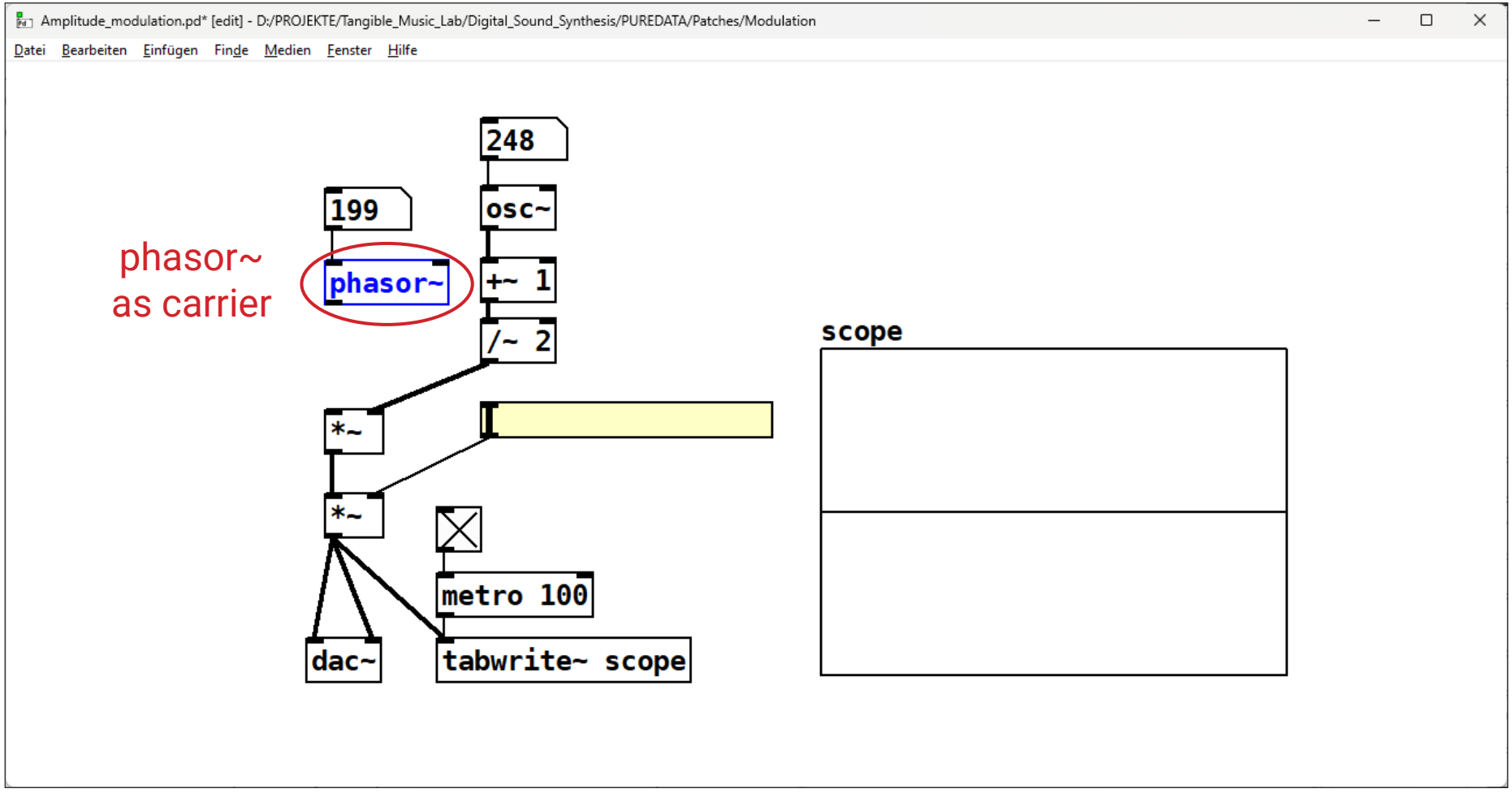
AMPLITUDE MODULATION

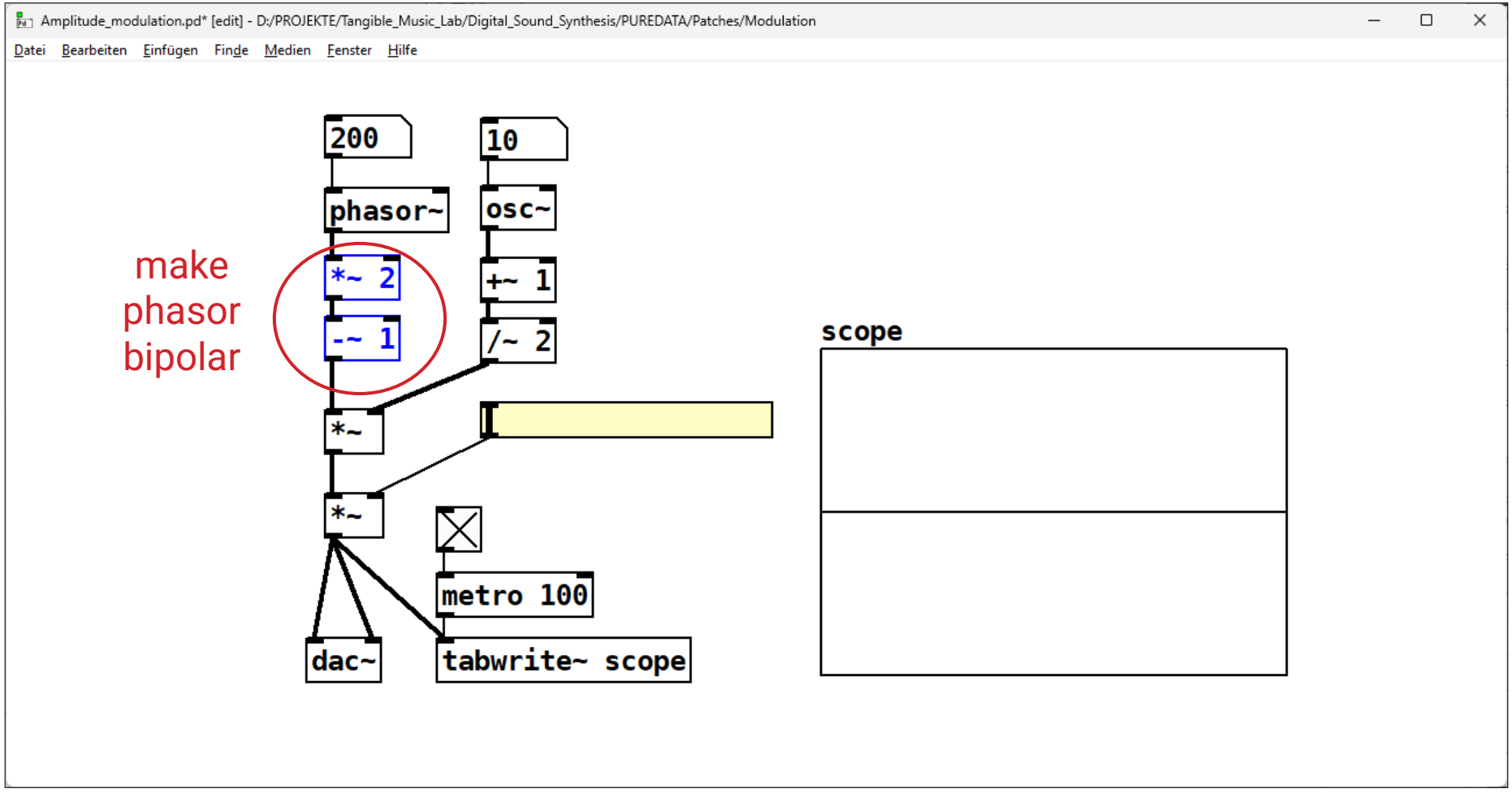


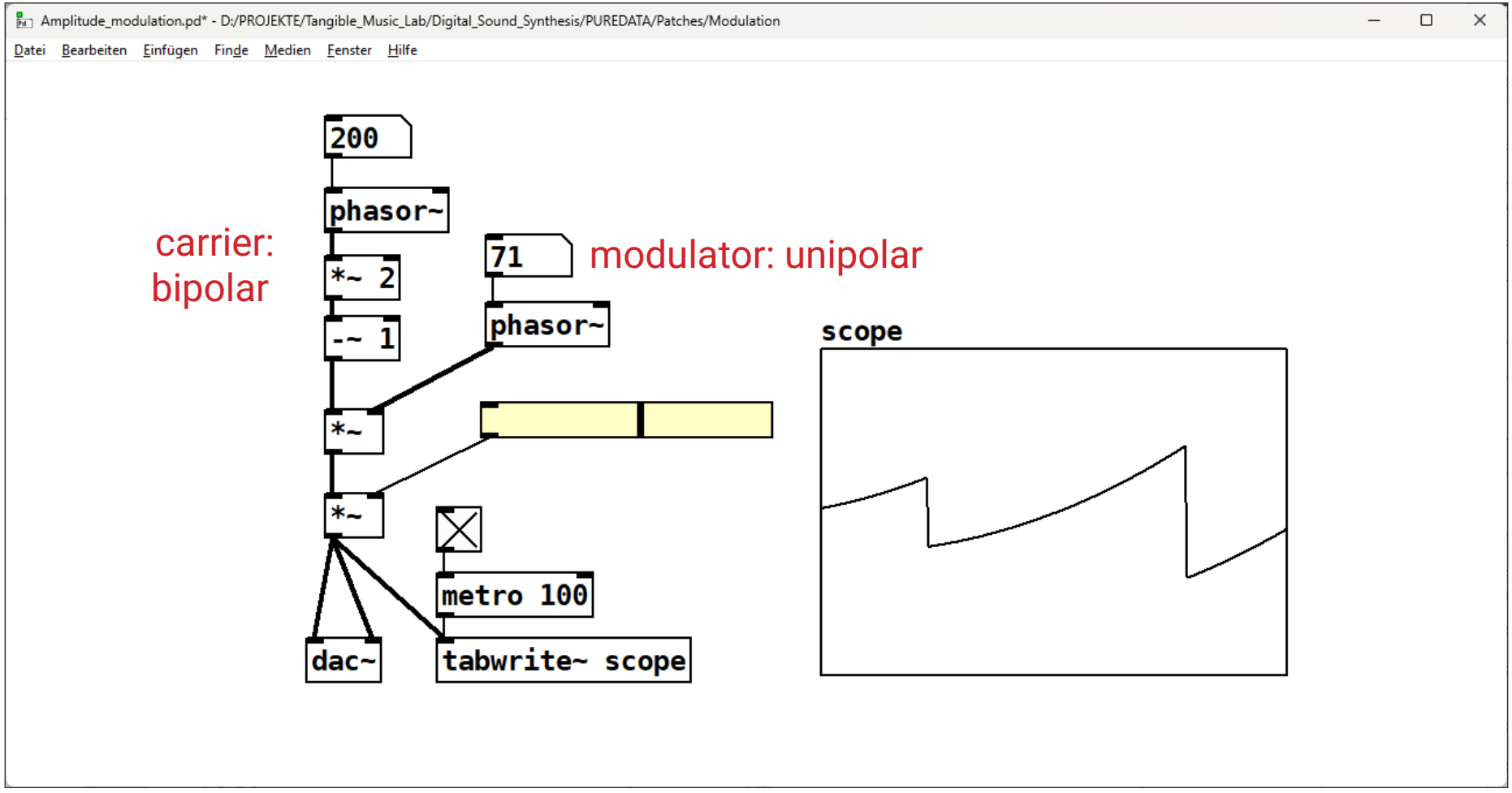

Ring_modulation.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0
0
osc~
osc~
+~ 1
/~ 2
*~
*~
metro 100
dac~
tabwrite~ scope
scope


Ring_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0.7
200
osc~
+~ 1
osc~
/~ 2
*~
*~
metro 100
dac~
tabwrite~ scope
scope


Ring_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0.7
200
osc~
+~ 1
/~ 2
osc~
*~
*~
metro 100
dac~
tabwrite~ scope
modulator
LFO (low frequency oscillator)
carrier
scope

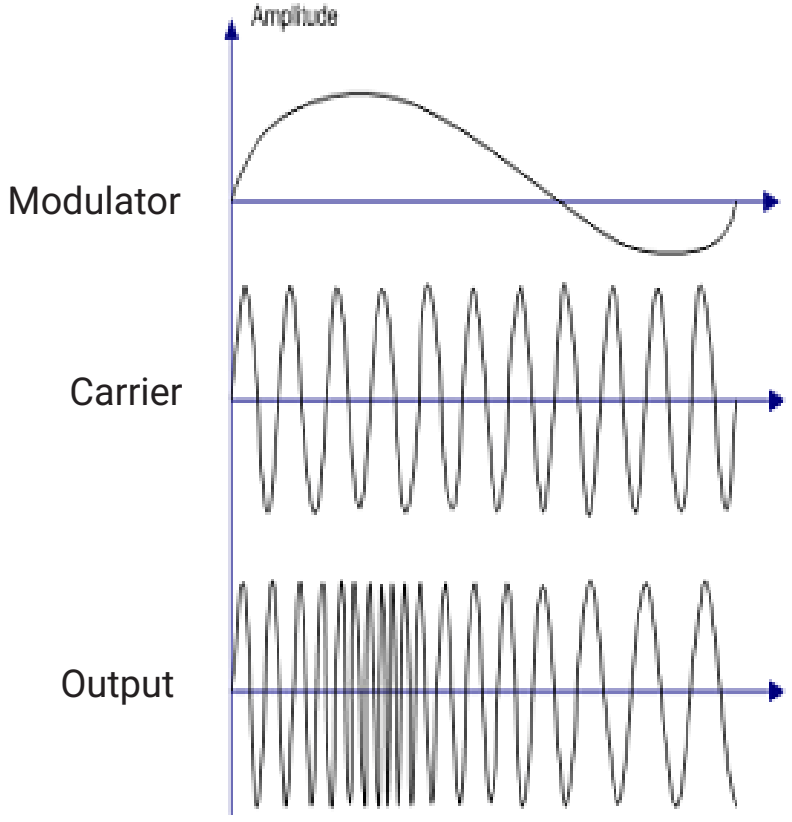

Amplitude_modulation.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
phasor~
as carrier
248
199
osc~
phasor~
+~ 1
/~ 2
*~
*~
metro 100
dac~
tabwrite~ scope
scope

