Mountain Language

for Alphorn, Cowbells and Electronics

1998
revised 2000

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James Wood

James Wood
Mountain Language (1996 - 98, revised 2000)

Commissioned by IRCAM
Musical Assistant: Carl Faia

Instrumentation:
Alphorn (in F)
Cowbells (and rainstick)
Electronics (triggered by MIDI-keyboard player)

Duration: 25 minutes approx.

First performance: Académie d'Eté, IRCAM, 20 June, 1998
Solistes de l'EIC -
Benny Sluchin (alphorn); Michel Cerutti (cowbells) - directed by the composer

Acknowledgements

I am grateful to John Kenny, who recorded the alphorn samples which provided the basis for all the alphorn resyntheses used in the work, and for his help and advice regarding alphorn technique.
I would like to thank Carl Faia for his work and sustained help throughout the eighteen months of production and realization of Mountain Language.

Principal electronic requirements

3 Alesis DM5 MIDI-interfaces for cowbells (total 27 inputs - 1 output)
2 EMU e-64 Samplers, each with 64Mbytes RAM, and each with its own media storage device (Jaz, Zip or MO Drive)
Power Mac G3 with multi-channel Sound Card/Interface (eg MOTU 2408) - 8 outputs needed
Additional 9th output (via an additional 2408) sends click-track to percussionist's headphones, as well as to light-boxes for alphorn player and keyboard player
Max MSP Software
Master Keyboard
Max Patch and soundfiles, as well as Sampler Disks available from the composer, together with the performing material

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Amplification

4 microphones for cowbells
1 close-microphone for alphorn, opened and closed by alphorn player via a balanced line footpedal
2 microphones for rainstick
Reverb unit for alphorn close-mic, levels to be constantly controlled by sound engineer
8 Loudspeakers with appropriate amplifiers
2 Bass Bins

Mixing Desk

Inputs: 2 from e-64.1 (from e64 Main Outputs)
8 from e-64.2 (from e64 Main and Sub Outputs)
8 from computer
1 from computer click-track
4 from cowbells
1 from alphorn close-mic
2 from rainstick

Total: 26 inputs maximum

Outputs: 8 to loudspeakers
Aux: 3 to click (headphones and 2 lightboxes)
2 to bass bins
1 or 2 to alphorn fold-back

Possible mixed-down foldback for alphorn
Percussionist may need a mix of some or all of the audio from the computer and the samplers, as well as the click track, sent to his headphones

MIDI Lighting Desk

The lighting is controlled from the keyboard (via MIDI) as an integral part of the Max patch.
However the work can be performed without lighting if necessary.

MIDI setup

MIDI-cowbells

27 bells
pickup on each bell feeds 27 inputs of 3 x Alesis DM5
(each DM5 has 12 inputs, hence all 12 inputs are used on DM5#1 and #2, and the DM5#3 uses just 3 inputs)
3 MIDI OUTs to MIDI MERGE#1 (3->1) INs (situated by the bells)
MIDI MERGE#1 OUT to MIDI LINE DRIVER SEND
MIDI LINE DRIVER RECEIVE (situated by the samplers/desk) to MIDI MERGE#2 (input#1)
[input#2 will come from the Mac, see below]
MIDI MERGE#2 OUT to MIDI THRU IN
MIDI THRU OUT#1 to E62#1 IN
MIDI THRU OUT#2 to E64#2 IN

DM5 Settings

The relationship between the exact position of the pickup on each bell and the Gain setting in the DM5 is extremely critical and delicate. In order for each cowbell to sound well, the pickup should be placed as far as possible from the lip of the bell, thus allowing it to resonate. However, the further from the lip of the bell the pickup is placed, the less energy is sent to the DM5, and therefore the higher the required gain setting. The precise position of the pickup on each bell will depend on the nature of the bell that is used, and consequently so will the associated gain settings. The table on page 8 shows the approximate positions of the pickups used on the composer's own set of bells, plus the associated DM5 settings. Blank spaces are provided to keep track of inevitable variations from this as demanded by different bells. The other parameters (Xtalk, VCrv, Decay and Noise) should be found to be satisfactory in most cases.

Keyboard/Mac

MIDI OUT to Roland USB MIDI interface IN
Roland USB MIDI interface OUT to MIDI MERGE#2 (input2)
(see above - this will allow Preset changes triggered by the keyboard player to reach the samplers)
Roland USB OUT to Mac USB IN

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Speaker setup

```
   1   2
8          3
7          4
   6   5
```

Care should be taken to ensure that the speakers surround the audience at equal azimuths.
The ideal is speaker 1 22.5° left of centre stage, speaker 2 22.5° right of centre stage, and then continuing round in a clockwise direction at 45° intervals. The distance of each speaker from the centre point of the hall should be as equal as possible. If the hall is very long, speakers 3, 4, 7 and 8 may need to be delayed by an appropriate amount.

Audio setup

2 outs from E64#1 to front speakers (1 & 2)
4 cowbells mics to front speakers (1 & 2)
2 rainstick mics to front speakers (1 & 2)
(stereo image of rainstick needs to be preserved, hence the 2 mics)
1 alphorn close-mic to front speakers (1 & 2)
1 Roland balanced line footpedal (for alphorn player to open and close mic)

8 outs from E64#2 to speakers 1 - 8 as follows:
MAIN L -> sp1
MAIN R -> sp2
SUB 1 L -> sp3 (possibly+sp2)
SUB 1 R -> sp4 (possibly+sp5)
SUB 2 L -> sp5
SUB 2 R -> sp6
SUB 3 L -> sp7 (possibly+sp6)
SUB 3 R -> sp8 (possibly+sp1)

8 outs from Mac (MOTU 2408) to speakers 1 - 8 as follows:
out1 -> sp1
out2 -> sp2
out3 -> sp3
out4 -> sp4
out5 -> sp5
out6 -> sp6
out7 -> sp7
out8 -> sp8

click-track (channel 9) from Mac (second MOTU 2408) to aux 1 (percussionist headphones), aux 2 (alphorn lightbox) and aux 3 (keyboard player's lightbox) - note that output levels of each aux may need to be different/independent.

General Notes

Microtones

↑ Eighth-tone sharp

↓ Eighth-tone flat

♯ Quarter-tone sharp

♯↓ Three-eighth-tone sharp

♯↑ Five-eighth-tone sharp

♯♯ Three-quarter-tone sharp

H⌐ Hauptstimme

Performance Logistics

Mountain Language needs a large space, with a large stage area, in order that the alphorn can be positioned at some distance from the audience. For example, if a traditional orchestral stage is used, the alphorn player should be at the back of the stage, in the position normally occupied by the percussion or even the chorus. Only in this way can a satisfactory balance be achieved between the live alphorn and the computer sounds. The cowbells, however, can be placed near the front of the stage.
The performers are coordinated by a click-track, which is sent to the alphorn via a light-box and to the percussionist via headphones. The keyboard player should be positioned in the centre of the hall, next to the sound desk. The keyboard player triggers all the soundfiles from the computer together with their associated click-tracks, as well as the sampler preset changes and the lighting desk preset changes (if lighting is used in the performance). The keyboard player should also be fed the click track via an additional lightbox.

