

IVANO PECORINI

DIES IRAE

FOR CHOIR AND LIVE ELECTRONICS

DESCRIPTION

Dies irae is a composition for six voices choir amplified by contact microphones put on the throat and live electronics, based on a XIII century namesake text, wrote by Tommaso da Celano, the biographer of S.Francesco d' Assisi.

Dies Irae is presented as a three-part composition, where each section ends with silence by the choir , emblem of the expectation of a sign, of answers that defer to arrive.

Electronic elaborations are mixed with concrete materials, namely the voices, rarefying the musical speech, slowing the time, expanding the expressive possibilities to try to develop a consideration on human voice and its uniqueness, exploring the interaction between it and its virtual clone.

INSTRUMENTS AND ARRANGEMENT

Instruments: Choir, Live Electronics

Length : ~ 8 minutes

Performers : 3 sopranos - 3 altos - 1 electronic performer

Setup : 6 collars provided with contact microphones
 2 monitors
 7 music stands
 1 elaboration system based on a computer
 1 chronometer

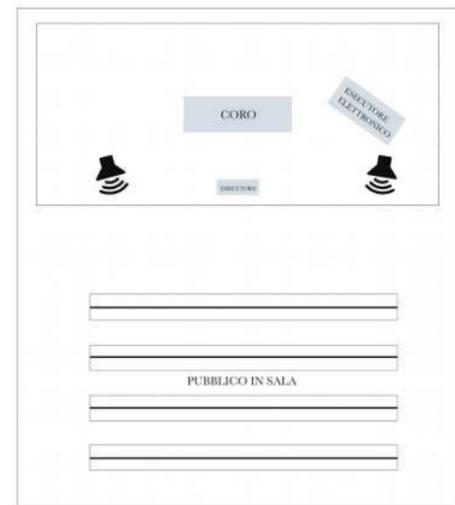


Fig.1 arrangement

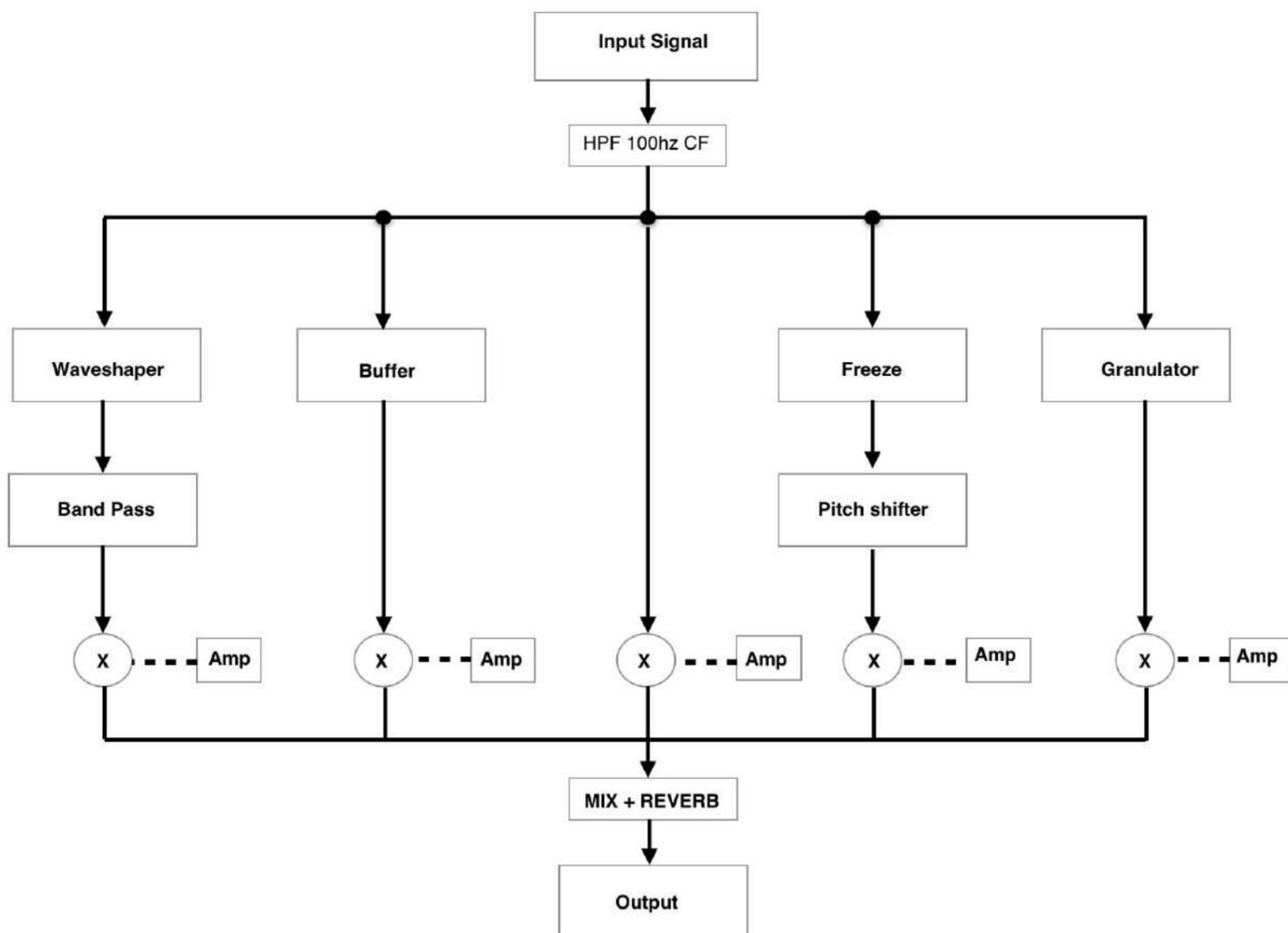


Fig.2 Complete algorithm

ELECTRONICS

Whaveshaper

The input signal is split into three bands (low-mid-hi) and distorted, with the option to have one different transfer function for each band.

The distorted signal is elaborated by a band-pass filter. The high Q factor gives a narrow passband, centered on specific frequencies, to enfatize one or more harmonics. it's possible to control 6 distortions like these (one for each voice).

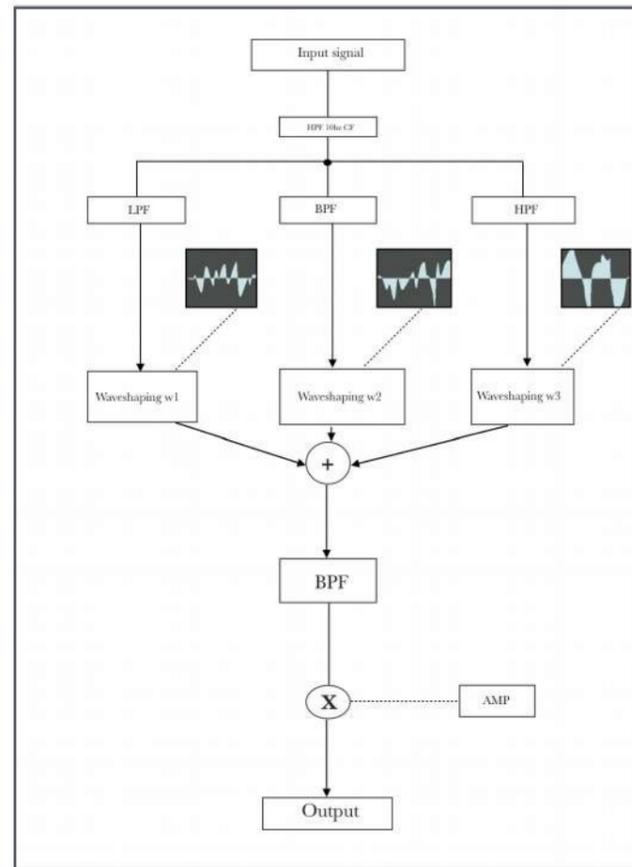


Fig.3 Waveshaper

Buffer

The input signal is written inside a buffer, which is read at a slowed speed, different for each voice.