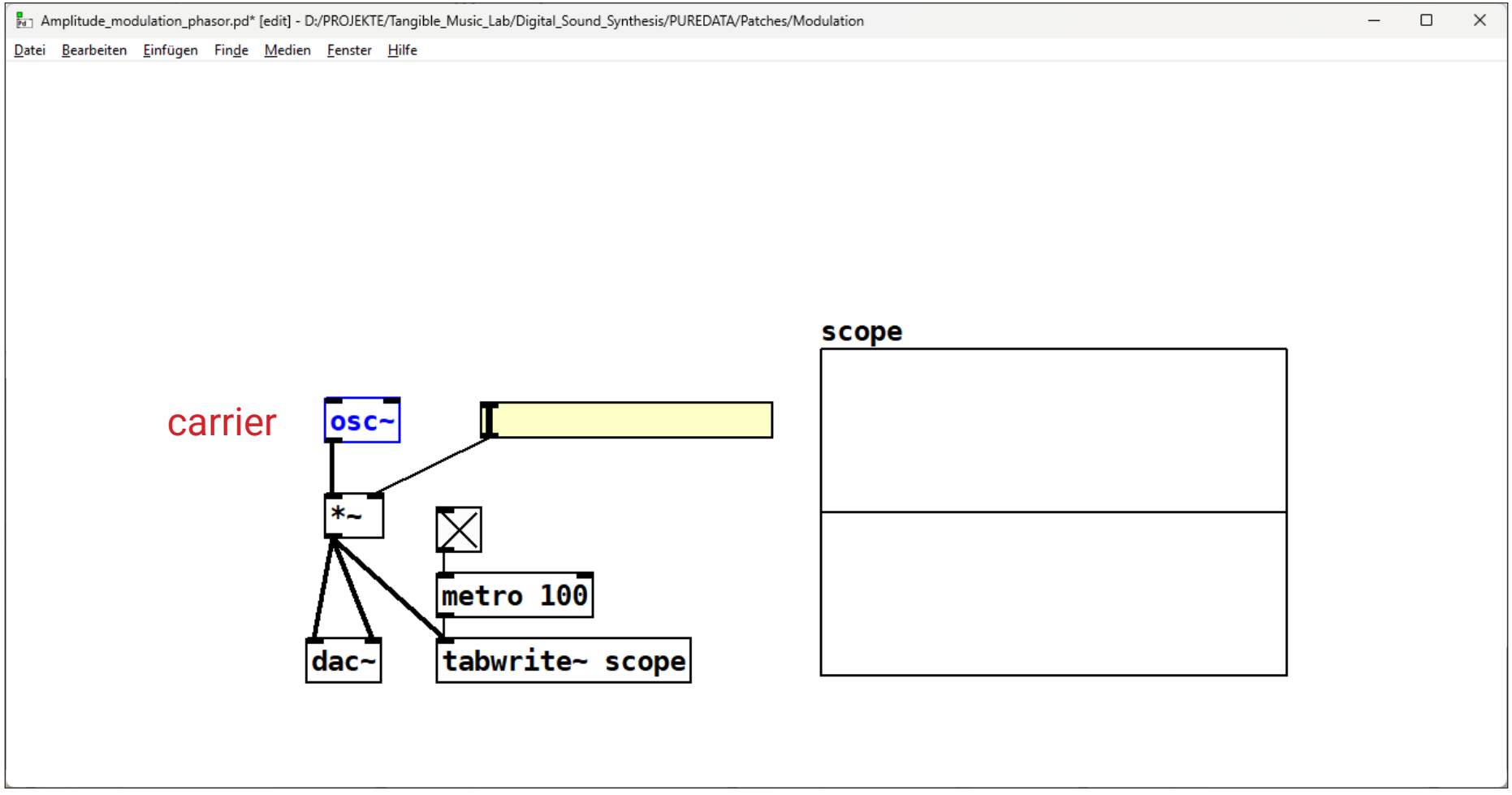

Amplitude_modulation.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
200
10
phasor~
osc~
*~ 2
+~ 1
-~ 1
/~ 2
make
phasor
bipolar
*~
*~
metro 100
dac~
tabwrite~ scope
scope

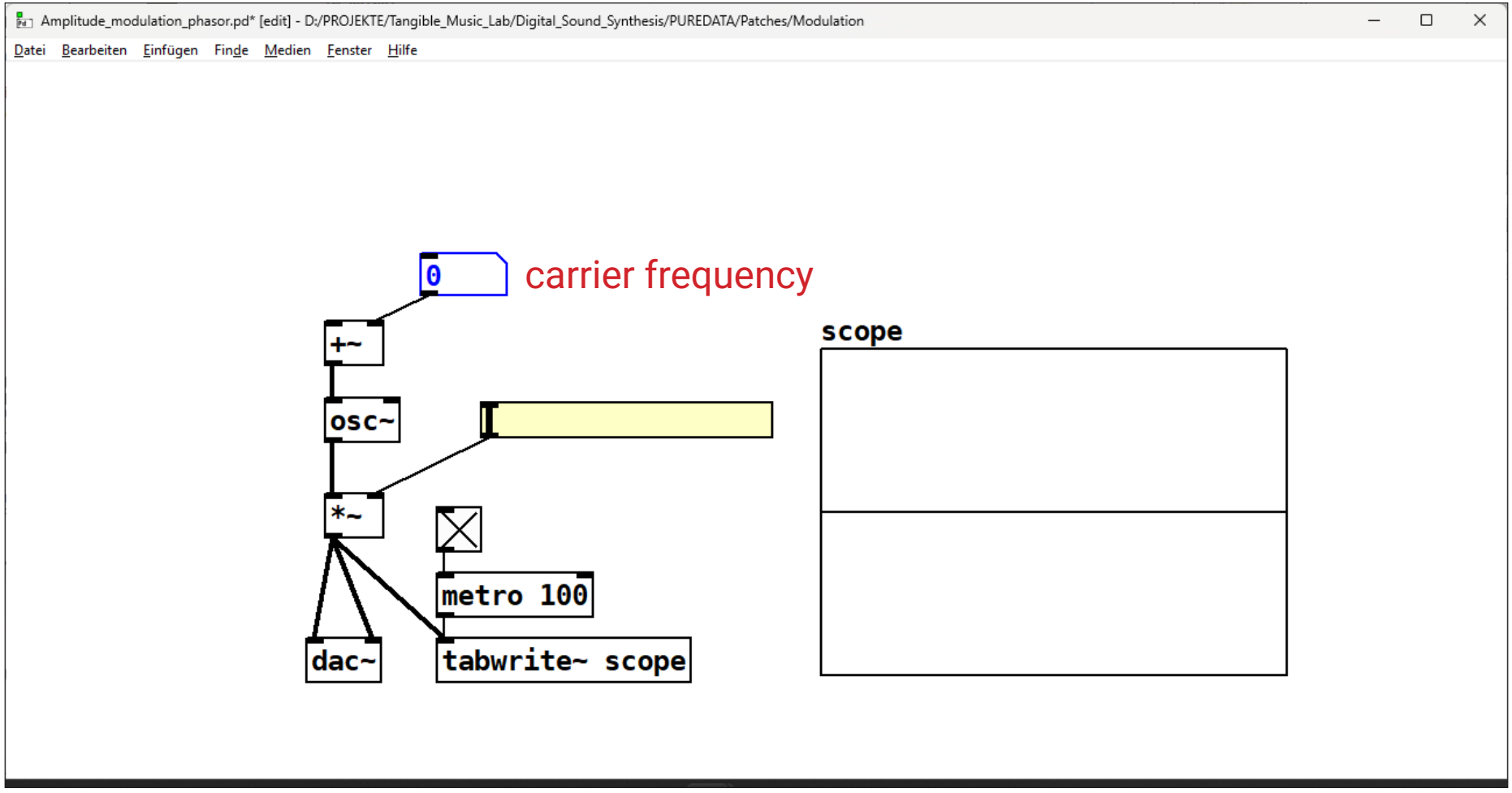

Amplitude_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
carrier: bipolar
200
phasor~
*~ 2
-~ 1
71
modulator: unipolar
phasor~
*~
*~
metro 100
dac~
tabwrite~ scope
scope