The electronic sounds come from two different sources:

1) Two EMU e-64 samplers are triggered by the cowbells (via the 3 DM5s).
   e-64.1 (not notated in the score) sounds always in rhythmic unison with the cowbells. The sounds (stereo) should be fed through speakers 1 and 2, and possibly also to speakers 8 and 3 for a wider stereo spread.
   The cowbells themselves should be (slightly) amplified, and similarly fed to the same speakers, so that their sounds blend and balance perfectly with the sounds of e64.1. The intention is to achieve a composite timbre, where the sound of the cowbells is embedded in the sound of the e64 sounds.
   e-64.2 plays sequences (of between just 2 or 3 notes and longer sequences of up to 7 or 8 seconds) modelled on birdsong. These sounds (also stereo) should be fed through all 8 outputs (MAIN, SUB 1, SUB 2, SUB 3) and distributed to all 8 speakers around the Hall. The technical set-up page shows which outputs should go to which speakers.
2) All the other sounds are triggered direct from the computer by a Master Keyboard, via a Max Patch run on a Power Mac G3.
   These sounds are all spatialised (see Map of Peaks on page 7) and therefore are all multi-channel files. Consequently the Power Mac should be equipped with a multi-channel sound card and interface (such as MOTU 2408) with at least 8 analog outputs.
   The click-track is sent from the computer via an additional 9th channel, which will require an additional 2408 or equivalent.
The computer not only plays the spatialised sounds, but also triggers the Preset changes in the samplers, and the lighting desk. The MIDI should therefore be set up accordingly (See page 3).

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Lighting

The performers should have lit music stands, since the lighting plan (contained in the central Max Patch) involves certain lighting effects which are potentially disturbing to the performers.

Loading of e64 Samplers

Both of the e64s need to be reloaded during the piece. This should happen around bar 100, as soon as the previous passage of birdsong has finished. It takes about one minute to load 64Mbytes from a Jaz Drive, and there is a gap of about 2 minutes between bar 100 and the next e64/cowbell entry in bar 121. Although this margin should be fairly safe, the technician charged with this responsibility should be ready to re-load as soon as possible after bar 100. Once the Banks have reloaded, they will automatically be ready with the first Preset of the second Bank (II:000) so no further action will be needed. Alternatively, if two eIVs (each with 128Mbytes RAM) are available, then both Banks can be loaded at the same time, making reloading unnecessary.

Birdsong Notation

Because of the complexity of the birdsong (e64.2), this is notated only approximately in the score.
My priority has been to indicate as accurately as possible the start and stop points of each fragment, as well as its contour. Wherever possible I have included accidentals (to the nearest eighth-tone), but often (in the case of extremely fast passages) these have been omitted in order to preserve a more comprehensible 'overview' of the main rhythmic progression of the score.

Notes for Alphorn

rr	flutter-tongue
◄	inhalation
►	exhalation
ph [i]	sustain 'ph' sound with vocal cavity shaped as for vowel 'i'
ss [o]	sustain 'ss' sound with vocal cavity shaped as for vowel 'o'
ss [i]═══[o]	as above, with vocal cavity changing gradually from vowel 'i' to vowel 'o'

Mute

If possible a kind of plunger mute should be constructed, whose shape and material can be determined by experiment. In order for the player to be able to operate (open and close) the mute from his playing position, this mute will need to be connected to a lever mechanism such as the one envisaged below:

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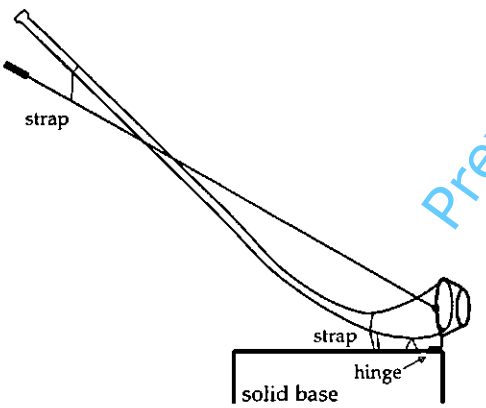
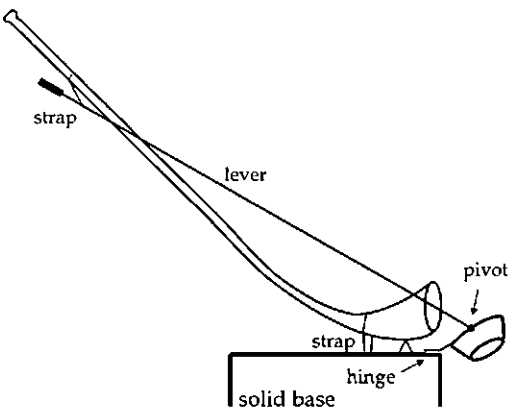


closed position

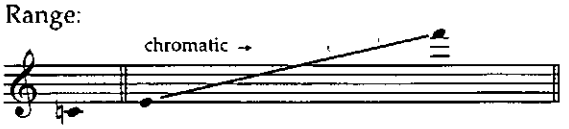


open position

o	open
o	half-closed
+	closed
o═══+	gradual change from open to closed

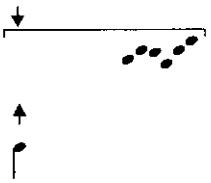
Notes for Cowbells

Range:



The chromatic set should be mounted horizontally, in the normal manner,
but the low C3 should be hung vertically in a convenient position above the low end of the keyboard

The cowbells trigger 2 EMU e64 Samplers. MIDI pick-ups are attached to each bell, and fed to the samplers via the DM5 modules. e64.1 plays harmonics extracted from samples of cowbells, churchbells and alphorn arranged non-linearly in many different permutations. The permutations change constantly (with each change of Preset). Whilst these sounds mix together with the live (slightly amplified) cowbells to create many composite timbres of great complexity, they are always in rhythmic unison with the cowbells, and for this reason are not notated in the score.
e64.2, however, consists of sequences modelled on birdsong - these sequences range in length between two or three notes, and longer sequences lasting several seconds. Because of the complexity of the birdsong this is notated only approximately in the score. My priority has been to indicate as accurately as possible the start and stop points of each fragment, as well as its contour. Whenever possible I have included accidentals (to the nearest eighth-tone), but often these have been omitted in order to preserve a more comprehensible 'overview' of the main rhythmic progression in the score.



The upward arrow from the cowbell note indicates the trigger notes in the cowbells part.
The downward arrow directly above it indicates the start of the sequence that is triggered.
The bracket shows the start and stop points of each sequence. Often (as in this case) there is a delay between the trigger point and the start of the audible sequence - this delay can range between a few milliseconds up to 7 or 8 seconds - these delays are built in to the sampler presets, and the gap between the arrow and the start of the notes shows approximately how much delay to expect in each case.

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Mallets

The main problem that will affect the choice of mallets is that much of the music requires extremely light, delicate playing, even in quite fast passages. For this reason light rubber mallets (such as Musser M3 amd M4) are suggested. The composer has found a combination of these to be quite successful. For example:

Outside right:	M4
Inside right:	M3
Left (both):	M3

For passages marked 'brilliante' a harder, even plastic, mallet could be used for the outside right, with M4s for the others
For the final section (bar 196 onwards) a softer, wound mallet will be needed for the outside left - the composer recommends a Musser M16 for this. Beware of using mallets that are too heavy, as is the case with most vibraphone mallets. Also needed is a small wooden dowel - 2 cm thick and 22cm long - this is used (by the right hand) for very short tremolandi inside the bell. Occasionally this is used (non trem) on the lip of the bell. It is important that this dowel be of ordinary ramin or softwood, and should not be lacquered or varnished, in order to produce a rather mellow sound.

Tails-up, tails-down, small notes

Throughout most of the score, the main rhythms are notated in large notes, (tails up). These main rhythms are ornamented by the small notes (tails down). With one or two exceptions (eg bars 30 and 65) the small notes have no official value, and can be fitted around the main notes with a certain degree of freedom. Small notes usually colour or ornament the preceding main note.
In this case the small notes can be played at any point during the value of the preceding note. If the small notes follow a rest, then they should be played within the duration of that rest. Often this means that the small notes can be very slightly separated from their preceding main note. The performer should try to vary the temporal relationship between main note and small notes as each musical context suggests. The small notes need not always be played very fast, especially when they are marked 'pp'. The dynamic of the small notes is generally at least one degree below that of the main notes around it, unless specifically marked otherwise.