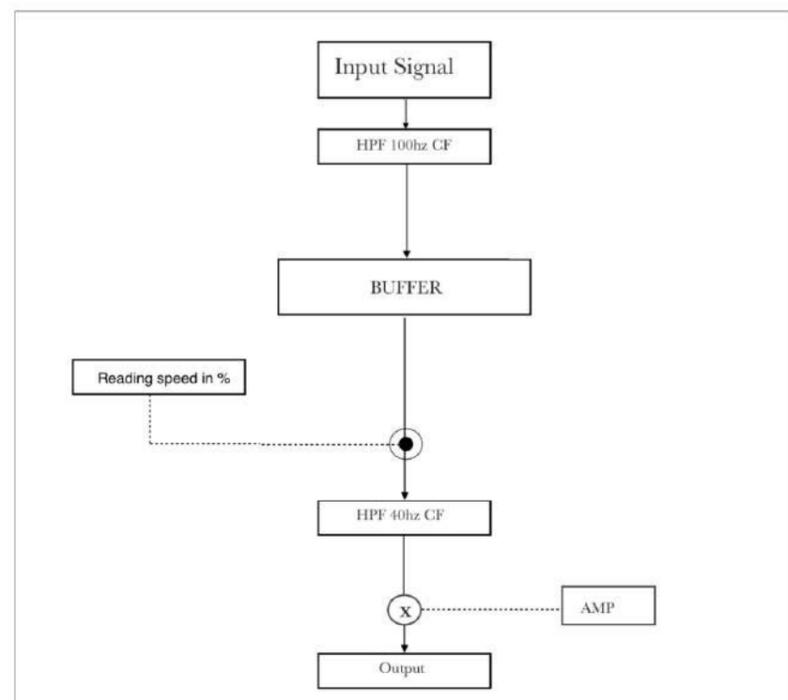


Fig.3 Buffer Reader

Freeze

The patch freezes the signal, so it reads the spectral content of a signal frame. The signal is analyzed by an FFT and it is split in real part and imaginary part, to acquire amplitudes and phases, which are written in a matrix. In this way it is possible to freeze the signal in an exact instant.

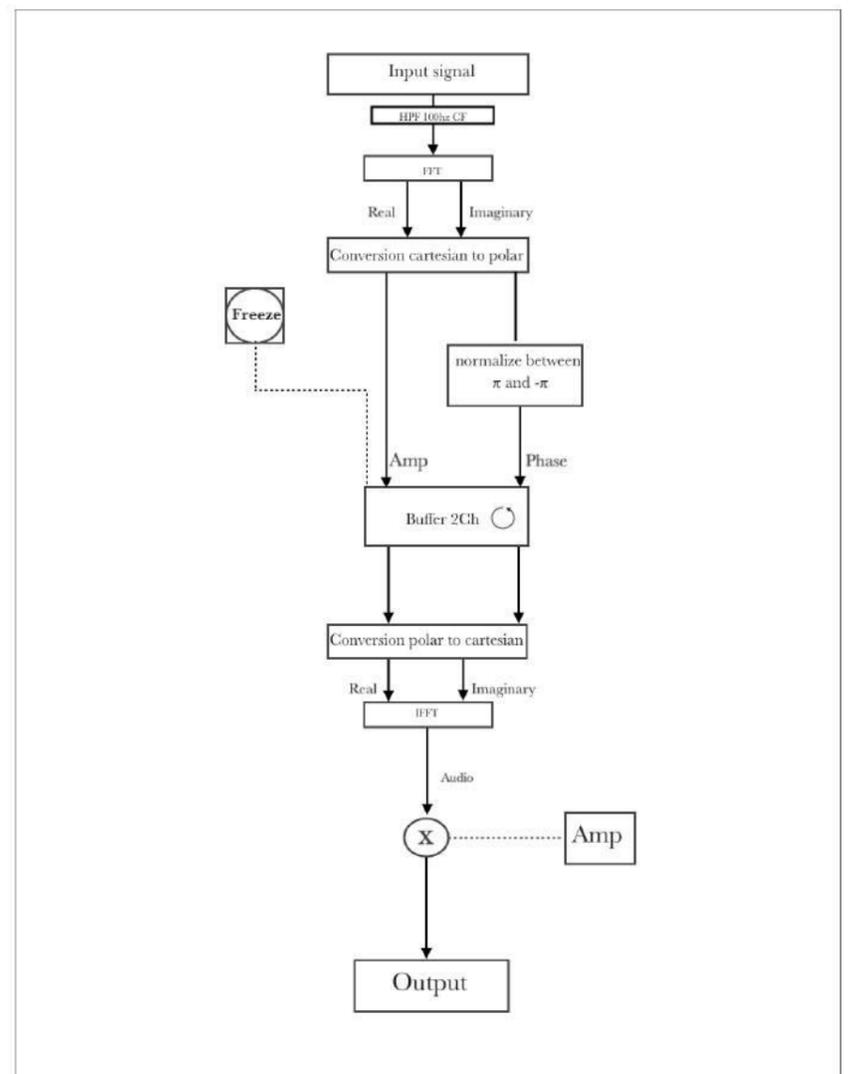


Fig 4 Freeze

Pitch Shifting

Pitch shifting patch is obtained using 2 delay lines, whose delay time is given by an X frequency ramp for the first line, and by the same X out of phase of π for the second (to avoid an amplitude modulation).

The X frequency ramp define the increase or the decrease of the pitch.

The two signals are interpolated by a sine envelope and summed before the output.

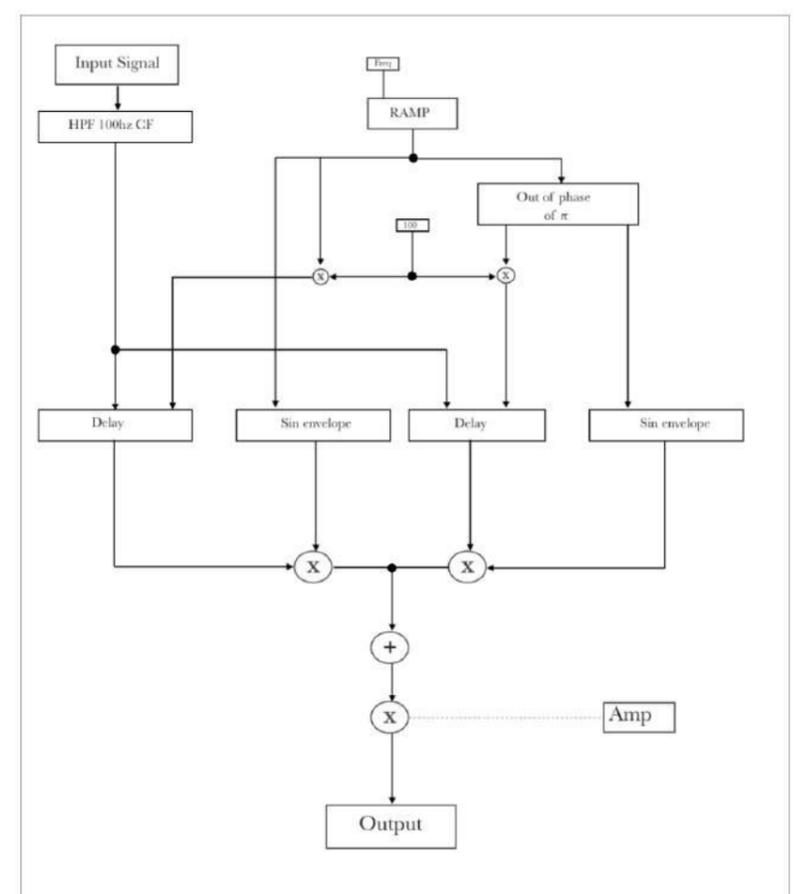


Fig 6 Pitch Shifter

Granular Syntesis

The granulator is equipped with 32 granular synthesizer, and all the activations are controlled by the performer.

