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

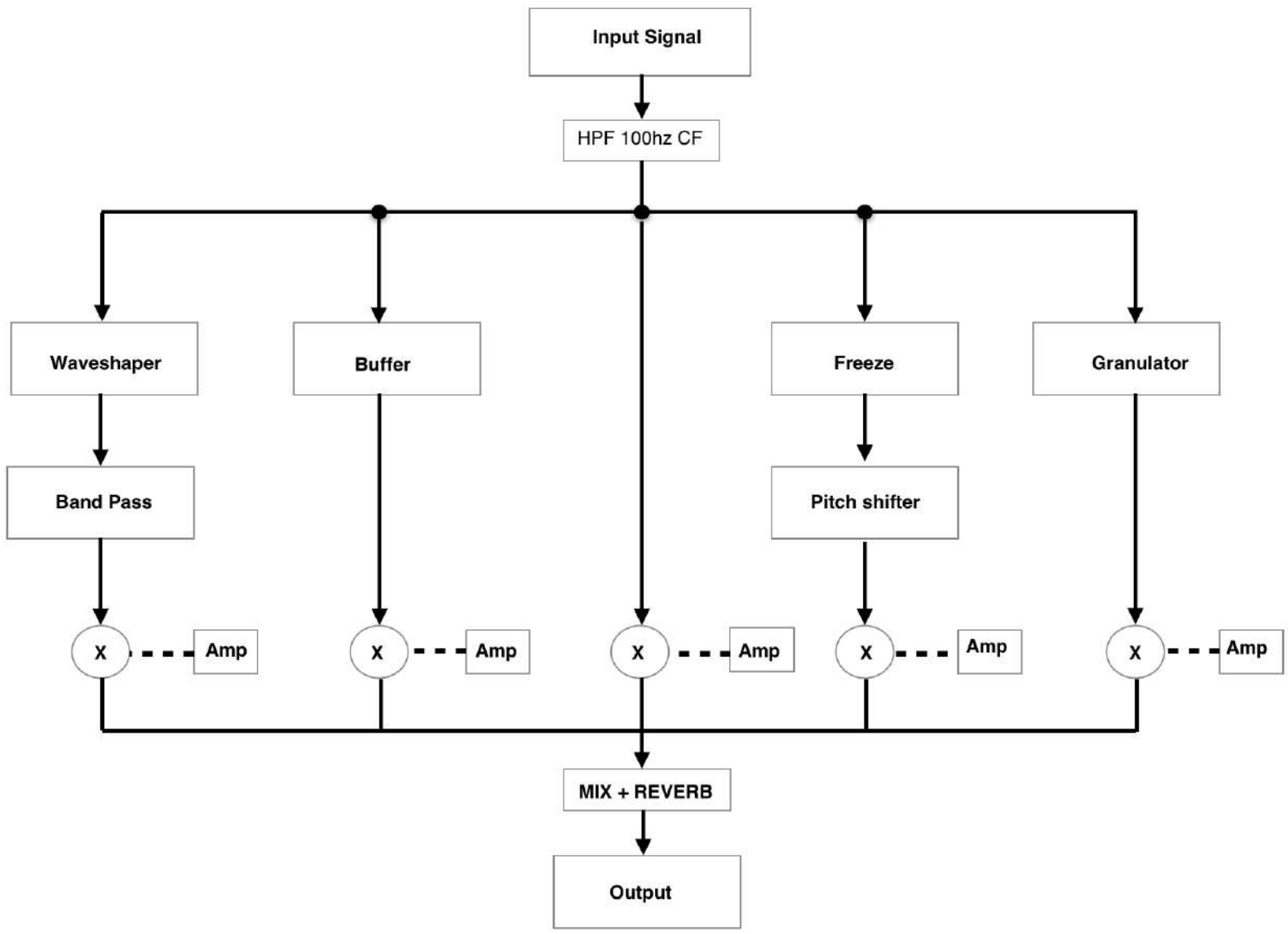


Fig.2 Complete algorithm

Whaveshaper

The imput signal is split into three bands (low-mid-hi) and distorted, with the ption 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).

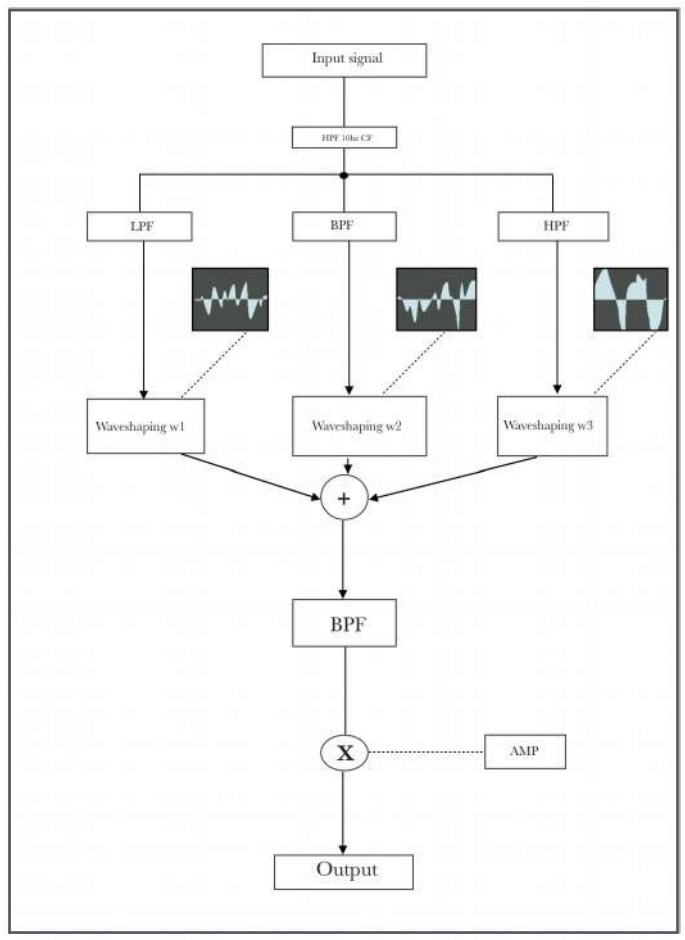


Fig.3 Waveshaper

Buffer

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

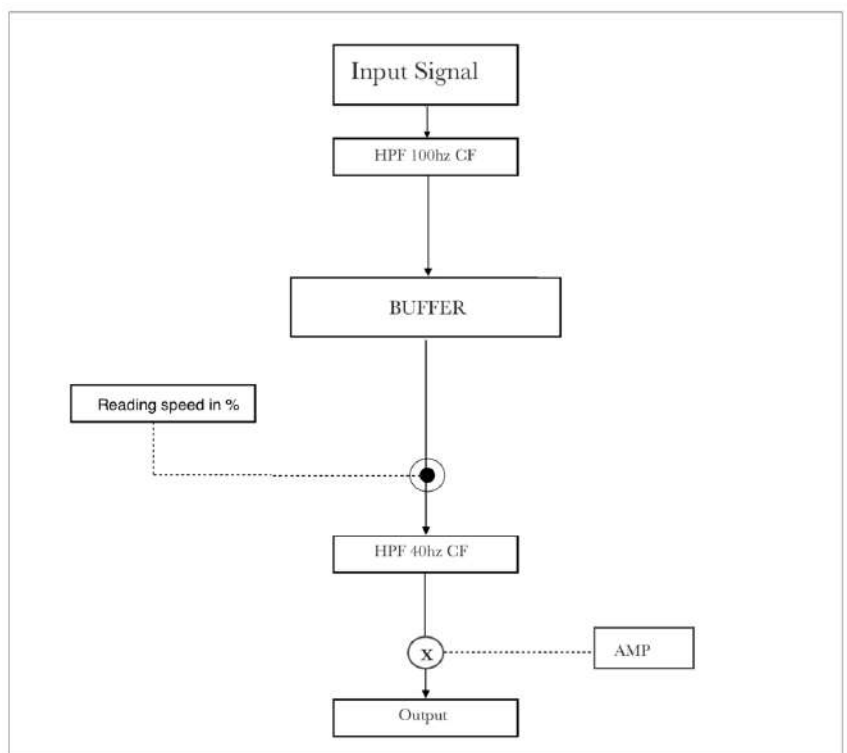


Fig.3 Buffer Reader

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.

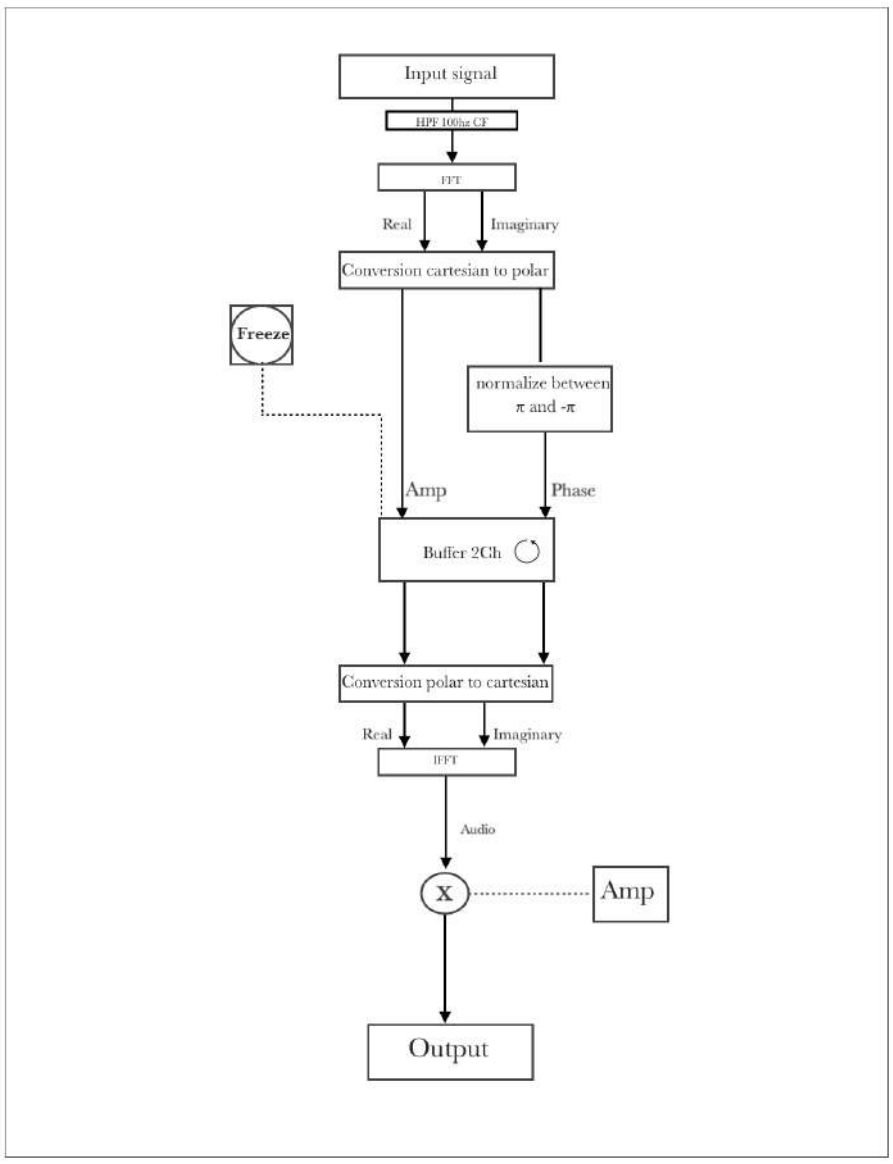


Fig 4 Freeze

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.

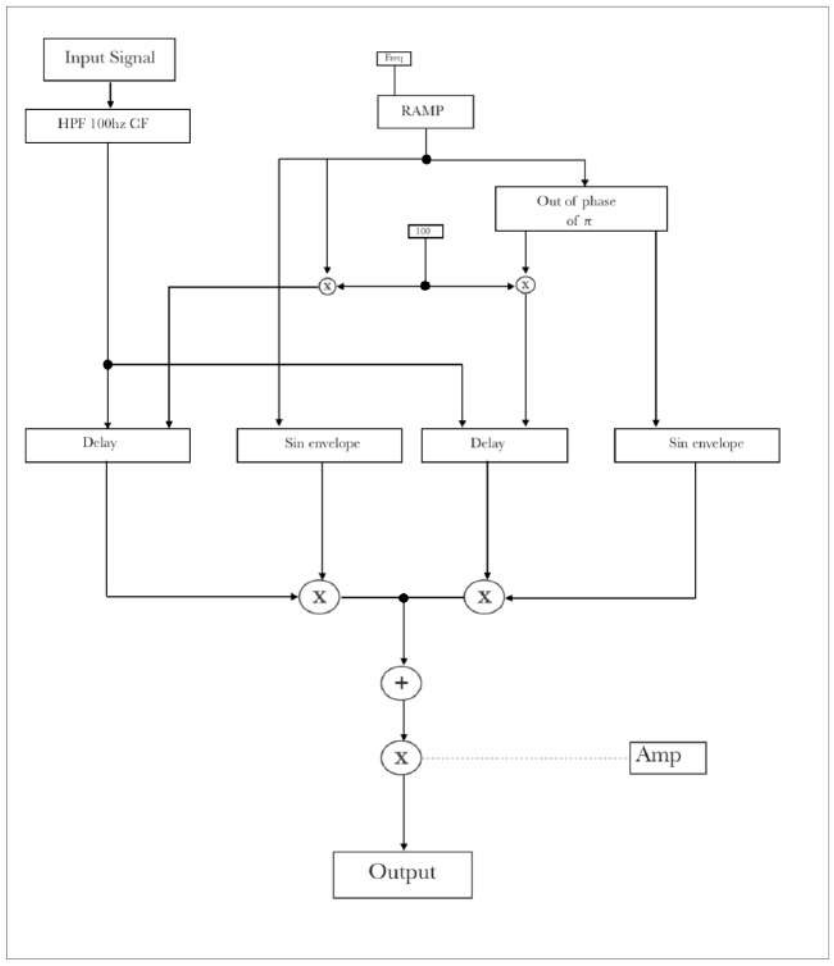


Fig 6 Pitch Shifter

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.