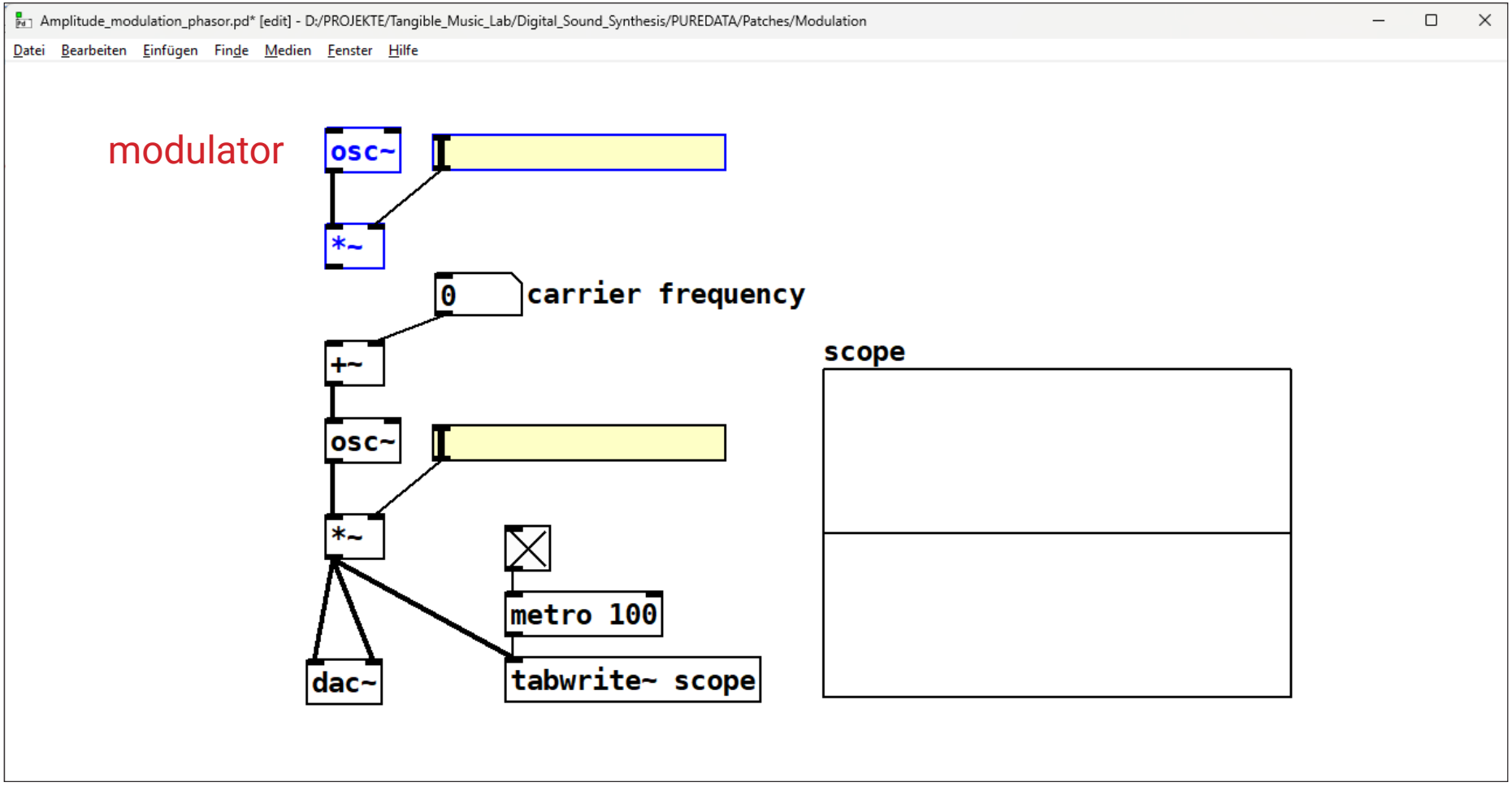
Frequency modulation

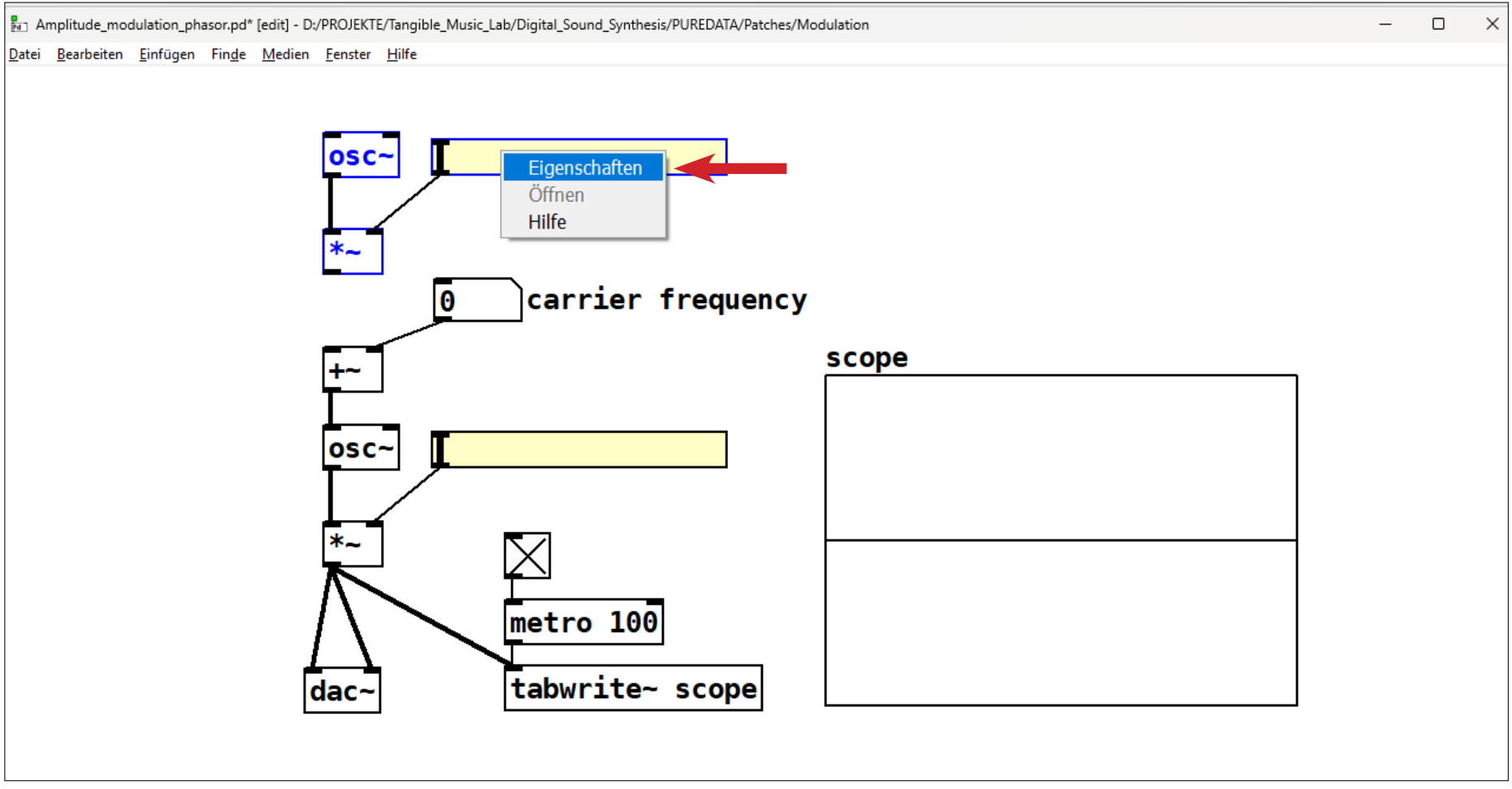
FREQUENCY MODULATION

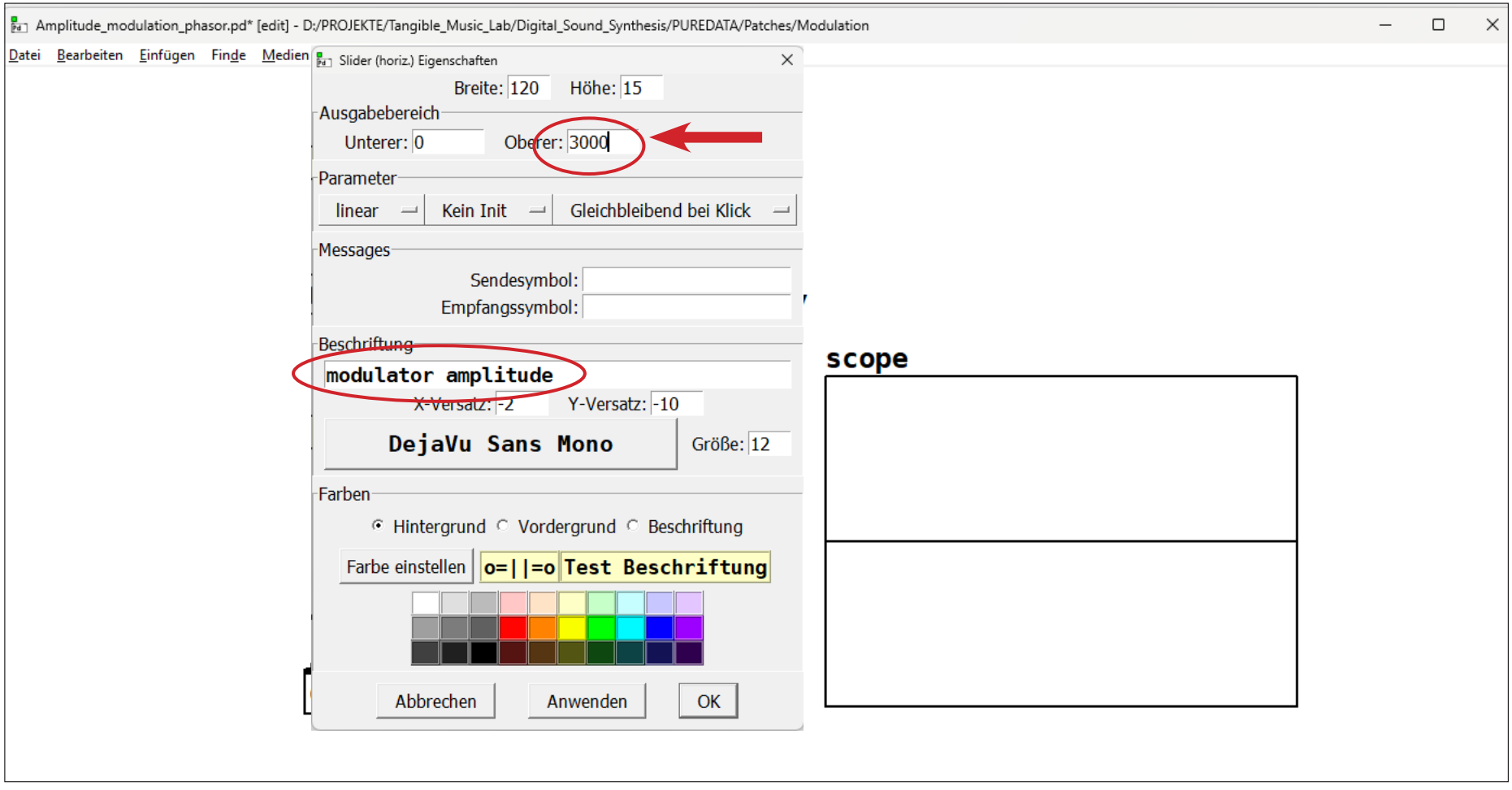



Amplitude_modulation_phasor.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
carrier
osc~
*~
metro 100
dac~
tabwrite~ scope
scope


Amplitude_modulation_phasor.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
0
carrier frequency
+~
osc~
*~
metro 100
dac~
tabwrite~ scope
scope

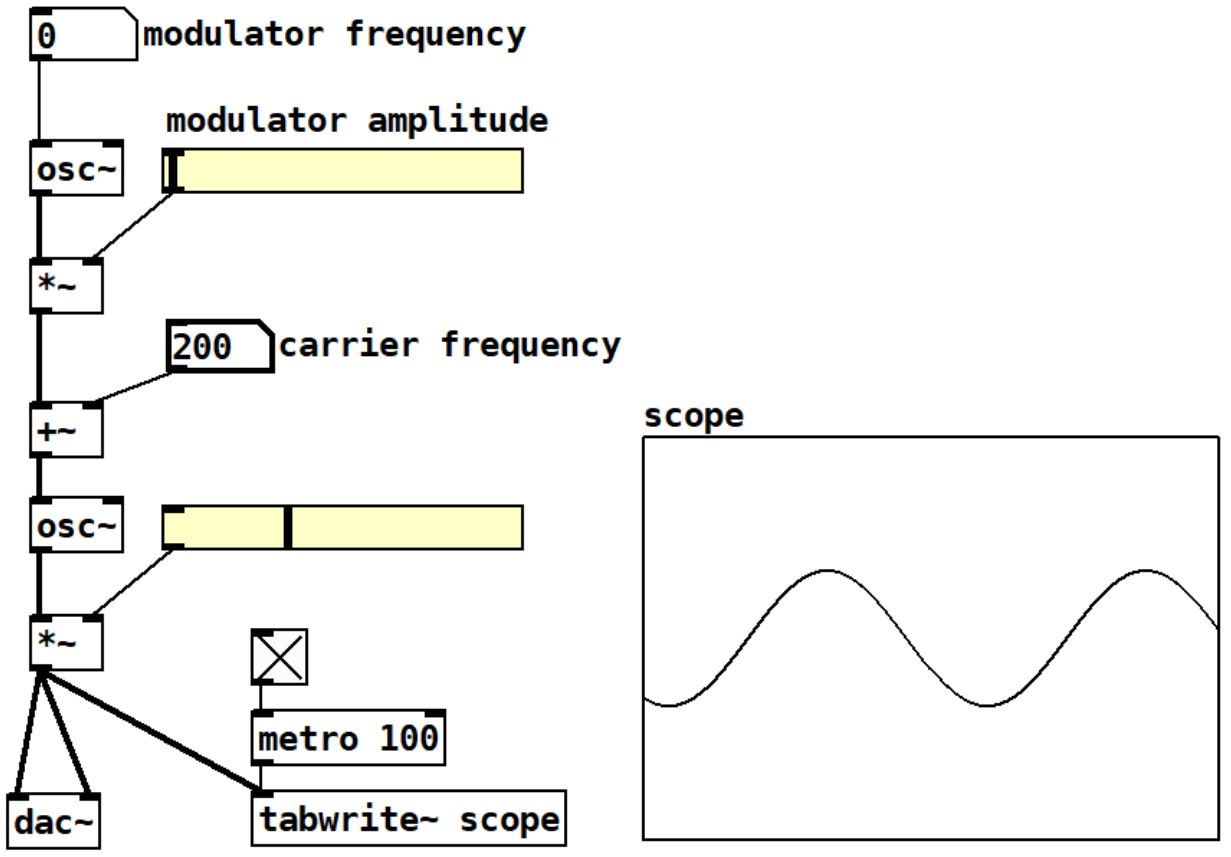

Amplitude_modulation_phasor.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
modulator
osc~
*~
0
carrier frequency
+~
osc~
*~
metro 100
dac~
tabwrite~ scope
scope


Amplitude_modulation_phasor.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
osc~
Eigenschaften
Öffnen
Hilfe
*~
0
carrier frequency
+~
osc~
*~
metro 100
dac~
tabwrite~ scope
scope

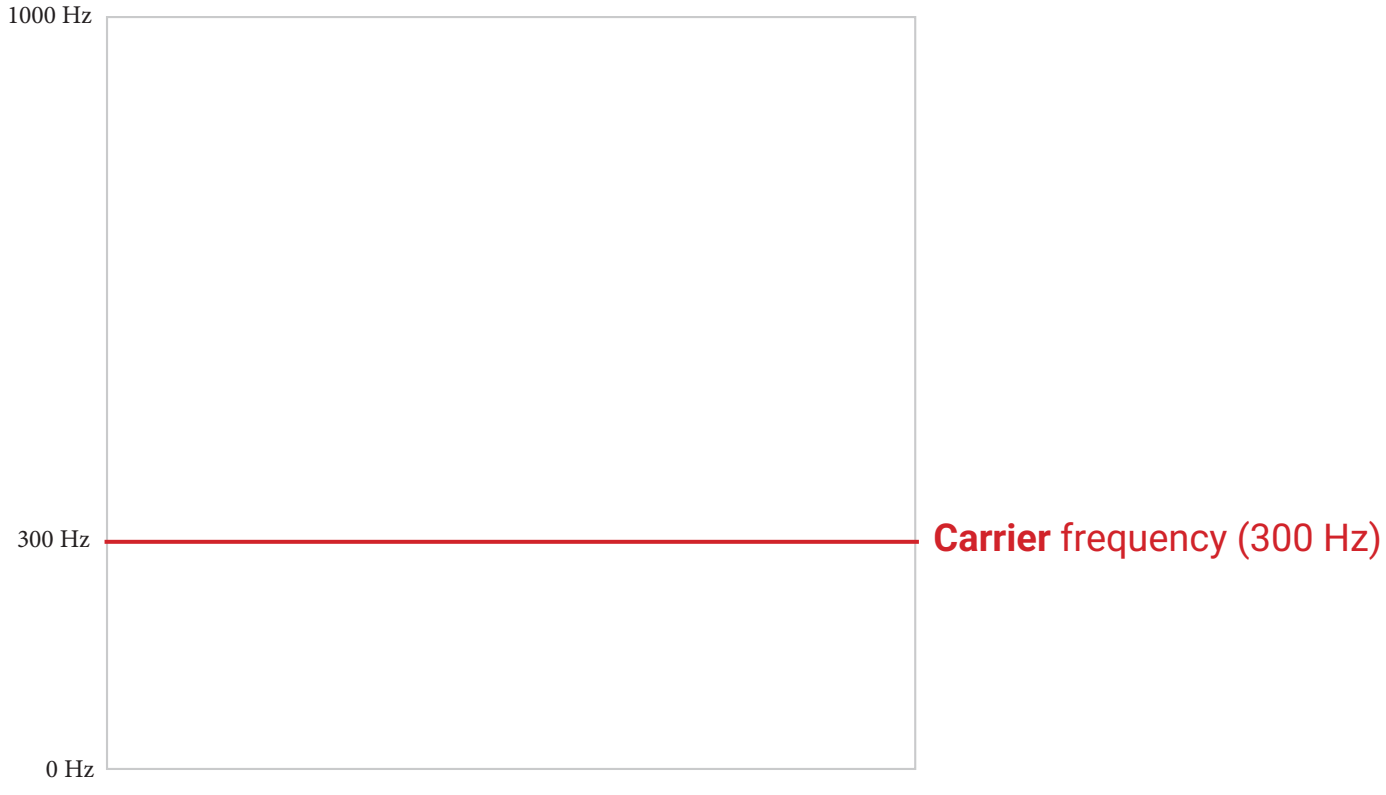

Amplitude_modulation_phasor.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien
Slider (horiz.) Eigenschaften
Breite: 120 Höhe: 15
Ausgabebereich
Unterer: 0 Oberer: 3000
Parameter
linear Kein Init Gleichbleibend bei Klick
Messages
Sendesymbol:
Empfangssymbol:
Beschriftung
modulator amplitude
X-Versatz: -2 Y-Versatz: -10
DejaVu Sans Mono Größe: 12
Farben
Hintergrund Vordergrund Beschriftung
Farbe einstellen o=||=o Test Beschriftung
Abbrechen Anwenden OK
scope

Frequency_modulation_phasor.pd - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation

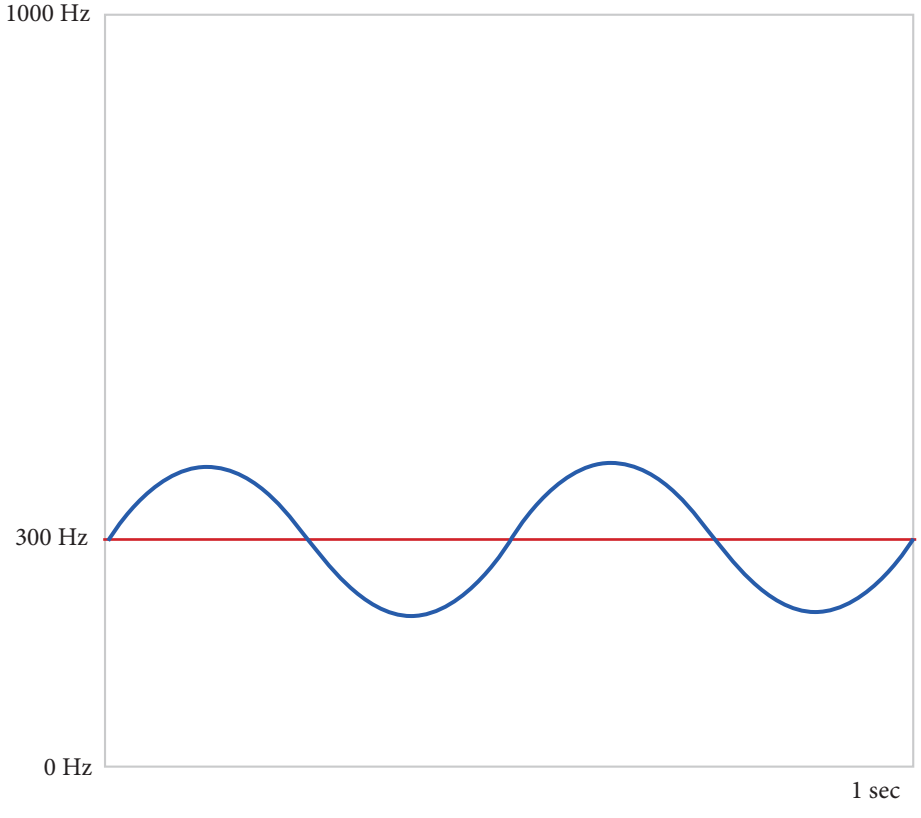
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe



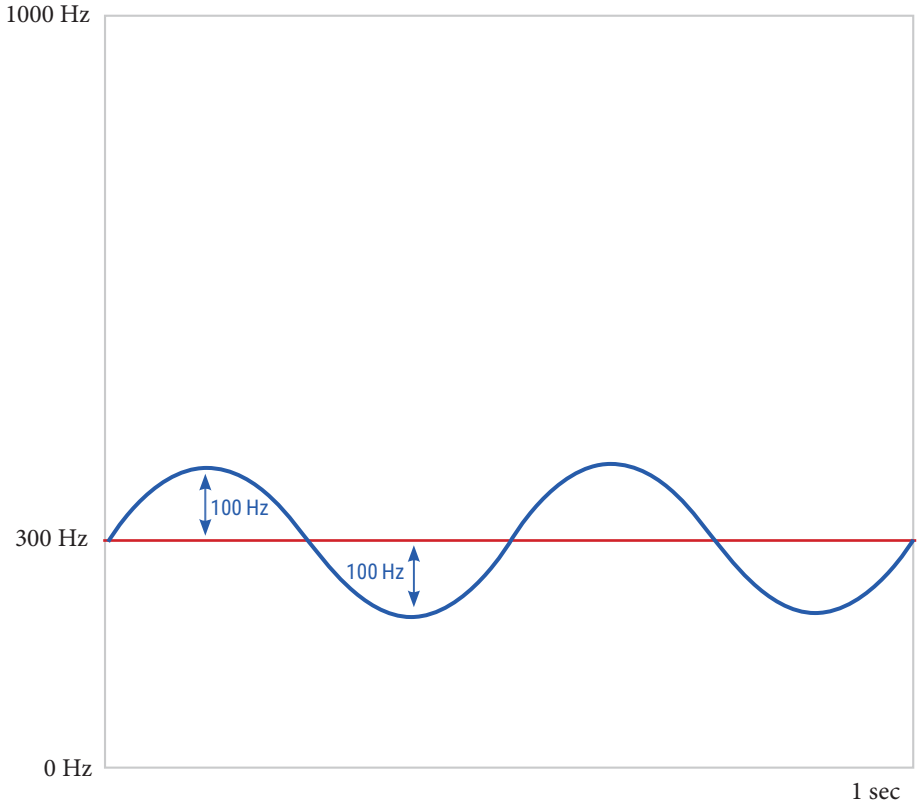
FREQUENCY MODULATION



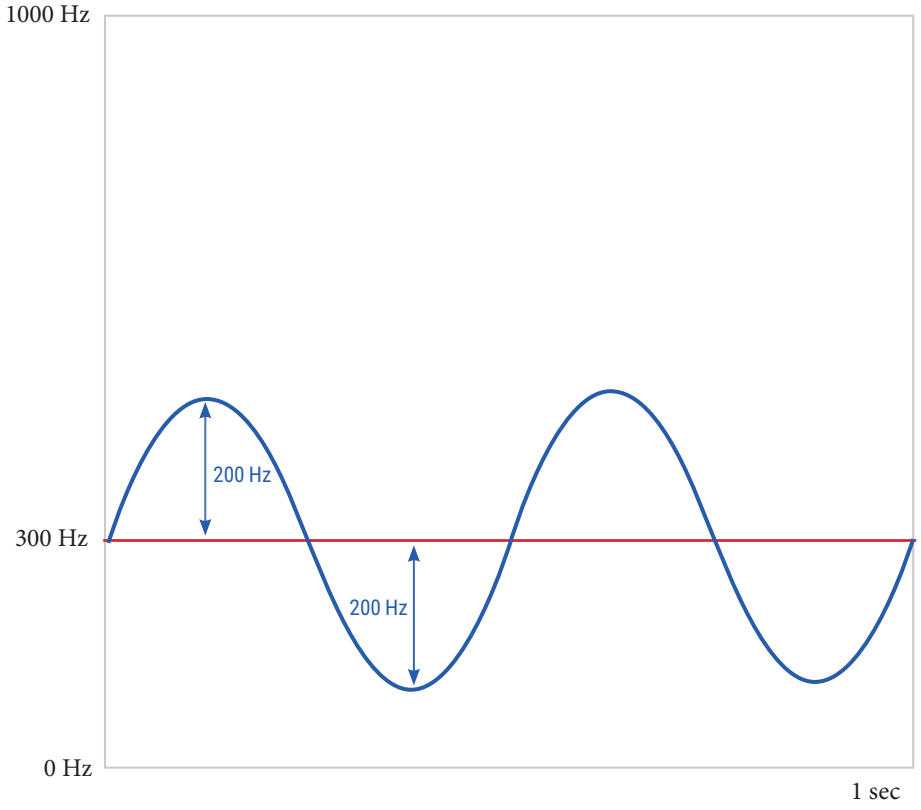
FREQUENCY MODULATION



Carrier + Modulator
(modulator index = 100,
modulator frequency = 2 Hz)



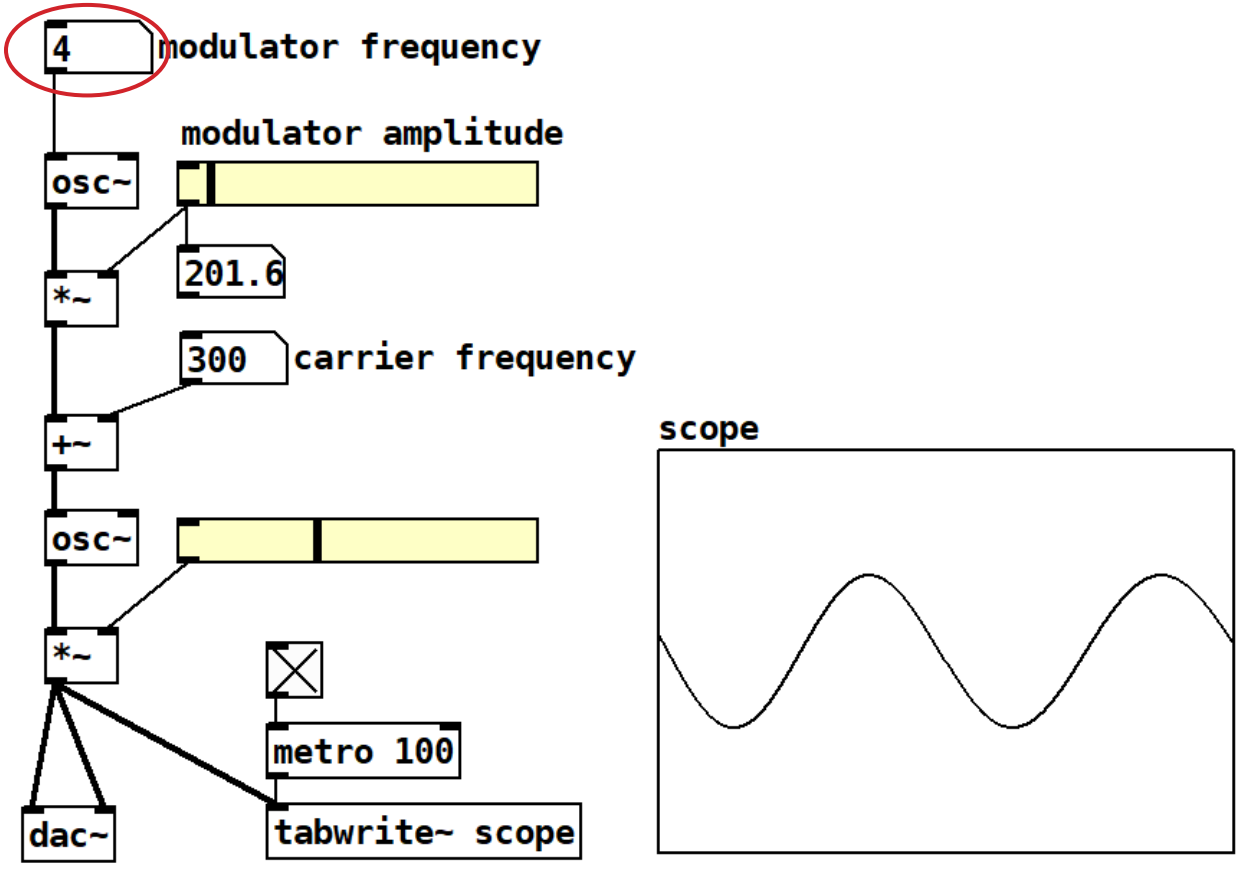
Carrier + Modulator
(modulator index = 100,
modulator frequency = 2 Hz)

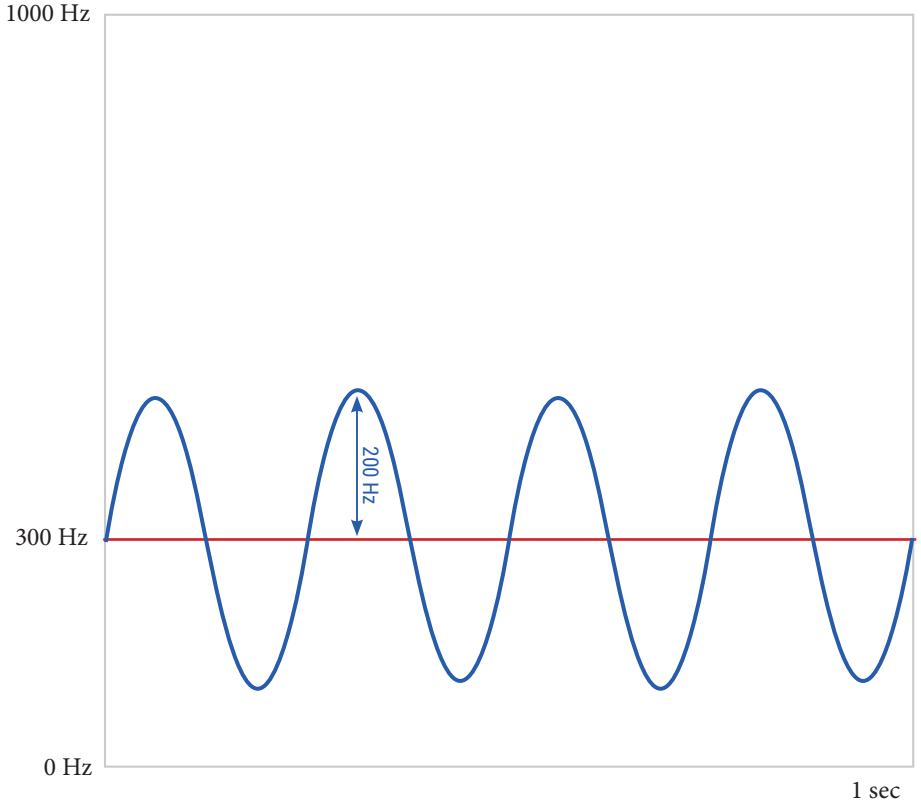


Carrier + Modulator
(modulator index = **200**,
modulator frequency = 2 Hz)