In every synth, the input signal is delayed in a random way and multiplied by a Gaussian envelope.

The envelope (written in a buffer) is read by an X frequency ramp which is multiplied by a random coefficient. In this way it is defined the length of a single grain.

The ramp signal output is multiplied by an amplitude coefficient.

This one is multiplied by a random coefficient to add silence between grains. The output signal is panned in a random way.

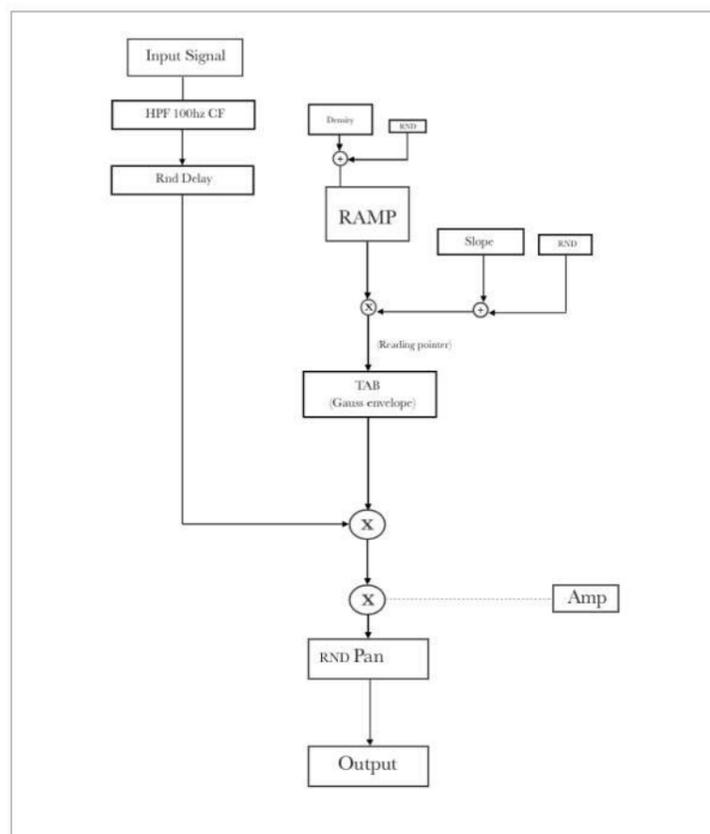


Fig 6 Granulator

Control

In the final part of the algorithm, the elaborated signals are resized, mixed, panned in space and reverberated.

The performer controls the output amplitudes, and the granulator activation.

The patch is initialized by the following values:

Distorsore

Sop 1	Sop 2	Sop 3
CBF: 846	CBF: 620	CBF: 809
Cont 1	Cont 2	Cont 3
CBF: 458	CBF: 1713	CBF: 1162

Buffer

Sop 1	Sop 2	Sop 3
Speed: 85%	Speed: 92%	Speed: 97.6
Pan: 50% R	Pan: C	Pan: 24% L
Cont 1	Cont 2	Cont 3
Speed: 78%	Speed: 81.9%	Speed: 96.1
Pan: 54% R	Pan: 22% R	Pan: 64% L

Pitchshifter

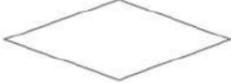
Ramp Freq. : 6.25 hz.

Granulator

Cont 2	Cont 3
Dur: 750 ms	Dur: 300 ms
Slope: 0.8	Slope: 0.4

CHOIR SYMBOLOGY

	Sung: the line specifies the length of the note
	Whispered: the line specifies the length of the note
	Fast vibrato: the line specifies the length of the note
	Slow vibrato: the line specifies the length of the note
	Glide following the direction: the line specifies The length of the note

	Crescendo/Decrescendo
	Accent
	Play the breathe legato as much as possible without accent on the next note
	Turn your back to audience
	Murmur

LIVE ELECTRONICS SYMBOLOGY

	Waveshaper fader (Amplitude)		Activate the fader
	Buffer 1 fader (Amplitude)		activate writing/reading of the Buffer (botton): Control is linked to every voice
	Granulator fader (Amplitude)		Clear the content of the Buffer (botton): Control is linked to every voice
	Freeze fader (Amplitude)		Activate the potentiometer
	Buffer 2 fader (Amplitude)	15	N° of granular synthesizer to activate
	Freeze activator (botton): Control is linked to every voice		

DIES IRAE

The musical score is written for Soprano (S.) and Alto (A.) voices. It consists of six systems of staves. Each system includes a vocal line and a corresponding dynamic range indicator (MAX and MIN) with a control knob icon. The dynamic marking *ppp* (pianissimo) is indicated at the start of each vocal line. The lyrics are: "Die", "Ill a a sol", "Die", "Dies ir ae sol vet", "Qua ntus tre m mor", and "est futu rus". The score includes various musical notations such as slurs, ties, and a wavy line for a trill. The control knob icons are positioned between the MAX and MIN lines, indicating the desired dynamic level for each section.

ppp
 S. Die

ppp
 S. Ill a a sol

ppp
 S. Die

ppp
 A. Dies ir ae sol vet

ppp
 A. Qua ntus tre m mor

ppp
 A. est futu rus

S. *ppp* Die
 S. *ppp* Ill a a sol
 S. *ppp* Die
 A. *ppp* Dies ir ae sol vet
 A. *ppp* Qua ntus tre m mor
 A. *ppp* est futu rus

S. *ppp* Die
 S. *ppp* Ill a a sol
 S. *ppp* Die
 A. *ppp* Dies ir ae sol vet
 A. *ppp* Qua ntus tre m mor
 A. *ppp* est futu rus

1.35

2.05

S. *ppp* Die

S. *ppp* Ill a a sol

S. *ppp* Die

A. *ppp* Dies ir ae sol vet

A. *ppp* Qua ntus tre m mor

A. *ppp* est futu rus

The image shows a musical score for three voices (Soprano, Alto, and Tenor) and piano accompaniment. The score is divided into three systems, each with a vocal line and a piano accompaniment line.

System 1 (Soprano): The vocal line starts with a treble clef and a common time signature. The piano accompaniment is in the bass clef. The lyrics "et" are written below the vocal line. The piano part has a dynamic marking of *pp* above it.

System 2 (Soprano): Similar to the first system, the vocal line has the lyrics "et". The piano part has a dynamic marking of *pp* above it.

System 3 (Alto): The vocal line has the lyrics "mors", "mors", and "mors". The piano part has a dynamic marking of *pp* above it.

System 4 (Alto): This system is mostly empty, with only a few notes visible in the piano accompaniment line.

System 5 (Tenor): The vocal line has the lyrics "mors", "mors", and "mors". The piano part has a dynamic marking of *ppp* above it.

The piano accompaniment consists of a single line in the bass clef. It features several measures of music, including a red dashed line indicating a crescendo or decrescendo. There are also some notes with stems and flags, and a few notes with stems and flags.

mp

S. tu r a

S.

S.