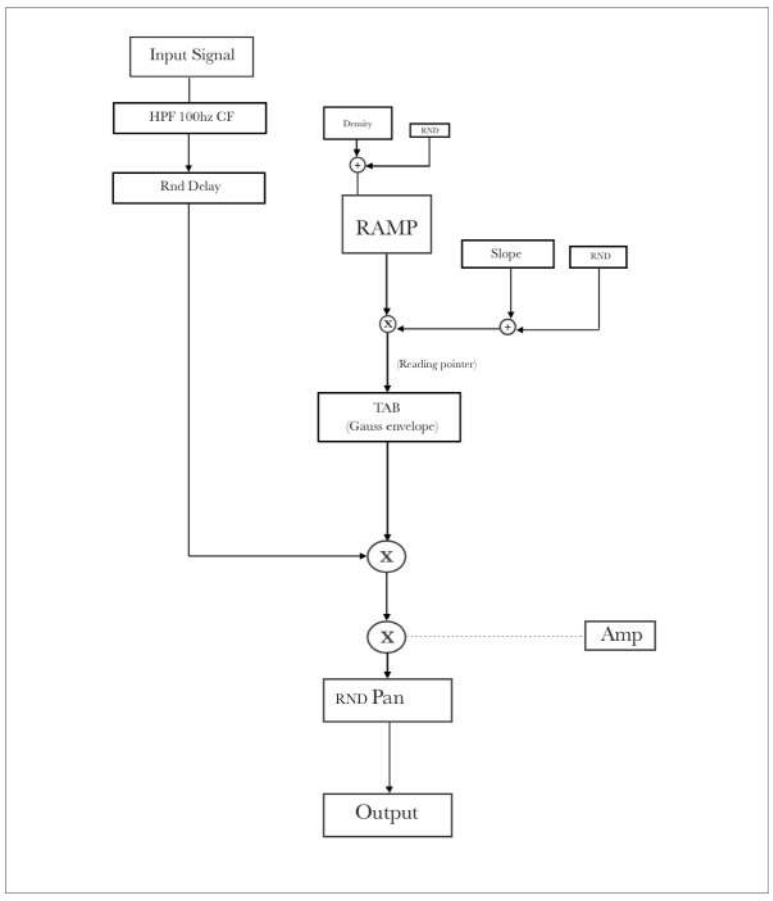


Fig.6 Granulator

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

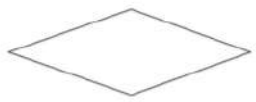
Sung: the line specifies
the length of the note

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)

Buffer 1 fader
(Amplitude)

Granulator fader
(Amplitude)

Freeze fader
(Amplitude)

Buffer 2 fader
(Amplitude)

Freeze activator (botton):
Control is linked to every
voice

Activate the fader

activate writing/reading of the Buffer
(botton):
Control is linked to every
voice

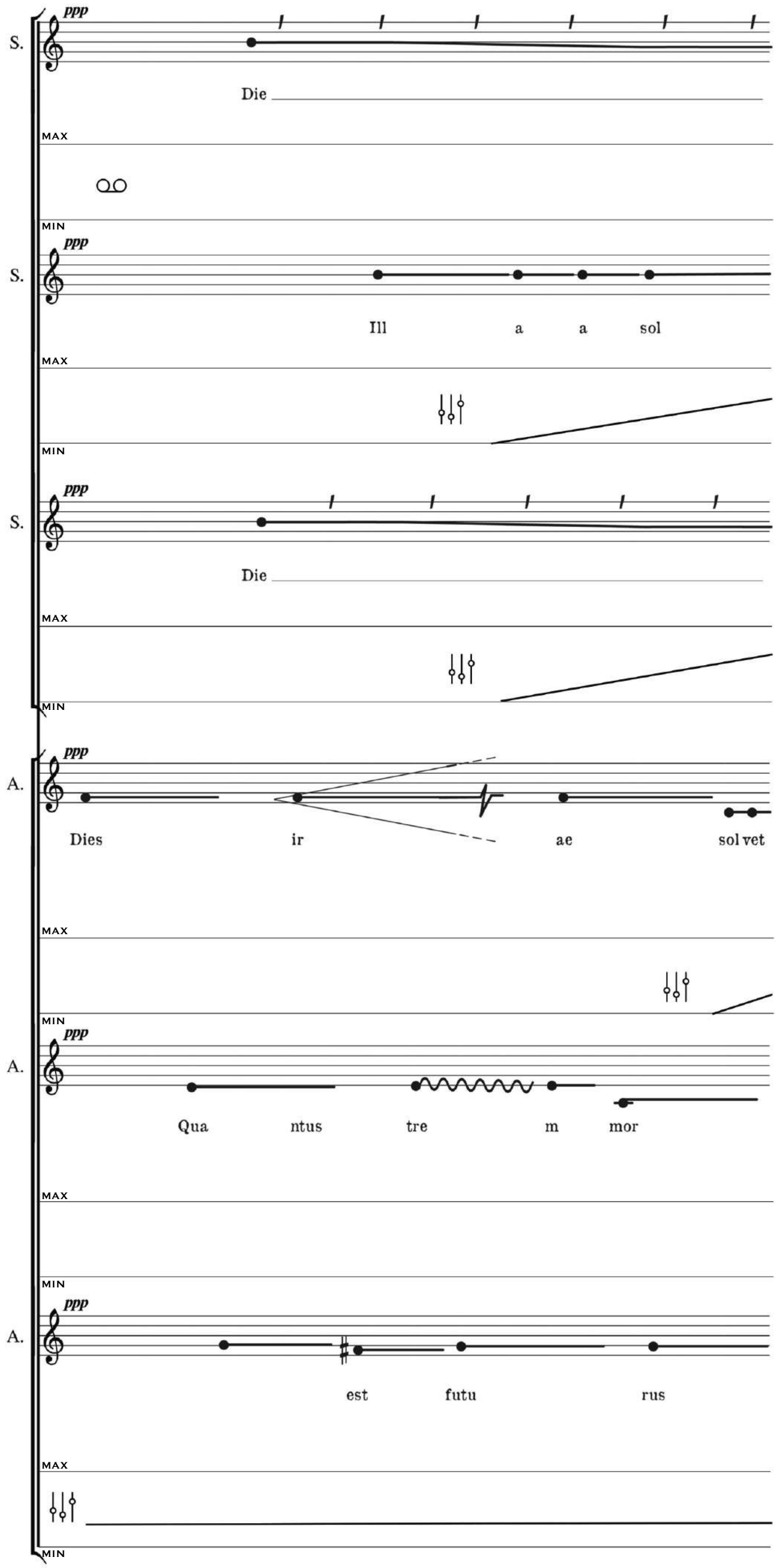
Clear the content of the Buffer
(botton):
Control is linked to every
voice

