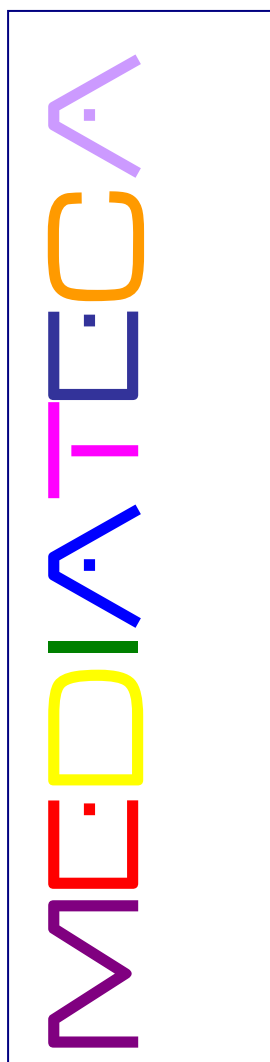


**Vincenzo Grossi**  
(Aprile 2003)



# MEDIATECA

Brano multimediale basato sulla ricerca delle possibilità di creare uno spartito visivo dove gli eventi grafici sono intimamente connessi a quelli audio.

Il progetto, realizzato per l'inaugurazione della Mediateca Comunale di Campobasso, si è sviluppato con la creazione di un supporto video di animazione mediante l'utilizzo del Flash6(MX) della Macromedia, e, successivamente, di un supporto audio ad esso integrato ( ed eseguito dal player web Flash) creato con CPS e CoolEditPro.

Il supporto video ha una risoluzione di 24 fotogrammi al secondo ed una durata di 2'5" per complessivi 3008 fotogrammi. Si è scelto di operare con solidi geometrici che si muovono in uno spazio 3D. L'applicazione usata è di tipo Grafico-vettoriale e non ha alcuna predisposizione per la renderizzazione 3D. Quindi il massimo sforzo è stato quello di sintetizzare un 3D virtuale ed approssimativo, basato semplicemente sul cambio di proporzioni e sul gioco delle ombre e dei colori. Pur esistendo applicativi 3D, nessuno di questi implementa la parte audio o ha un costo di centinaia di migliaia di euro...

## Corrispondenze effettuate

Ad ogni elemento visivo corrisponde un singolo evento audio, ad iniziare dall'ambientazione iniziale ( camera blu ).

La posizione occupata da ogni elemento video ha un corrispondente nella spazializzazione audio: all'allontanamento (asse Z) corrisponde un maggior riverbero ed una minore intensità etc.

L'asse Y del video è stato arbitrariamente ( in base alla classica correlazione) assegnato al range frequenziale scelto (50-16kHz).

L'asse X è stato coerentemente affidato in campo audio al bilanciamento dei canali L-R.

Al cambio di colore e/o di forma degli oggetti corrisponde una variazione delle componenti spettrali del segnale audio ( piccolo=acuto, scuro = grave) nonché un cambio di ampiezza (grande=forte).

## Sintesi adoperate

Le sintesi adoperate sono la additiva, sottrattiva, FM, AM.

Il lavoro è stato svolto implementando gli algoritmi con CPS e editandoli con CoolEdit. Quindi si sono importati in Flash i singoli files wave ed inseriti nella Timeline nei momenti previsti. Il programma ha alla fine prodotto un file "swf" che è leggibile con il software player della Macromedia, gratuitamente scaricabile da internet, essendo un formato oggi praticamente universale per la costruzione di pagine web con elementi grafici.

E' previsto l'upload di tutto il materiale ( partitura, storyboard ed Swf ) nelle pagine del mio sito: [www.vincenzogrossi.it](http://www.vincenzogrossi.it).

Seguono le 7 tavole dello storyboard e, in ordine di apparizione, i parametri degli algoritmi utilizzati. Questi ultimi sono in coda.

















## Parametri algoritmi “Mediateca” in ordine d’apparizione

Formato generale delle KLines = 1°valore, 1°durata di transizione (sec.), 2° val. , 2° dur. ...etc

### Sfondo01 dur 57”

FM: fp=232Hz, IM=0.9, Fm=365Hz, Ap=0.16 (0~1),  
Reverb: DlyTime=0.03”, mix=91/100, tale 82/100

### Sfera01 dur 9.1”

SintesiAdditiva: 7 Sinusoidi + 2 NoiseGenerator filtrati BP

Sinusoidi

con fattori d’ampiezza = 0.1,0.2, 0.2, 0.2, 0.2, 0.2, 0.2,  
con rapporti di frequenza = 1, 1.122,1.259,1.414,1.587,1.781,2 (esatonale)  
KAmp= 0,1.1,1,8,1

Noise1(Arand) Freq=Kline(0.1,1.1,0.6,8,0.6); BPFILTER18dB cf=2997Hz QFactor29/127

Noise2(Arand) Freq=Kline(0.1,1.1,0.6,8,0.6); BPFILTER30dB cf=2000Hz QFactor98/127

Entrambi seguono lo stesso KAmp delle sine = KAmp= 0,1.1,1,8,1

Riverbero generale: DlyTime= 0.2” mix = Kline(100,1.1,10,8,10)

### Cilindro Verde 9.7”

FM + Noise

FM = Frequenza portante = Kline (637,1,604,3.6,604,0.7,604,0.9,604,2.5,604)

Indice di modulazione = KLine(3.7,1,3.7,2.2,1.1,0.7,3.7,0.7,10,0.7,10,0.9,10,2.5,10)

Frequenza modulante = KLine(53,1,37,3.6,37,0.7,37,0.9,37,2.5,37)

Filtro Q (BP-6dB): cf=Kline (878,1,1574,3.6,1574,0.7,4000,0.9,1574,2.5,1574)

Pan controllato da KLine (1,1.2,0.2,0.3,0.2,0.6,0.5)

Reverb mix% controllato da KLine (30,1.5,30,0.6,100)

1°Involuppo d’ampiezza = 0,0.1,1,0.8,0.3,0.1,1,2.2,2,0.7,1,2.3,1,2.5,0

Noise = Filtro Q (BP-12dB): cf= 878Hz

2°Involuppo d’ampiezza = 0,0.1,1,0.8,0.3,0.1,1,2.2,2,0.7,1,2.3,1,2,20,1,0

Reverb mix = kline (0, 6.2,0,2,100,1,100)

### RedBall 26”

SintesiAdditiva/Sottrattiva: 7 OndeQuadre

con fattori d’ampiezza = 0.1,0.3,0.5,0.9,0.5,0.3,0.1

con rapporti di frequenza = 1, 1.122,1.259,1.414,1.587,1.781,2 (esatonale)

freq. base = Kline

(124.5,1.1,498,1,520,1.3,470,1,450,0.8,600,0.9,500,0.9,550,1.5,570,1.4,550,1,250,1.4,100,1.3,850,2.2,  
200,0.8,180,1.2,150,1.5,150,1.6,100,2,100,1.1,1000,2.2,1000)

Amp. base = kline (0,1.1,1,9.8,1,1.4,0.2,1.3,0.6,3,0.6,1.2,1,1.5,1.5,1.6,0.3,2,0.3,1.1,1.5,2.2,0)

LPFilter24dB :

cf = Kline di freq.base \* KLine (1,1.1,4,9.8,4,0.2,2,1.2,2,1.3,8,4.2,8,1.5,12,1.6,6,2,6,1.1,50,2.2,50)

Reverb: mix% = kline(100,1.1,10,7.4,10,1.4,60,1,20,1.4,10,1.3,90,2.2,10,8.2,10,2.2,100)

Panning = kline

(0.84,3.4,0.7,1.8,0.9,0.9,0.9,0.9,0.6,1.5,0.84,1.4,0.55,1,0.9,1.4,1,1.3,0.55,2.2,0.9,0.8,1,1.2,0.7,1.5,0.75,  
1.6,0.7,2,0.5,3.3,0.5)

## Sferagialla02

SintesiAdditiva/Sottrattiva: 7 Sinusoidi + 2 NoiseGenerator filtrati BP

Sinusoidi

con fattori d'ampiezza = 0.1,0.3, 0.5, 0.9, 0.5, 0.3, 0.1,

con rapporti di frequenza = 1, 1.122,1.259,1.414,1.587,1.781,2 (esatonale)

freq base= Kline (124.5, 1.1, 498, 0.9, 460, 0.7, 536, 0.7, 545, 0.5, 498, 0.6, 465, 0.6, 500, 0.5, 560, 0.5, 498, 0.6, 580, 0.6, 650, 0.8, 580, 1, 300, 1, 300, 1, 460, 1.4, 460, 0.9, 350, 1.8, 498, 1,545, 1.6, 124.5, 1.5, 400, 1.6, 800, 2, 800, 1.1, 498, 2.2, 1000)

KAmp= 0,1.1,1,5.6,1,0.6,1.2,2.8,1.2,1,3,2.3,3,1.8,1,1,0.5,6.7,0.5,1.1,2,2.2,0

Noise1(Arand) Freq=Kline(0.1,1.1,0.4,14.1,0.4,1,0.8,6.7,0.8,1.1,1.2,2.2,0);

BPFilter18dB cf=2997Hz QFactor29/127

Noise2(Arand) Freq=Kline(0.1,1.1,0.4,14.1,0.4,1,0.8,6.7,0.8,1.1,1.2,2.2,0);

BPFilter30dB cf=2000Hz QFactor98/127

Entrambi seguono lo stesso KAmp = 0,1.1,1,14.1,1,1,2,6.7,2,1.1,1,2.2,0

Filtro BP: Kline(124.5, 1.1, 498, 0.9, 460, 0.7, 536, 0.7, 545, 0.5, 498, 0.6, 465, 0.6, 500, 0.5, 560, 0.5, 498, 0.6, 580, 0.6, 650, 0.8, 580, 1,300, 1, 300, 1, 420, 1.4, 390, 0.9, 310, 1.8, 550, 1, 650, 1.6, 200, 1.5, 600, 1.6, 850, 2, 900, 1.1, 700, 2.2, 1000 )