A. mors mors mors

A. *pp* stupebit stupebit stupebit stupebit

A. *pp* natura natura

3.05

3.29

The image displays a musical score for Soprano (S.) and Alto (A.) parts. The Soprano part consists of three staves, each with a treble clef and a key signature of one sharp (F#). The first staff shows a single note on the first line (F#) with a fermata and a double bar line. The second and third staves show a series of notes on the first line, each with a fermata and a double bar line. The Alto part consists of three staves, each with a treble clef. The first staff shows a diamond-shaped annotation containing a note on the first line with a flat (Bb) and the word "mors" below it. The second staff shows a diamond-shaped annotation containing a note on the first line with the word "stupebit" below it. The third staff shows a diamond-shaped annotation containing a note on the first line with the word "natura" below it. Red dashed lines are present between the staves, indicating a change in pitch or a specific interval.

3.29

3.53

S. m k a r s ta

S.

S.

A. mors

A.

A. natura natura

3.53

4.11

The image shows a musical score for Soprano (S.) and Alto (A.) parts. The Soprano part consists of three staves with lyrics 't t e t t e' and 't t te'. The Alto part consists of four staves, with the first staff containing a large triangular symbol. Red dashed lines indicate pitch contours for the Soprano part.

S.

S.

S.

A.

A.

A.

A.

4.11

4.35

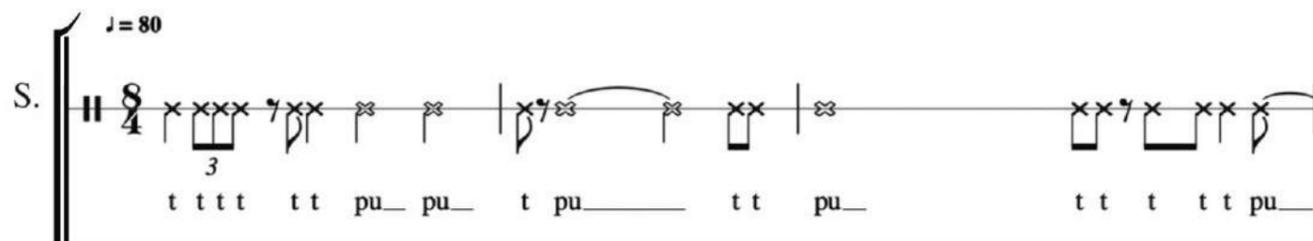
The image shows a musical score for Soprano (S.) and Alto (A.) parts. The Soprano part consists of three staves. The first two staves are mostly empty, with a red dashed line indicating a melodic contour. The third staff contains the lyrics "te te" under a slur, followed by a tie and a microphone icon. The Alto part consists of three staves. The first two staves are mostly empty, with a red dashed line indicating a melodic contour. The third staff contains a microphone icon. The score is marked with time signatures 4.35 and 4.59.

4.35

4.59

The image shows a musical score for Soprano (S.) and Alto (A.) parts. The Soprano part consists of three staves, and the Alto part consists of three staves. Each staff begins with a treble clef and a common time signature. The word "irae" is written below the first note of each vocal line. The dynamic marking "ff" (fortissimo) is placed above the first note of each vocal line. The Soprano part features a melodic line with various contours, including a descending curve in the first staff and a rising curve in the second and third staves. The Alto part features a melodic line that rises and then levels off in the first staff, and a line with a fermata in the second and third staves. The piano accompaniment is indicated by two staves between the vocal staves, showing tremolos and a fermata.

J = 80

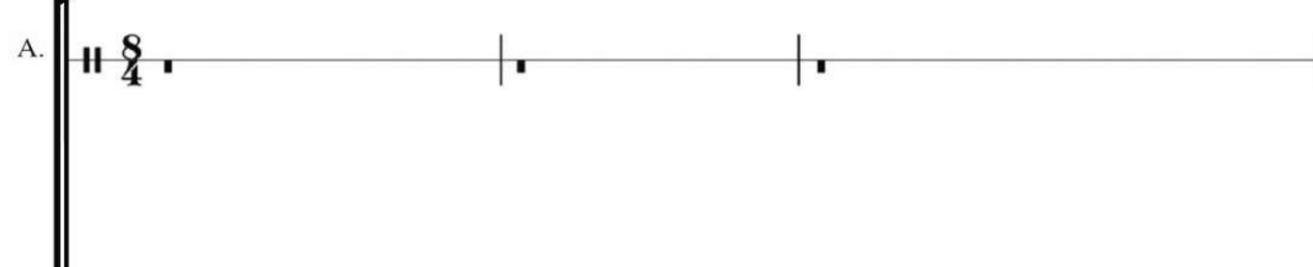
S. 

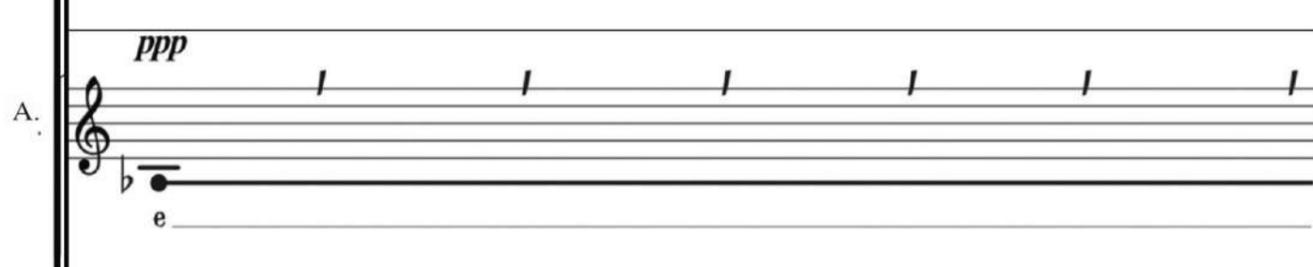
t t t t t t pu_ pu_ t pu_ t t pu_ t t t t t pu_

S. 

S SSSS SSS sc(s)_ sc(s)_

S. 

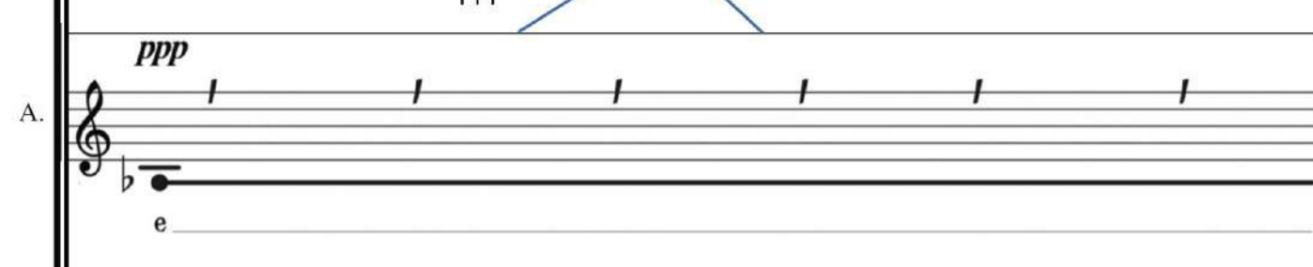
A. 

A. 