Activate the potentiometer

15

N° of granular synthesizer to
activate

Dies Irae



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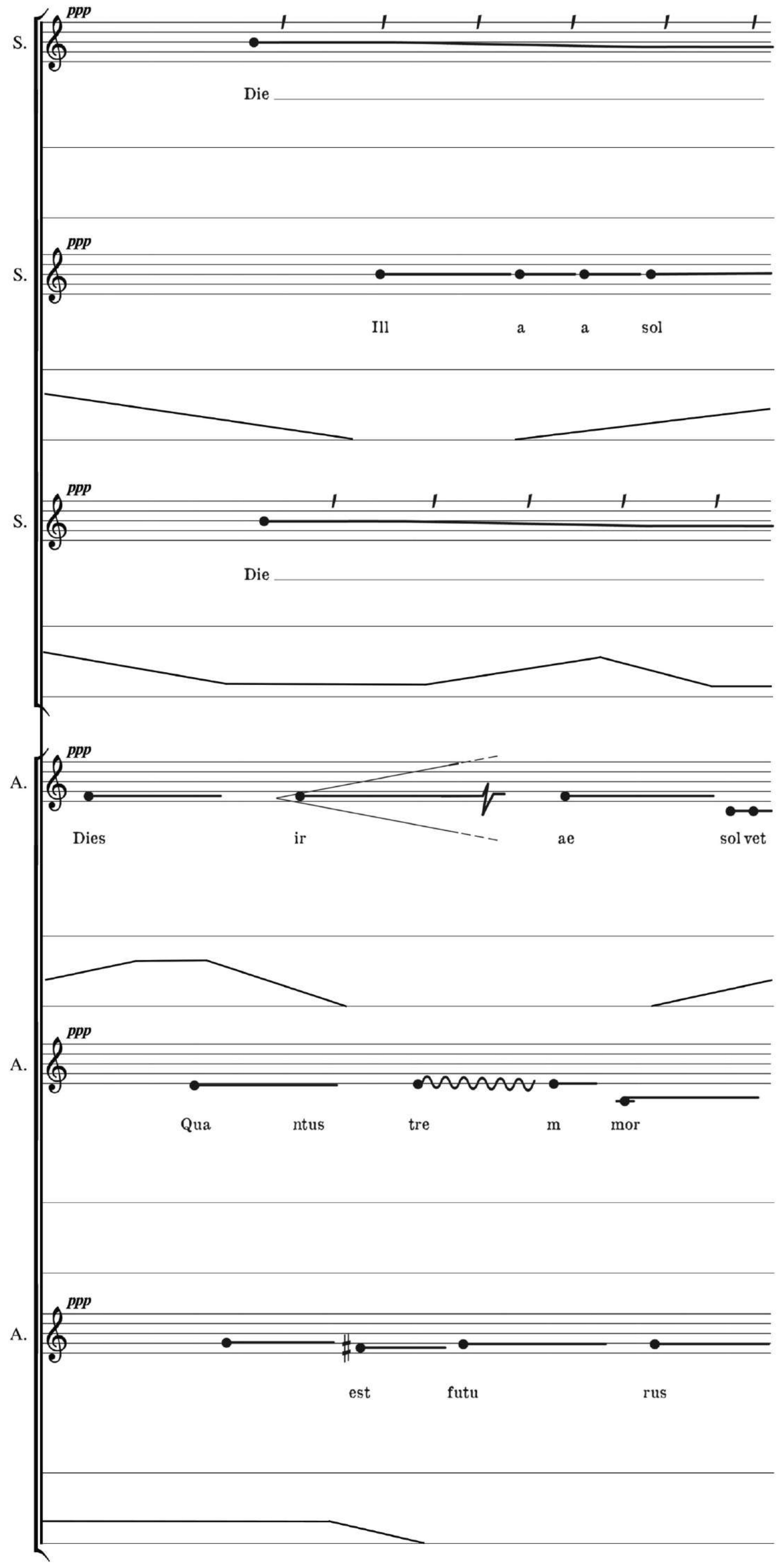
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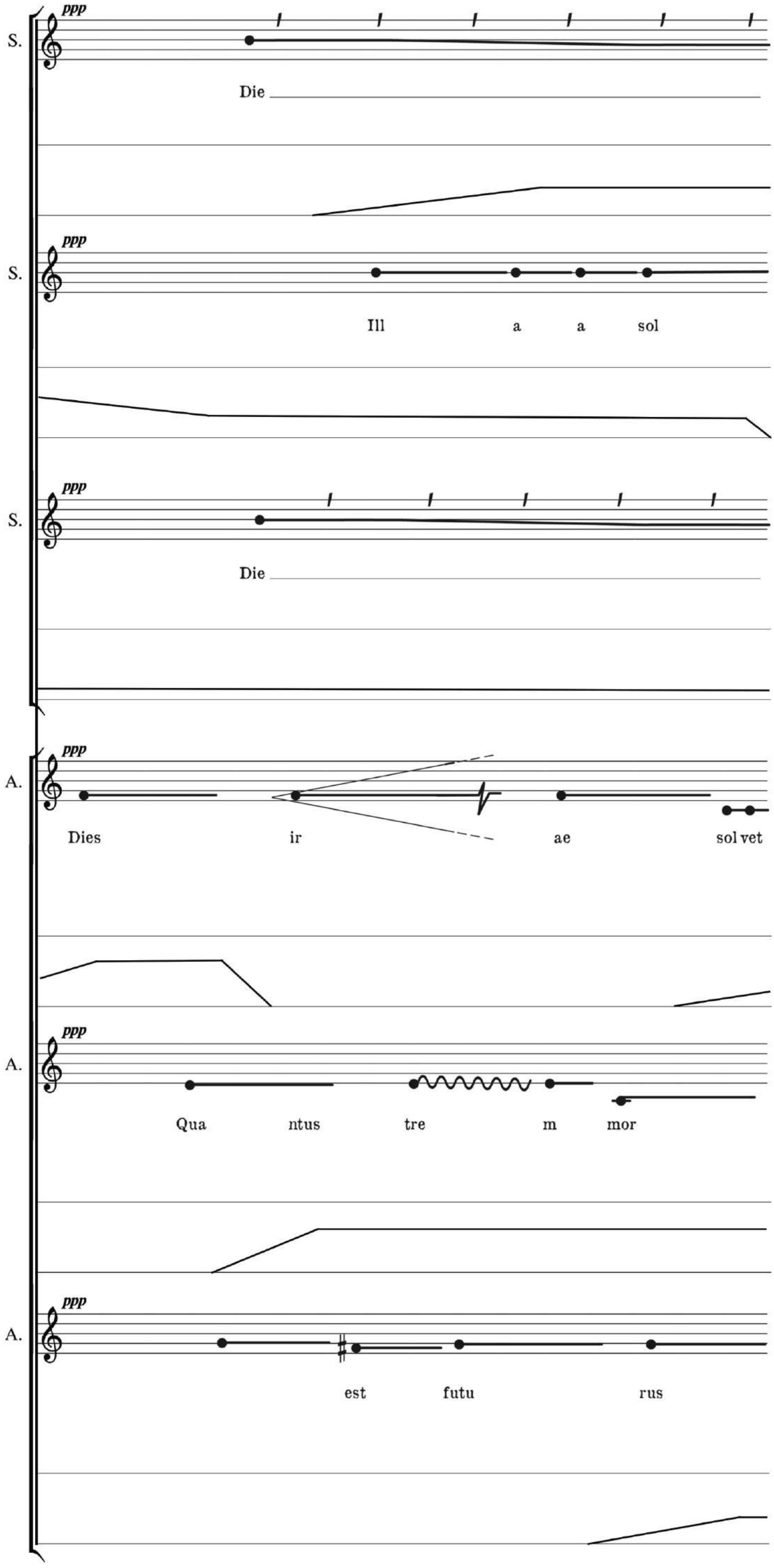
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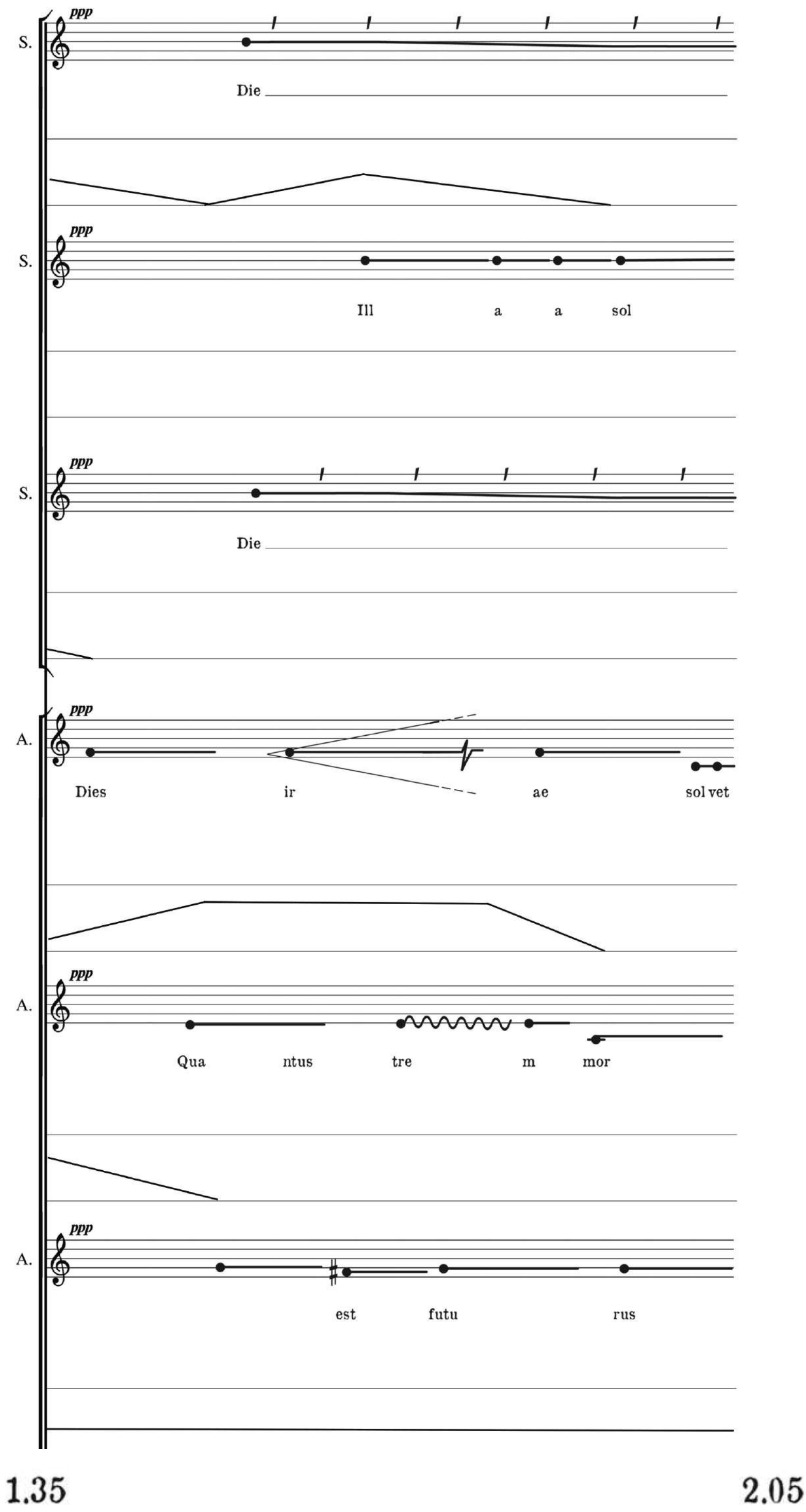
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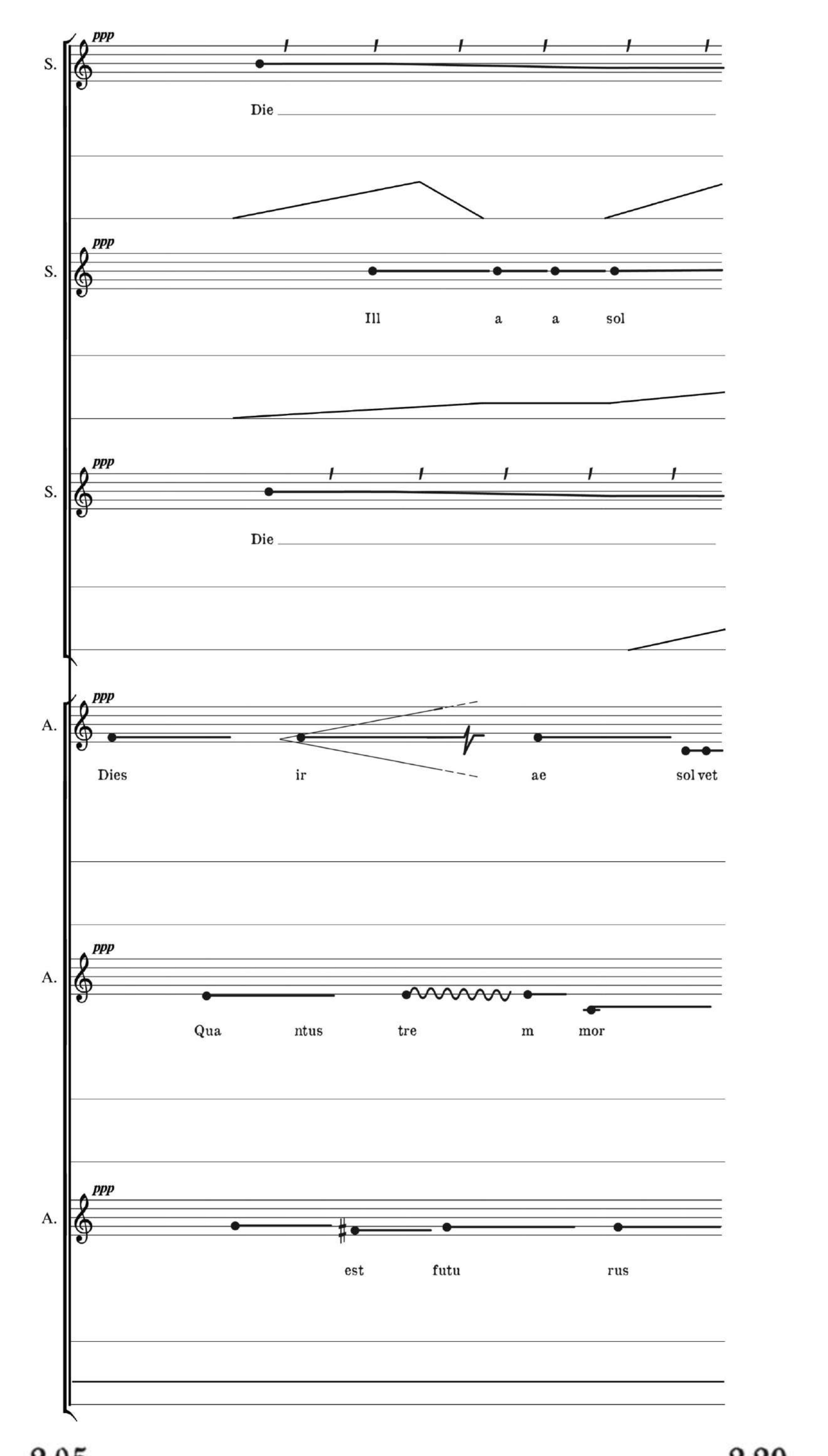
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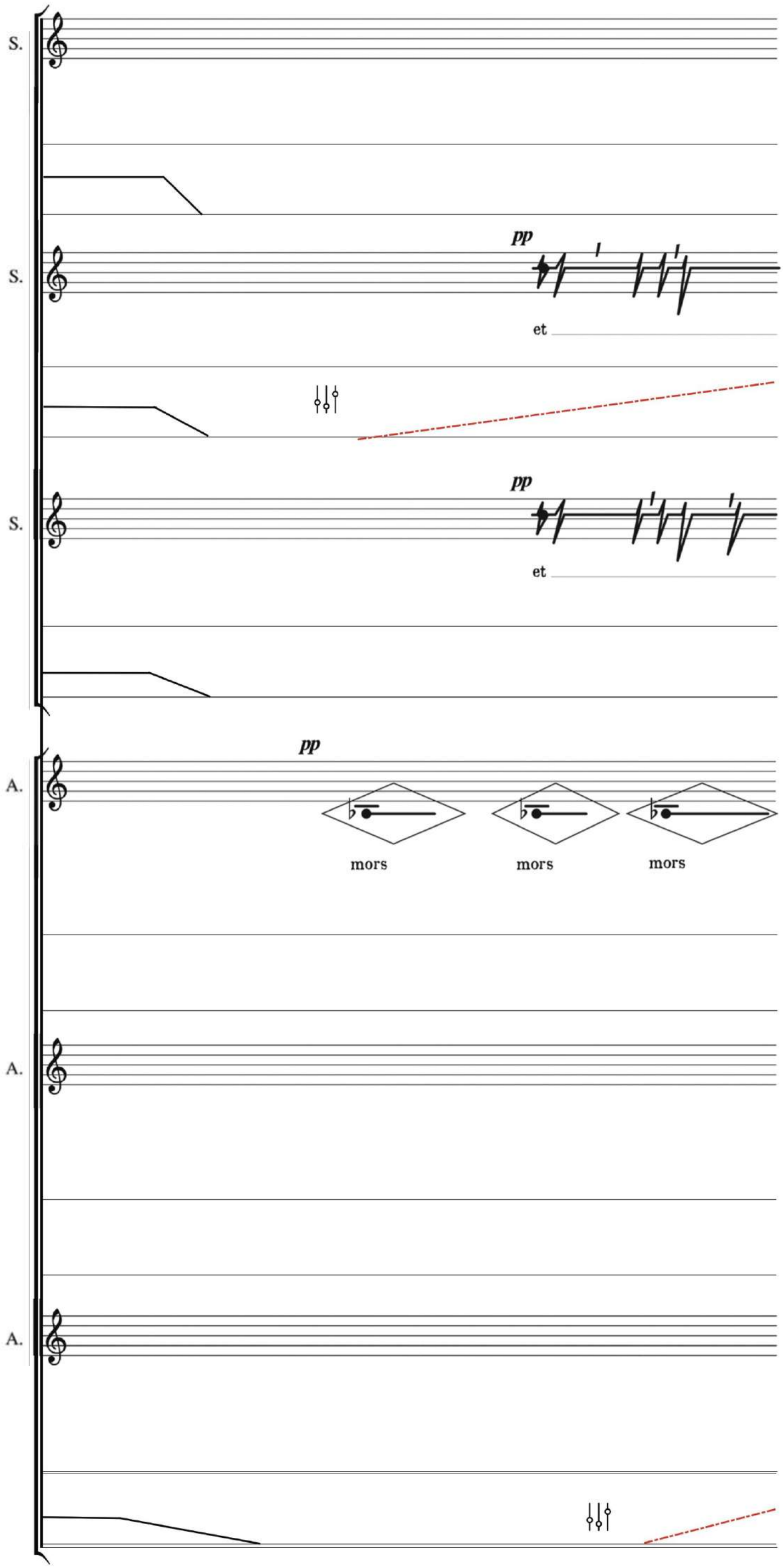