Rainstick

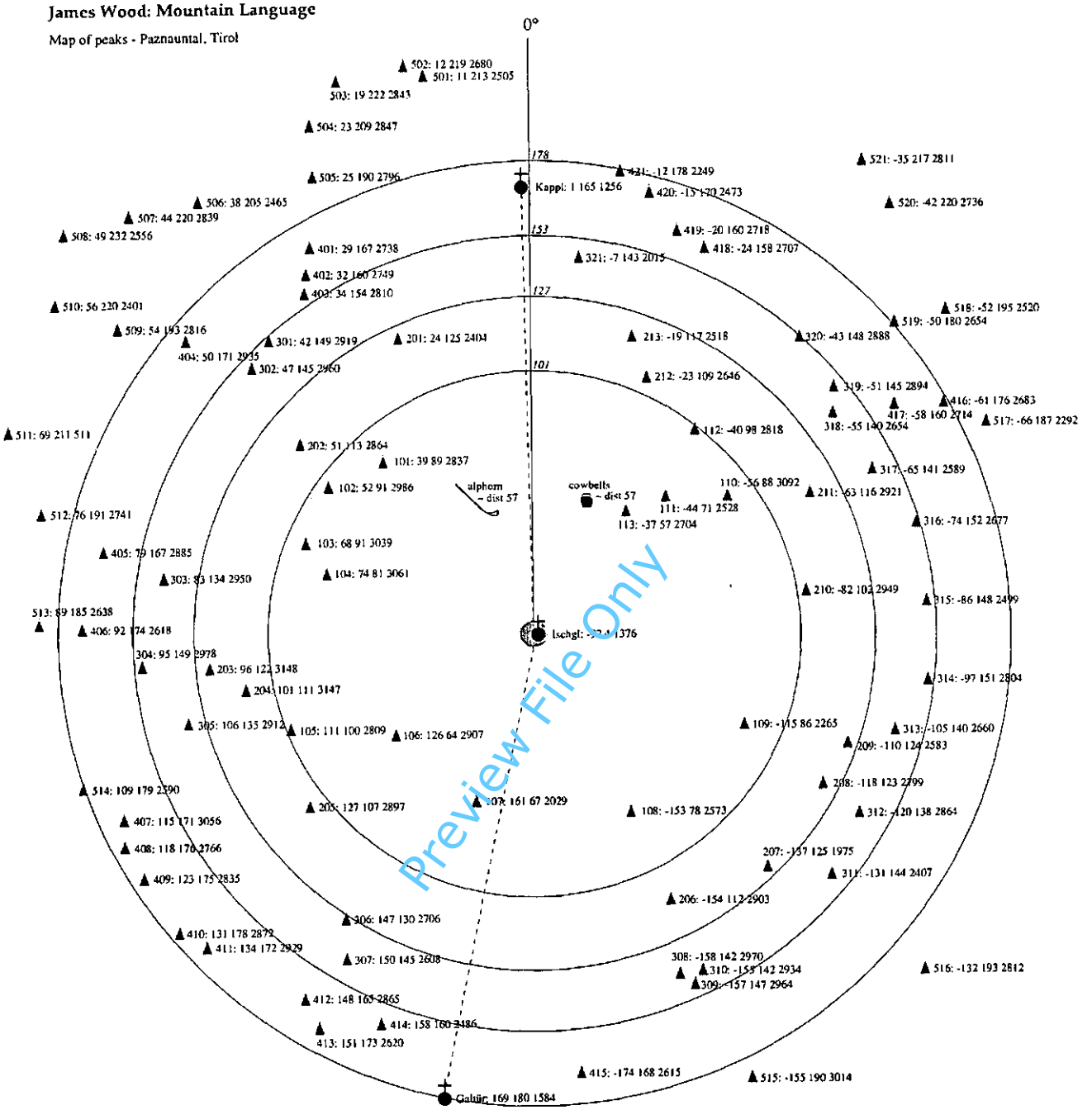
A rainstick (either bamboo or cactus) is required to initiate the central 'rain' section (from bar 105).
The length of the rainstick should be such that it is possible to play the duration notated (about 28") with one single movement.

Preset changes

Preset changes are indicated by the numbers in the boxes (as distinct from the section numbers which are much larger numbers in boxes) - these preset changes will be made automatically by the keyboard player, and do not have to be made by the percussionist during performance. They are included in the part in case the percussionist should want to work alone with the samplers.

James Wood: Mountain Language

Map of peaks - Paznauntal, Tirol



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Zone 1: 13 peaks (101 - 113) - distance range: 57 - 100
Zone 2: 13 peaks (201 - 213) - distance range: 102 - 125
Zone 3: 21 peaks (301 - 321) - distance range: 130 - 152
Zone 4: 21 peaks (401 - 421) - distance range: 154 - 178
Zone 5: 21 peaks (501 - 521) - distance range: 179 - 232

Numbers represent: peak number - azimuth - distance - altitude

Lowest altitude (Kappl bell) = 1256
therefore 1256 = 0 elevation
thus altitude - 1256 = elevation

The spatialisation in Mountain Language has been modelled on the geographical location of 89 mountain peaks surrounding a central reference point, the village of Ischgl, Paznauntal, Tirol.

DM5 settings

Blank spaces in Gain and Pickup position have been left for user variations

ideal position

DM5 in	Trigger	Gain	VCrv	Xtalk	Decay	Noise	Pickup position
1.01	60/C3	85	5	50	99	45	
1.02	64/E3	93	5	50	99	45	
1.03	65/F3	78	5	60	99	45	
1.04	66/F#3	99	5	50	99	45	
1.05	67/G3	76	5	50	99	45	
1.06	68/G#3	78	4	50	99	45	
1.07	69/A3	74	4	50	99	45	
1.08	70/A#3	85	4	50	99	45	
1.09	71/B3	76	4	50	99	45	
1.10	72/C4	89	4	50	99	45	
1.11	73/C#4	79	4	50	99	45	
1.12	74/D4	94	4	50	99	45	
2.01	75/D#4	85	4	50	99	45	
2.02	76/E4	85	4	50	99	45	
2.03	77/F4	85	4	50	99	45	
2.04	78/F#4	79	4	50	99	45	
2.05	79/G4	84	4	50	99	45	
2.06	80/G#4	85	4	50	99	45	
2.07	81/A4	85	4	50	99	45	
2.08	82/A#4	59	4	50	99	45	
2.09	83/B4	68	4	50	99	45	
2.10	84/C5	79	4	50	99	45	
2.11	85/C#5	79	4	50	99	45	
2.12	86/D5	65	4	50	99	45	
3.01	87/D#5	85	4	50	99	45	
3.02	88/E5	99	4	50	99	45	
3.03	89/F5	99	4	50	99	45	