PPP
e

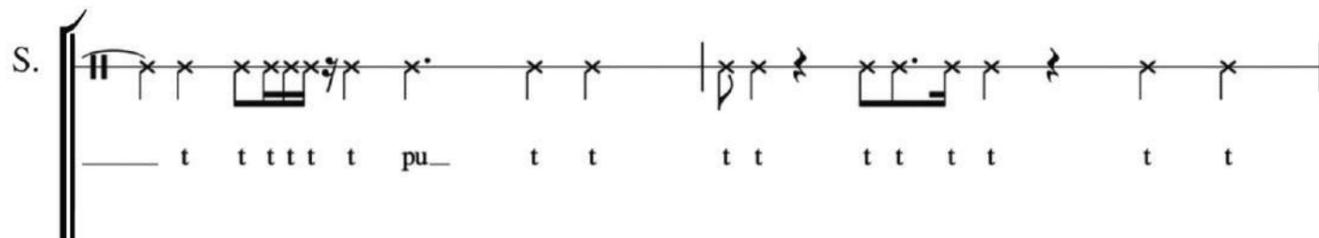
⊙ 1

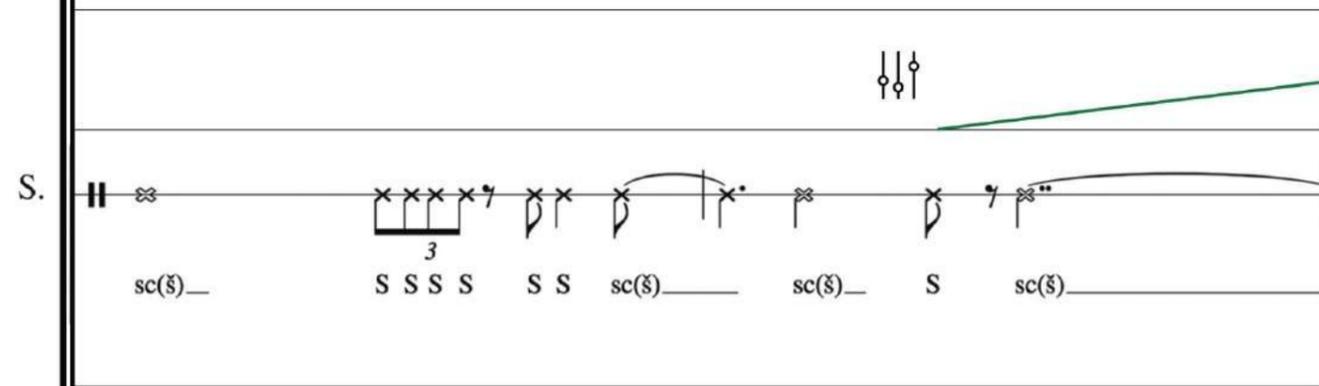


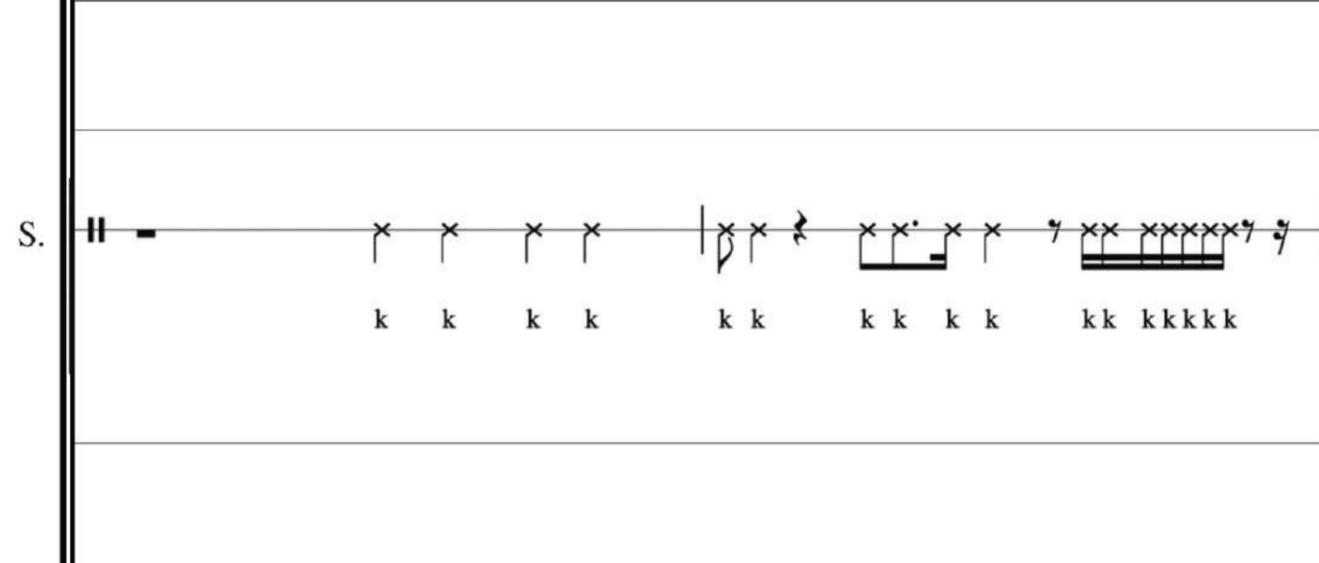
A. 