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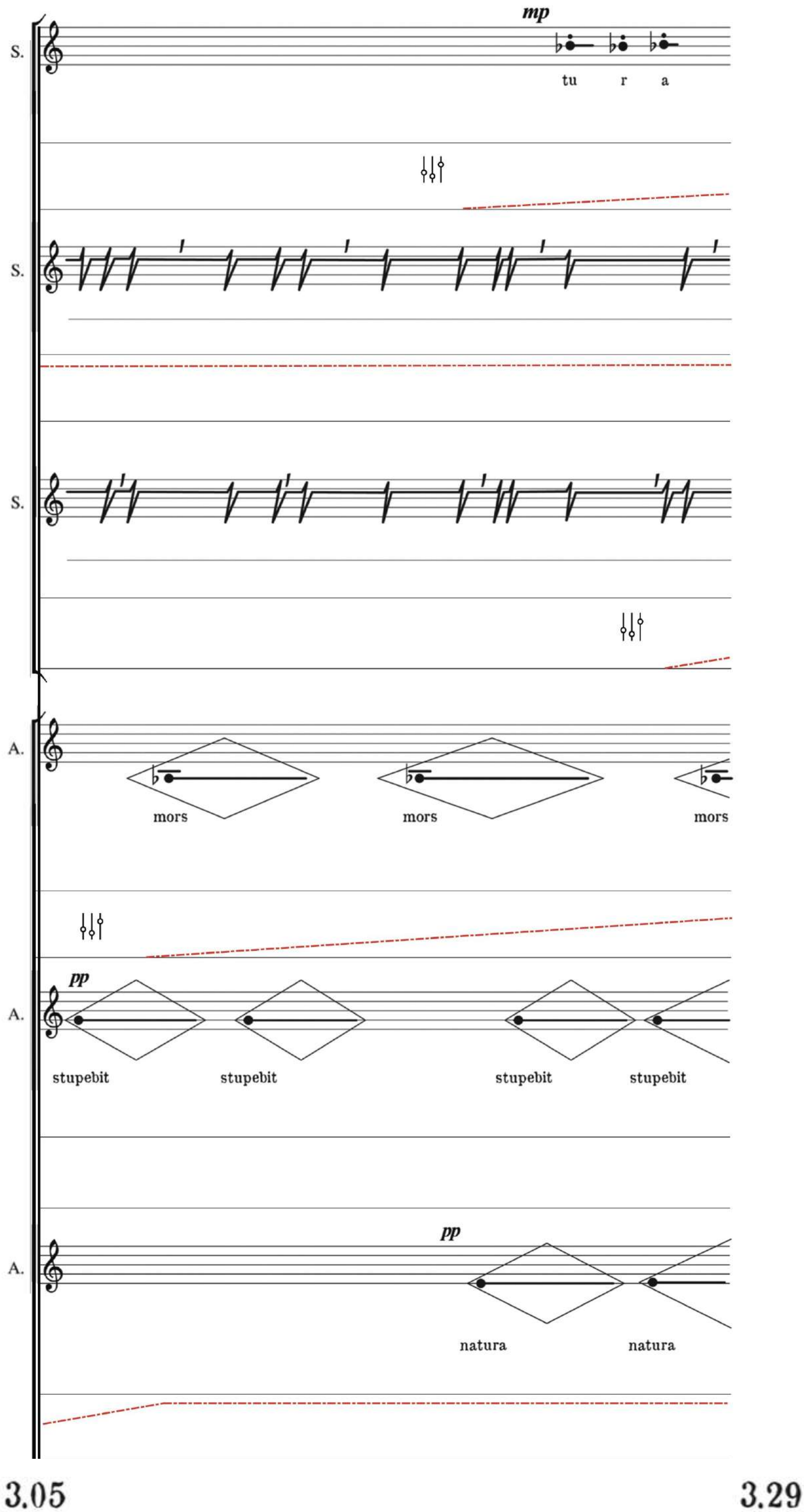
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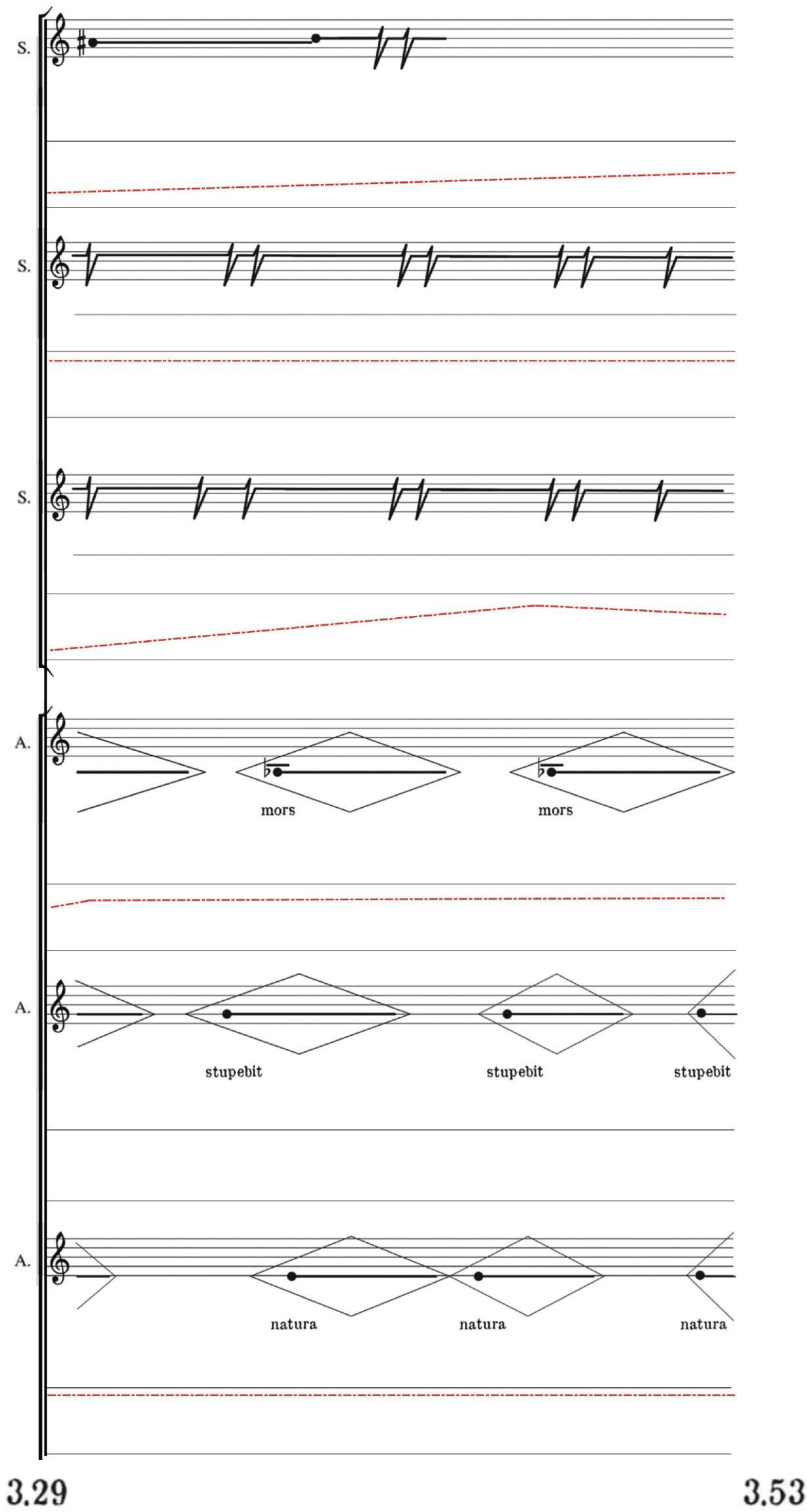
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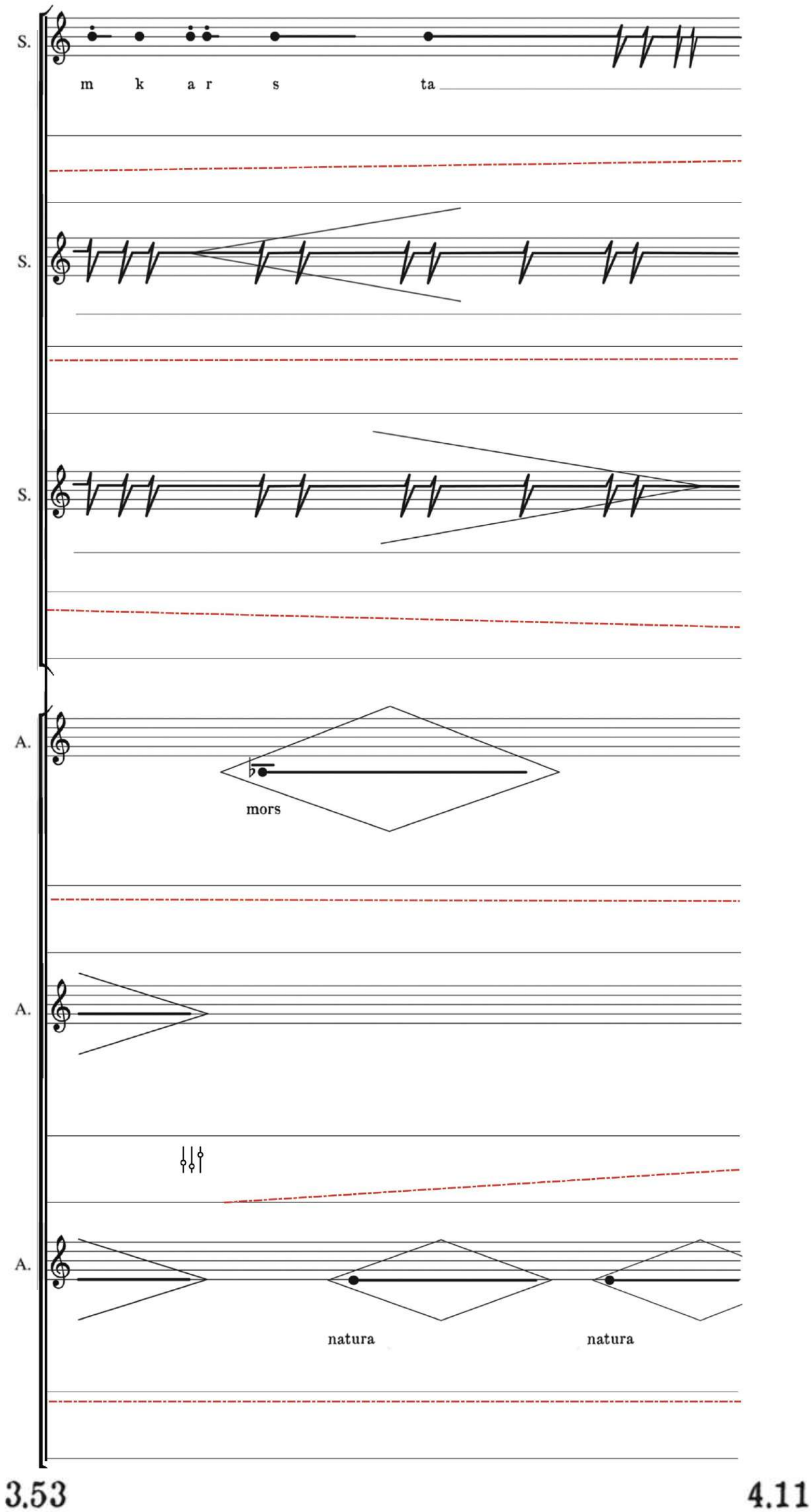
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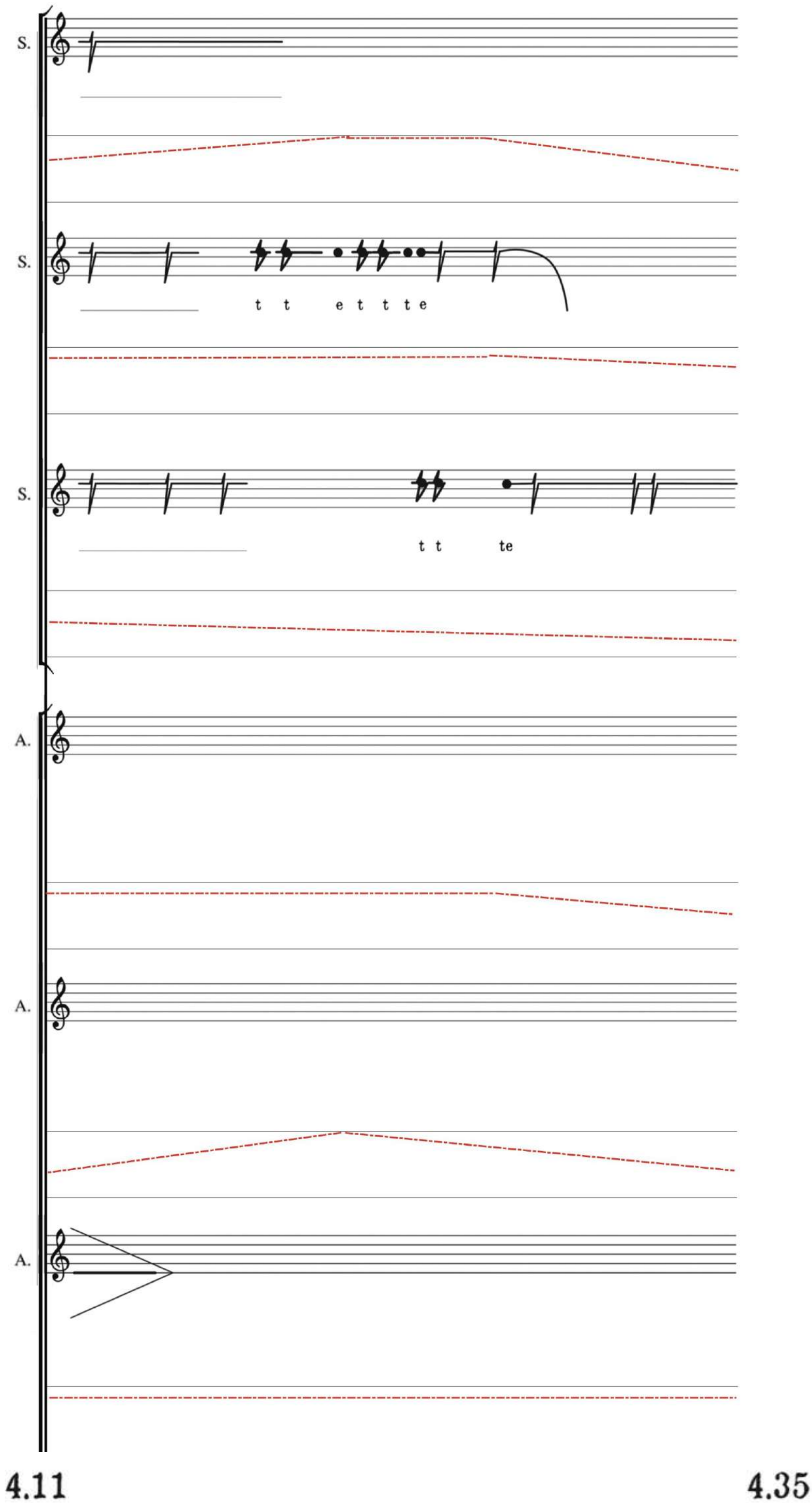
