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Etüde
für Klavier und Ringmodulator

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Etüde für Klavier und Ringmodulator

Die Aufführung erfordert einen Ringmodulator, der das akustische Live-Signal des Klaviers moduliert und dessen Frequenz flexibel gesteuert werden kann.

Es empfiehlt sich ein Computerprogramm (z. Bsp. Max MSP) das auf das Tastensignal am Laptop des Klavierspielers (neben oder auf dem Klavier) hin die Frequenz ändert, wie in der Partitur vermerkt.

Der Modulator kann aber natürlich auch von einer anderen Person gesteuert werden.

Die beiden Frequenzen (440 Hz und 65,4 Hz) müssen natürlich an die Flügelstimmung vor Ort angeglichen werden und genau der Frequenz des a´ bzw. des großen C entsprechen.

Es ist sehr wichtig, dass der modulierte Klang durch die Anlage in etwa gleich laut, oder evtl. sogar ein wenig lauter ist, als der Live-Klang des Klaviers.

Etude for piano and ring modulator

For the performance it is necessary to have an interface which acts like a ring modulator. It should transform the real acoustic signal of the piano in real time and it has to be flexible with his modulation frequency.

I would advise to use a computer program (e.g. Max MSP) which is changing the frequency of the modulator as indicated in the score, when touching a key of the laptop, placed besides the piano. But it can also be done by another person, controlling the modulator by hand.

The two frequencies (440Hz and 65,4 Hz) naturally have to be adapted to the tuning of the piano. They have to be set to exactly the same frequency as the notes a´/low c.

It is very important, that the modulated sound from the loudspeakers is set approximately to the same volume, or even a bit louder, than the original live-sound of the piano itself.

Etude pour piano et modulateur en anneau

Pour la réalisation il faut un modulateur en anneau qui peut moduler le signal acoustique du piano.

La fréquence du modulateur doit être contrôlée par un ordinateur (contrôlé par le jouer du piano: par exemple un ordinateur portable à côté du piano avec un patch de Max MSP) ou par une autre personne.

La fréquence du modulateur doit changer, comme indiqué dans la partition.

Il faut adapter les deux fréquences (440 Hz et 65,4 Hz) aux fréquences réelles du piano des notes La´ et Do grave.

Il est très important, que le son modulé est équilibré ou un peu plus fort que le son original du piano.

Etude for piano and ring modulator

Ring modulator at $f=0\text{Hz}$

Gregor A. Mayrhofer
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Presto $\text{♩} = 110$

3 2 1 3 2 1 3 2 1 3 2 1 ... 3 2

5 3 2 1 3 2 1 2 3

9

13

17

21

with verve

Etude for piano and ring modulator

2 25

Musical notation for measures 25-28. Treble clef with a continuous eighth-note pattern. Bass clef is mostly empty with a few notes at the end. Dynamics include *fz* and accents.

29

Musical notation for measures 29-32. Treble clef with eighth notes. Bass clef has chords and a melodic line. Dynamics include *p* and *fz*.

33

Musical notation for measures 33-36. Treble clef with eighth notes and triplets. Bass clef has a melodic line. Dynamics include *simile*.

Start ring modulator!

change fréquency from 0 to 440 Hz (lthe same pitch, as the repeated A) in about 14 sec.

37

Musical notation for measures 37-40. Treble clef with eighth notes. Bass clef is empty. Dynamics include *fz*.

41

Musical notation for measures 41-44. Treble clef with eighth notes. Bass clef is empty. Dynamics include *fz*.

45

Musical notation for measures 45-48. Treble clef with eighth notes. Bass clef is empty.

49

(if necessary repeat these bars until the modulator arrives at his target frequency)

WITH modulator! (f=440Hz)

Musical notation for measures 49-52. Treble clef with eighth notes. Bass clef has a melodic line. Dynamics include *ff* and *pp*.

Etude for piano and ring modulator

53

Musical score for measures 53-56. The right hand features a continuous eighth-note pattern. In measure 55, a triplet of eighth notes is marked with a '3' and a slur. The left hand has a sustained bass line with a triplet of eighth notes in measure 55. Dynamics include accents (>) and fortissimo (fz).

57

Musical score for measures 57-60. The right hand continues with eighth notes. The left hand has rests in measures 57 and 58, followed by eighth notes in measures 59 and 60. Dynamics include accents (>) and piano (p).

61

Musical score for measures 61-63. The right hand has eighth notes with a triplet of eighth notes in measure 62. The left hand has rests in measures 61 and 62, followed by eighth notes in measure 63. Dynamics include accents (>) and fortissimo (fz).