Riverbero generale: DlyTime= 0.2” mix = Kline(100, 1.1, 15, 5.6, 15, 0.6, 50, 0.8, 20, 1, 10, 1, 80, 1, 20, 4.1, 20, 1, 40, 6.7, 40, 1.1, 0, 2.2, 100 )

Panning= Kline(0.16, 9.1, 0.16, 1, 0.03, 1, 0.16, 2.3, 0.16, 1.8, 0.5, 1, 0.16, 1.6, 0.16, 1.5, 0.5, 1.6, 0.16, 2, 0.16, 1.1, 0.5, 2.2, 1 )

## Ants 8.7” (formiche gialle)

Modulazione di ampiezza mediante un modulo (**GRANULE03**) random (arand) di una forma d'onda variabile (table-edit) composta di 5 segmenti (pausa iniziale, attack, sustain,decay, pausa finale)

variabili e controllati mediante due KLines .A[ x2 (and x5 ) (1 ~ 500)] B [x3 ( and x4 ) (1 ~ 512)]

Table = size 1024 x1=0, y1=0, x2=Kline\_A, y2=0, x3=Kline\_B, y3=1, x4=Kline\_B, y4=1, x5=Kline\_A, y5=0, x6=0, y6=0

KLine\_A = 400,5.3,400,1.5,50,1.9,50

KLine\_B = 450,5.3,450,1.5,400,1.9,400

Frequenza dell'oscillatore « portante » controllata da una KLine (40,5.3,40,1.5,8,1.9,0)

BPFilter : cf= KLine (12000,2.4,12000,2.9,6000,3.4,6000) , BW = KLine (1500,5.3,1500,3.4,18000)

Stereo Echo: Feedback Amount (0~1) = Kline (0,5.3,0,1.5,0.6,1.9,0.6)

Reverb amount (0~100) = KLine (0,2.4,40,4.4,40,1.9,0)

Inviluppo d'ampiezza = KLine (1,6.8,1,1.9,0) PAN = KLine (1,2.4,0.65,2.9,0.65,1.5,0.5,1.9,0.4)

## Sfondo02 dur 61.6”

Somma di tre segnali FM, filtrati LP

FM1: Fp = Kline(10,1.9,496,59.7,496)

Im = 5.201 ; fm = 156Hz ; Ap = 0.33

FM2: Fp = 496Hz

Im = 5.201 ; fm = KLine(19,1.9,156,59.7,156) ; Ap 0.33

FM3: Fp = 496

Im = KLine(0,0.5,20,1.4,5.201,59.7,5.201) ; fm = 156Hz ; Ap =0.33

LPF6dB: cf= Kline(500,1.8,4000,0.1,900,59.7,900)  
Reverb: mix% = Kline(0.1,26.3,0.1,2.9,100,22.9,100,1.7,100,1.2,1,6.6,1)  
Pan: KLine(0.5,52.1,0.5,1.7,0.15,7.8,0.15)

### Sdong.wav dur 3"

Algoritmo smarrito, campana FM con lento vibrato d'ampiezza

### Ray1 – 1.2"

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)  
400, 54      402, 66      398, 76      405,83  
Inviluppo d'ampiezza = 0,0.3,2,0.9,0

### Ray2 – 1.6"

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)  
800, 54      802, 66      798, 76      805,83  
Inviluppo d'ampiezza = 0,1.1,2,0.5,0

### Ray5 – 0.8"

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)  
480, 52      485, 59      474,112      407.8, 129  
Kline\* = 2000,0.8,800,0.2,200  
Pan controllato da KLine (0,0.2,0.3,0.6,1)  
Reverb mix% controllato da KLine (80,0.2,50,0.6,0)  
Inviluppo d'ampiezza = 0,0.2,2,0.6,0

### Ray7 – 2.1"

FM = Frequenza portante = KLine (223,1.5,223,0.6,244.5)  
Indice di modulazione = KLine (3,1.2,12,0.9,12 )  
Frequenza modulante = Kline (350,1.2,350,0.3,489,0.6,489 )  
Pan controllato da KLine (1,1.2,0.2,0.3,0.2,0.6,0.5)  
Reverb mix% controllato da KLine (30,1.5,30,0.6,100)  
Inviluppo d'ampiezza = 0,1.2,1,0.3,1,0.6,0

### Ray8

Smarrito (simile)

### Ray3 – 1"

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)  
(Kline\*), 54      (Kline+2), 66      (Kline\*-2), 76      (Kline\*+5),83  
Kline\* = 2000,0.8,800,0.2,200  
Pan controllato da KLine (1,0.8,0.5,0.2,0)  
Reverb mix% controllato da KLine (80,1,0)  
Inviluppo d'ampiezza = 0,0.8,2,0.2,0

### Ray6 – 1"

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)  
(Kline\*), 52      (Kline+5), 59      (Kline\*-6), 112      (Kline\*+7.8), 129  
Kline\* = 400,0.7,2000,0.3,200  
Pan controllato da KLine (0.3,0.7,0.7,0.3,1)  
Reverb mix% controllato da KLine (80,0.7,20,0.3,0)  
Inviluppo d'ampiezza = 0,0.7,1,0.3,0

### **Ray9 - 0.6"**

FM = Frequenza portante = 748Hz

Indice di modulazione = 4.4

Frequenza modulante = 286 Hz

Pan controllato da KLine (1,1.2,0.2,0.3,0.2,0.6,0.5)

Reverb mix% controllato da KLine (30,1.5,30,0.6,100)

Involuppo d'ampiezza = 0,0.1,2,0.5,0

### **Ray4 - 1.2"**

4 SubPModAmp = Modulazione d'ampiezza di due sinusoidi aventi Frequenze = (Hz)

(Kline\*), 54 (Kline+2), 66 (Kline\*-2), 76 (Kline\*+5),83

Kline\* = 100,0.6,400,0.6,2000

Involuppo d'ampiezza = 0,0.6,1.5,0.6,0

### **Triangle0 dur1.2"**

AM fra un generatore Buzz ed una Triangular Window

Buzz: f=400Hz Window: f=300Hz

BPFILTER12dB: cf=kline(3000,1.2,300) ; BW=1000Hz

Reverb mix=kline (80,1.7,0)

### **Triangle1 dur11.9"**

AM fra un generatore Buzz ed una Triangular Window

Buzz: f=120Hz Window: f=300Hz

Amp= kline(0,0.2,2,0.1,1,7.8,1,1.1,1,0.7,1.8,2,0)

BPFILTER12dB: cf=480 ; BW=840Hz

Reverb mix=kline (80,8.1,10,1.1,70,0.7,0.2,80)

### **TriangleBlu**

FM: fp=965Hz IM=Kline(16,0.4,14,0.4,14,0.6,8,0.8,4.4,0.9,1.3) fm=304Hz

Ap=Kline(1,2.3,1,0.2,0) BPFILTER12dB: cf=910Hz; BW=1540Hz

Reverb: mix=Kline(30,0.4,10,0.4,90,0.6,80,0.8,0,0.9,10)

Panning= Kline(1,0.4,0.9,0.4,0.7,0.6,0.5,0.8,0,0.9,0)

### **TriangleRed**

FM: fp=813Hz IM=Kline(16,0.4,14,0.4,14,0.6,8,0.8,4.4,0.9,1.3) fm=406Hz

Ap=Kline(1,2.2,1,0.9,0) BPFILTER12dB: cf=10Hz; BW=730Hz

Reverb: mix=Kline(30,0.4,10,0.4,90,0.6,80,0.8,0,0.9,10)

Panning= Kline(0,0.5,0.2,0.2,0.3,0.2,0.4,0.5,0.5,0.3,0.7,0.6,1,0.2,1)

### **Tetra1Red dur 13.5"**

Somma di tre segnali FM, filtrati HP

FM1: Fp = 1300Hz

Im = 5 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)

FM2: Fp = 1307 Hz

Im = 5.5 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)

FM3: Fp = 1315 Hz

Im = 6 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)

HPF12dB: cf= 1400 Hz  
Reverb: mix% = Kline(100,1.2,10,2.7,0,2.8,10,4.1,10,1,30,0.7,30,0.3,80,0.6,80,0.1,0)  
Il panning è azionato da uno switch controllato da Kline(0,3.9,0,0.01,1,8.9,1,0.01,0)  
Pan: Rotate panning frequency\*2= kline (0.001, 3.9, 0.001, 0.01, 0.175, 2.8, 0.175, 0.01,  
0.45, 2.2, 0.45, 3.7, 5, 2.3, 5, 5, 5)  
Pan: KLine(0.5,1.2,0.75,12.2,0.5,0.1,1,0.5,1)

### **Tetra2 dur 13.5” (stesso algoritmo precedente)**

Somma di tre segnali FM, filtrati HP

FM1: Fp = 1500Hz  
Im = 5 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)  
FM2: Fp = 1507 Hz  
Im = 5.5 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)  
FM3: Fp = 1515 Hz  
Im = 6 ; fm = 50Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)

HPF12dB: cf= 1400 Hz  
Reverb: mix% = Kline(100,1.2,10,2.7,0,2.8,10,4.1,10,1,30,0.7,30,0.3,80,0.6,80,0.1,0)  
Il panning è azionato da uno switch controllato da Kline(0,3.9,0,0.01,1,8.9,1,0.01,0)  
Pan: Rotate panning frequency\*2= kline  
(0.001,3.9,0.001,0.01,0.175,2.8,0.175,0.01,0.45,2.2,0.45,3.7,5,2.3,5,5,5)  
Pan: KLine(0.5,13.4,0.5,0.1,1,0.5,1)

### **Tetra3Ver dur 13.5” (stesso algoritmo precedente)**

Somma di tre segnali FM, filtrati HP

FM1: Fp = 1700Hz  
Im = 5 ; fm = 70Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)  
FM2: Fp = 1707 Hz  
Im = 5.5 ; fm = 70Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)  
FM3: Fp = 1715 Hz  
Im = 6 ; fm = 70Hz ; Ap = kline (0.4,13.4,0.4,0.1,0)