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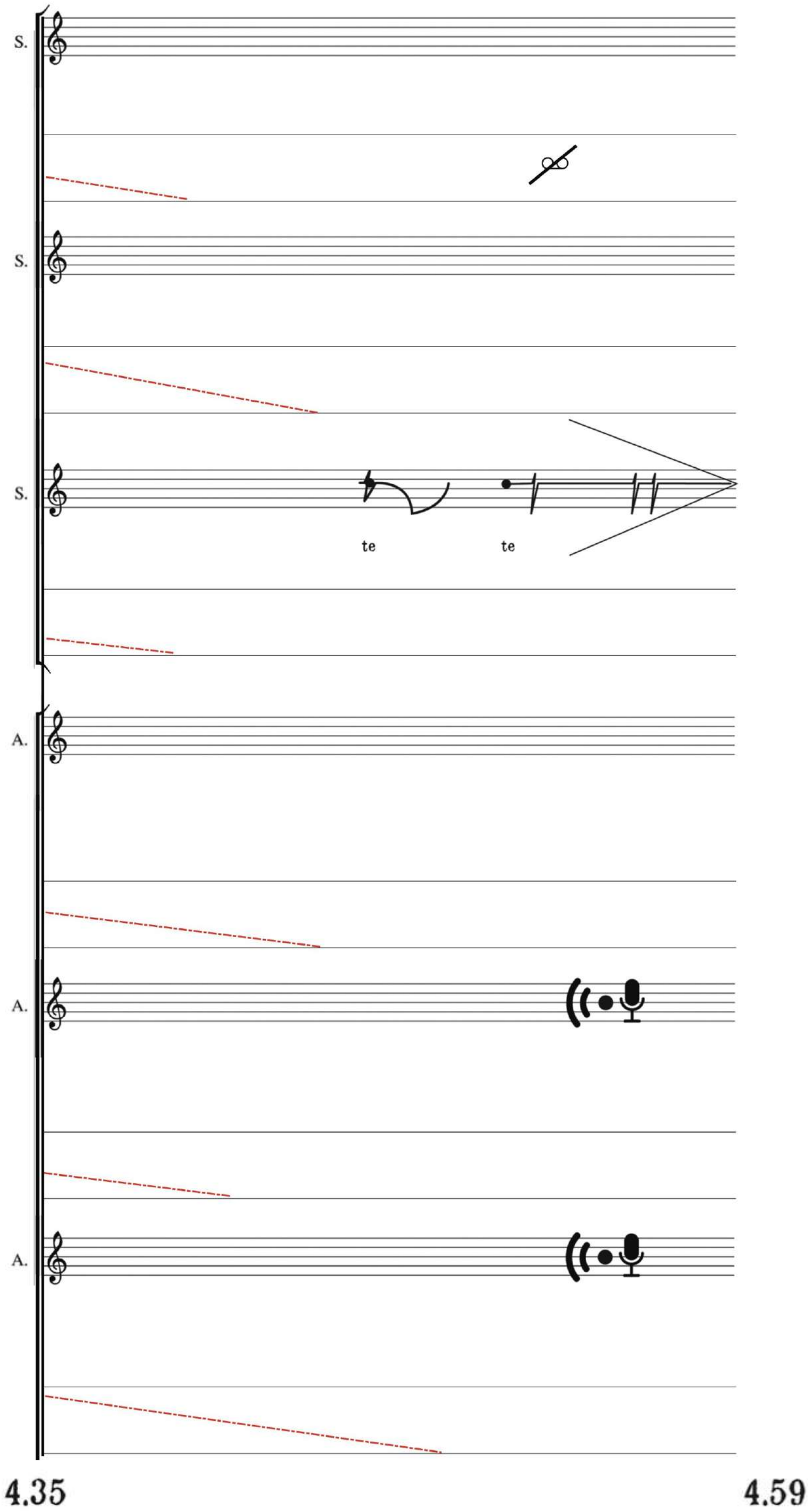
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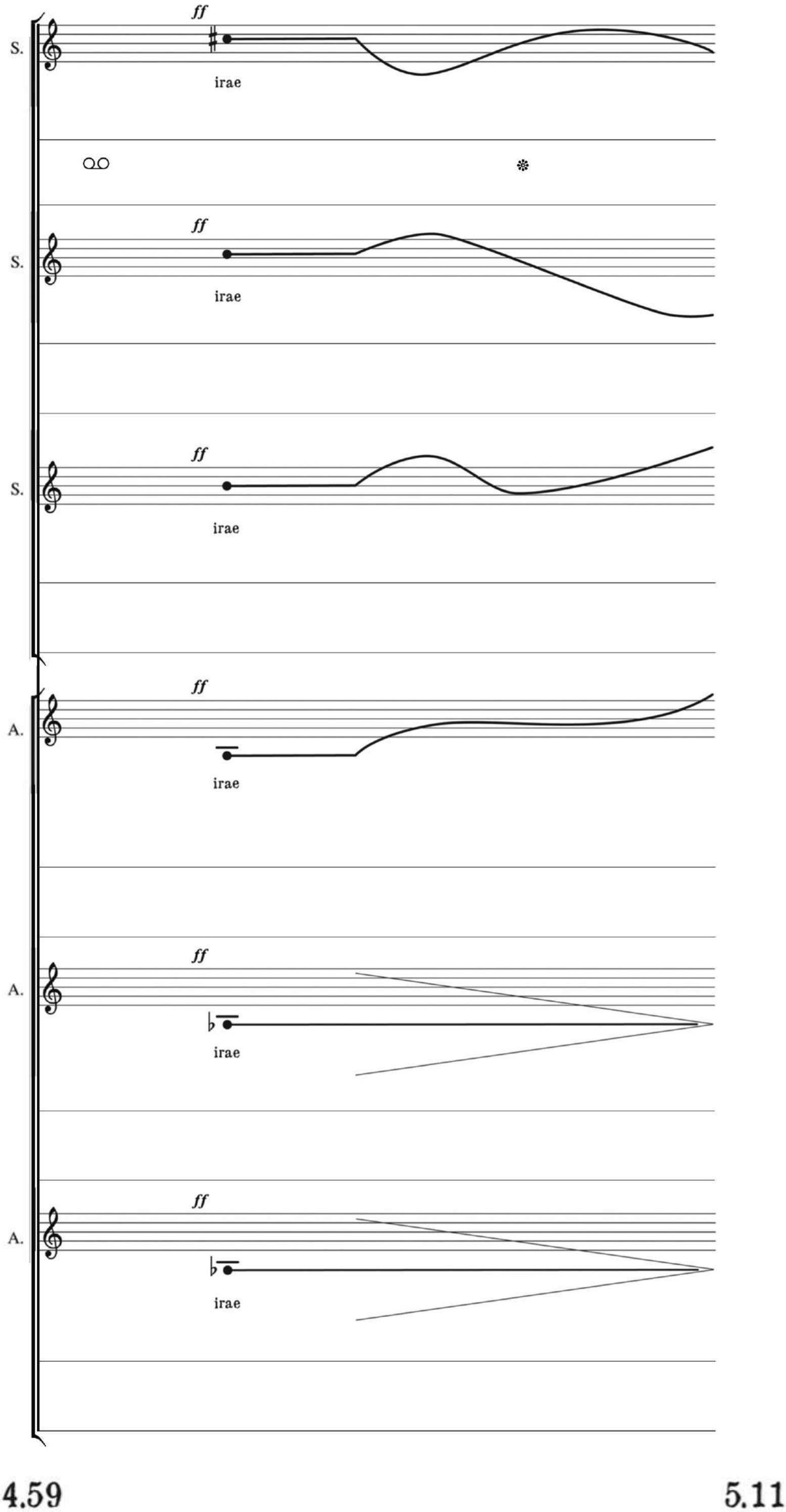
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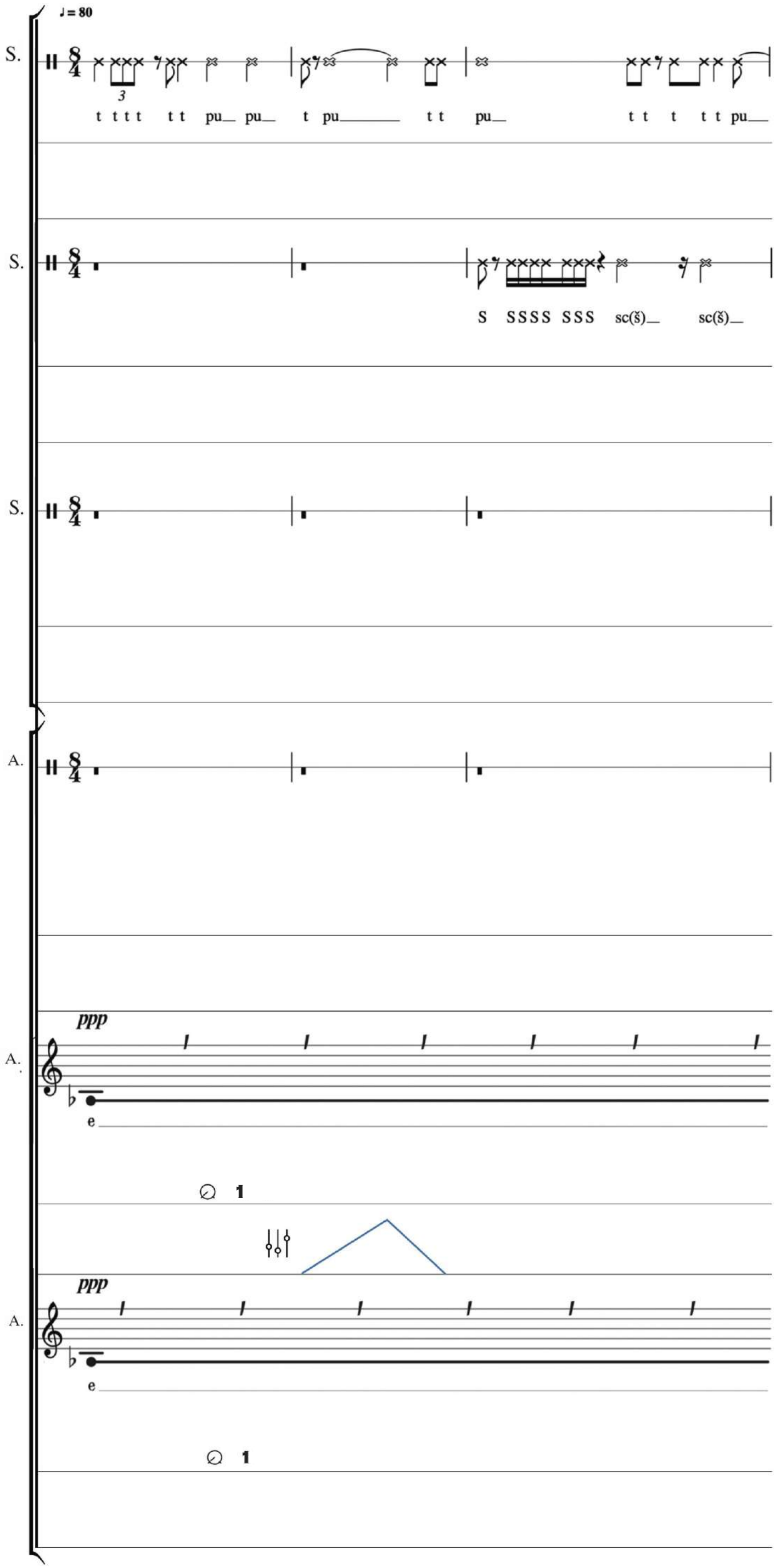