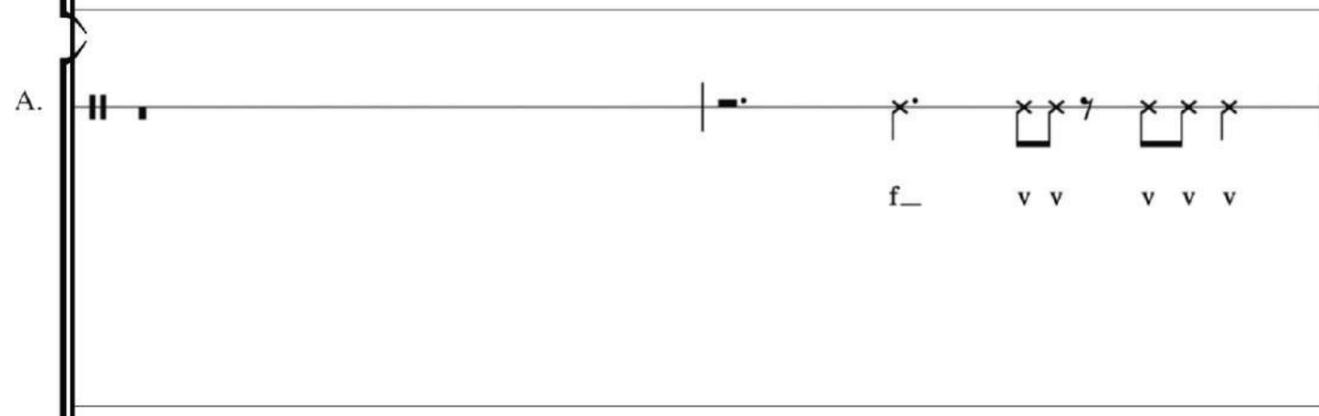
PPP
e

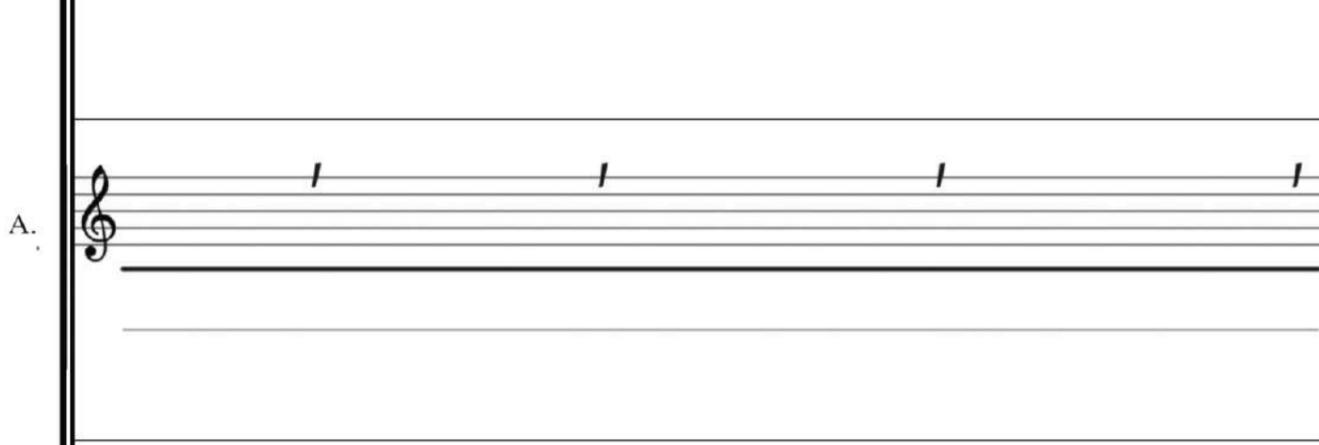
⊙ 1

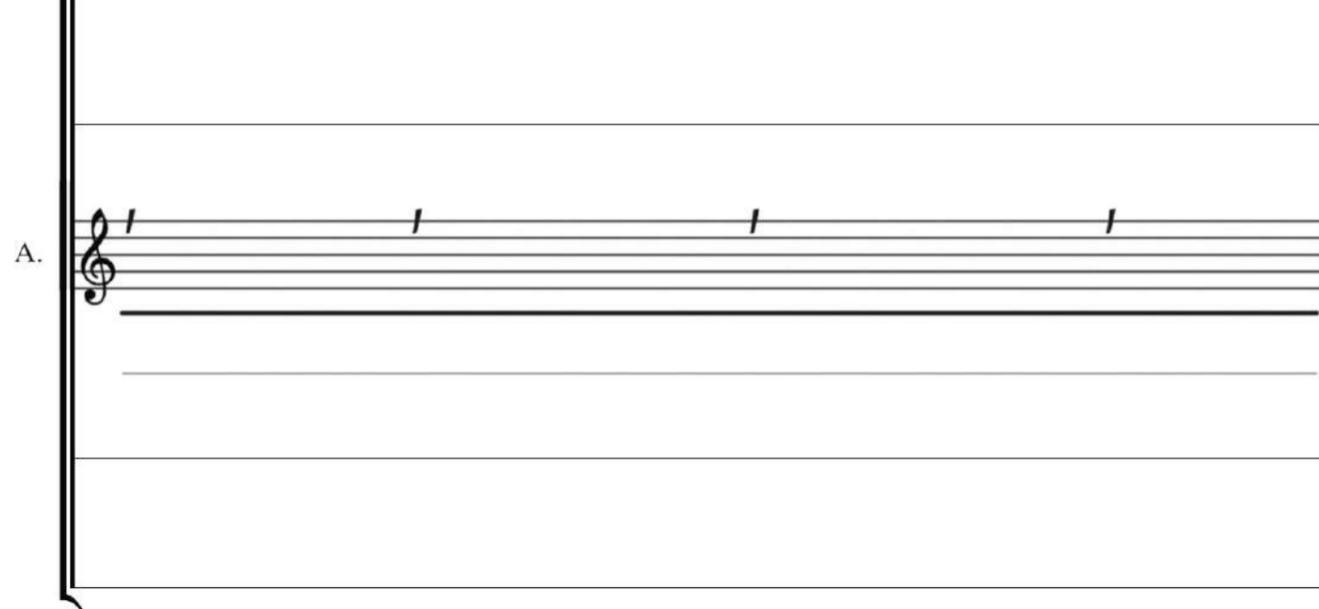
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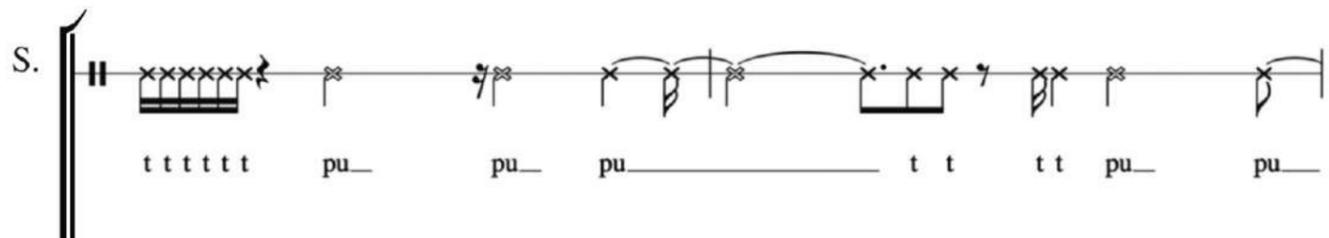
S. 

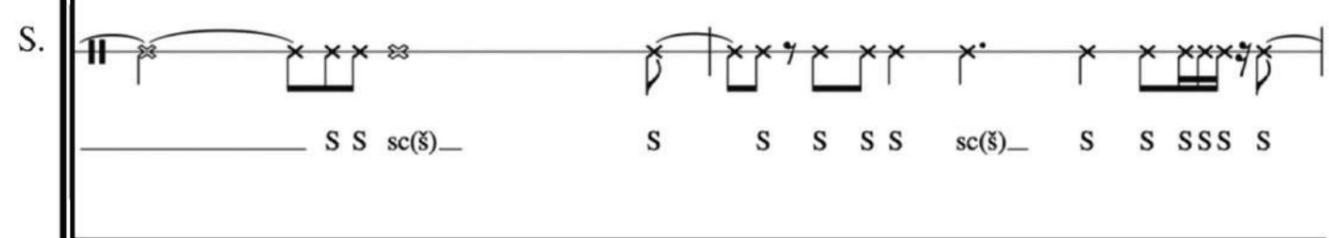
S. 

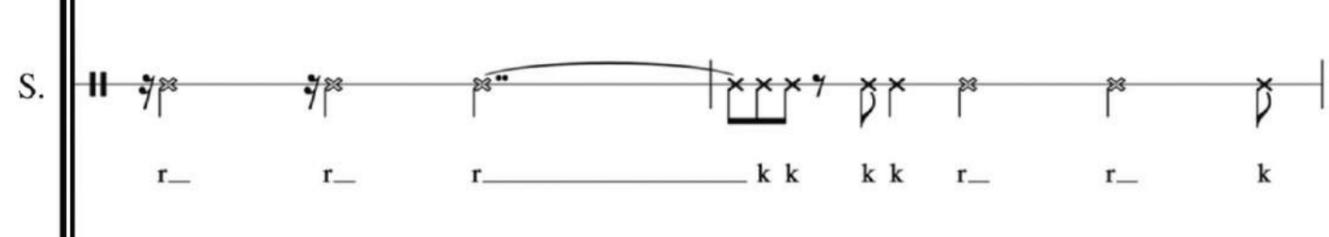
A. 

A. 

A. 

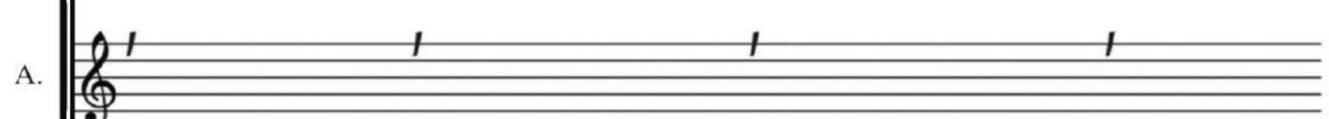
S. 

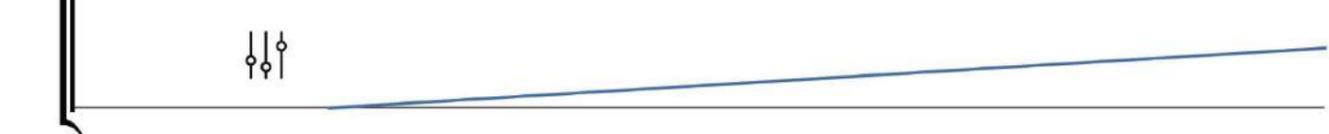
S. 