64

Musical score for measures 64-67. The right hand has eighth notes with a triplet of eighth notes in measure 64. The left hand has eighth notes with a triplet of eighth notes in measure 64. Dynamics include accents (>) and fortissimo (fz). An 8va marking is present in measure 65.

68

Musical score for measures 68-70. The right hand has eighth notes with a triplet of eighth notes in measure 68. The left hand has eighth notes with a triplet of eighth notes in measure 68. Dynamics include accents (>) and fortissimo (fz). An 8va marking is present in measure 69.

71

Musical score for measures 71-74. The right hand has eighth notes with a triplet of eighth notes in measure 71. The left hand has eighth notes with a triplet of eighth notes in measure 71. Dynamics include accents (>) and fortissimo (fz) and mezzo-forte (mf). An 8va marking is present in measure 71.

Etude for piano and ring modulator

4 75

Tremolo at the left hand dal niente!

mf marcato

f

80

fz ppp *ff* *fz ppp* *ff* *fz ppp* *ff*

85

fz *fz* *fz ppp* *fz* *fz* *fz*

fz *8vb*

90

♩ = 100

ppp *ff* *cresc. molto* *p*

gliss.

8vb

95

misterioso

mf

100 (8)

(8)

Etude for piano and ring modulator

104 *suddenly hesitating*

p

108 *accel.* *piu mosso* ♩ = 140 *sempre accel*

f marcato

113

118 *Martellato* ♩ = 160

ff

121

125 *Andante* ♩ = 50

p *very mechanical, like an ECG*

pp

simile

Etude for piano and ring modulator

6

129

mp (*like bells*) *pp* *p marcato*

always with the middle pedal *Ped.*

131

pp *mp* *Ped.*

134

pp *mp* *Ped.*

135

pp *mp* *Ped.*

136

gain momentum

pp *mp* *Ped.*

138 with verve

Musical score for measures 138-139. Measure 138 features a piano part with two sixteenth-note sextuplets and a ring modulator part with a series of chords. Dynamics include *mf*. Measure 139 continues with piano and ring modulator parts, including a triplet and accents.

139

Musical score for measures 139-142. Measure 139 includes piano and ring modulator parts with dynamics *poco fz*, *p*, and a triplet. Measure 140 has piano and ring modulator parts with dynamics *p* and accents. Measure 141 has piano and ring modulator parts with dynamics *f* and accents. Measure 142 has piano and ring modulator parts with dynamics *p (écho)*.

142

Musical score for measures 142-146. Measure 142 has piano and ring modulator parts with dynamics *f* and accents. Measure 143 has piano and ring modulator parts with dynamics *p (écho)*. Measure 144 has piano and ring modulator parts with dynamics *pp* and accents. Measure 145 has piano and ring modulator parts with dynamics *pp* and accents. Measure 146 has piano and ring modulator parts with dynamics *pp* and accents.

146 ^{8va}

Musical score for measures 146-150. Measure 146 has piano and ring modulator parts with dynamics *pp* and accents. Measure 147 has piano and ring modulator parts with dynamics *pp* and accents. Measure 148 has piano and ring modulator parts with dynamics *pp* and accents. Measure 149 has piano and ring modulator parts with dynamics *pp* and accents. Measure 150 has piano and ring modulator parts with dynamics *pp* and accents.

150 ^{8va}

Musical score for measures 150-153. Measure 150 has piano and ring modulator parts with dynamics *sempre pp*, *fz*, *f*, and *mf*. Measure 151 has piano and ring modulator parts with dynamics *pp* and accents. Measure 152 has piano and ring modulator parts with dynamics *pp* and accents. Measure 153 has piano and ring modulator parts with dynamics *pp* and accents.

153

Musical score for measures 153-156. Measure 153 has piano and ring modulator parts with dynamics *pp* and accents. Measure 154 has piano and ring modulator parts with dynamics *pp* and accents. Measure 155 has piano and ring modulator parts with dynamics *pp* and accents. Measure 156 has piano and ring modulator parts with dynamics *pp* and accents.

Etude for piano and ring modulator

8 156

ff 5 5 5 pp 6 6

8^{vb} Ped. ff 5 5 pp 6 6

8^{vb} Ped. 3 5 3 5

3 fpp 6 6

3 5 pp 6 6

3 5 p marcato 6

ff 5 5 fz p 3 3 5

(first note always very heavy, portato then make in every bar little accel. to gain momentum)

Ped. 8^{vb}

Etude for piano and ring modulator

171

174

176

179

meno mosso, poco a poco accel.