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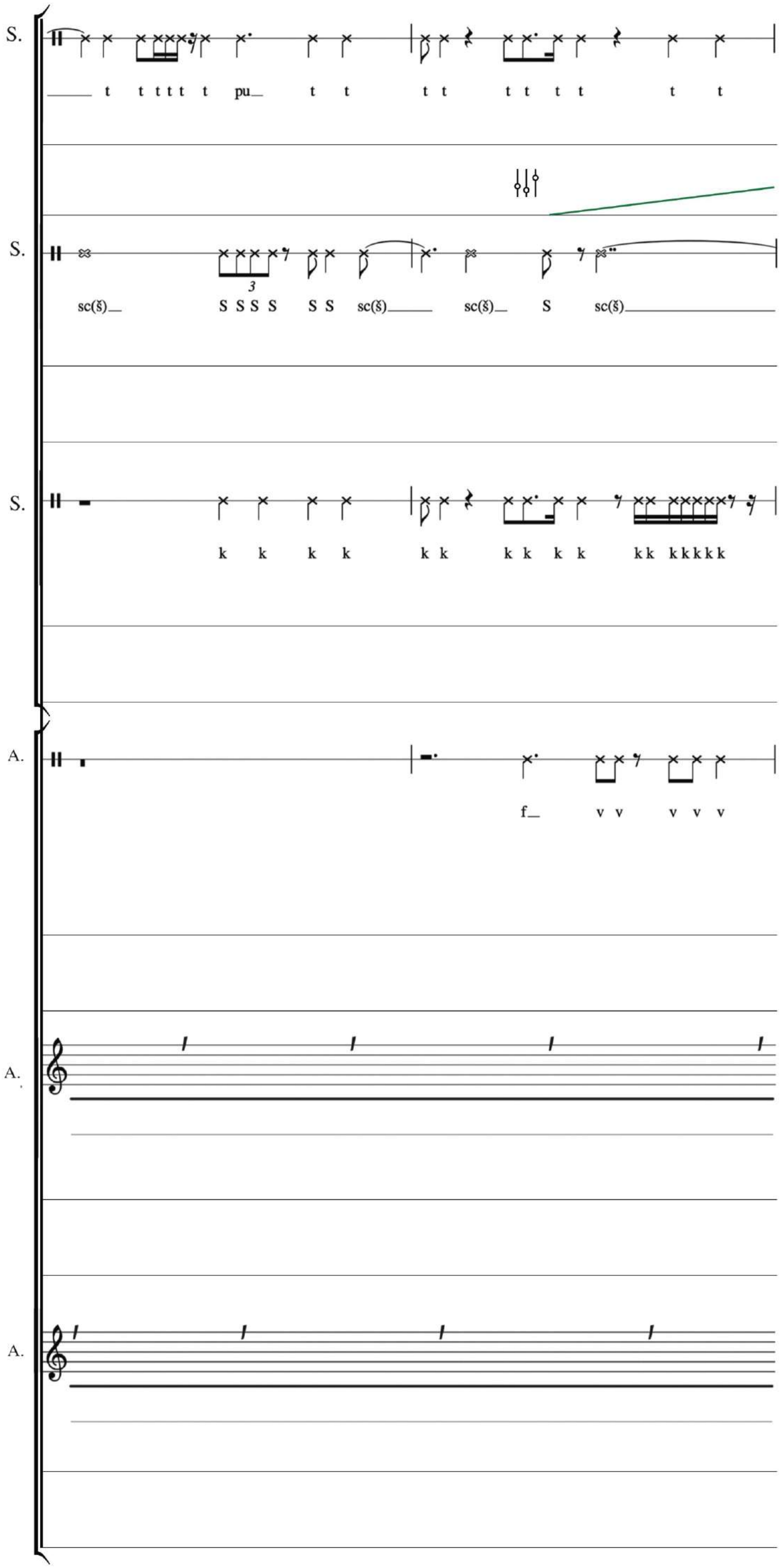
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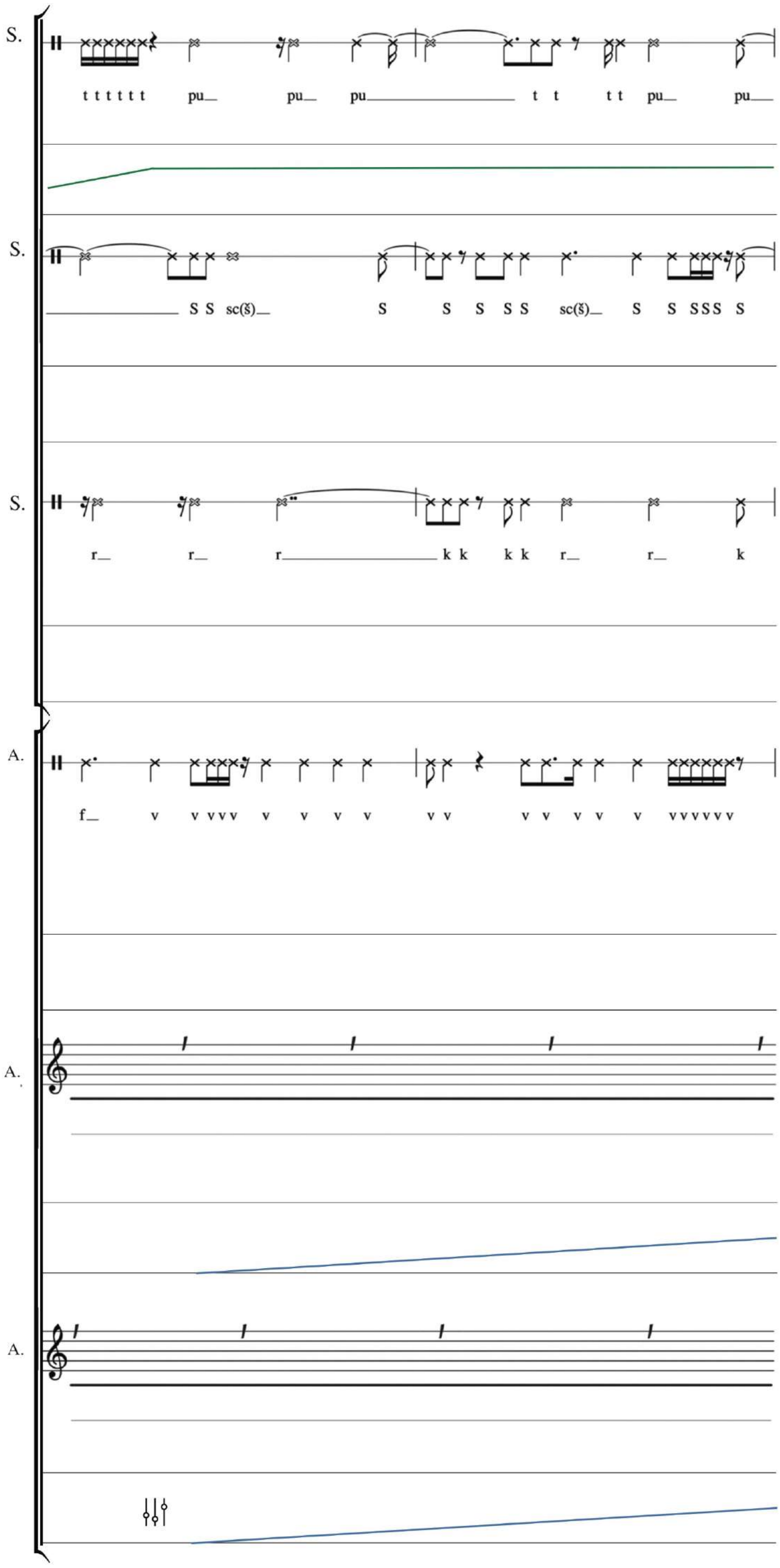
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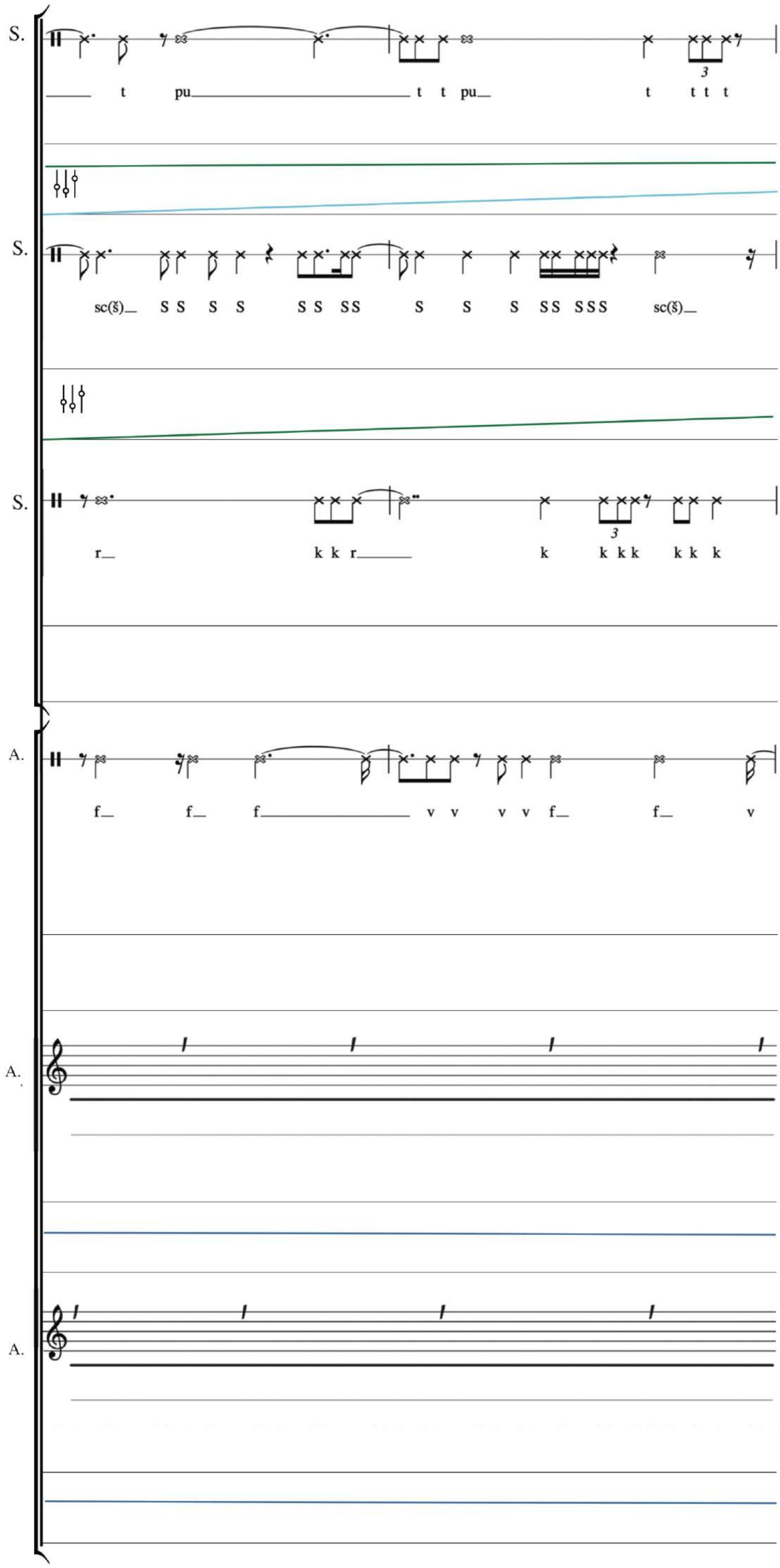
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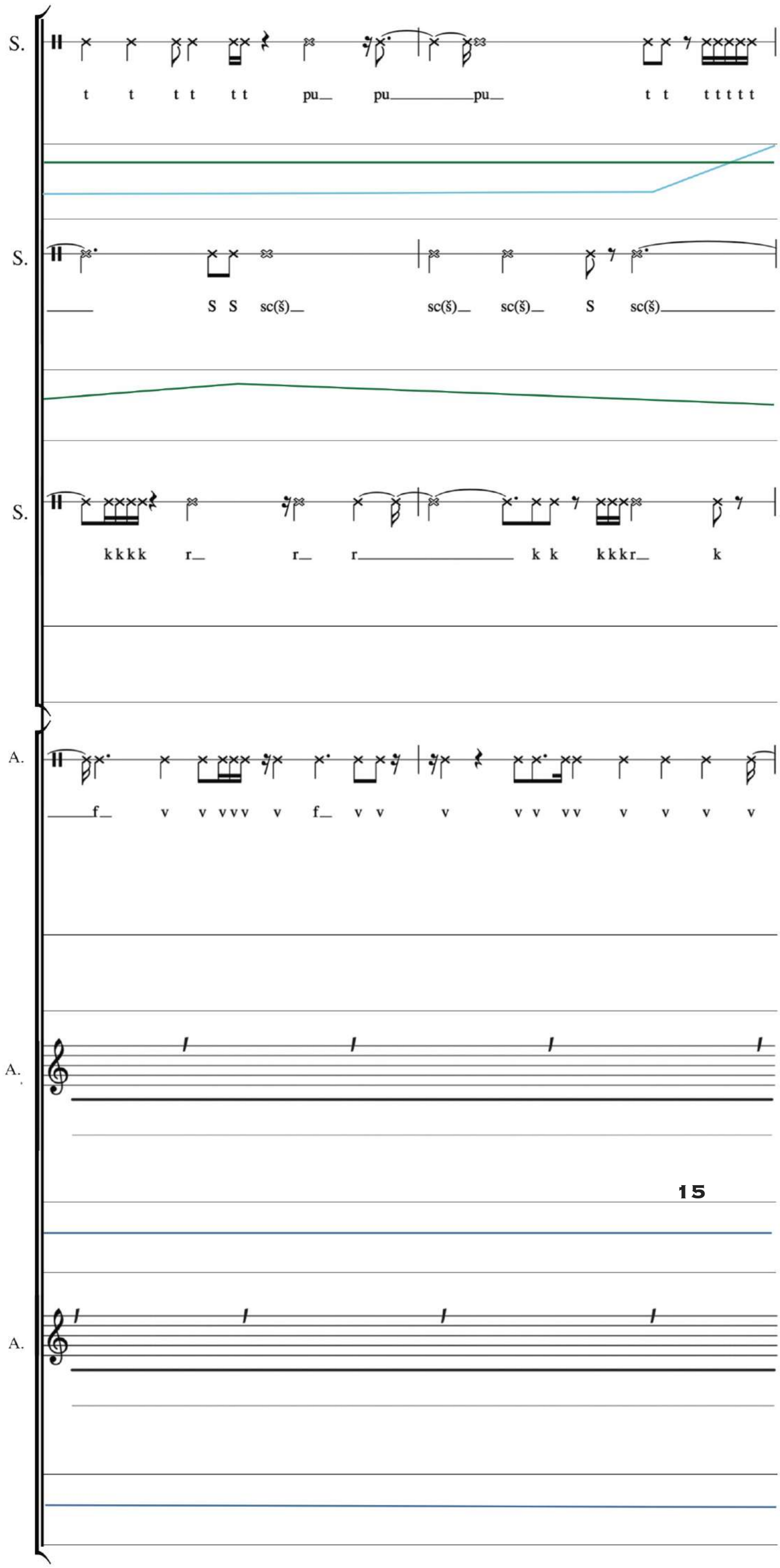