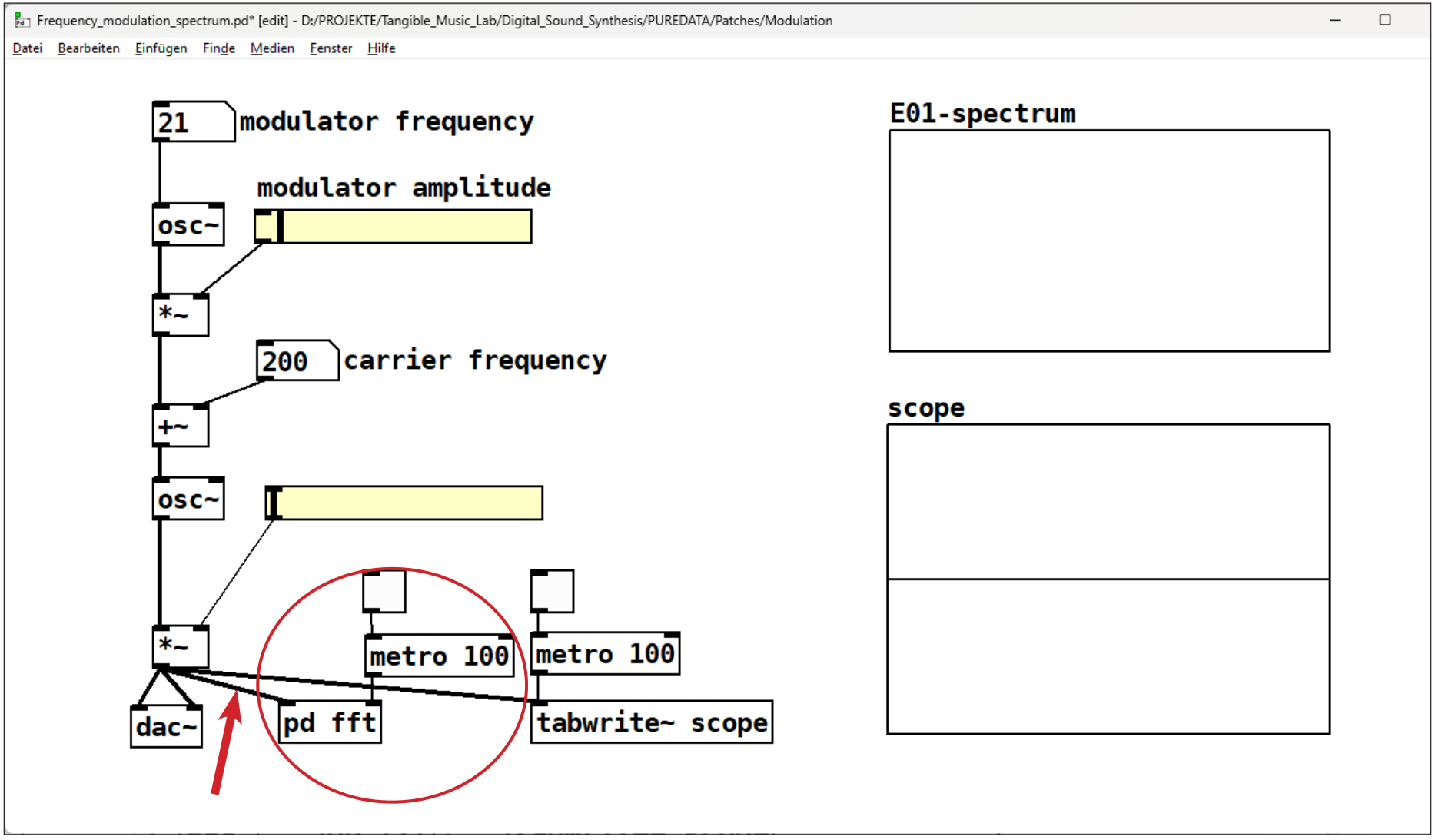
Frequency_modulation.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation

Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe



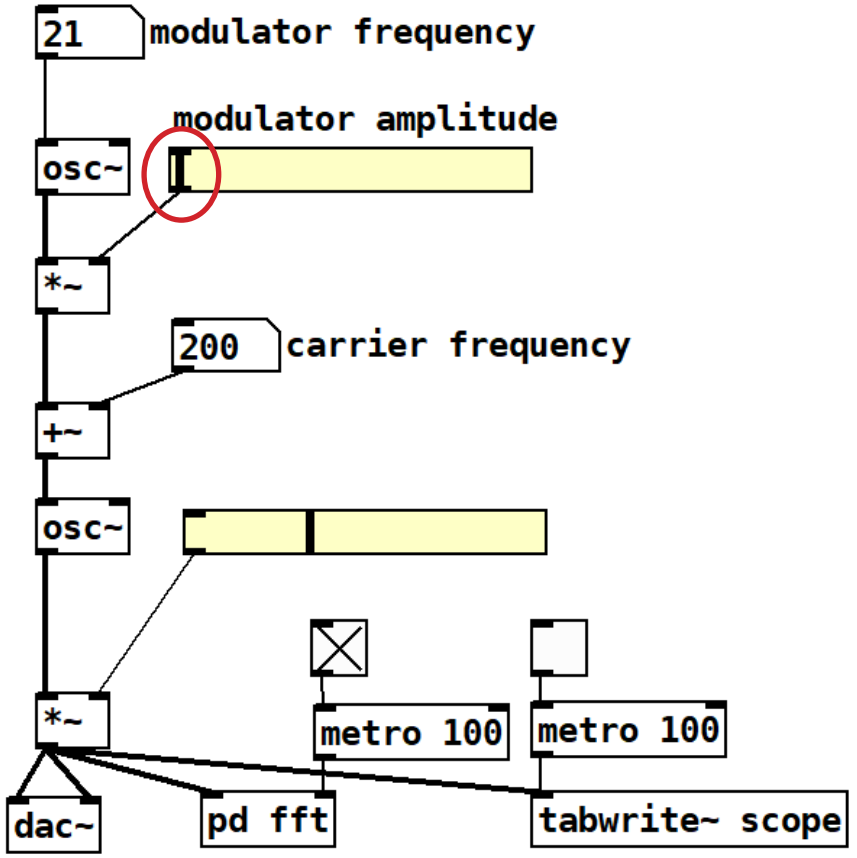


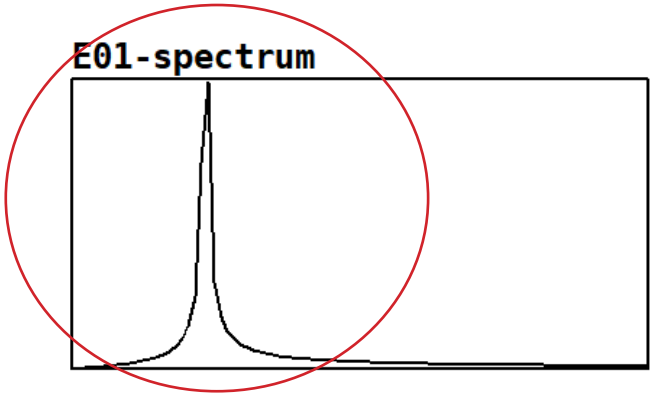
Carrier + Modulator
(modulator index = 200,
modulator frequency = **4 Hz**)


Frequency_modulation_spectrum.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
21
modulator frequency
modulator amplitude
osc~
*~
200
carrier frequency
+~
osc~
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
E01-spectrum
scope

Frequency_modulation_spectrum.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation

Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe

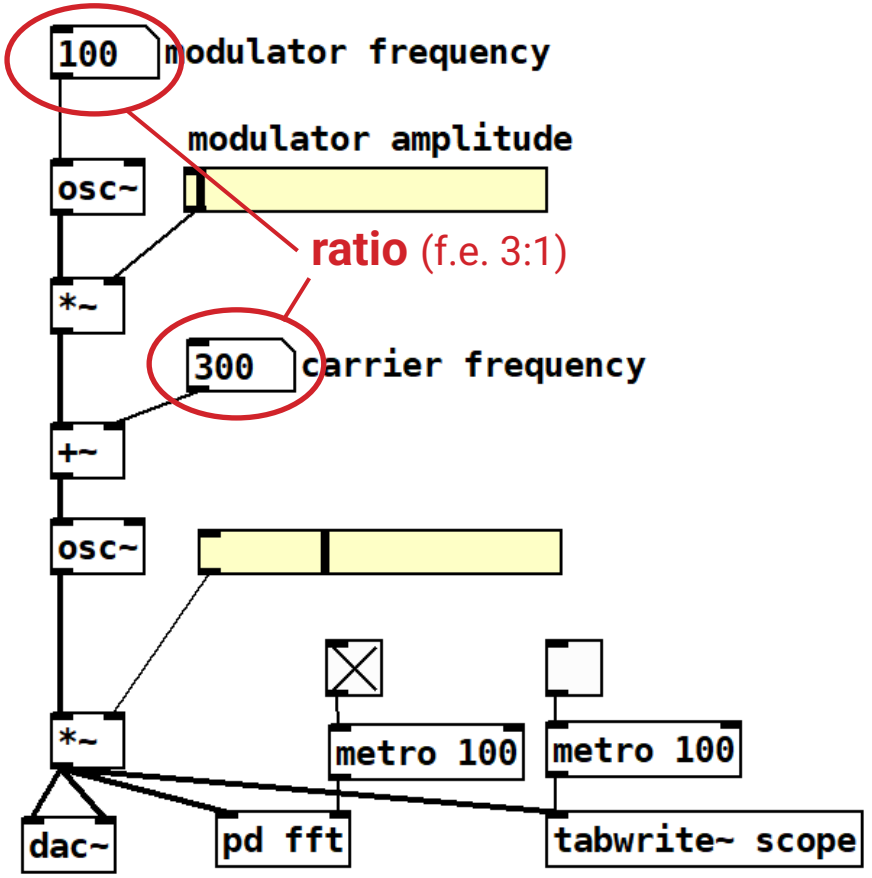


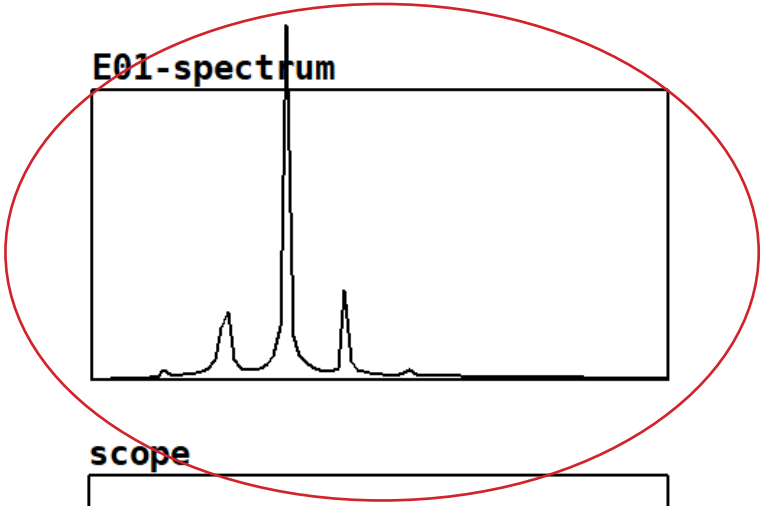


scope

Frequency_modulation_spectrum.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation

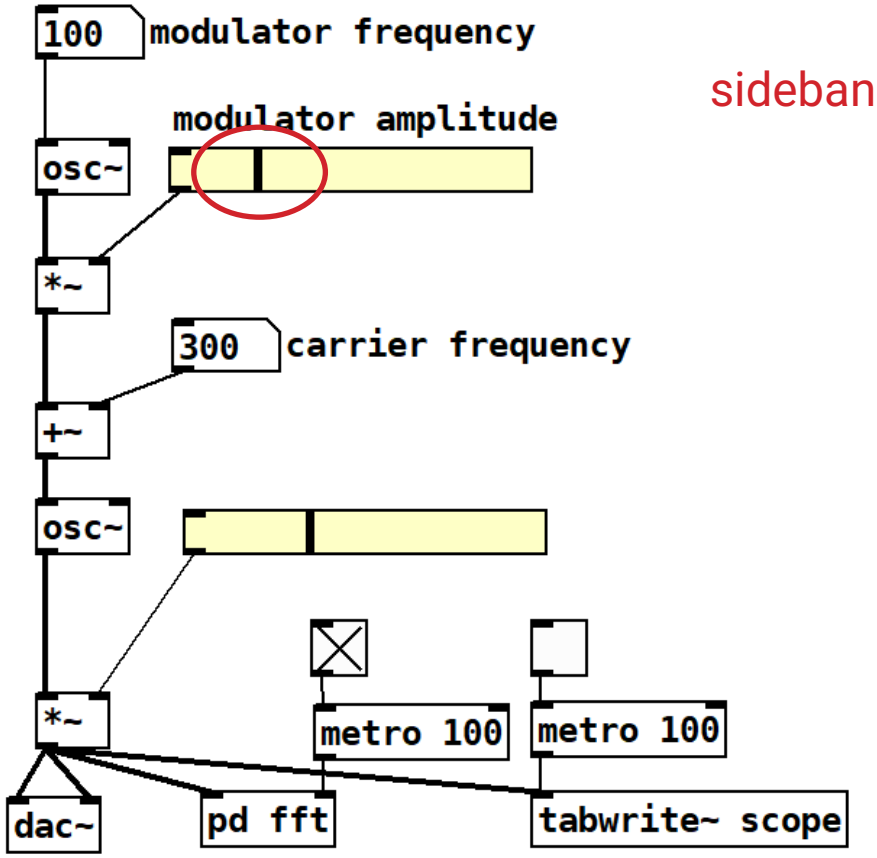
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe