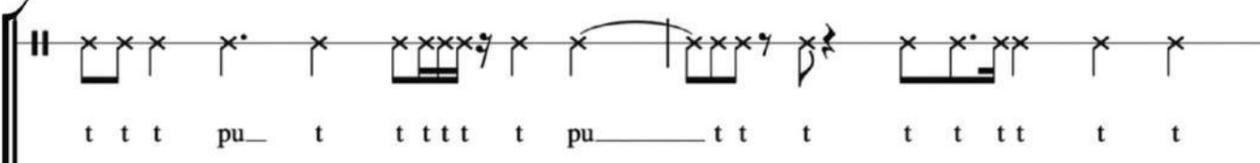
S. 

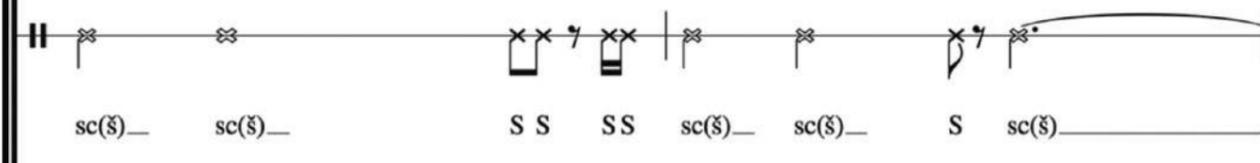
A. 

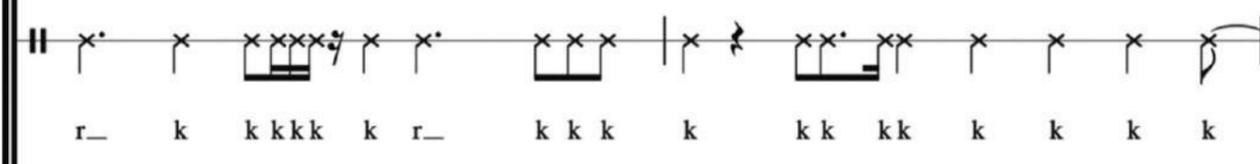
A. 

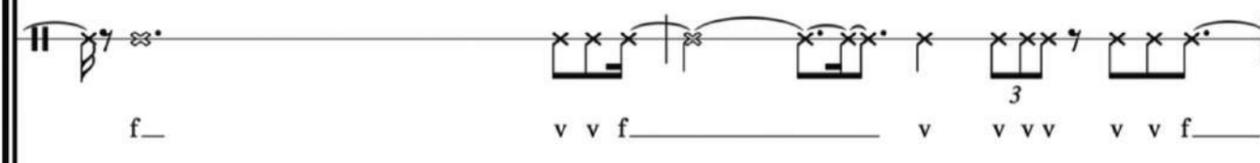
A. 



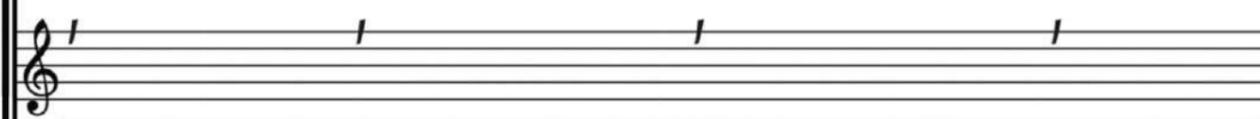
S. 
 t t t pu_ t t t t t pu_ t t t t t t t

S. 
 sc(š)_ sc(š)_ S S SS sc(š)_ sc(š)_ S sc(š)_

S. 
 r_ k k k k k r_ k k k k k k k k k

A. 
 f_ v v f_ v v v v v f_

A. 

A. 

15

S.
 t t t t t pu_ pu_ pu_ t t tttt

S.
 S S sc(s)_ sc(s)_ sc(s)_ S sc(s)_

S.
 kkkk r_ r_ r_ k k kkr_ k

A.
 f_ v v vvv v f_ v v v v v v v v v v

A.
 15

A.

S. pu_ t t pu_ t t t t t t pu_

S. S S sc(š)_ S sc(š)_ S S S S S sc(š)_ S

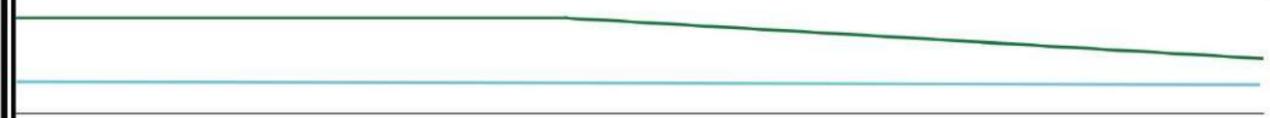
S. r_ k k r_ k k k k k r_

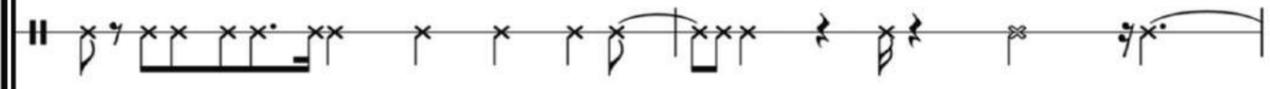
A. v v v v f_ f_ f_ v v v v v v f_

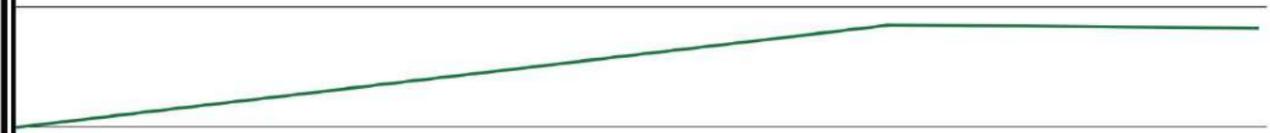
A.

A.

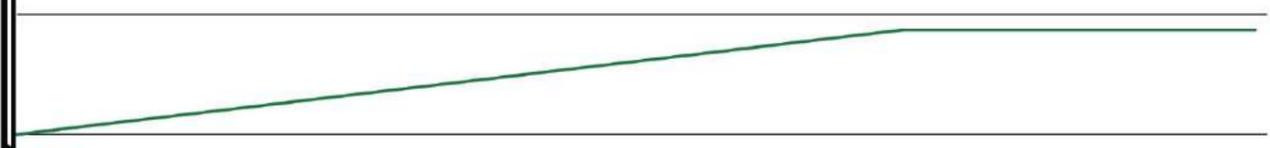
S. 
 pu_ t t t t t pu_ t t t t pu_ t t t



S. 
 S S S S S SS S S S S SS S sc(š)_ sc(š)_

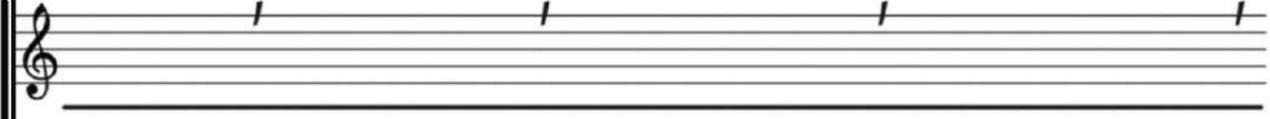


S. 
 r_ k k k k k r_ k k k k k k k k k



A. 
 v v f_ v v v v v v v f_ f_

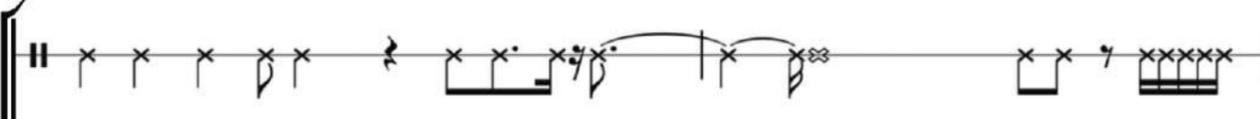


A. 