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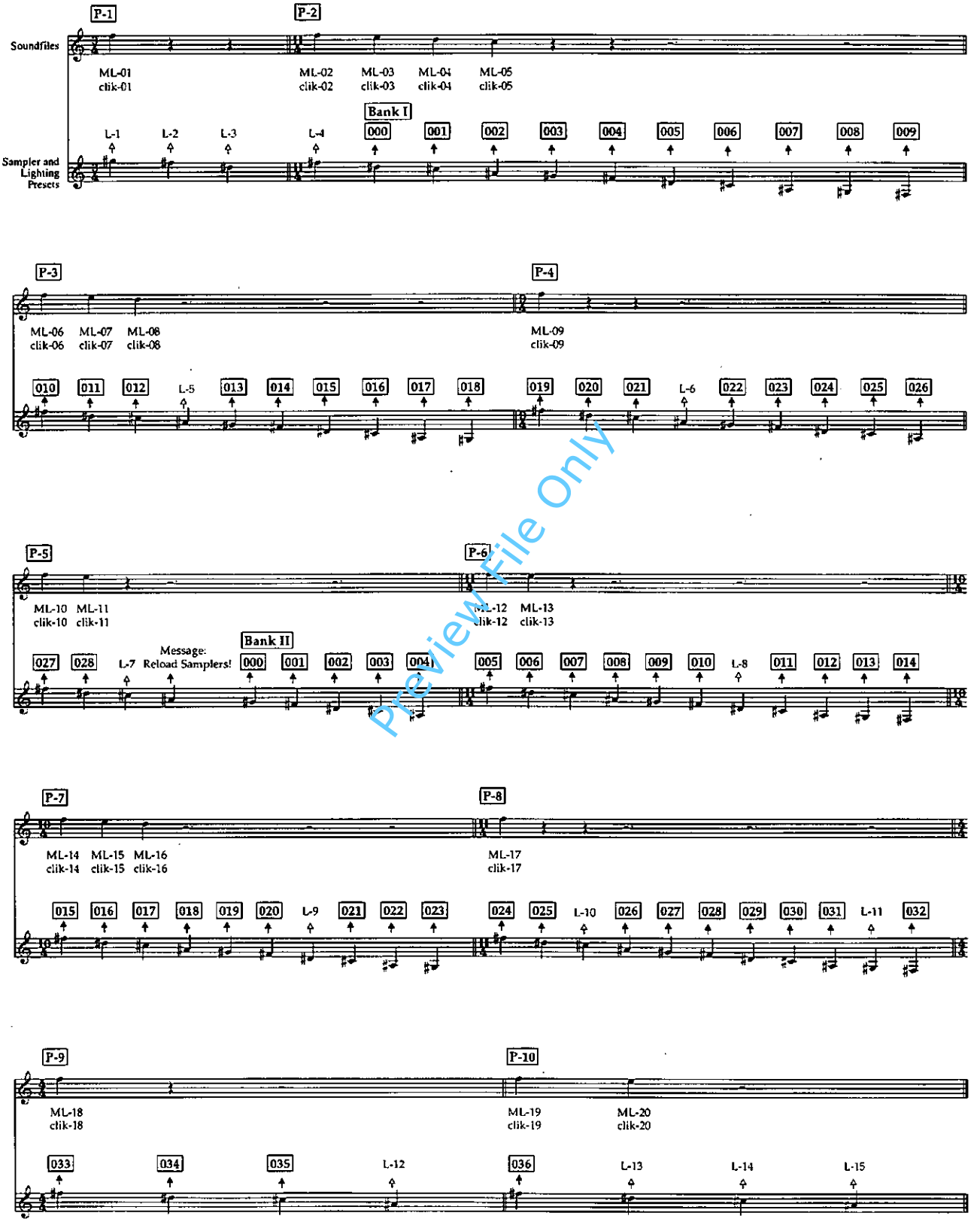
List of keyboard triggers



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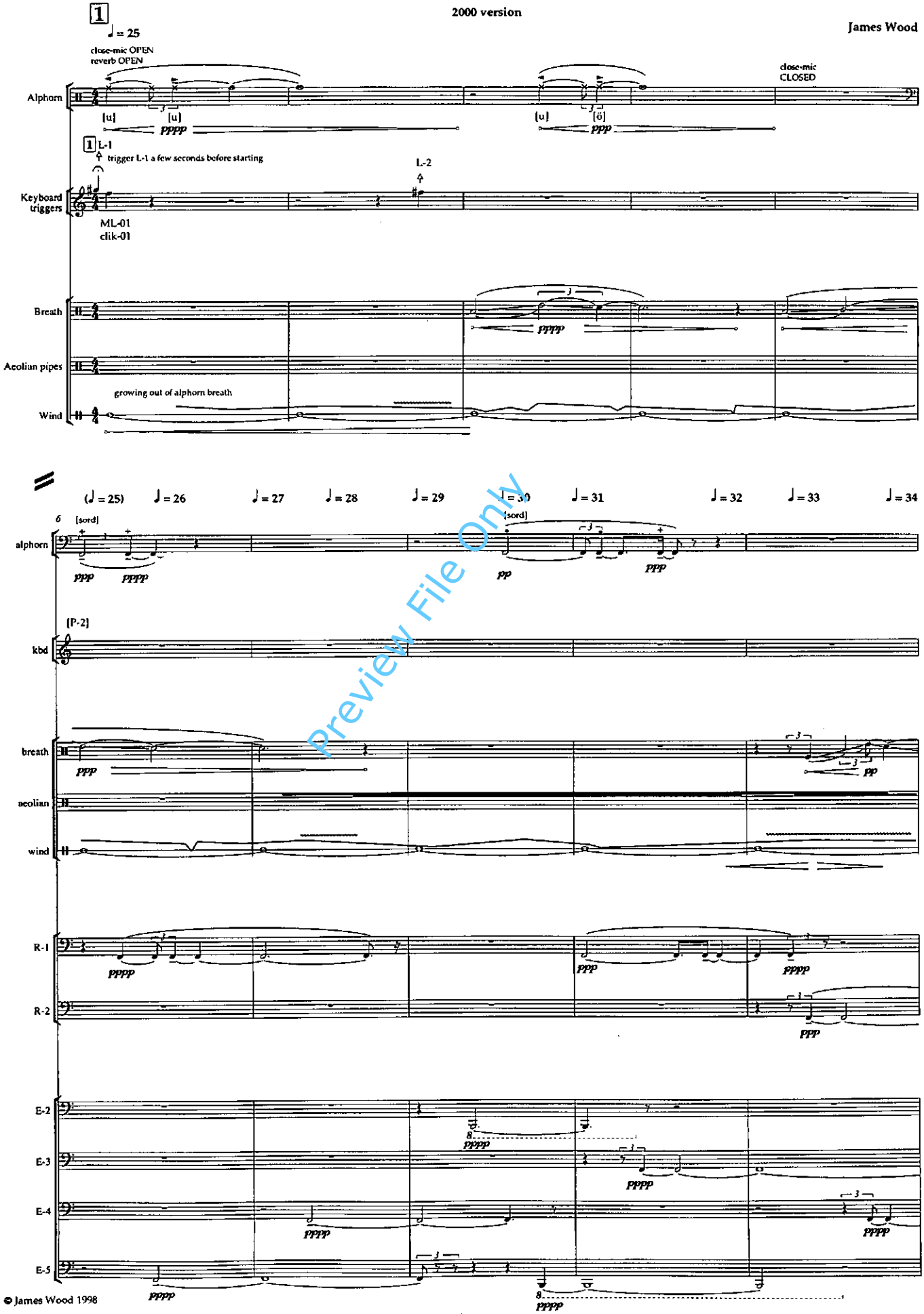
to John Kenny