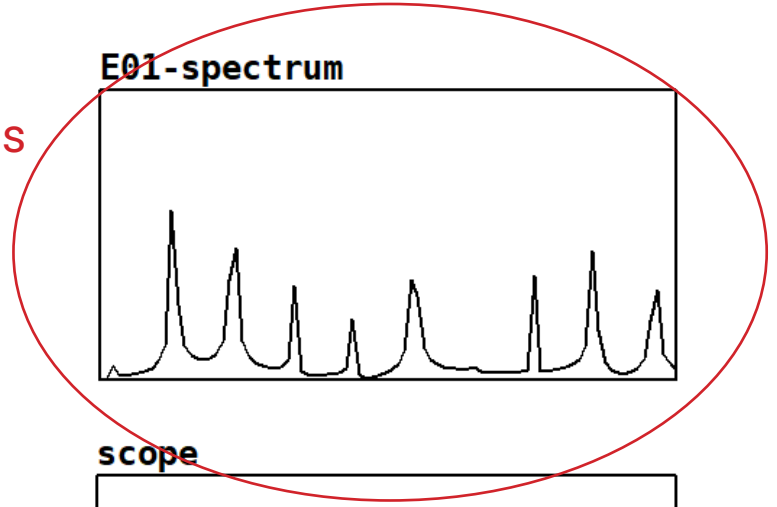


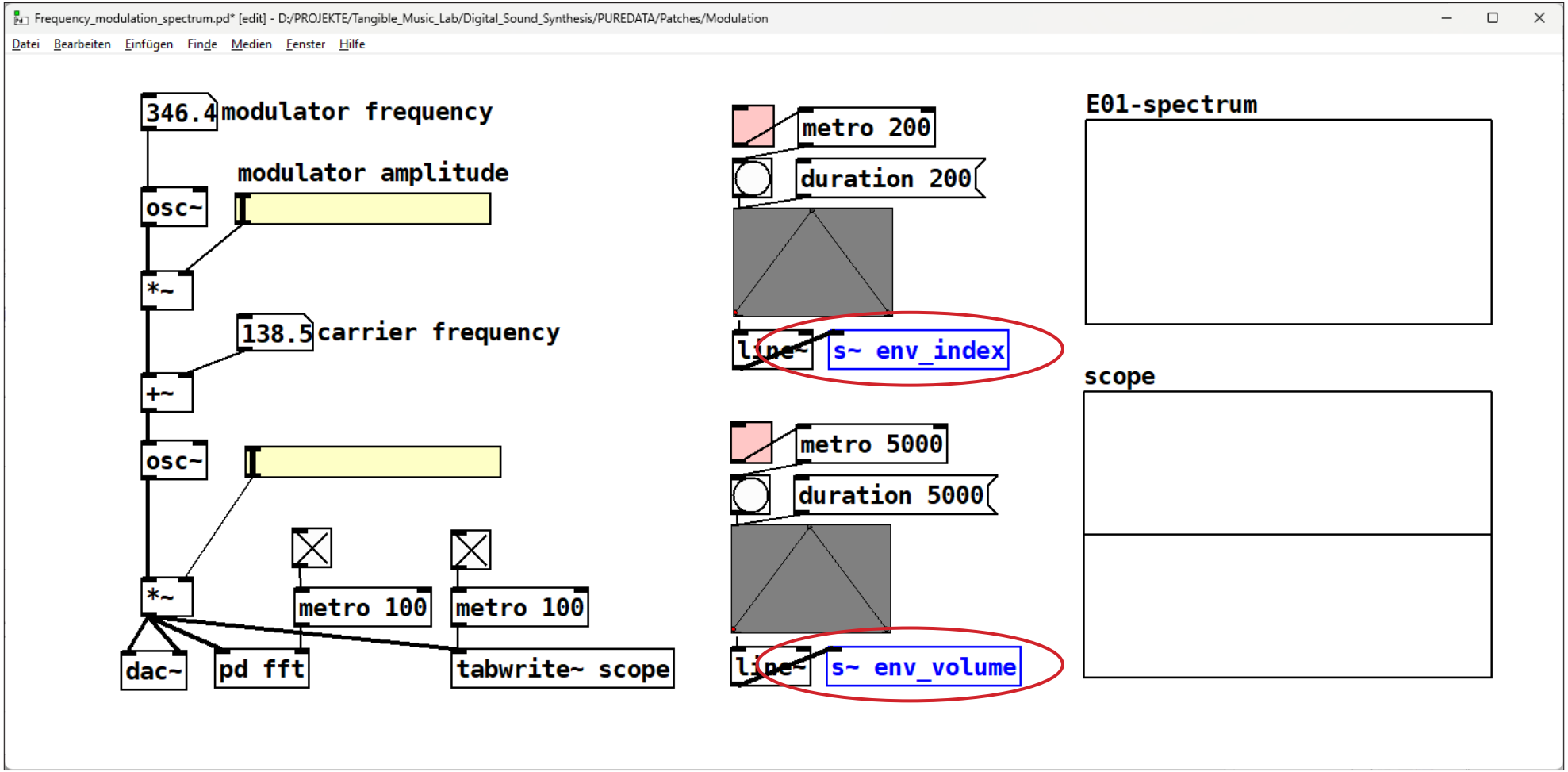
Frequency_modulation_spectrum.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation

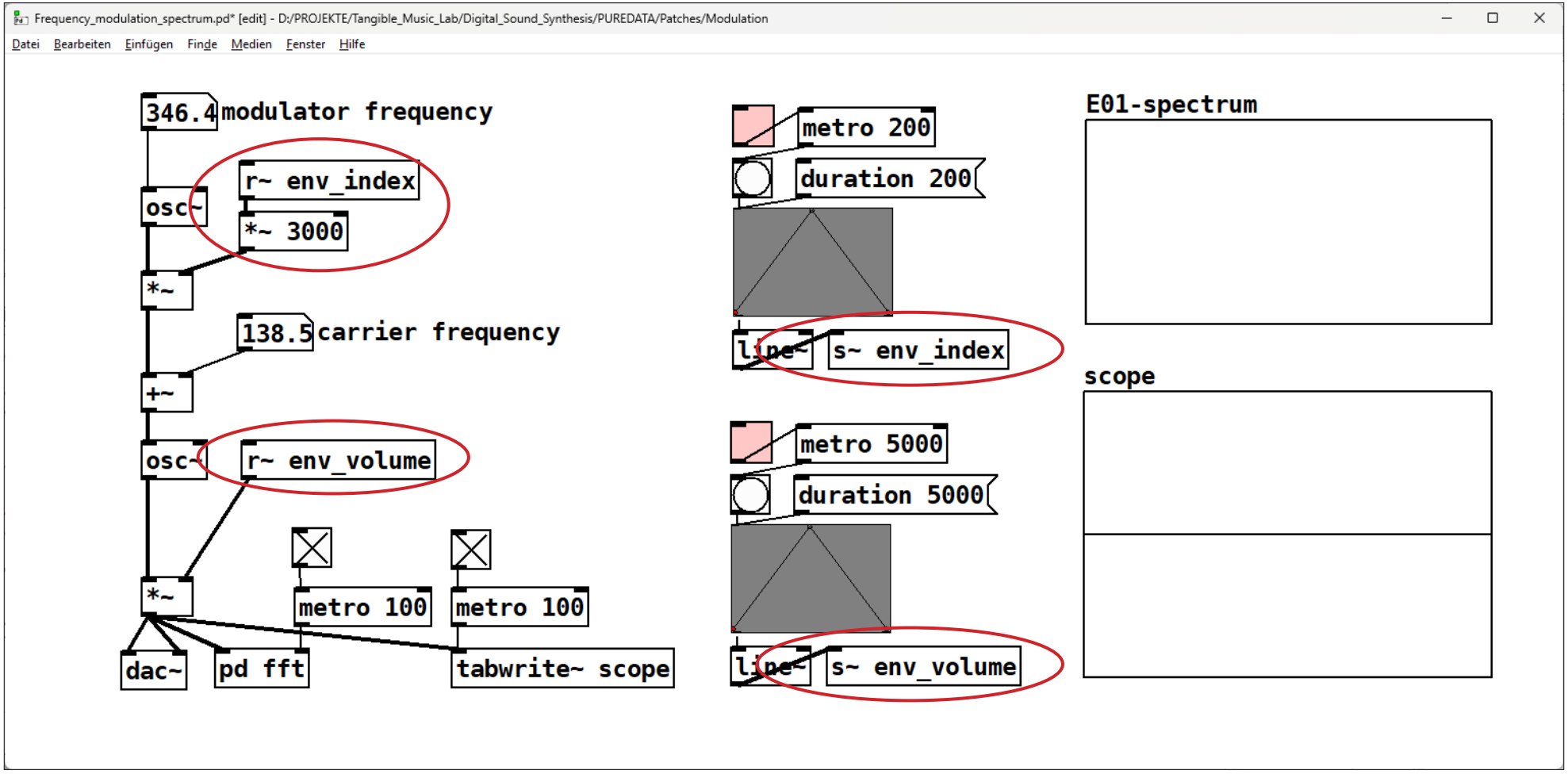
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe

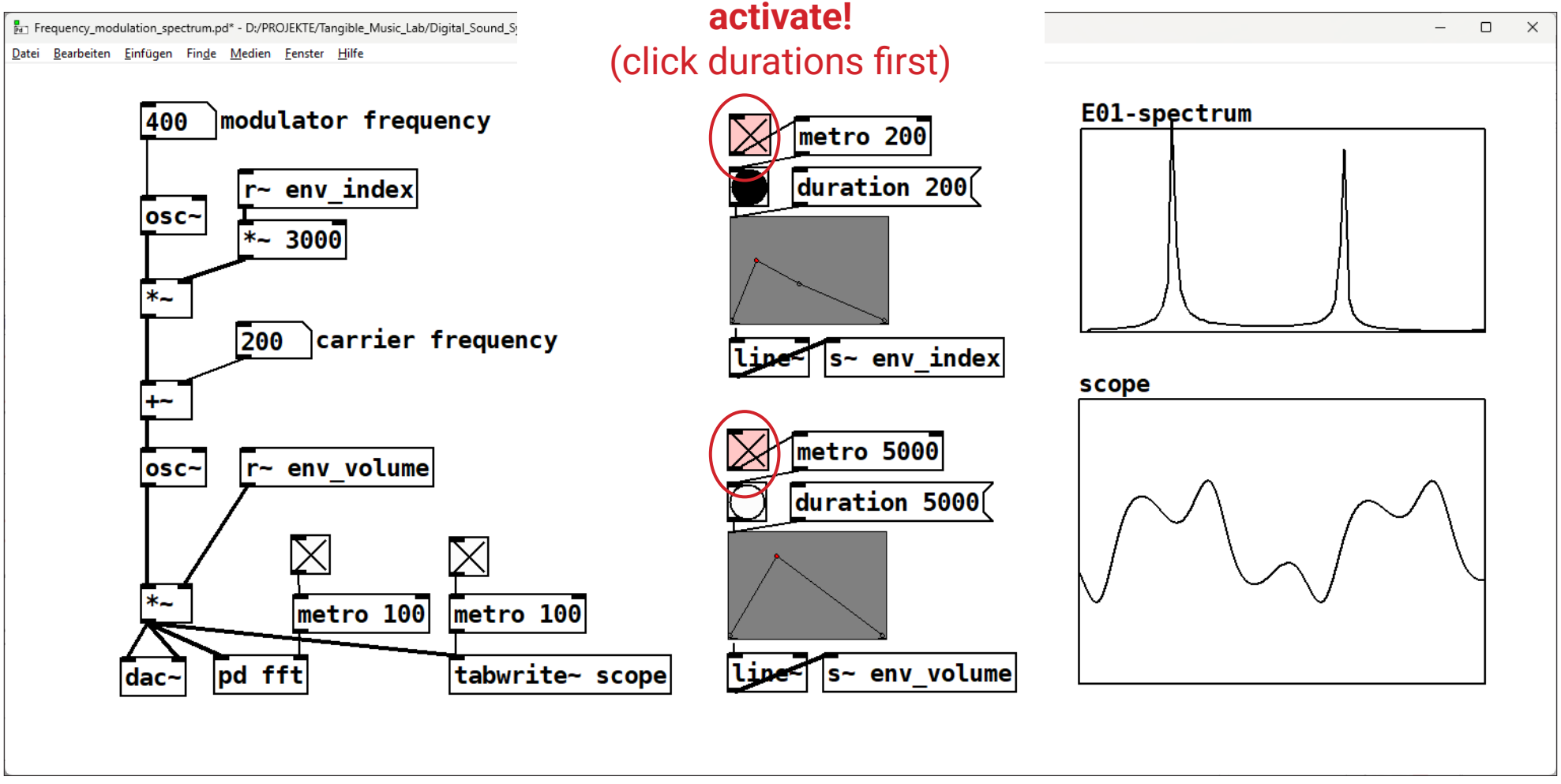


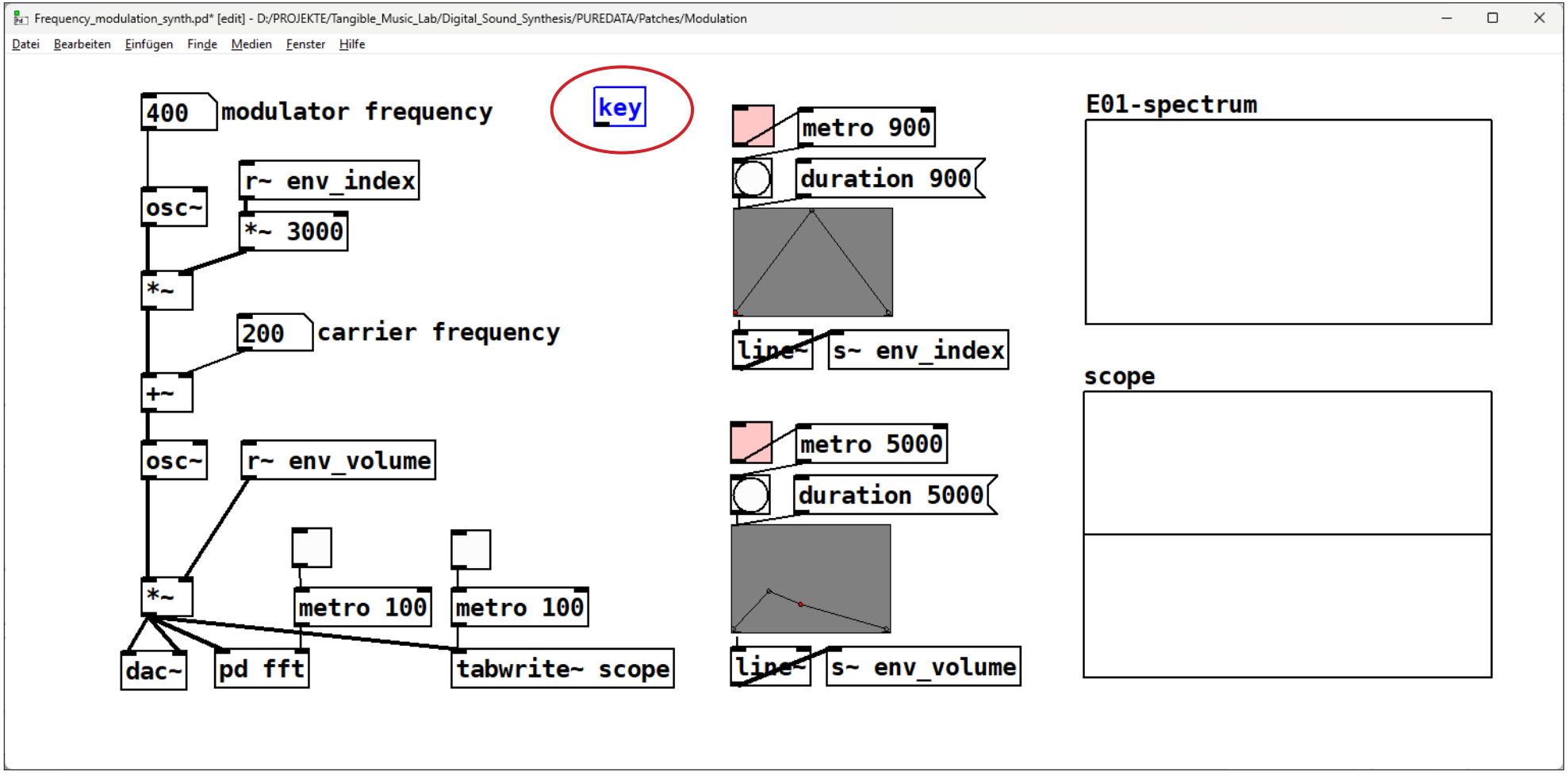
sidebands

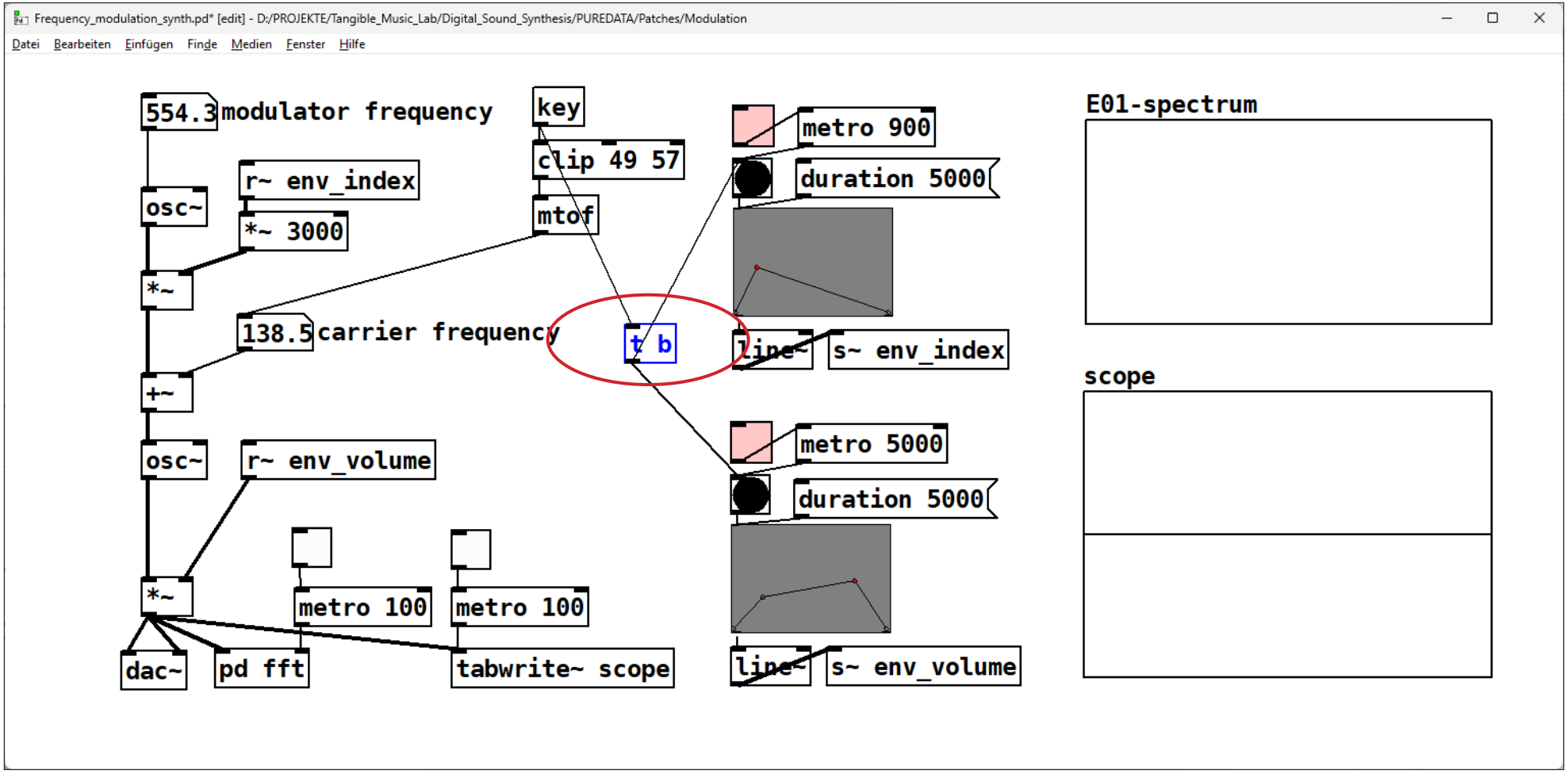


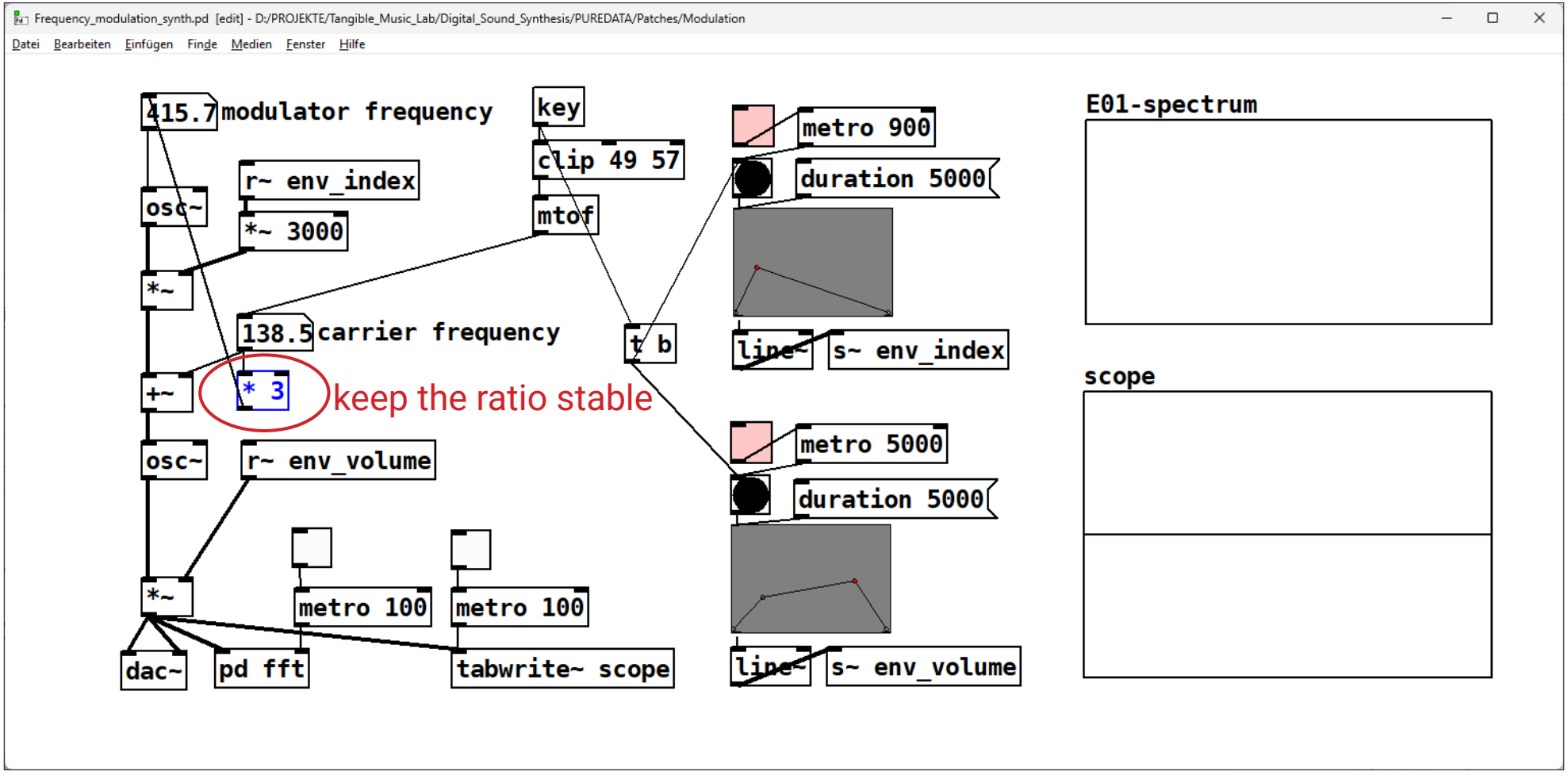

Frequency_modulation_spectrum.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
346.4
modulator frequency
modulator amplitude
osc~
*~
138.5
carrier frequency
+~
osc~
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
metro 200
duration 200
line~
s~ env_index
metro 5000
duration 5000
line~
s~ env_volume
E01-spectrum
scope

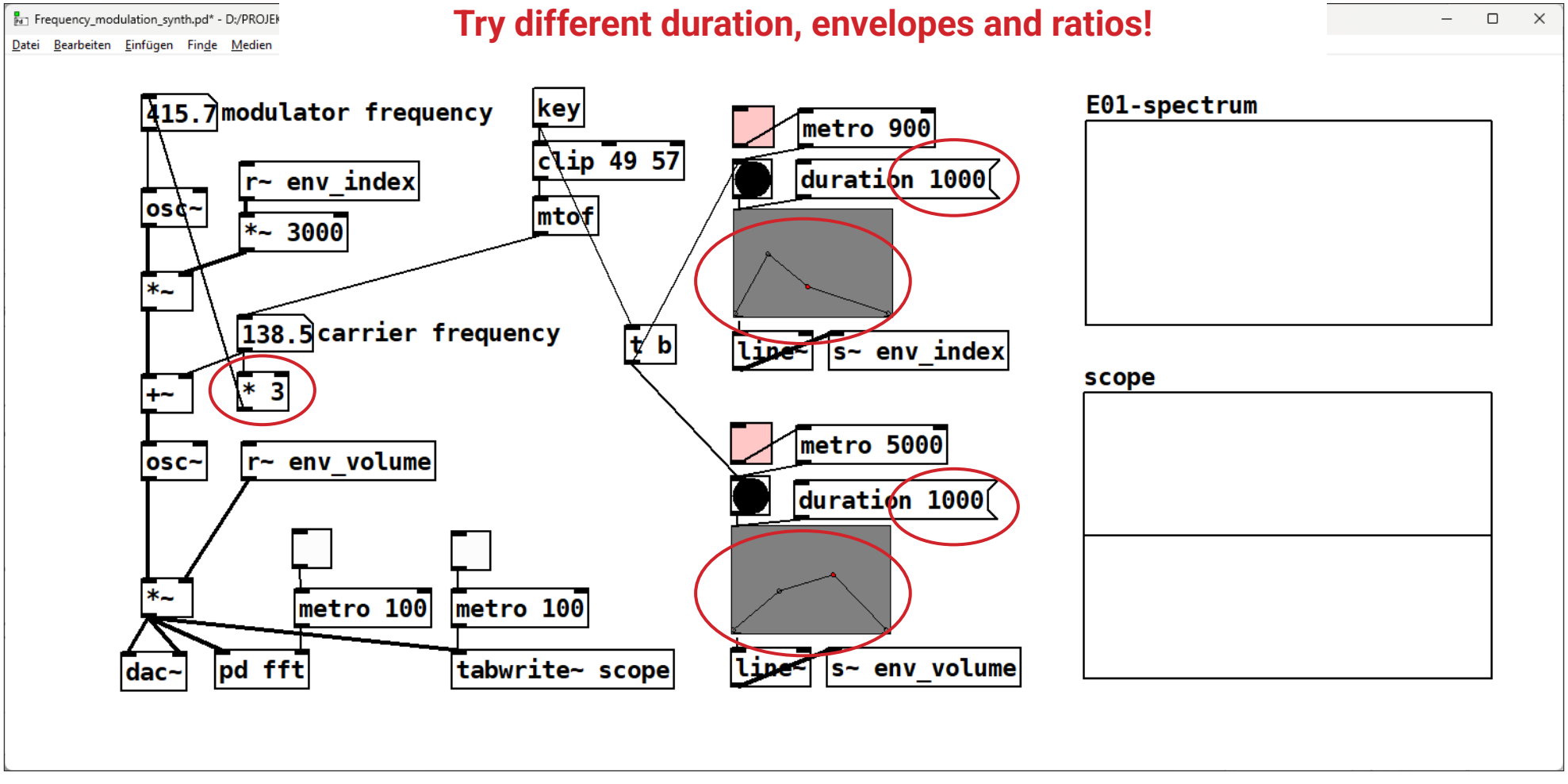

Frequency_modulation_spectrum.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
346.4 modulator frequency
r~ env_index
osc~
*~ 3000
*~
138.5 carrier frequency
+~
osc~
r~ env_volume
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
metro 200
duration 200
line~
s~ env_index
metro 5000
duration 5000
line~
s~ env_volume
E01-spectrum
scope