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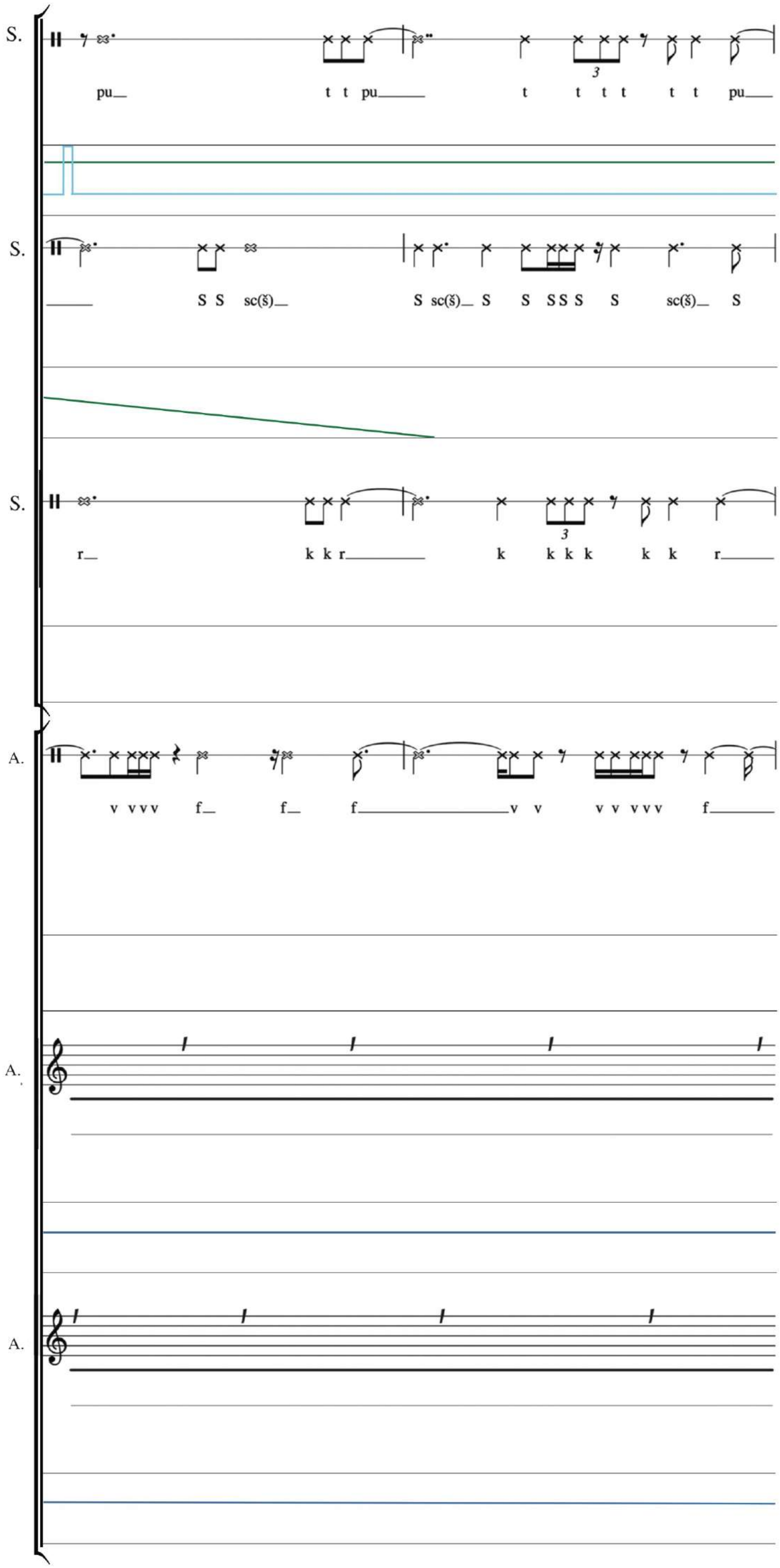
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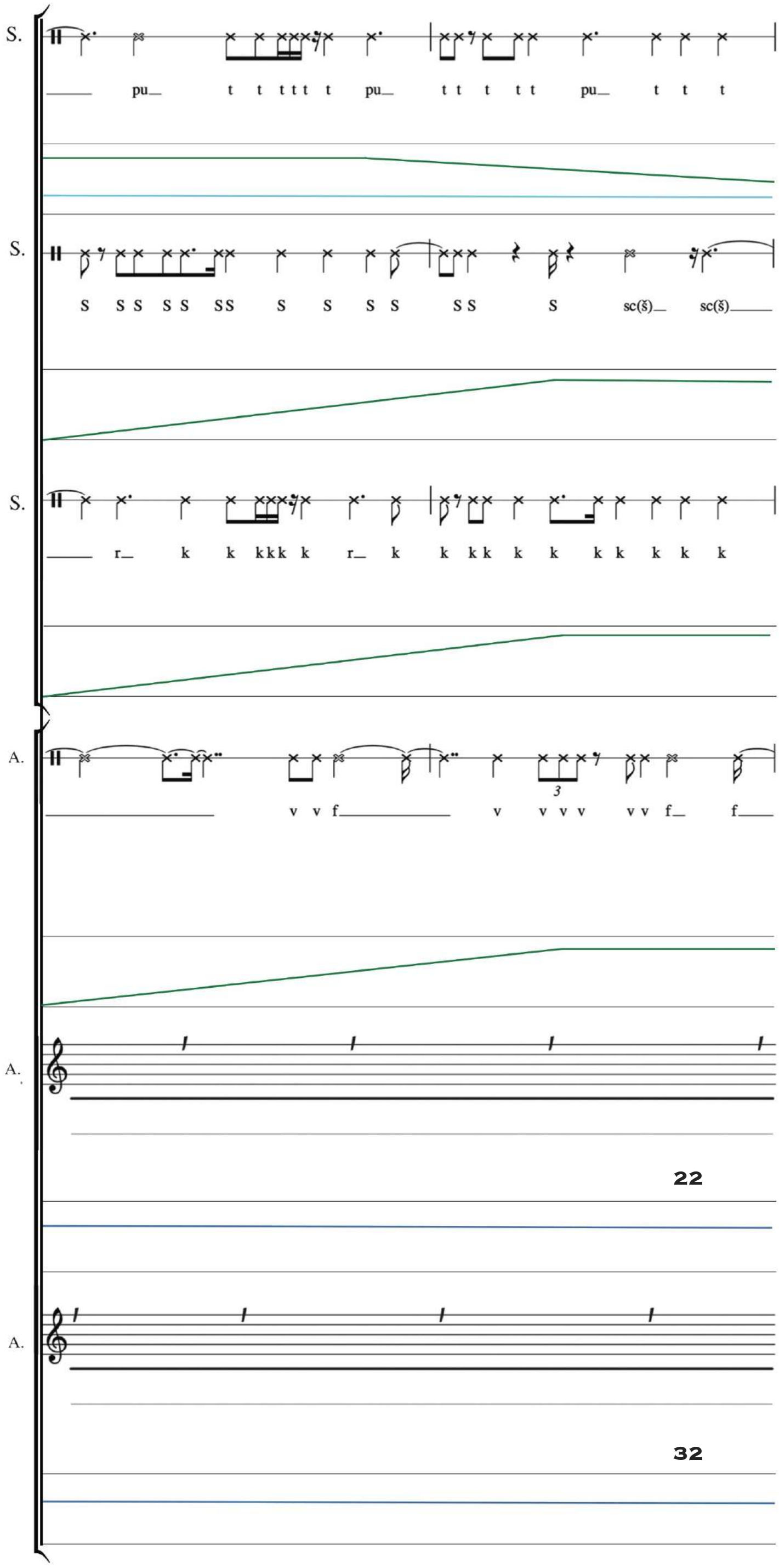
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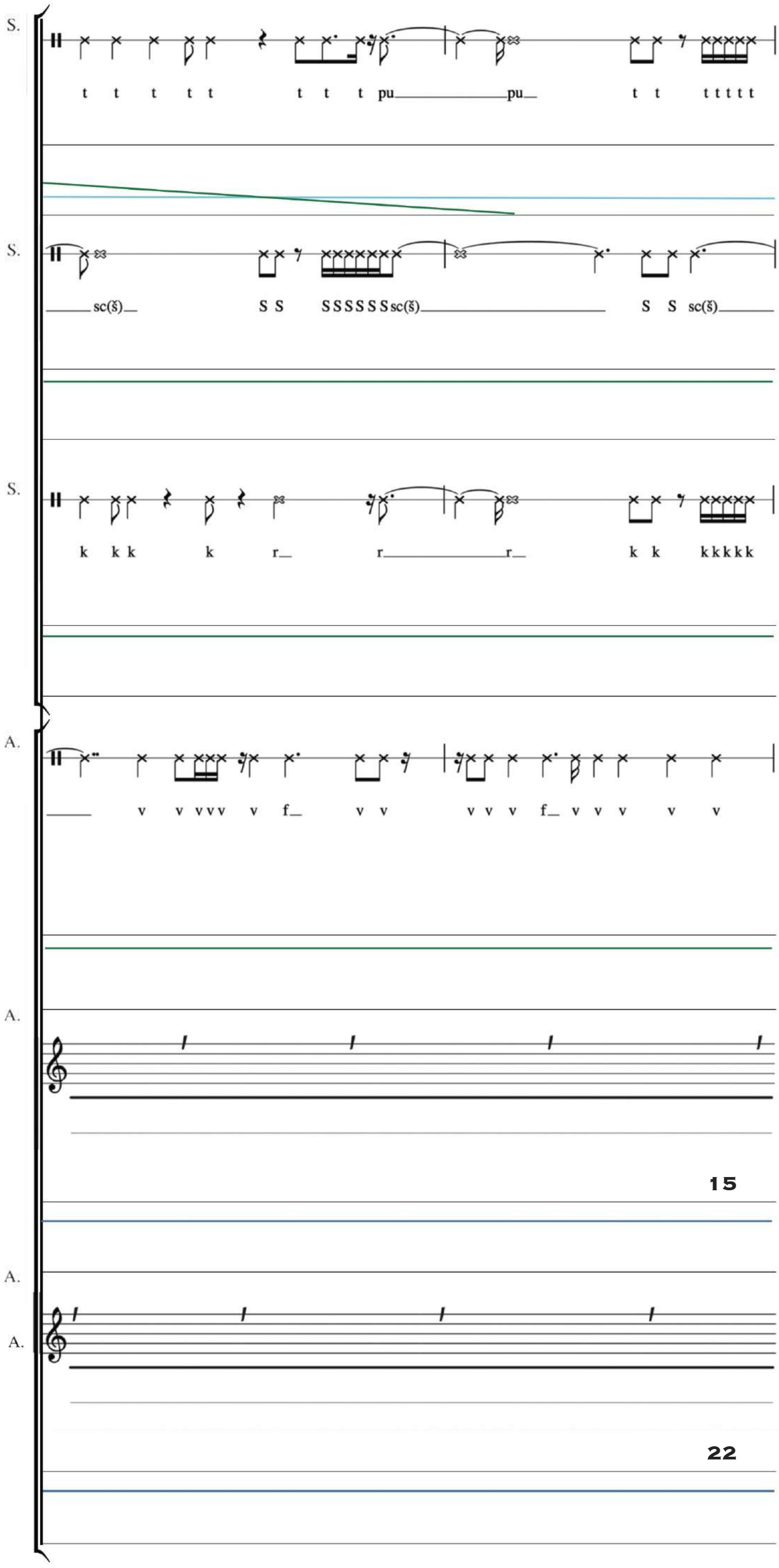
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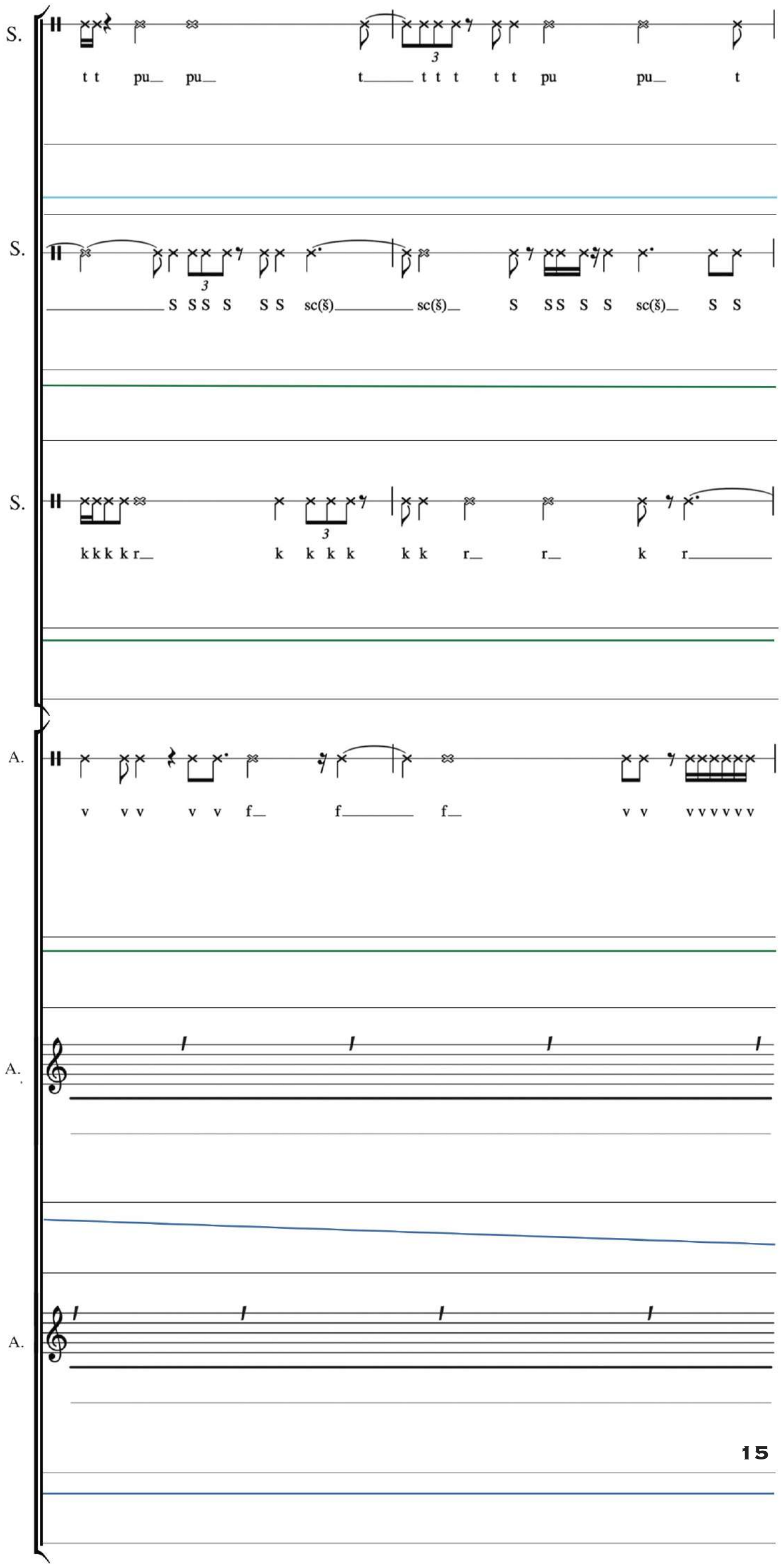