HPF12dB: cf= 1400 Hz  
Reverb: mix% = Kline(100,1.2,10,2.7,0,2.8,10,4.1,10,1,30,0.7,30,0.3,80,0.6,80,0.1,0)  
Il panning è azionato da uno switch controllato da Kline(0,3.9,0,0.01,1,8.9,1,0.01,0)  
Pan: Rotate panning frequency\*2= kline  
(0.001,3.9,0.001,0.01,0.175,2.8,0.175,0.01,0.45,2.2,0.45,3.7,5,2.3,5,5,5)  
Pan: Kline(0.5,1.2,0.25,13.4,0.5,0.1,1,0.5,1)

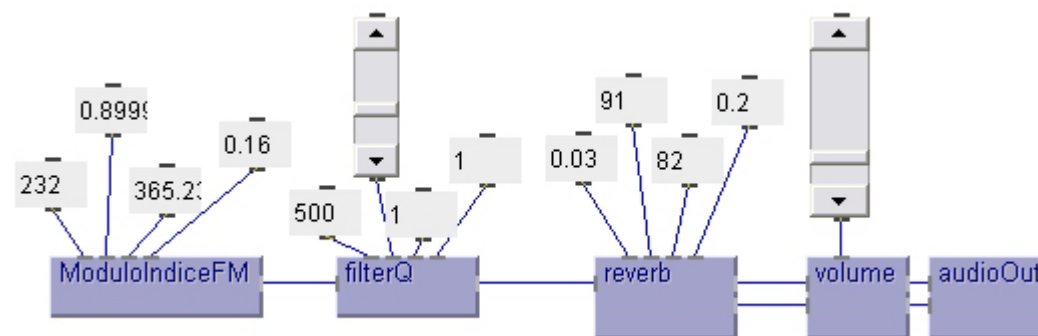
### **Rainbow 11.5”**

Somma di tre segnali FM, filtrati HP

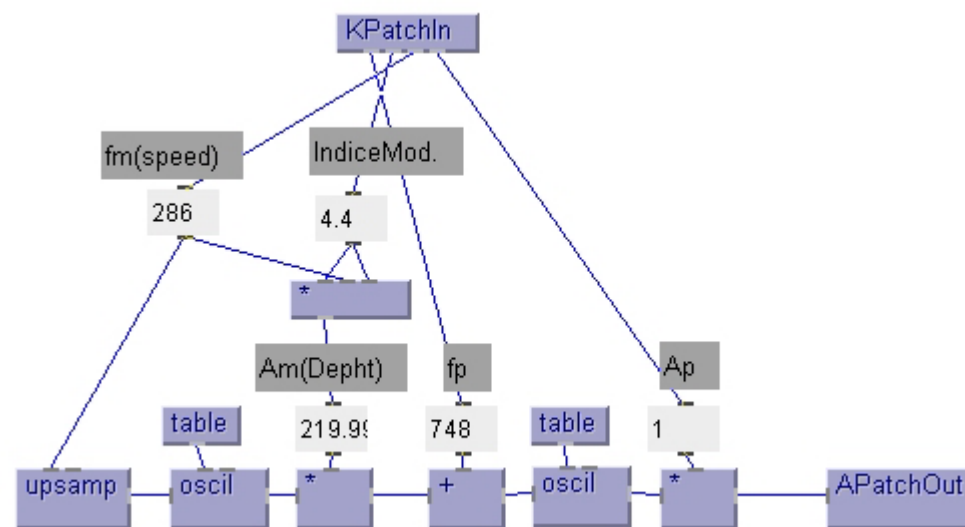
FM1: Fp = Kline(1300,3.2,1300,0,1000,1.2,1000,0,800,0.4,600,5.1,600)  
Im = 3 ; fm = 50Hz ; Ap = kline (0,0.6,0.3,4.4,0.3,2.1,0)  
FM2: Fp = Kline(1500,3.2,1500,0,800,1.2,800,0,600,0.4,400,5.1,400)  
Im = 2 ; fm = 60Hz ; Ap = kline (0,0.6,0.3,6.5,0.3,0.9,0)  
FM3: Fp = Kline(1715,3.2,1715,0,620,1.2,6200,0,400,0.4,200,5.1,200)  
Im = 1 ; fm = 70Hz ; Ap = kline (0,0.6,0.3,7.4,0.3,1.4,0)

HPF12dB: cf= 1400 Hz  
Reverb: mix% = Kline(100,1.2,10,2.7,0,2.8,10,4.1,10,1,30,0.7,30,0.3,80,0.6,80,0.1,0)  
Pan: Rotate panning frequency\*2=kline(0,3.9,0,0.01,1,8.9,1,0.01,0)  
Pan: Kline(0.5,1.2,0.25,13.4,0.5,0.1,1,0.5,1)