Mountain Language

2000 version

James Wood



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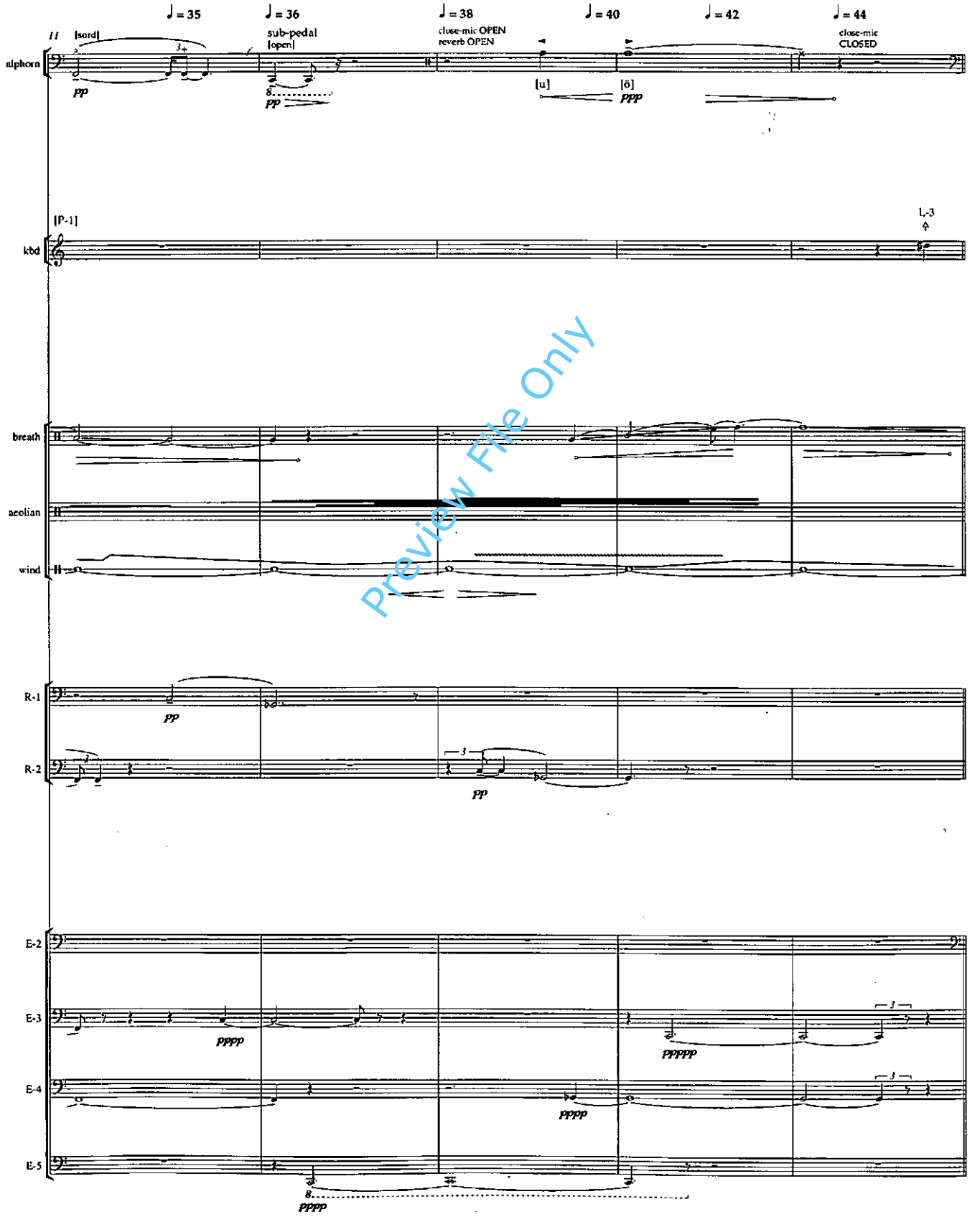

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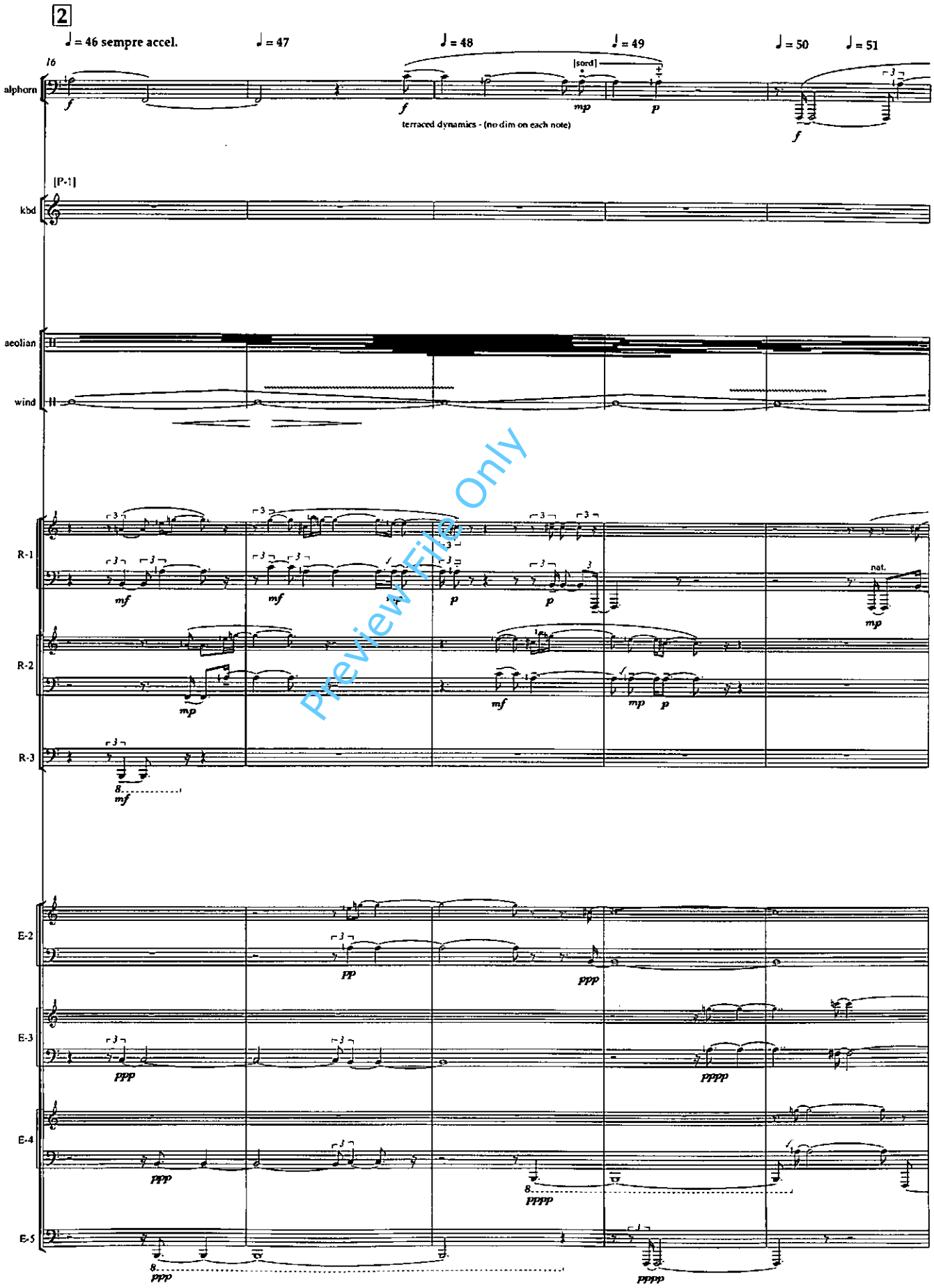