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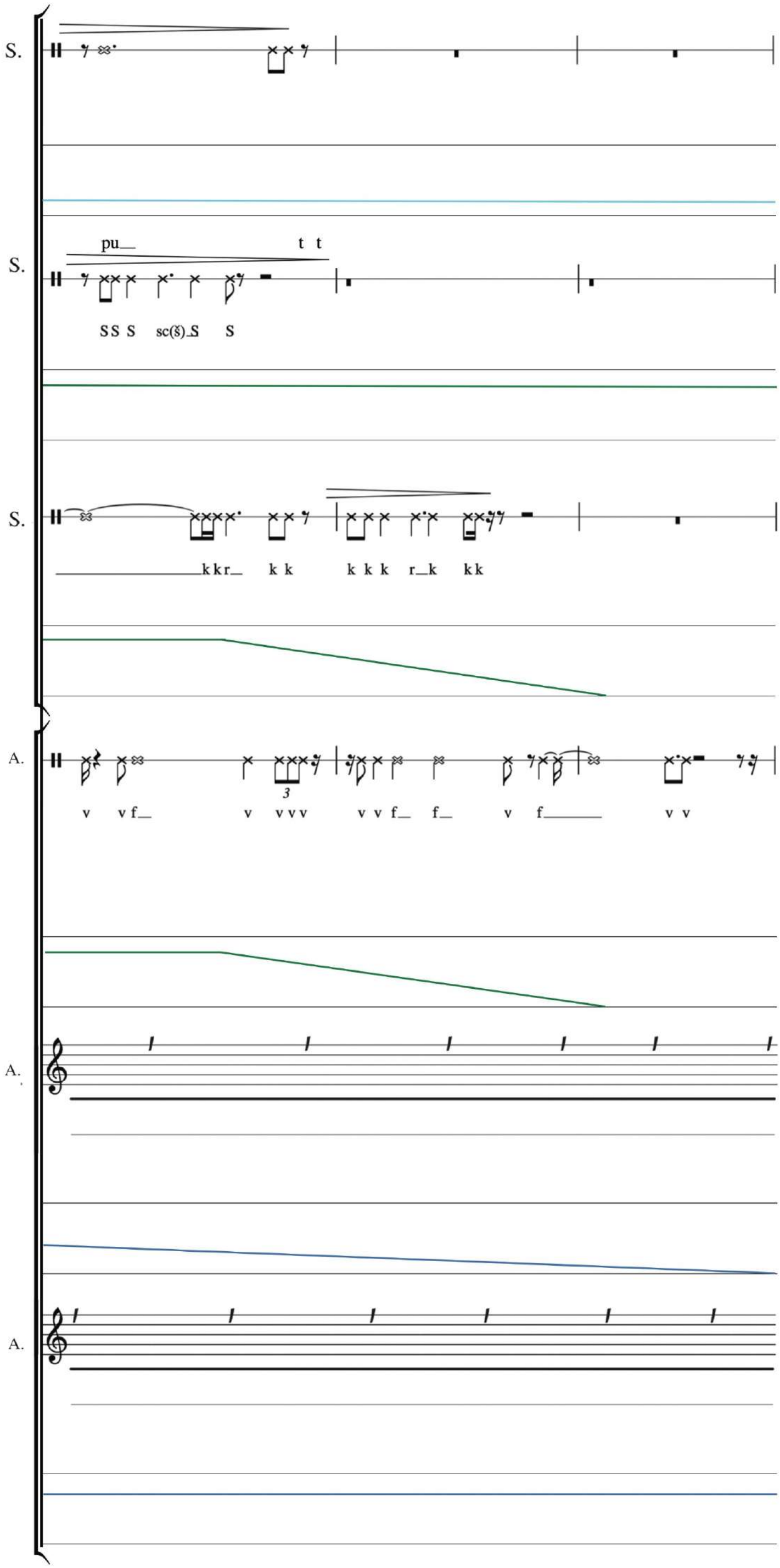
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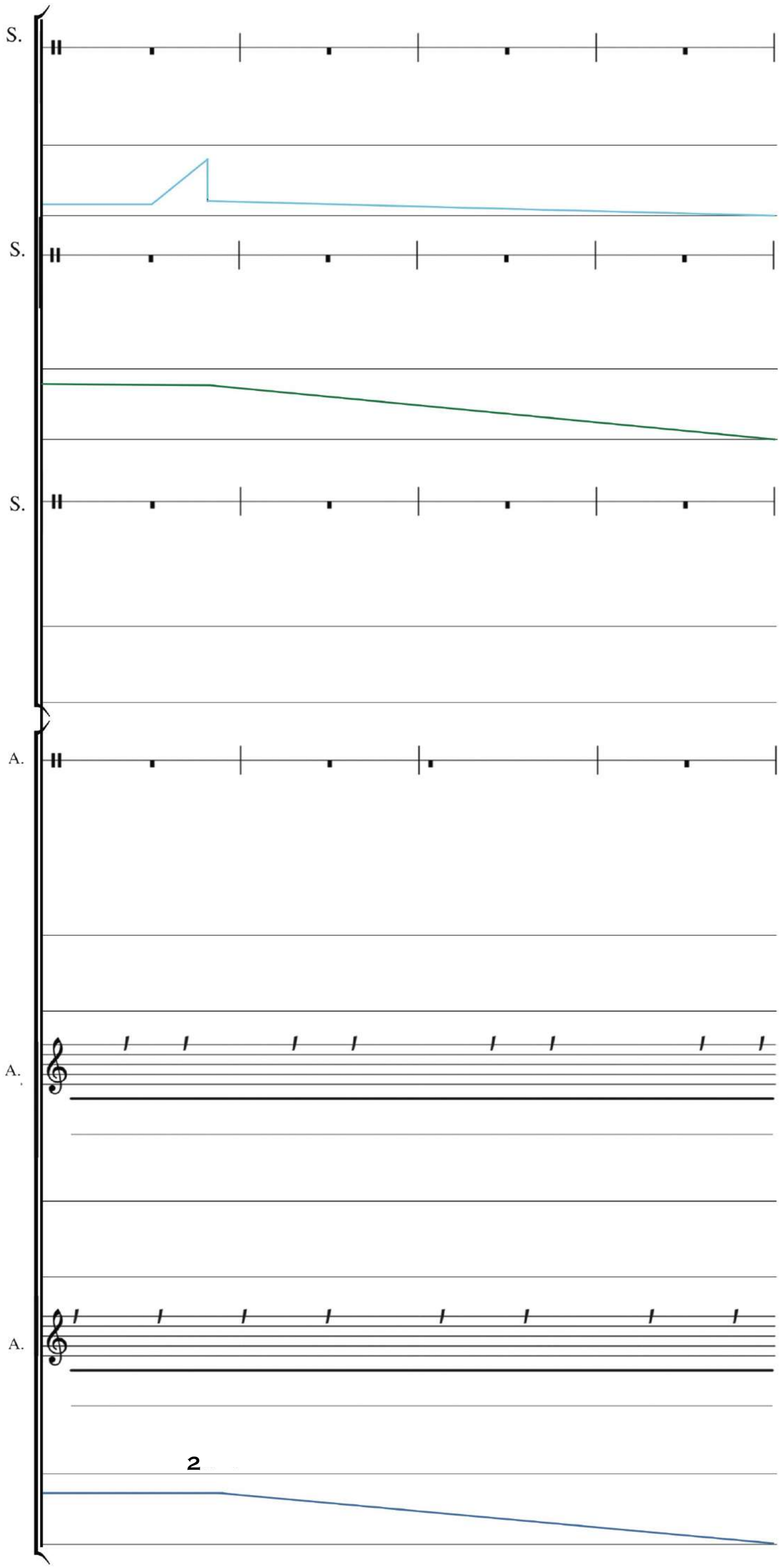
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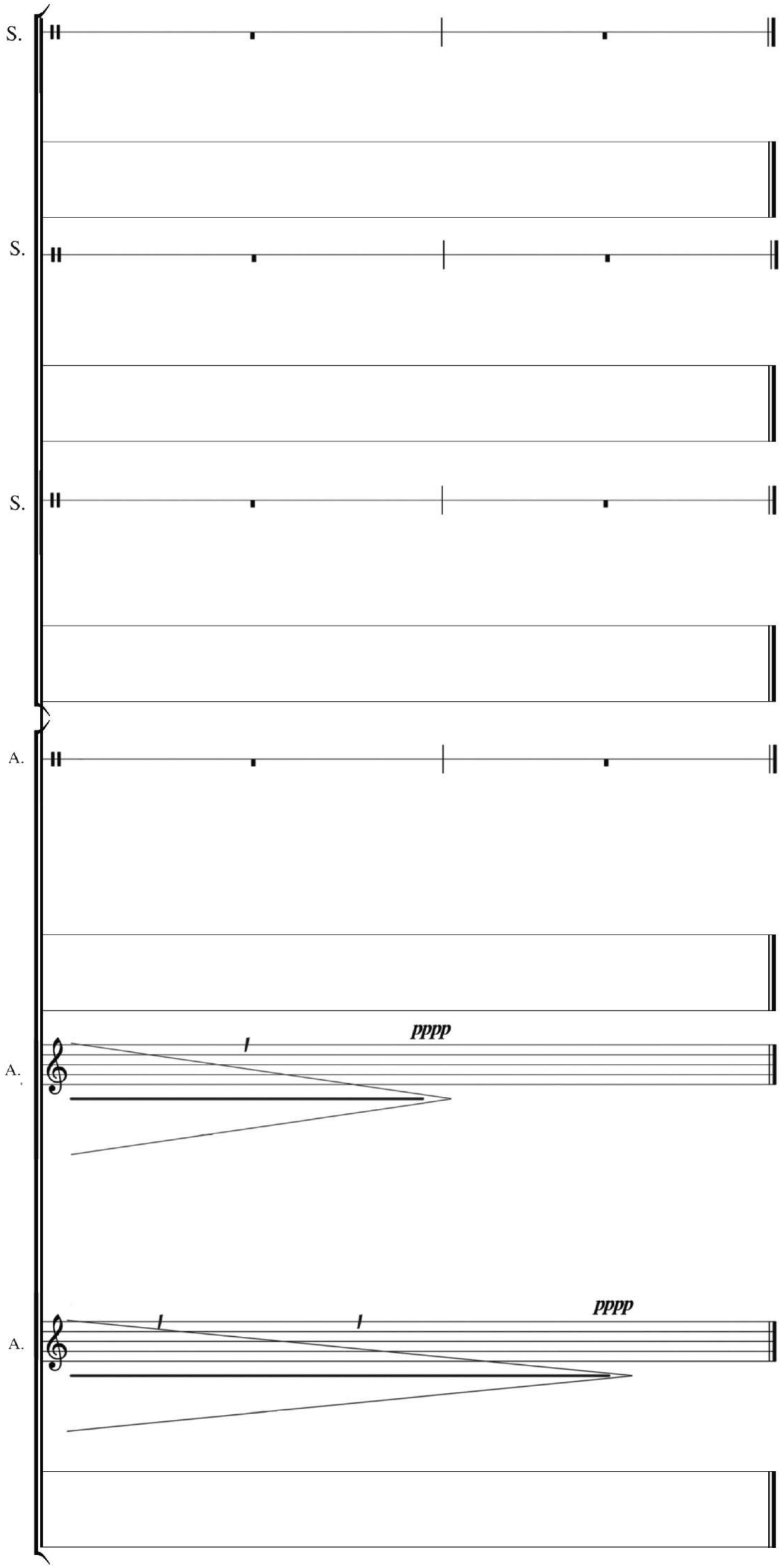
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