## Sfondo01 dur 57"



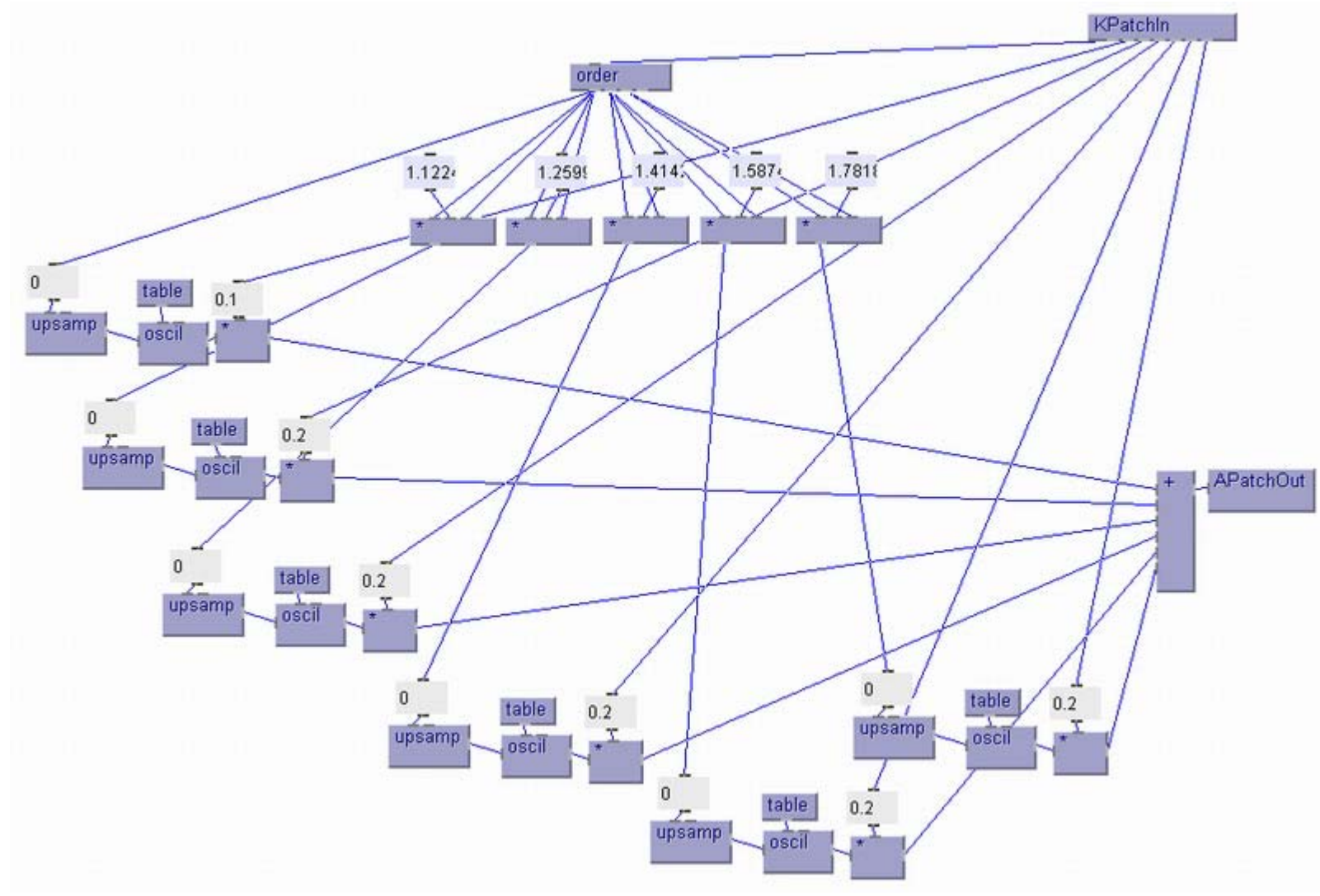
## Modulo Indice



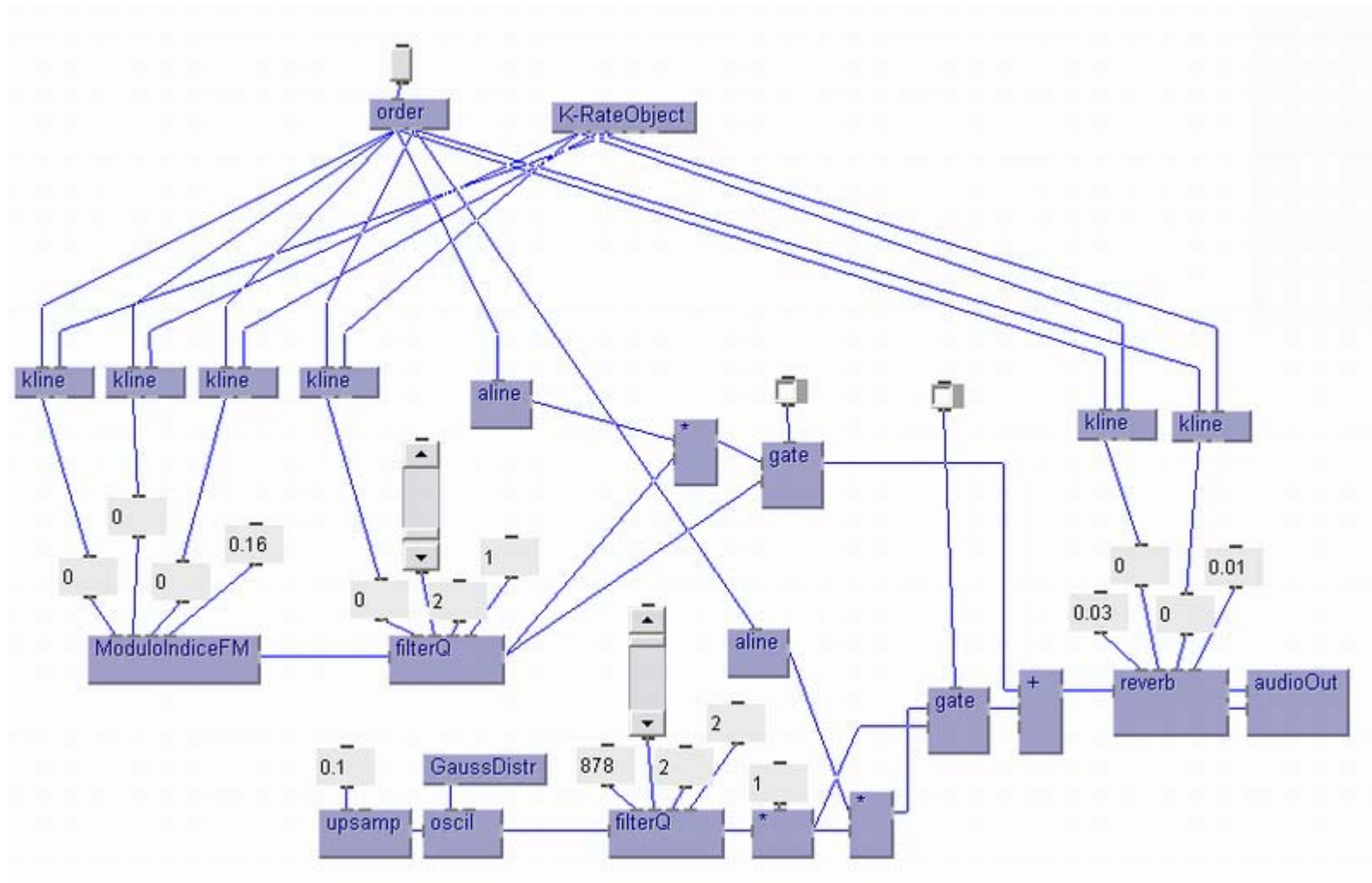




## Sfera SubPatch (Table=sine)

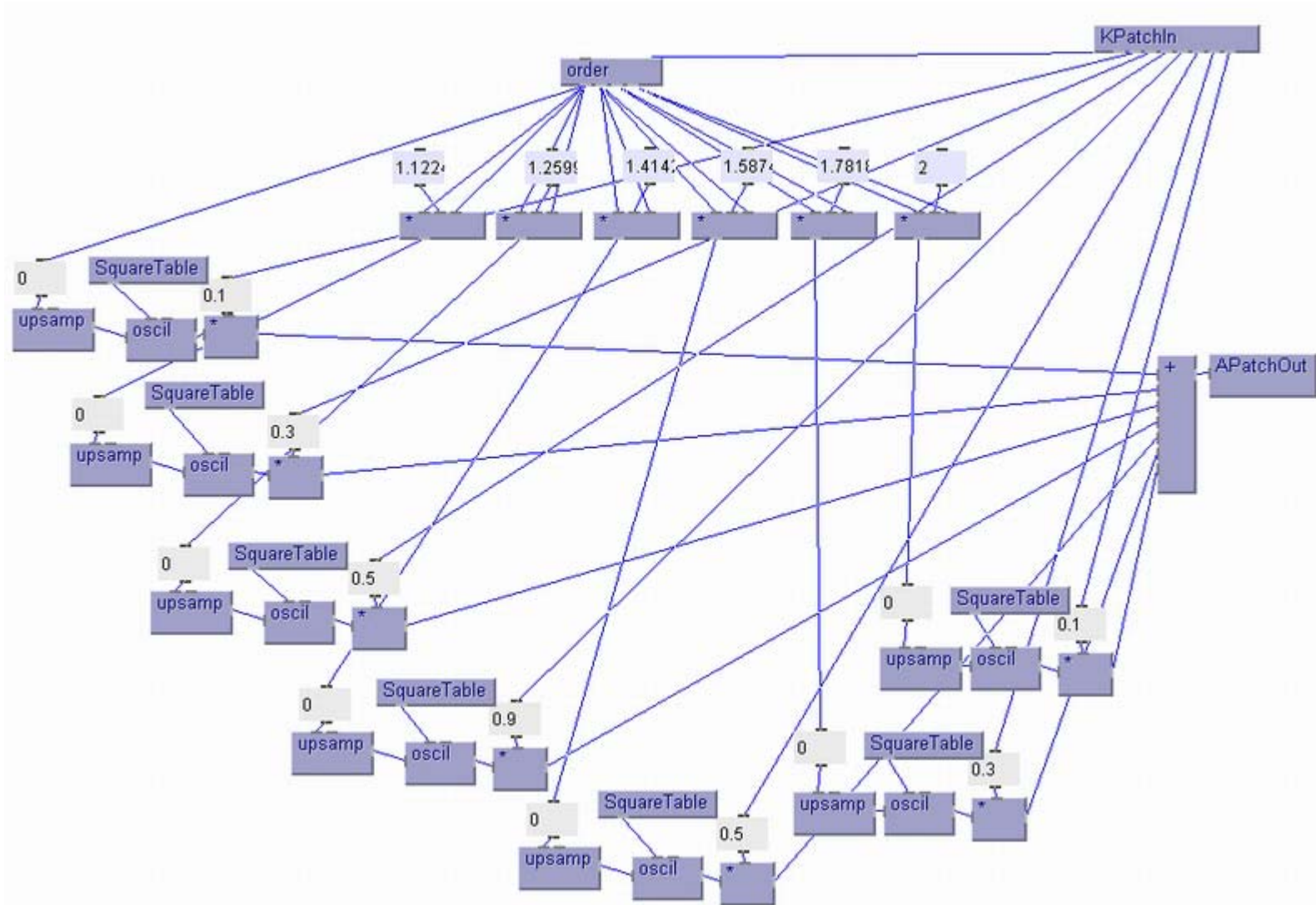