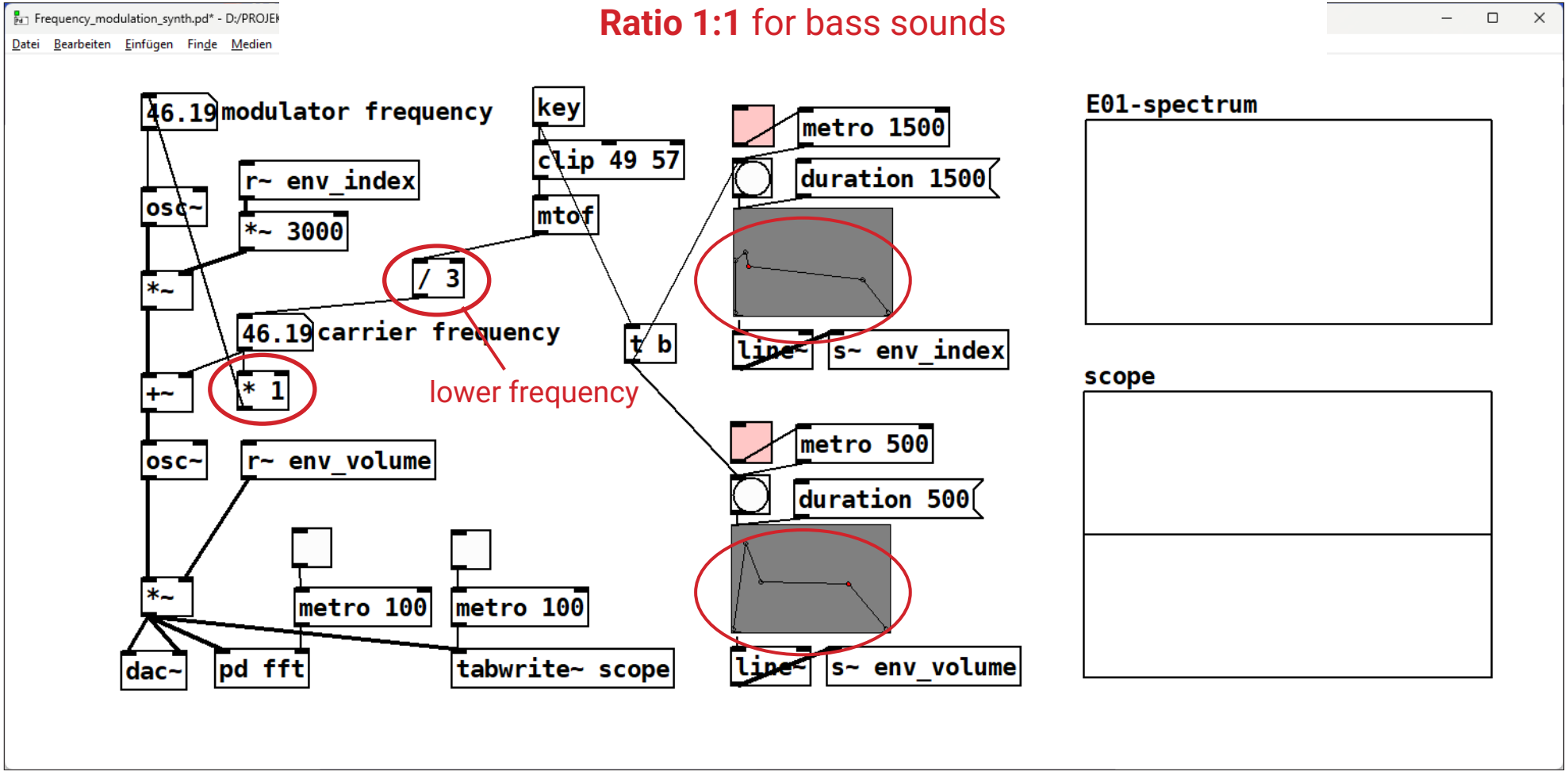

Frequency_modulation_spectrum.pd* - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Sy
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
400 modulator frequency
r~ env_index
osc~
*~ 3000
*~
200 carrier frequency
+~
osc~
r~ env_volume
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
activate!
(click durations first)
metro 200
duration 200
line~
s~ env_index
metro 5000
duration 5000
line~
s~ env_volume
E01-spectrum
scope

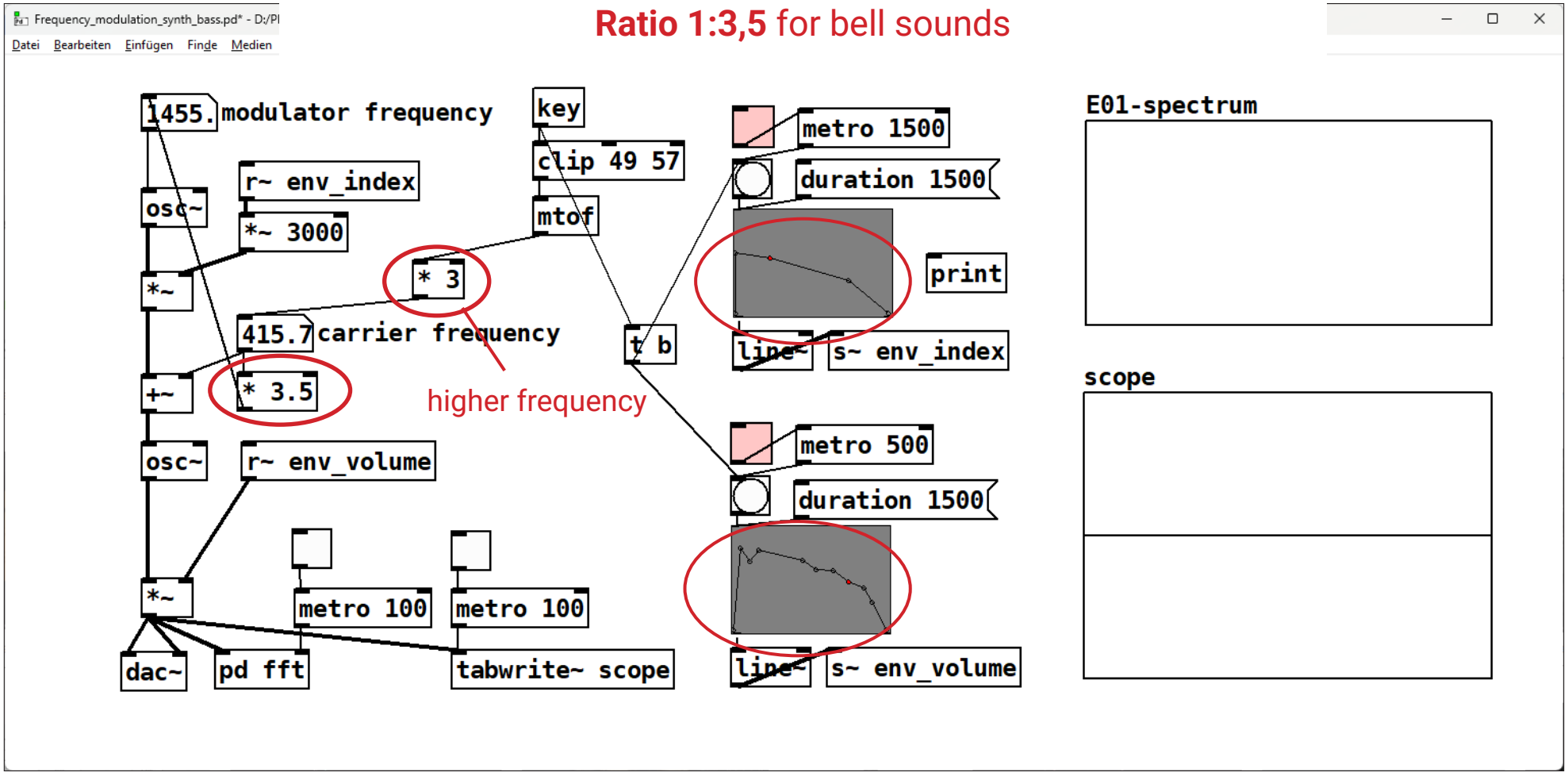

Frequency_modulation_synth.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
400 modulator frequency
key
r~ env_index
osc~
*~ 3000
*~
200 carrier frequency
+~
osc~
r~ env_volume
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
metro 900
duration 900
line~
s~ env_index
metro 5000
duration 5000
line~
s~ env_volume
E01-spectrum
scope

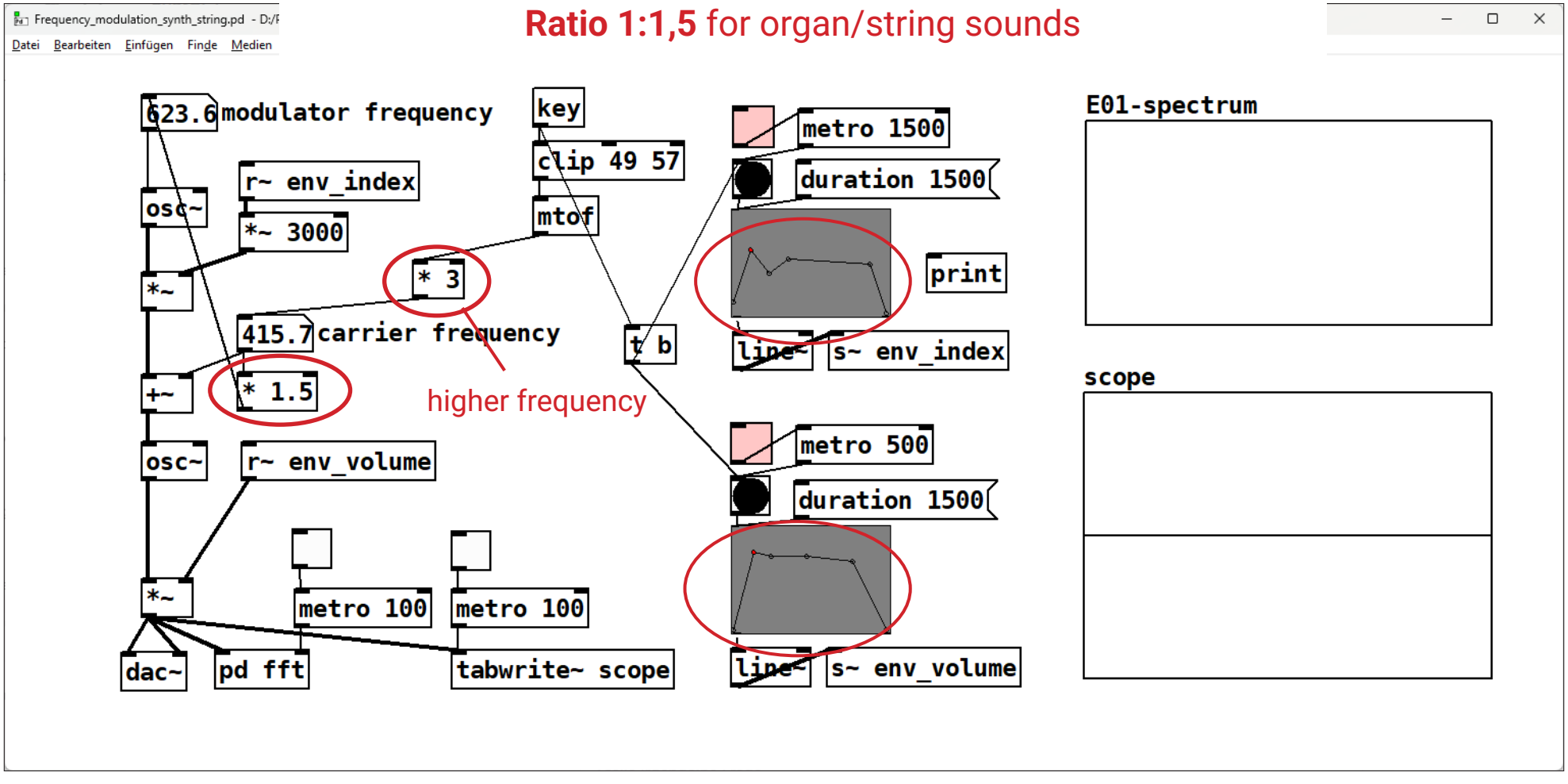

Frequency_modulation_synth.pd* [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
554.3 modulator frequency
key
clip 49 57
metro 900
duration 5000
r~ env_index
osc~
*~ 3000
mtof
*~
138.5 carrier frequency
t b
line~
s~ env_index
+~
osc~
r~ env_volume
metro 5000
duration 5000
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
line~
s~ env_volume
E01-spectrum
scope


Frequency_modulation_synth.pd [edit] - D:/PROJEKTE/Tangible_Music_Lab/Digital_Sound_Synthesis/PUREDATA/Patches/Modulation
Datei Bearbeiten Einfügen Finde Medien Fenster Hilfe
415.7 modulator frequency
key
clip 49 57
mtof
r~ env_index
osc~
*~ 3000
*~
138.5 carrier frequency
t b
+~
* 3
keep the ratio stable
osc~
r~ env_volume
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
metro 900
duration 5000
line~
s~ env_index
metro 5000
duration 5000
line~
s~ env_volume
E01-spectrum
scope


Frequency_modulation_synth.pd* - D:/PROJEK
Datei Bearbeiten Einfügen Finde Medien
Try different duration, envelopes and ratios!
415.7 modulator frequency
key
clip 49 57
mtof
r~ env_index
osc~
*~ 3000
*~
138.5 carrier frequency
+~
* 3
t b
metro 900
duration 1000
line~
s~ env_index
E01-spectrum
scope
osc~
r~ env_volume
metro 5000
duration 1000
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
line~
s~ env_volume


Frequency_modulation_synth.pd* - D:/PROJEK
Datei Bearbeiten Einfügen Finde Medien
Ratio 1:1 for bass sounds
46.19 modulator frequency
r~ env_index
osc~
*~ 3000
*~
/ 3
46.19 carrier frequency
+~
* 1
lower frequency
osc~
r~ env_volume
*~
dac~
pd fft
metro 100
metro 100
tabwrite~ scope
key
clip 49 57
mtof
t b
metro 1500
duration 1500
line~
s~ env_index
metro 500
duration 500
line~
s~ env_volume
E01-spectrum
scope


Frequency_modulation_synth_bass.pd* - D:/Pl
Datei Bearbeiten Einfügen Finde Medien
Ratio 1:3,5 for bell sounds
1455. modulator frequency
key
clip 49 57
mtof
r~ env_index
osc~
*~ 3000
*~
* 3
415.7 carrier frequency
+~
* 3.5
higher frequency
t b
metro 1500
duration 1500
print
line~
s~ env_index
E01-spectrum
scope
osc~
r~ env_volume
metro 500
duration 1500
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
line~
s~ env_volume


Frequency_modulation_synth_string.pd - D:/F
Datei Bearbeiten Einfügen Finde Medien
Ratio 1:1,5 for organ/string sounds
623.6 modulator frequency
key
clip 49 57
mtof
r~ env_index
osc~
*~ 3000
*~
* 3
415.7 carrier frequency
+~
* 1.5
higher frequency
t b
metro 1500
duration 1500
print
line~
s~ env_index
E01-spectrum
scope
osc~
r~ env_volume
metro 500
duration 1500
*~
metro 100
metro 100
dac~
pd fft
tabwrite~ scope
line~
s~ env_volume