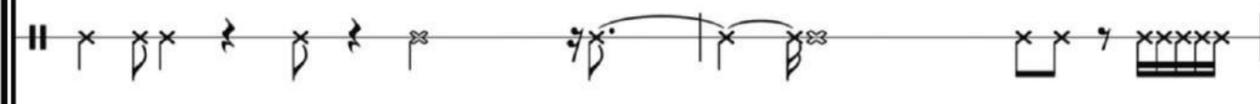
22

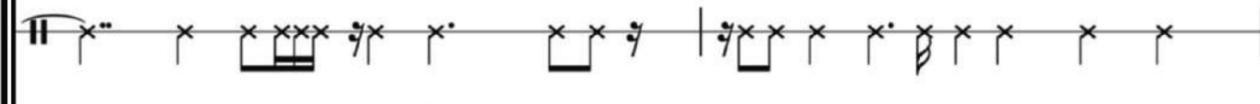
A. 

32

S. 
 t t t t t t t t pu pu t t tttt

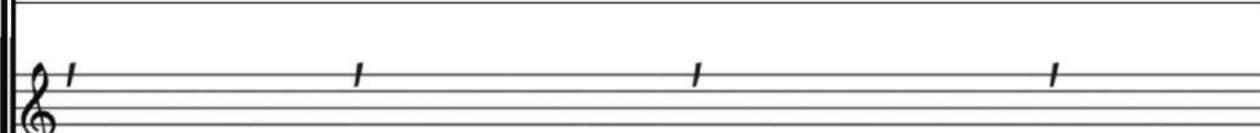
S. 
 sc(š) S S SSSSSsc(š) S S sc(š)

S. 
 k k k k r r k k kkkk

A. 
 v v vvv v f v v v v v f v v v v v

A. 

15

A. 

22

S. t t pu_ pu_ t t t t t pu pu_ t

S. S S S S S sc(š) sc(š) S S S S sc(š) S S

S. k k k k r_ k k k k k k r_ r_ k r_

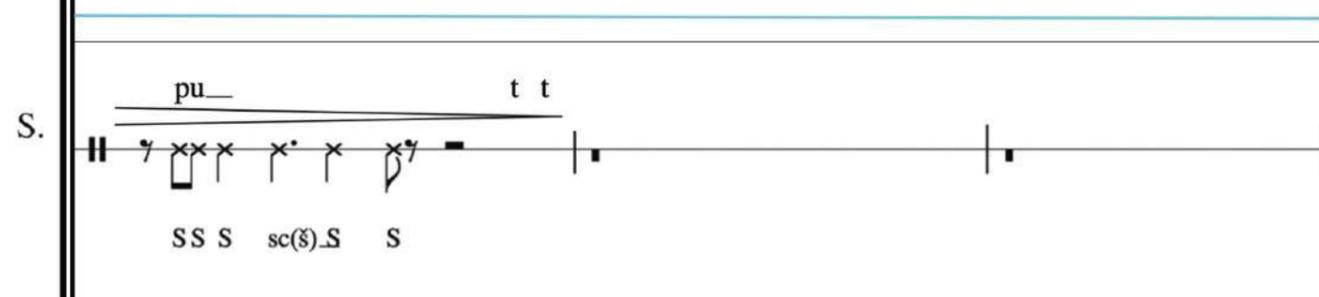
A. v v v v v f_ f_ f_ v v v v v v v v

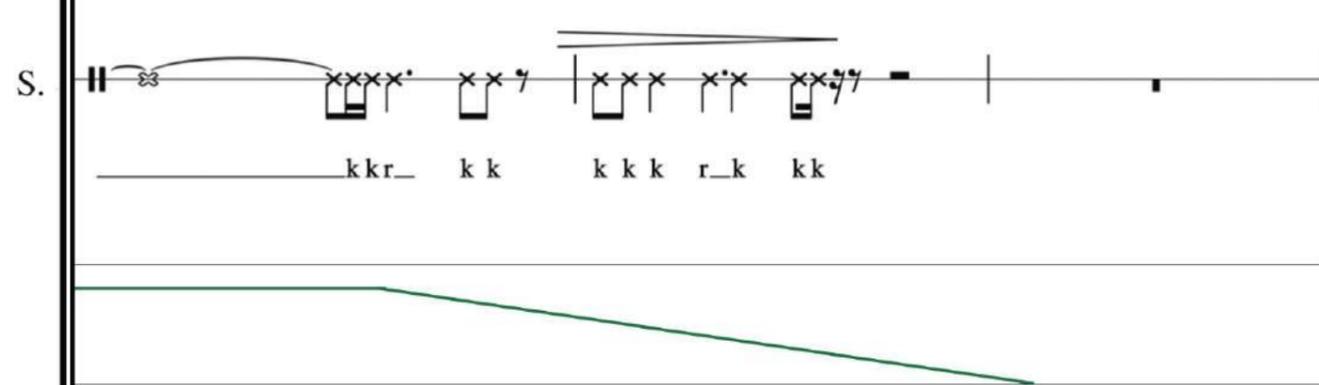
A.

A.

15

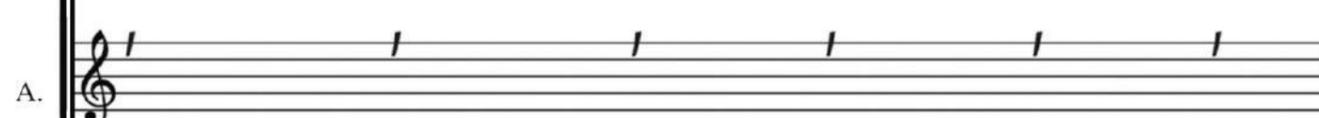
S. 

S. 

S. 

A. 

A. 

A. 

The image displays a musical score for Soprano (S.) and Alto (A.) voices, along with piano accompaniment. The score is organized into three systems, each with a vocal line and piano accompaniment.

- System 1 (Soprano):** The vocal line (S.) is marked with a double bar line and contains four quarter notes. The piano accompaniment (A.) is represented by a blue line that starts at a certain level, rises slightly, and then gradually decays.
- System 2 (Soprano):** The vocal line (S.) is marked with a double bar line and contains four quarter notes. The piano accompaniment (A.) is represented by a green line that starts at a certain level and gradually decays.
- System 3 (Alto):** The vocal line (A.) is marked with a double bar line and contains four quarter notes. The piano accompaniment (A.) is represented by a blue line that starts at a certain level and gradually decays. A fermata is placed over the first two notes of the piano accompaniment line, with the number "2" written below it.

The piano accompaniment for the first two systems is shown as a single line, while the third system shows two staves with a treble clef and a series of vertical strokes, indicating a specific rhythmic pattern.

This musical score is arranged in a system with four vocal staves and two piano accompaniment staves. The vocal staves are labeled 'S.' (Soprano) and 'A.' (Alto). Each vocal staff begins with a double bar line and a fermata, followed by a series of notes: a half note, a quarter note, a half note, and a quarter note. The piano accompaniment staves feature a treble clef and a series of notes with dynamic markings. The first piano staff has a dynamic marking of *pppp* and a fermata over the first two notes. The second piano staff has dynamic markings of *pppp* and a fermata over the first two notes. The piano accompaniment staves are connected to the vocal staves by a vertical line on the left and a horizontal line at the bottom.