## Cilindro Verde 9.7”



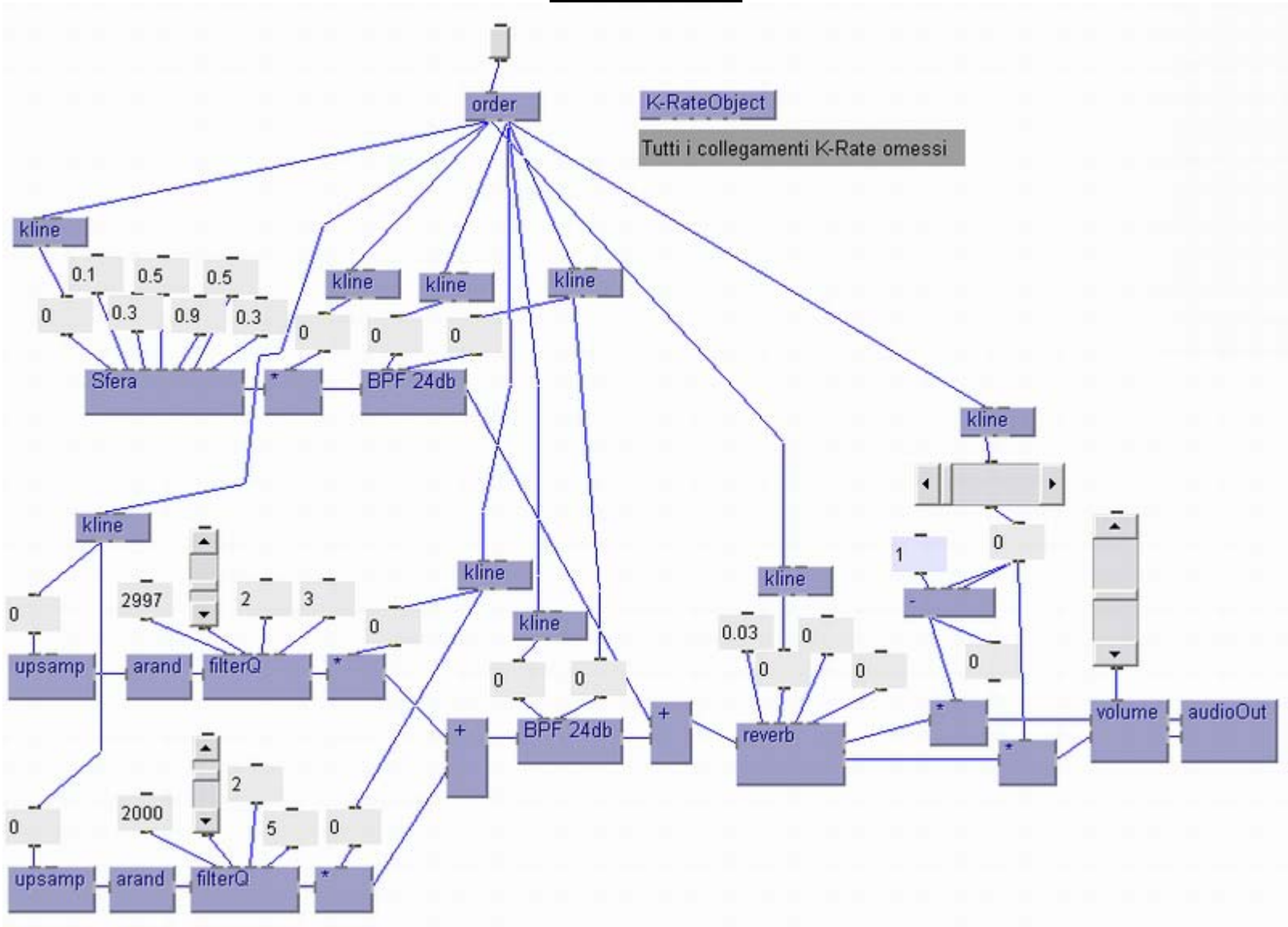


## SferaQuadra SubPatch

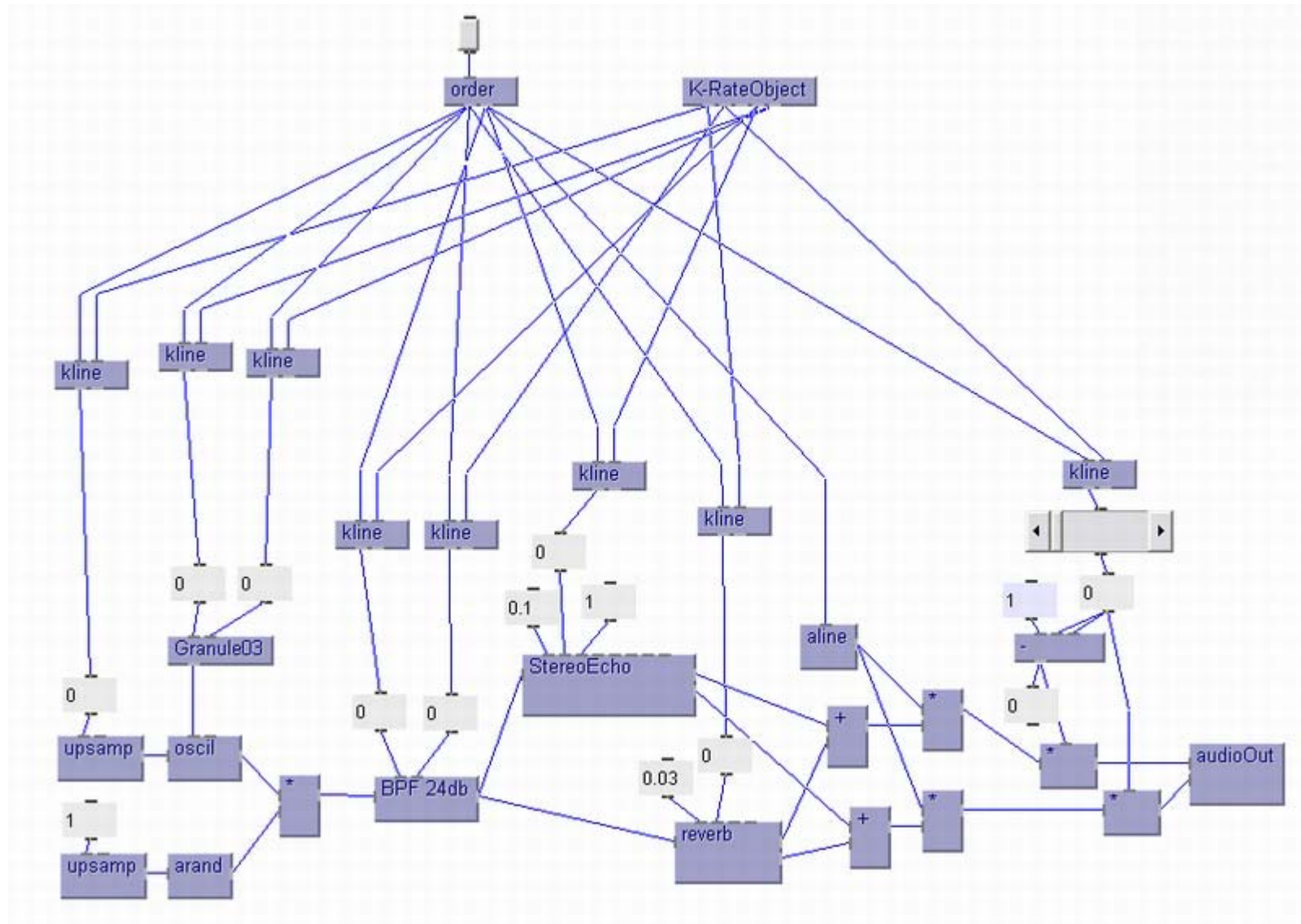




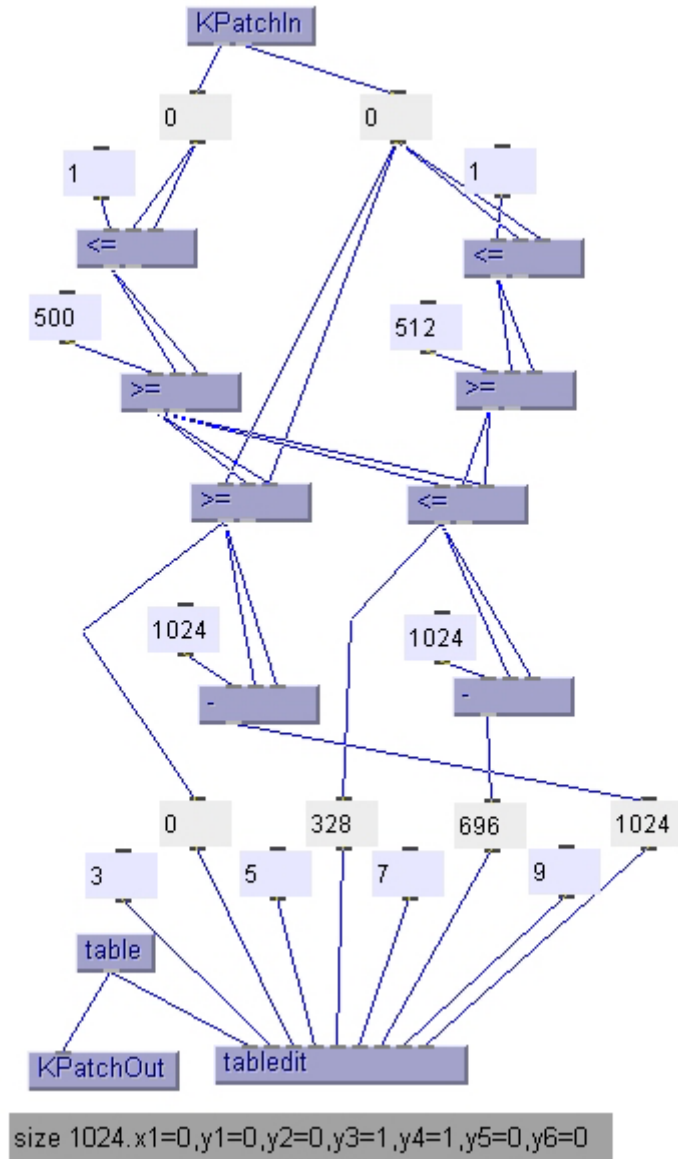
**Sferagialla02**



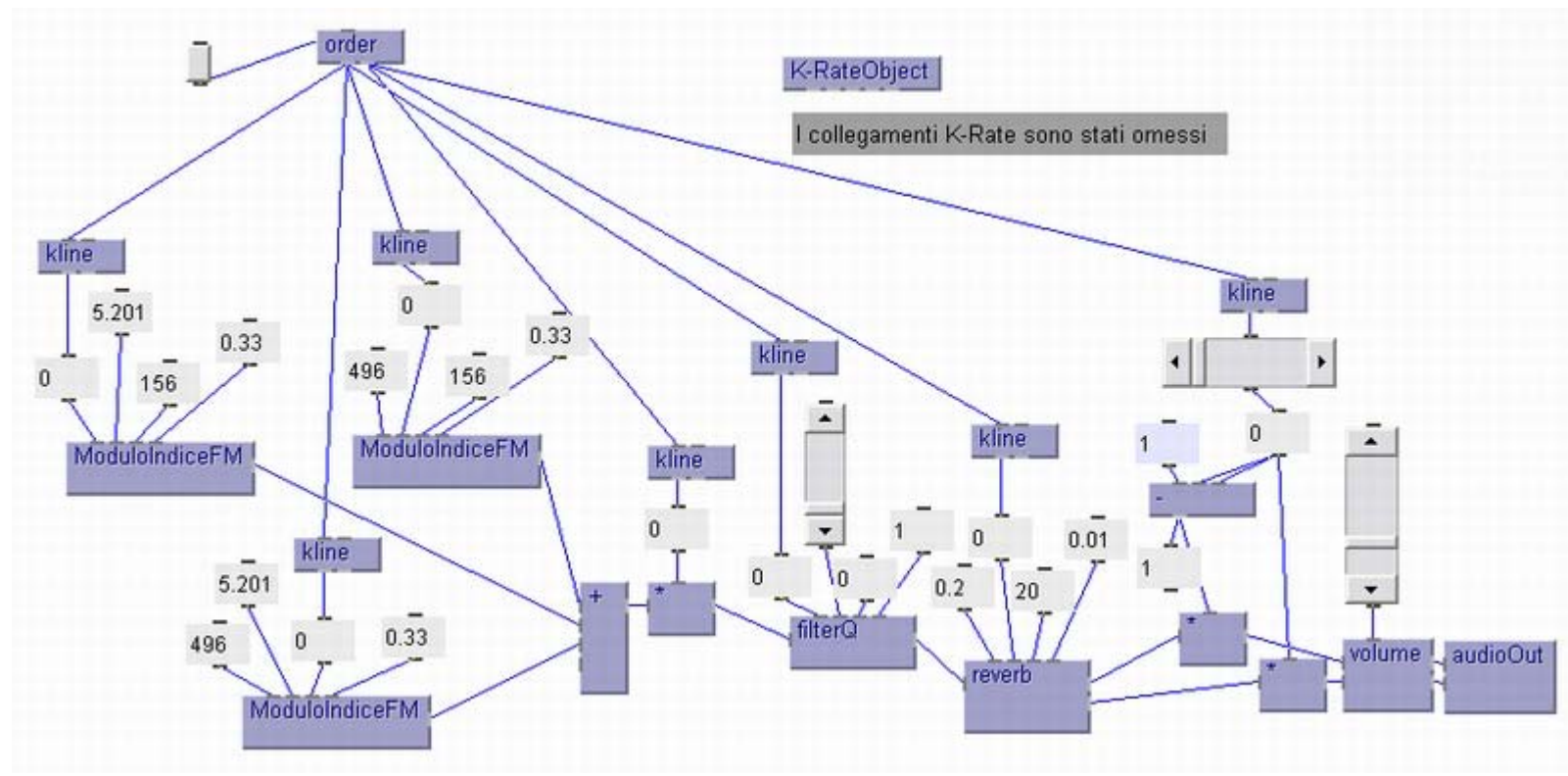
## ANTS 8.7”