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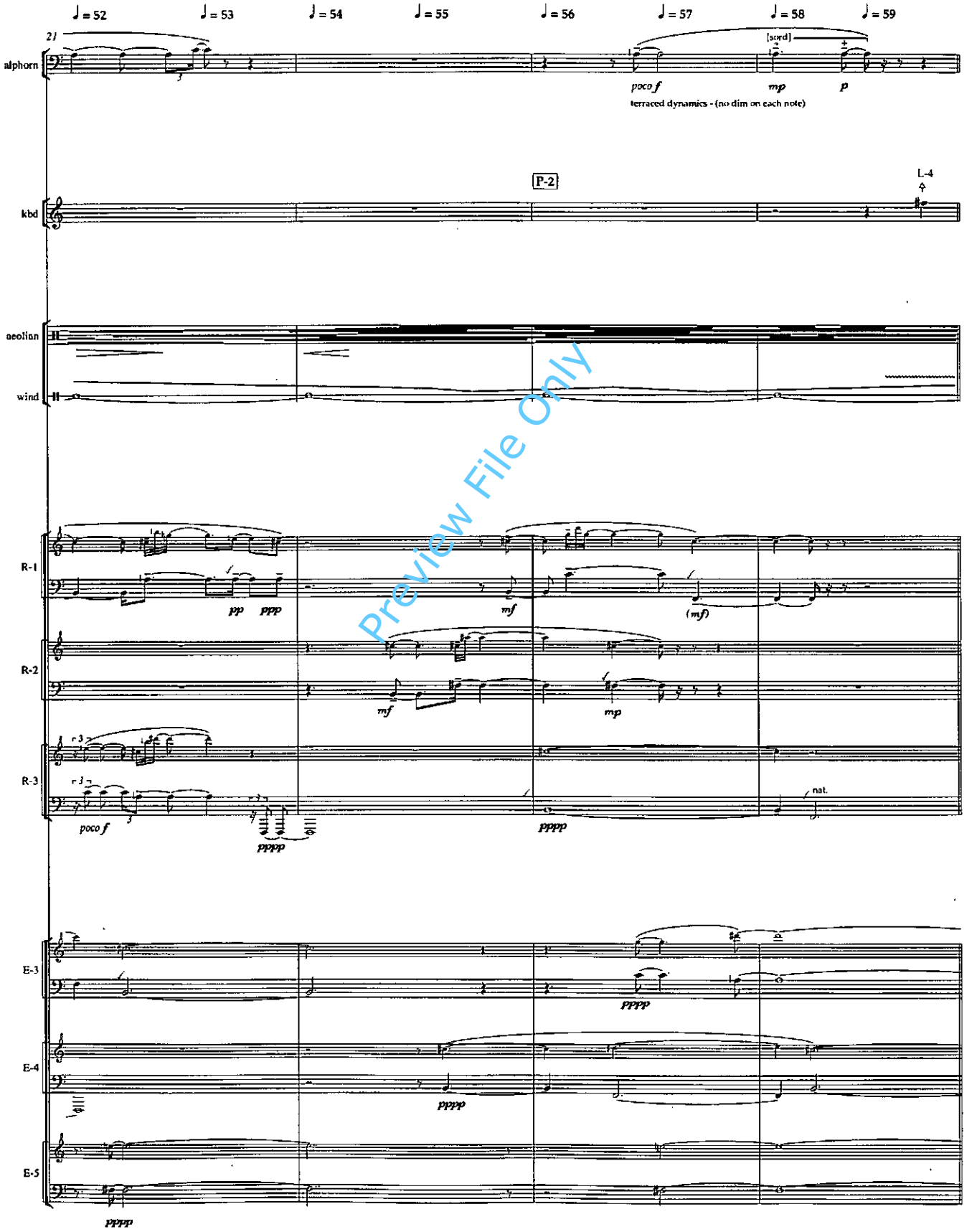

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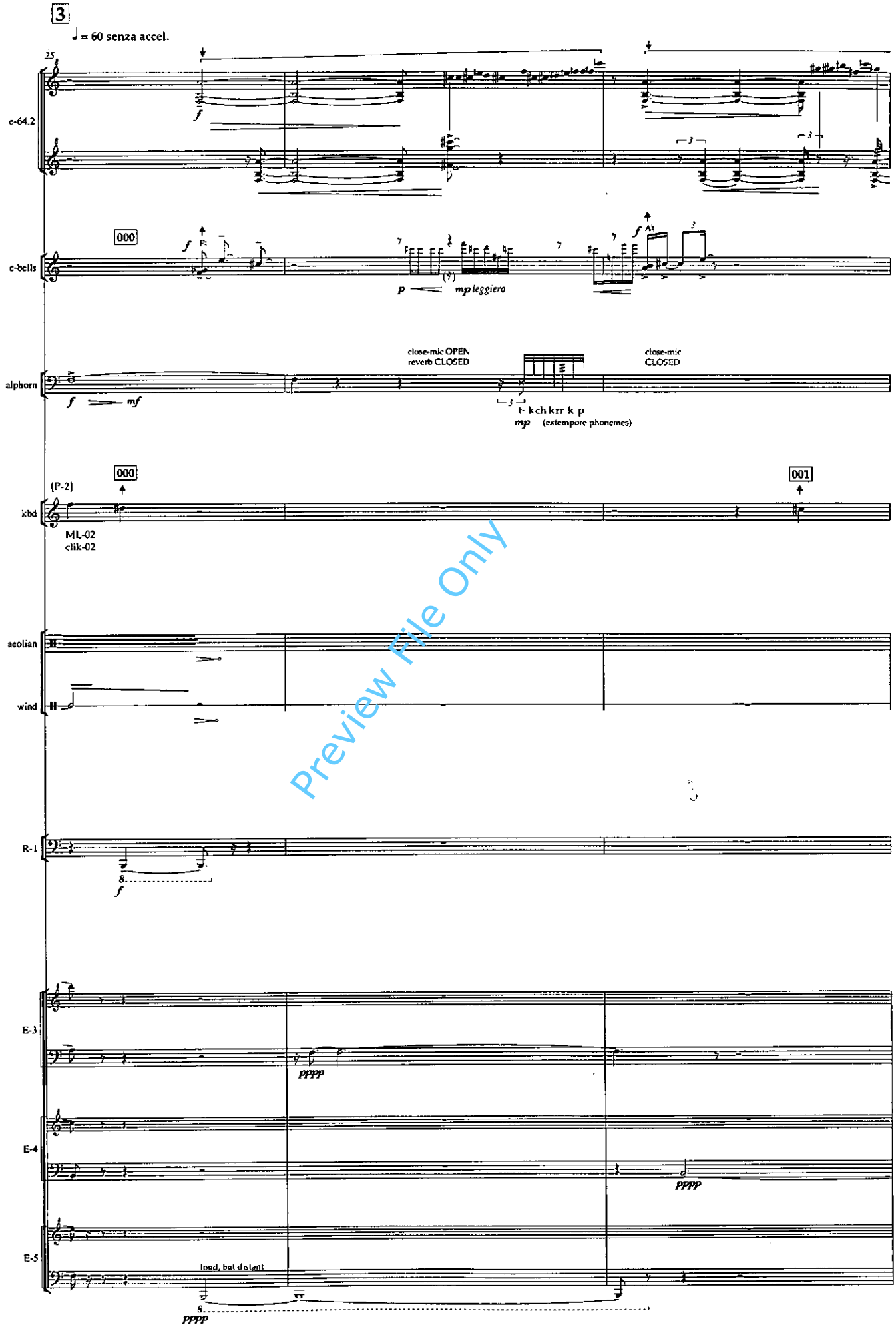