182

184

Etude for piano and ring modulator

Musical score for measures 186-187. The piece is in 3/8 time. Measure 186 features a sixteenth-note triplet in the right hand and a sixteenth-note triplet in the left hand, both marked with a '6' above and below. Measure 187 continues with similar triplet patterns in both hands.

♩ = 80 subito accel.

Musical score for measures 188-189. Measure 188 contains sixteenth-note triplets in both hands, with a '6' above the right hand and a '3' below. Measure 189 features a sixteenth-note triplet in the right hand and a half note in the left hand, marked with *ff dim.*

Prestissimo ♩ = 120

Musical score for measures 190-192. Measure 190 has sixteenth-note triplets in both hands. Measure 191 continues with sixteenth-note triplets. Measure 192 features sixteenth-note triplets in the right hand and a half note in the left hand.

Musical score for measures 193-195. Measure 193 has sixteenth-note triplets in both hands. Measure 194 continues with sixteenth-note triplets. Measure 195 features sixteenth-note triplets in the right hand and a half note in the left hand, marked with *p*.

Musical score for measures 196-199. Measure 196 has sixteenth-note triplets in both hands. Measure 197 continues with sixteenth-note triplets in the right hand and a half note in the left hand, marked with *sub f marcato*. Measures 198 and 199 continue with sixteenth-note triplets in the right hand and a half note in the left hand.

Musical score for measures 200-203. Measure 200 has sixteenth-note triplets in both hands. Measure 201 continues with sixteenth-note triplets in the right hand and a half note in the left hand. Measures 202 and 203 continue with sixteenth-note triplets in the right hand and a half note in the left hand.

204

208

215

222

Lento ♩ = 40 secco!

ffp (press silent!) *pp* *secco!*

always hold these notes with the middle pedal *Ped.*

226

Etude for piano and ring modulator

12

228

smile

fz *p*

229

fz *p*

232

misterioso

ppp *sempre pp*

poco fz *ppp*

234

p

236

pp cresc. *3*

right hand quasi accel.
(left hand stay strict in the tempo!)

Etude for piano and ring modulator

238

Measures 238-242. Measure 238 features a piano accompaniment with a tremolo in the right hand and a melodic line in the left hand. Measure 239 is a whole rest for the piano. Measure 240 begins with a ring modulator part in the right hand, marked *f pesante*, and a piano accompaniment. Measure 241 continues the ring modulator part with a triplet of eighth notes. Measure 242 features an 8va⁻¹ triplet of eighth notes. A page number 13 is in the top right corner.

240

Measures 240-242. Measure 240 features a ring modulator part with a triplet of eighth notes and a piano accompaniment. Measure 241 continues the ring modulator part with a triplet of eighth notes. Measure 242 features an 8va⁻¹ triplet of eighth notes.

243

Measures 243-244. Measure 243 features a ring modulator part with a triplet of eighth notes and a piano accompaniment. Measure 244 features an 8va⁻¹ triplet of eighth notes and a piano accompaniment.

245

Measures 245-246. Measure 245 features a ring modulator part with a triplet of eighth notes and a piano accompaniment. Measure 246 features a ring modulator part with a triplet of eighth notes and a piano accompaniment.

Etude for piano and ring modulator

14

246

8va

8va

poco piu mosso (♩ = 60)

248

p espressivo

8vb

change ring modulator to $f = 65,4$ Hz (pitch of low c) in about 14sec.

254

mp like a heart beating

ohne Ped.

modulateur at $f = 65,4$ Hz (low c)

so that it creates a very low frequency, when playing the B

261

una corda!! tremolo as fast as possible!

pp *p*

8vb

Ped.

ppp *pp*

269

8vb

273

Musical score for measures 273-274. The right hand features a complex melodic line with sixths and triplets, marked *mp* and *pp*. The left hand has a bass line with octaves and chords, marked *mp*. A dashed line with an 8 indicates the ring modulator's input.

275

Musical score for measures 275-276. The right hand continues with sixths and triplets, marked *mp* and *pp*. The left hand has a bass line with octaves and chords, marked *mp*. A dashed line with an 8 indicates the ring modulator's input.

277

Musical score for measures 277-278. The right hand features a complex melodic line with sixths, marked *p*. The left hand has a bass line with octaves and chords, marked *p*. A dashed line with an 8 indicates the ring modulator's input.