## Granule03 SubPatch

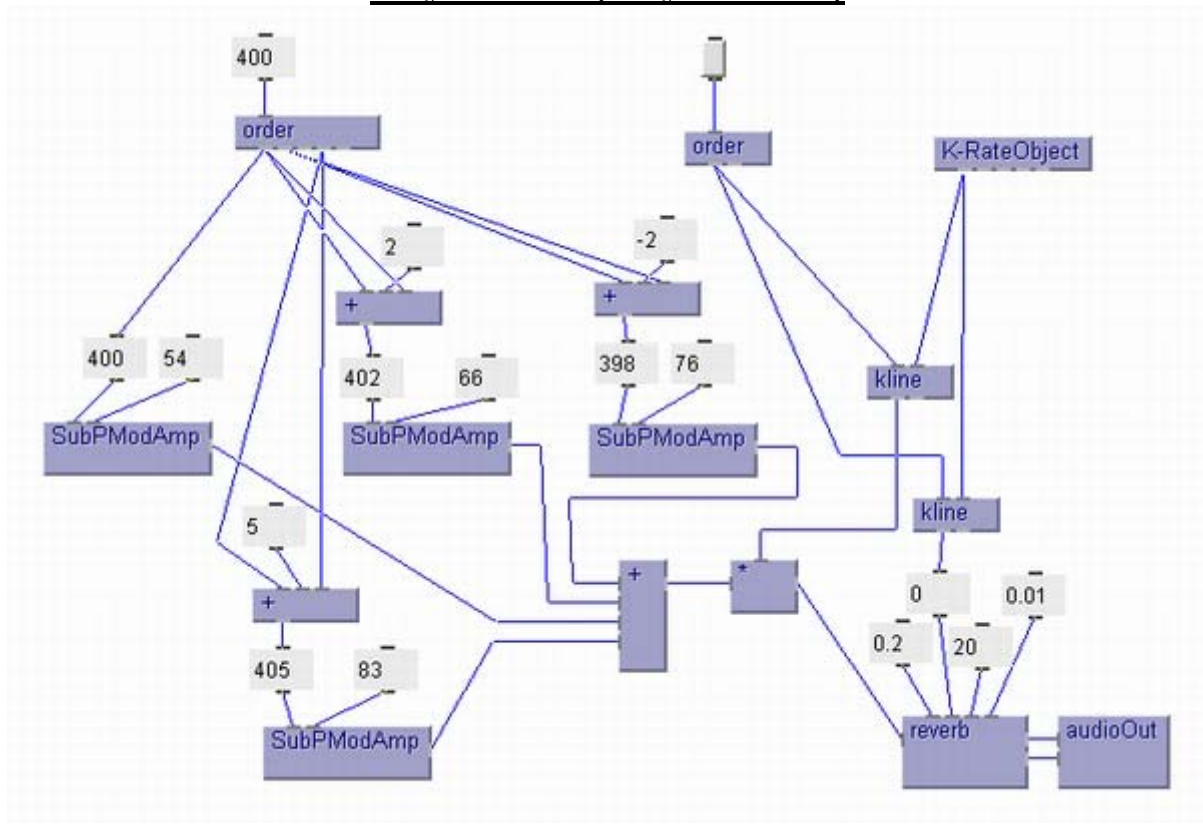


## Sfondo02 dur 61.6”

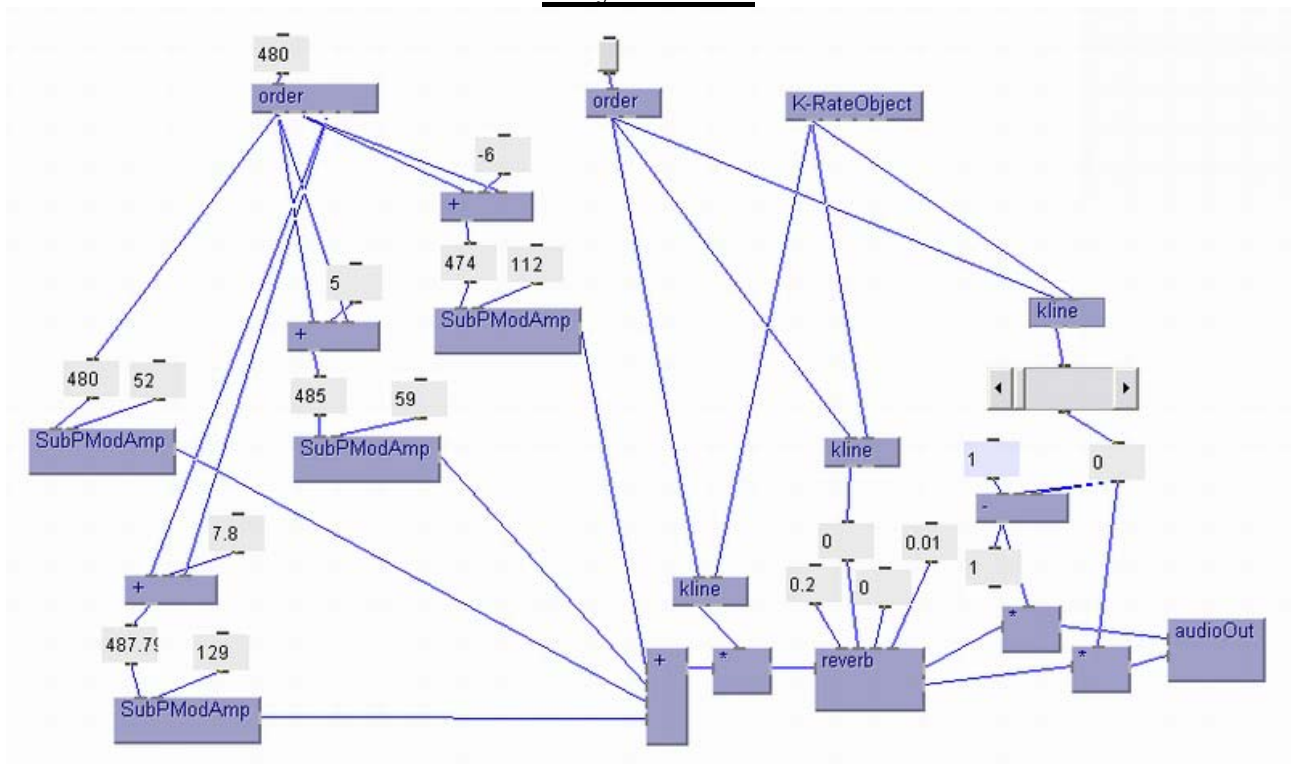




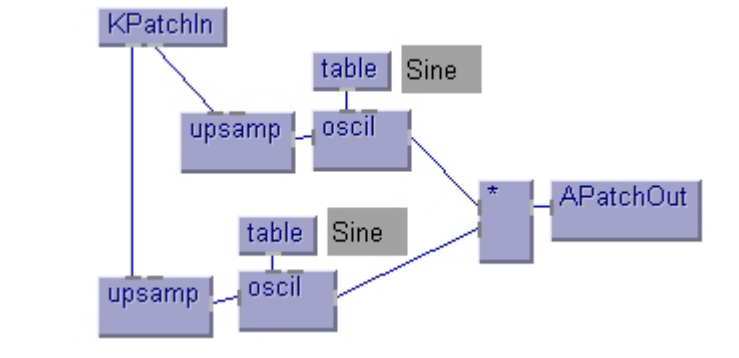
## Ray1 – 1.2” (Ray 2 – 1.6”)



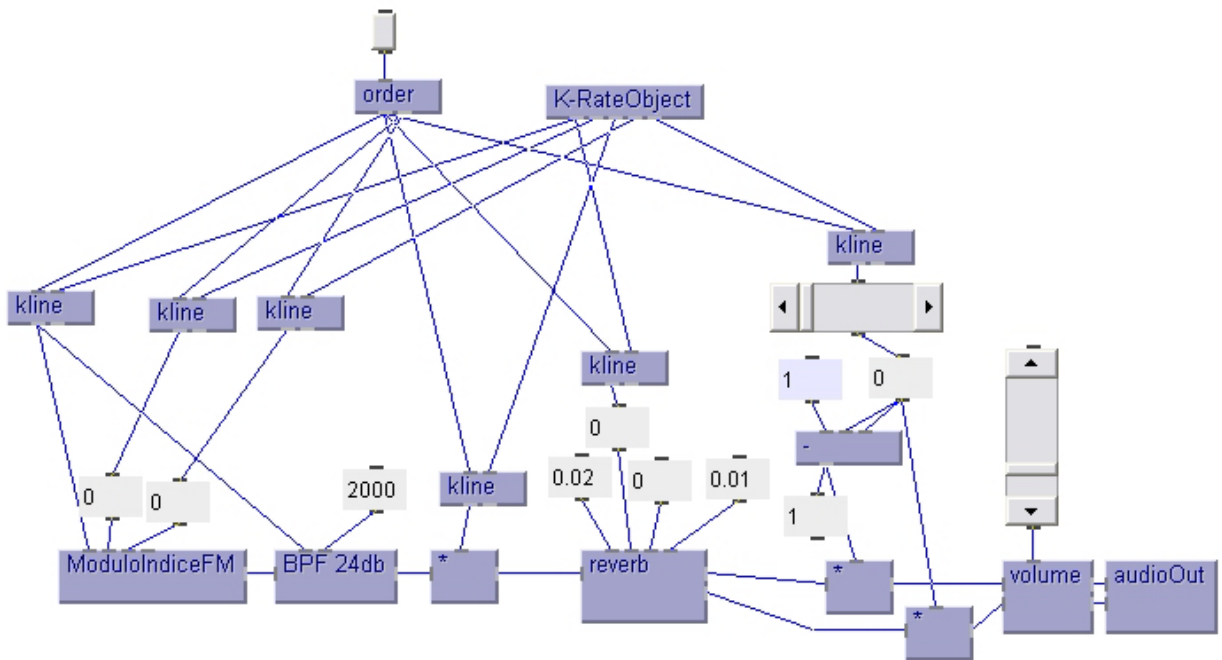
## Ray5 – 0.8”