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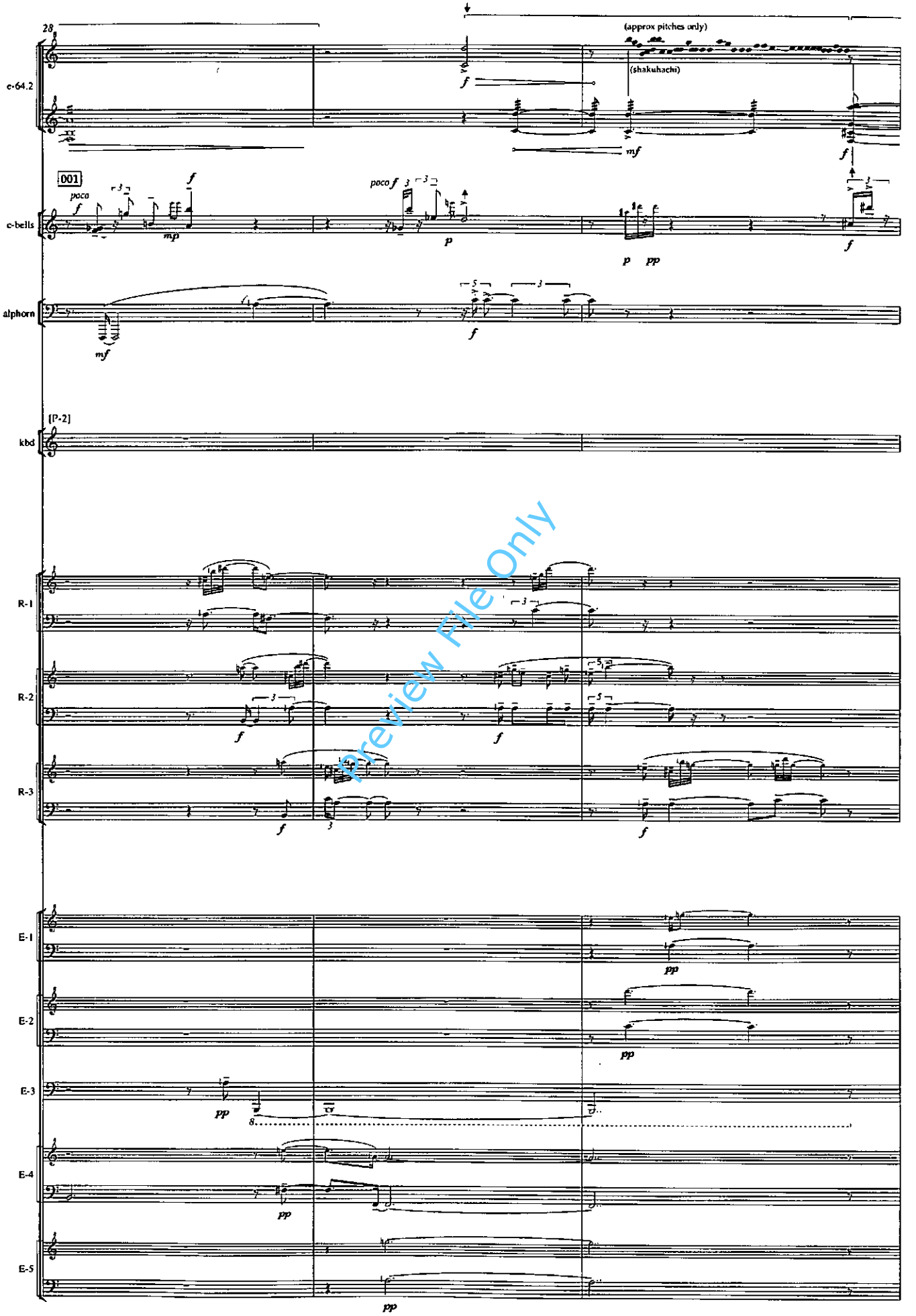

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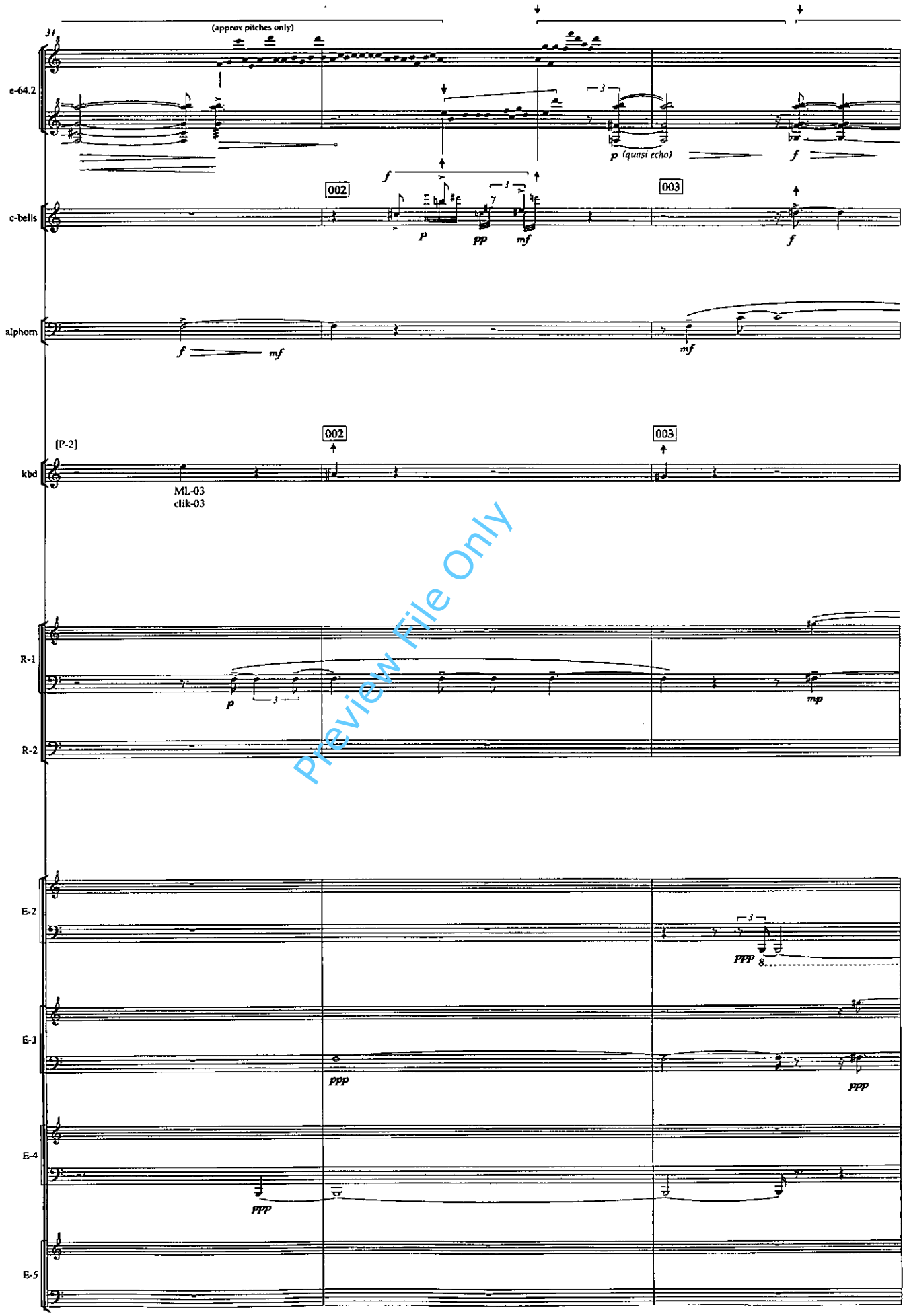