279

Musical score for measures 279-280. The right hand features a complex melodic line with sixths and triplets, marked *mp* and *mf*. The left hand has a bass line with octaves and chords, marked *mp*. A dashed line with an 8 indicates the ring modulator's input. The text "tre corde" is present.

281

Musical score for measures 281-282. The right hand features a complex melodic line with sixths and triplets, marked *mf* and *p*. The left hand has a bass line with octaves and chords, marked *mf*. A dashed line with an 8 indicates the ring modulator's input.

Etude for piano and ring modulator

16

282

Musical score for measures 282-283, system 1. The system consists of two staves. The upper staff is in treble clef with a key signature of one flat (B-flat). It features sixteenth-note runs with sixteenth rests, marked with a '6' and a slur. The lower staff is in bass clef with a key signature of one flat. It features eighth-note runs with eighth rests, marked with a '3' and a slur. Dynamics include *mf*. Fingerings are indicated as (8) for the left hand and 5 for the right hand.

283

Musical score for measures 283-284, system 2. The system consists of two staves. The upper staff is in treble clef with a key signature of one flat. It features sixteenth-note runs with sixteenth rests, marked with a '6' and a slur. The lower staff is in bass clef with a key signature of one flat. It features eighth-note runs with eighth rests, marked with a '3' and a slur. Dynamics include *mf* and *p*. The time signature changes to 3/4. Fingerings are indicated as (8) for the left hand and 5 for the right hand.

284

Musical score for measures 284-285, system 3. The system consists of two staves. The upper staff is in treble clef with a key signature of one flat. It features sixteenth-note runs with sixteenth rests, marked with a '6' and a slur. The lower staff is in bass clef with a key signature of one flat. It features eighth-note runs with eighth rests, marked with a '3' and a slur. Dynamics include *mf* and *p*. The time signature changes to 2/4. Fingerings are indicated as (8) for the left hand and 3, 5 for the right hand.

285

Musical score for measures 285-286, system 4. The system consists of two staves. The upper staff is in treble clef with a key signature of one flat. It features sixteenth-note runs with sixteenth rests, marked with a '6' and a slur. The lower staff is in bass clef with a key signature of one flat. It features eighth-note runs with eighth rests, marked with a '3' and a slur. Dynamics include *f* and *p*. The time signature changes to 2/4. Fingerings are indicated as 8^{vb} for the left hand and 5 for the right hand.

Etude for piano and ring modulator

17

287

ff $\overset{3}{>}$ mf \leftarrow fz \leftarrow fz

(8) 3

Ped. \longrightarrow

Detailed description: This system contains measures 287 and 288. The right hand features sixteenth-note runs with sixteenth-note chords, marked with '6' and '3' above them. Dynamics include *ff*, *mf*, and *fz*. The left hand plays a steady eighth-note accompaniment with a '5' below the notes. A pedal instruction 'Ped.' with a right-pointing arrow is located below the left hand staff.

289

6 fz 3 fz

(8) 5 5

Detailed description: This system contains measures 289 and 290. The right hand continues with sixteenth-note runs and chords, marked with '6' and '3'. Dynamics include *fz*. The left hand accompaniment continues with eighth notes and chords, marked with '5' below. The time signature changes to 3/4 at the end of measure 290.

change modulateur to f = 440Hz (A) in about 14 sec.

290

6 6 ffz mf

(8) 5 5 fffz

Detailed description: This system contains measures 290 and 291. The right hand features sixteenth-note runs and chords, marked with '6' and '6'. Dynamics include *ffz* and *mf*. The left hand accompaniment continues with eighth notes and chords, marked with '5' and '5'. A dynamic marking *fffz* is placed below the left hand staff in measure 291. The time signature is 3/4.

291 Presto, like shimmering

p

Let still resonate all in the pedal! (blurred!)

Detailed description: This system contains measures 291 and 292. The right hand plays a series of arpeggiated chords, marked with 'p' (piano). The left hand accompaniment continues with eighth notes and chords. A performance instruction 'Let still resonate all in the pedal! (blurred!)' is written below the left hand staff.

292

Detailed description: This system contains measures 292 and 293. The right hand continues with arpeggiated chords. The left hand accompaniment continues with eighth notes and chords.

Etude for piano and ring modulator

18293

294

arrive here at the same time, as the modulator (f=440 Hz)
left hand in the notated rhythm, right hand freely
(♩ = ca. 160)

296

297

298

rall.

♩ = ♩ = ca. 90

sans Ped.

302

senza ritardando!!!

15^{ma}

dim.

pp morendo

pppp

8^{va}