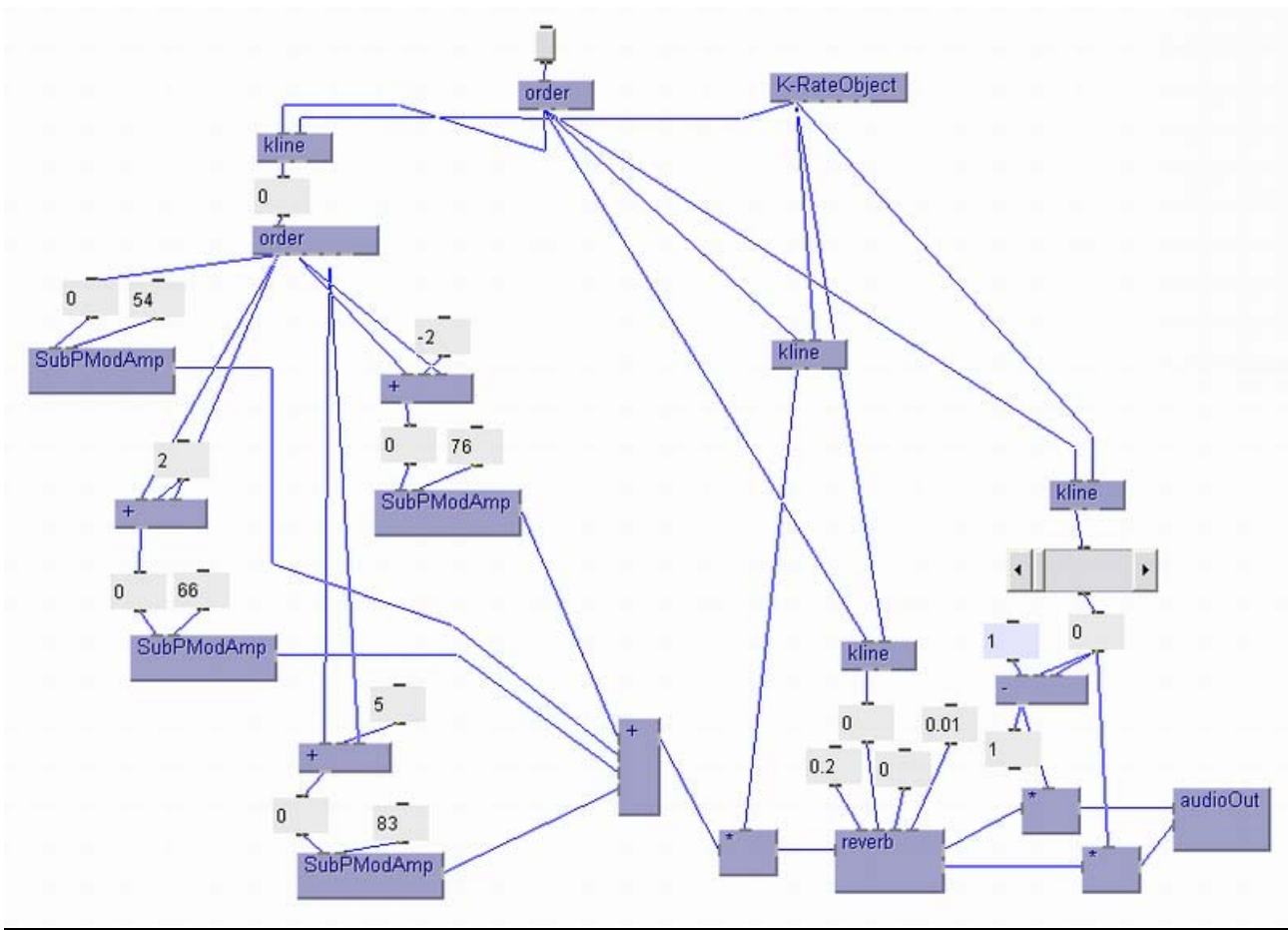
## SubPModAmp



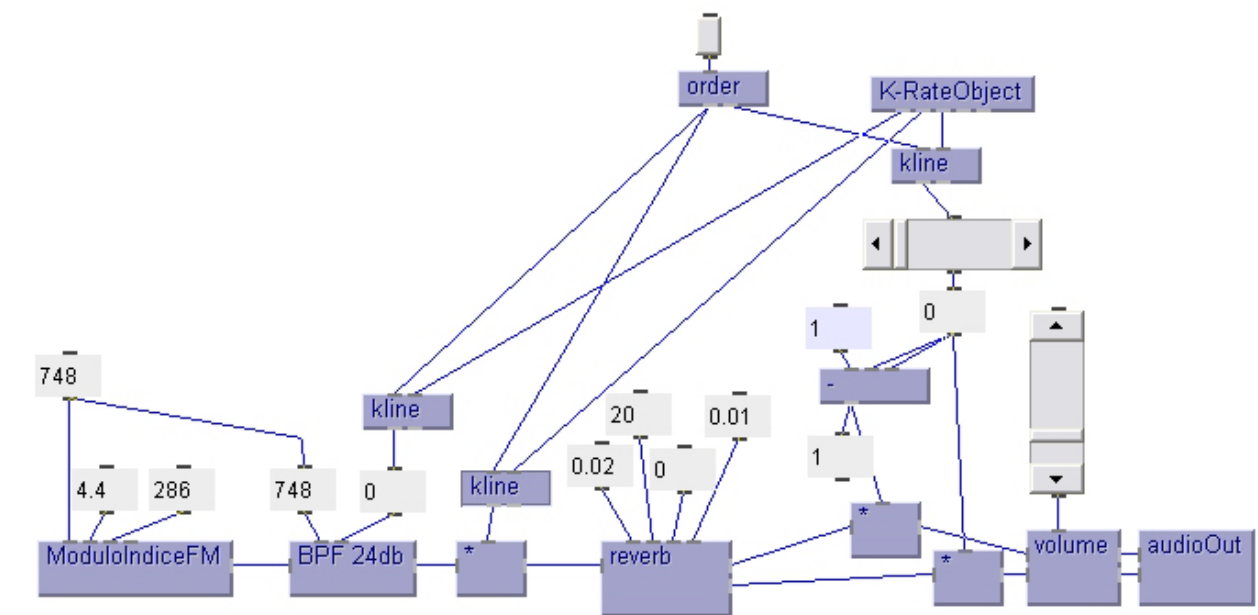
## Ray7 – 2.1”



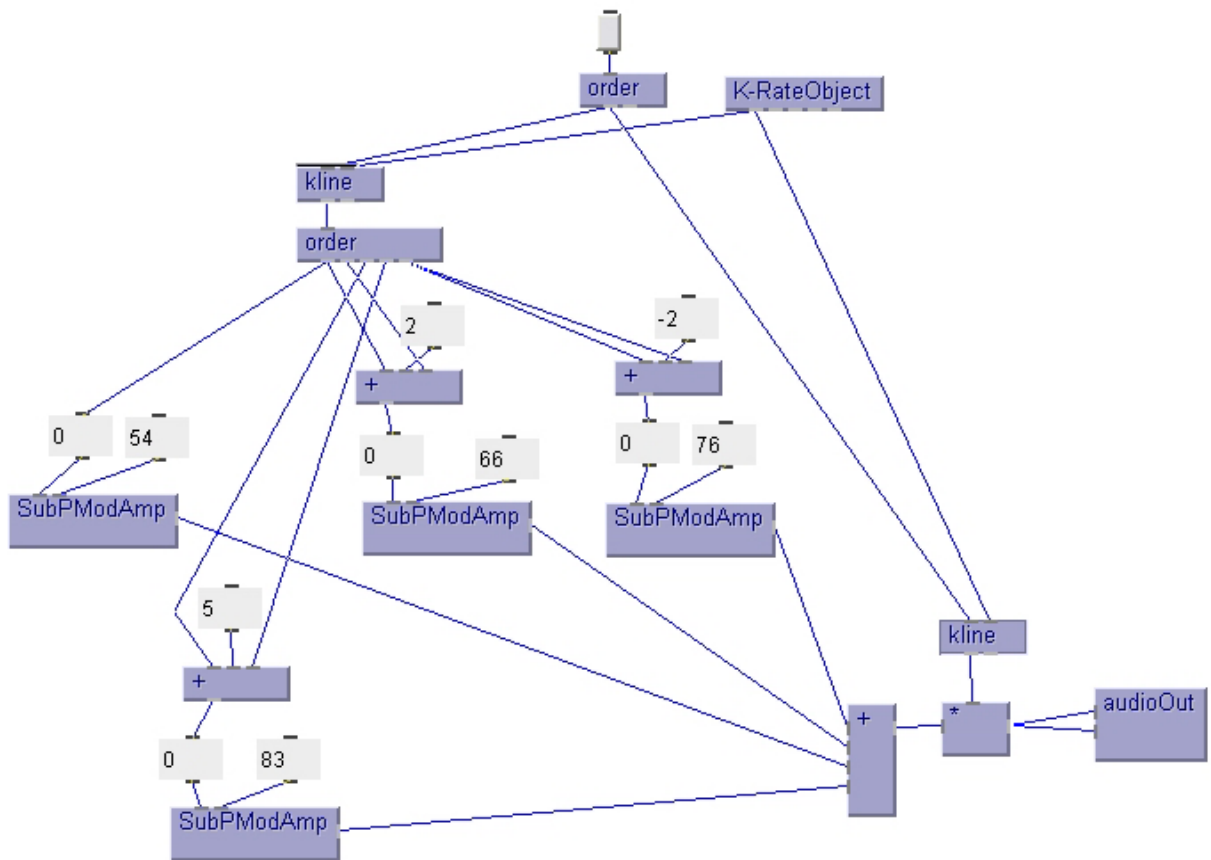
### Ray3 – 1” (Ray 6)



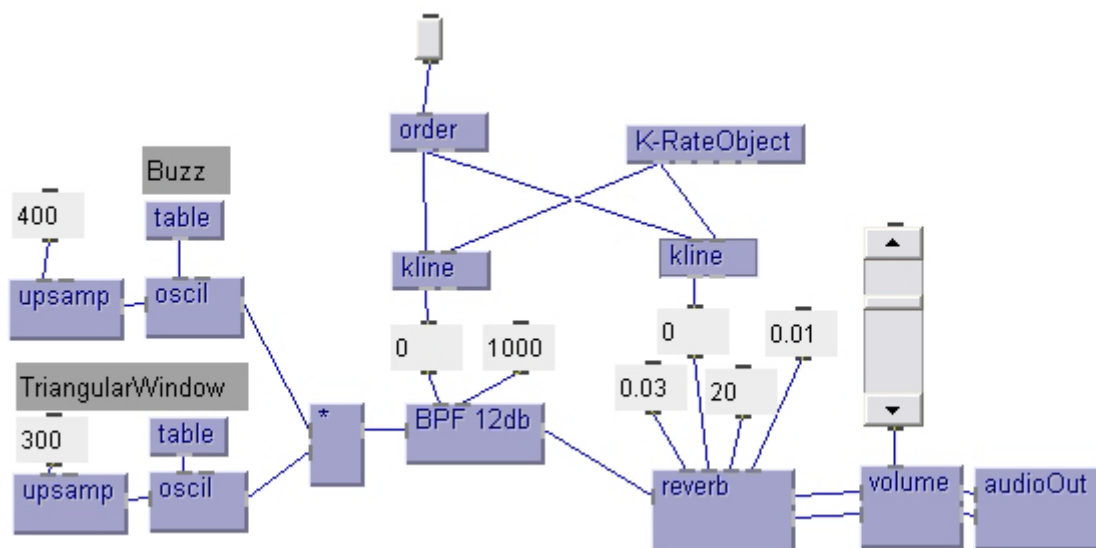
### Ray9 – 0.6”



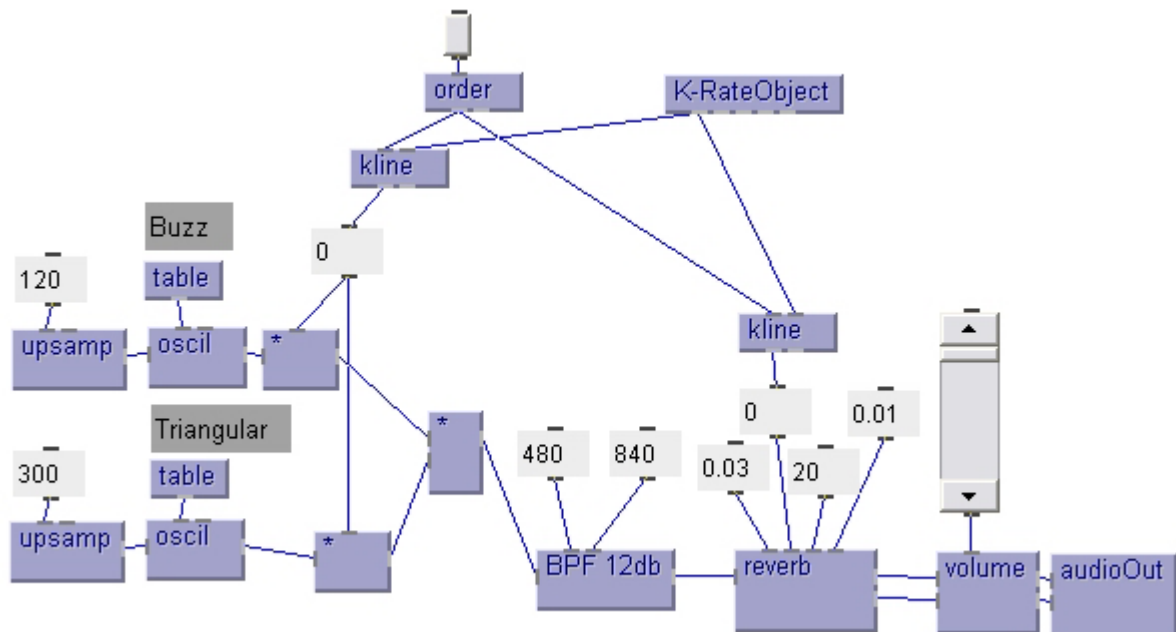
## Ray4 - 1.2"



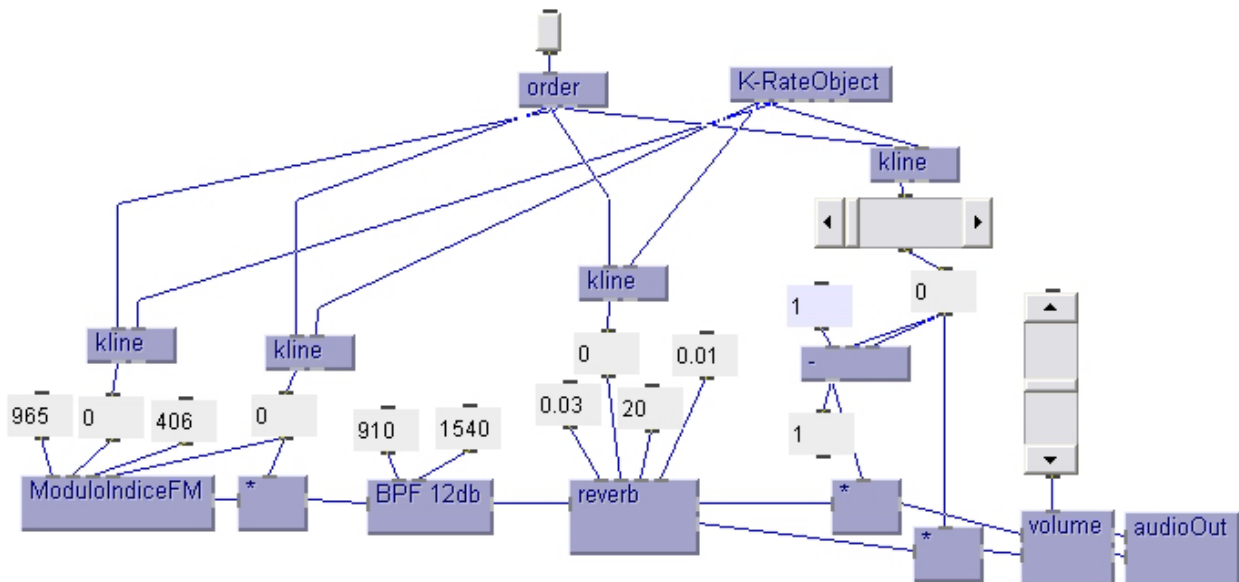
## Triangle0 dur1.2"



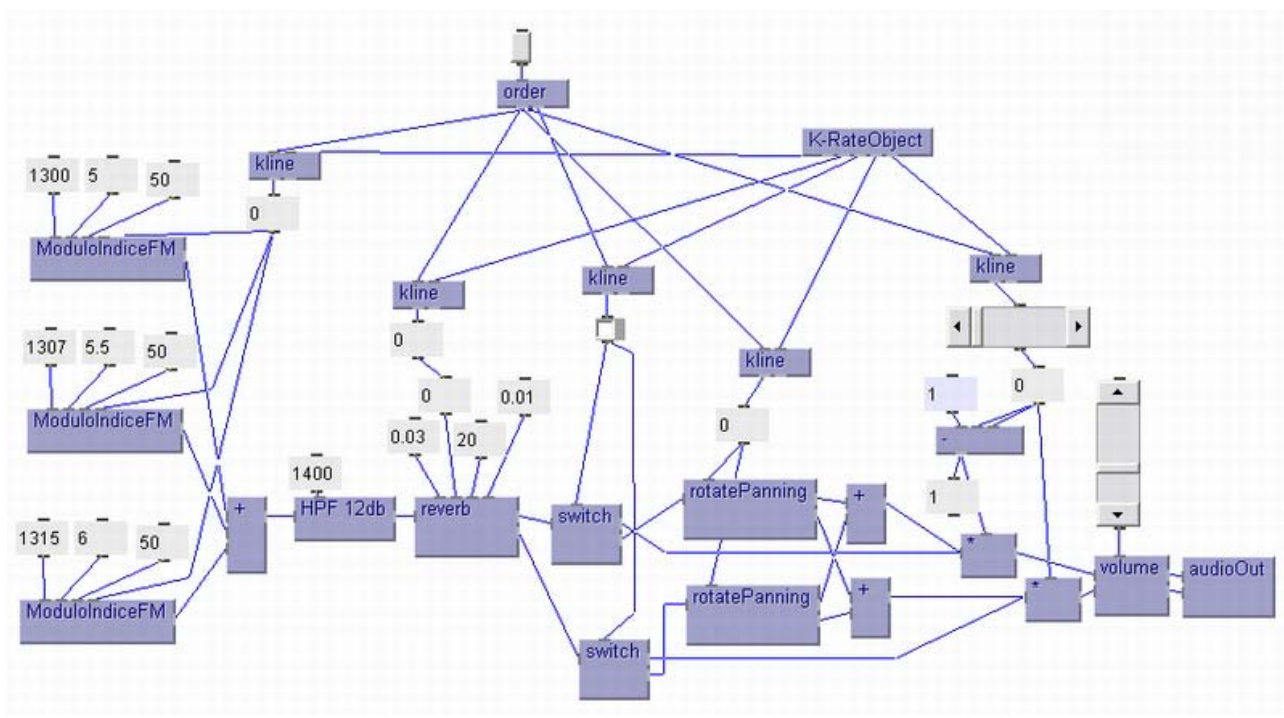
## Triangle1 dur11.9”



## Triangle Blu-Red



## Tetra1Red - 2 – 3Ver





# Rainbow