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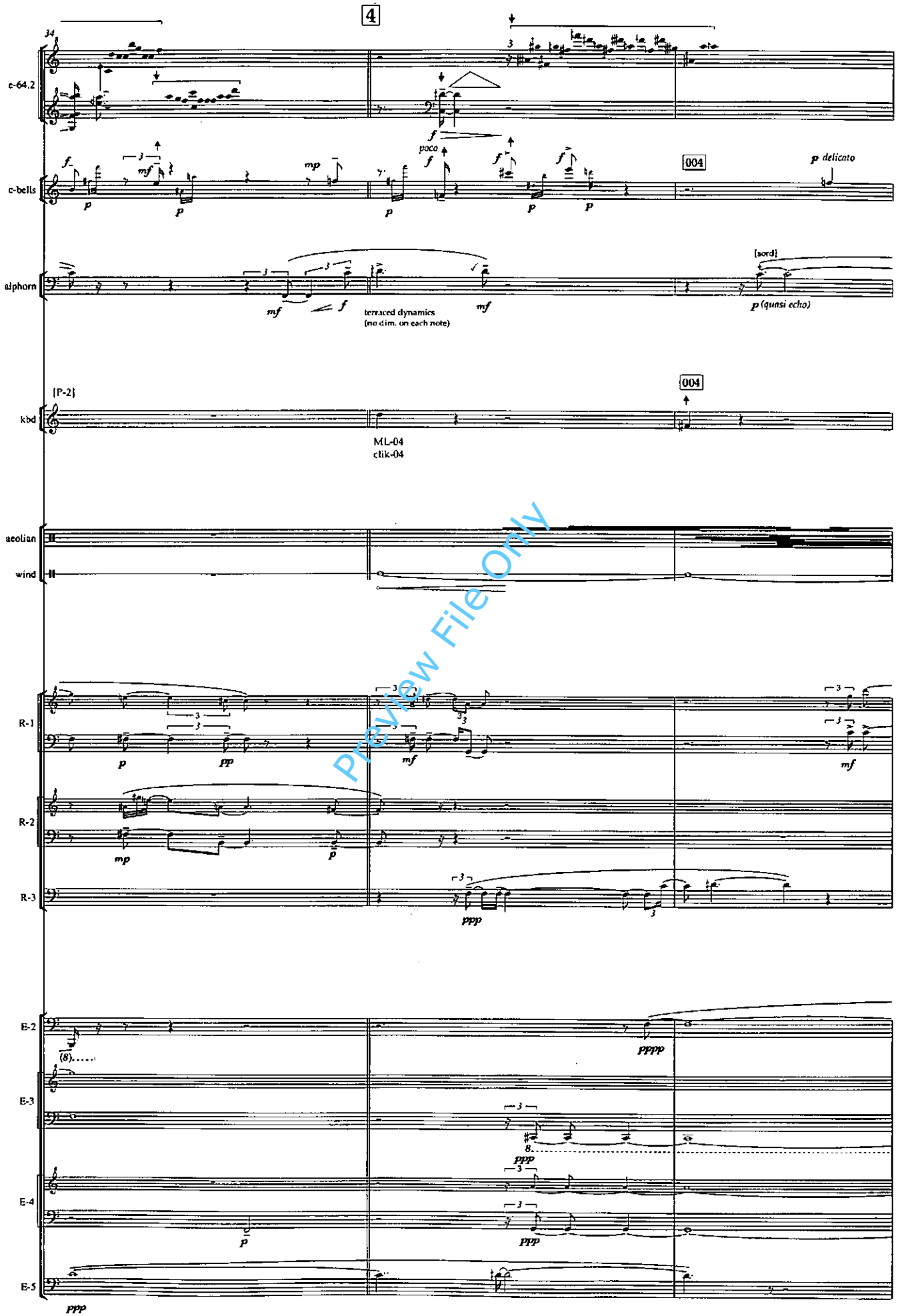

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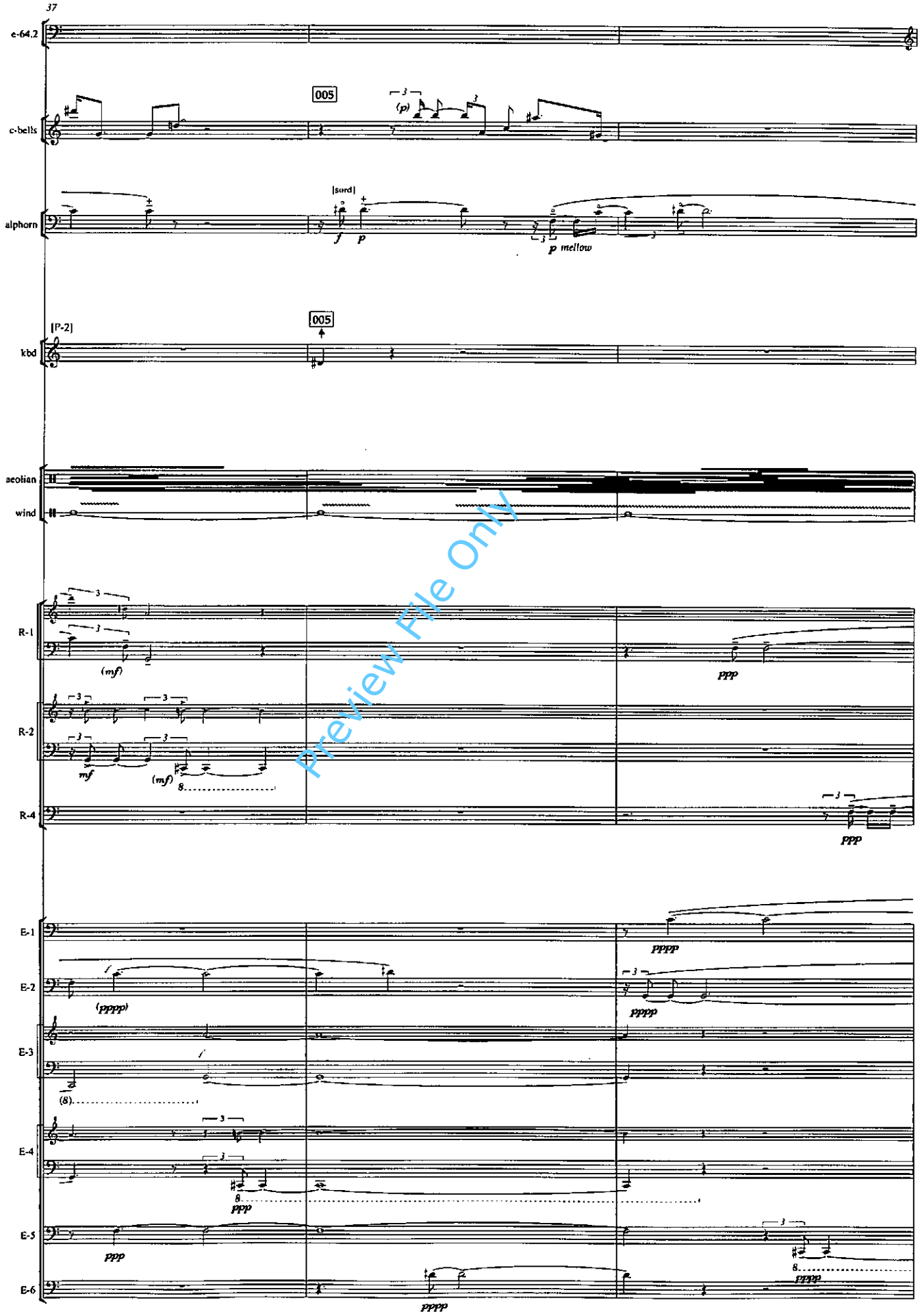

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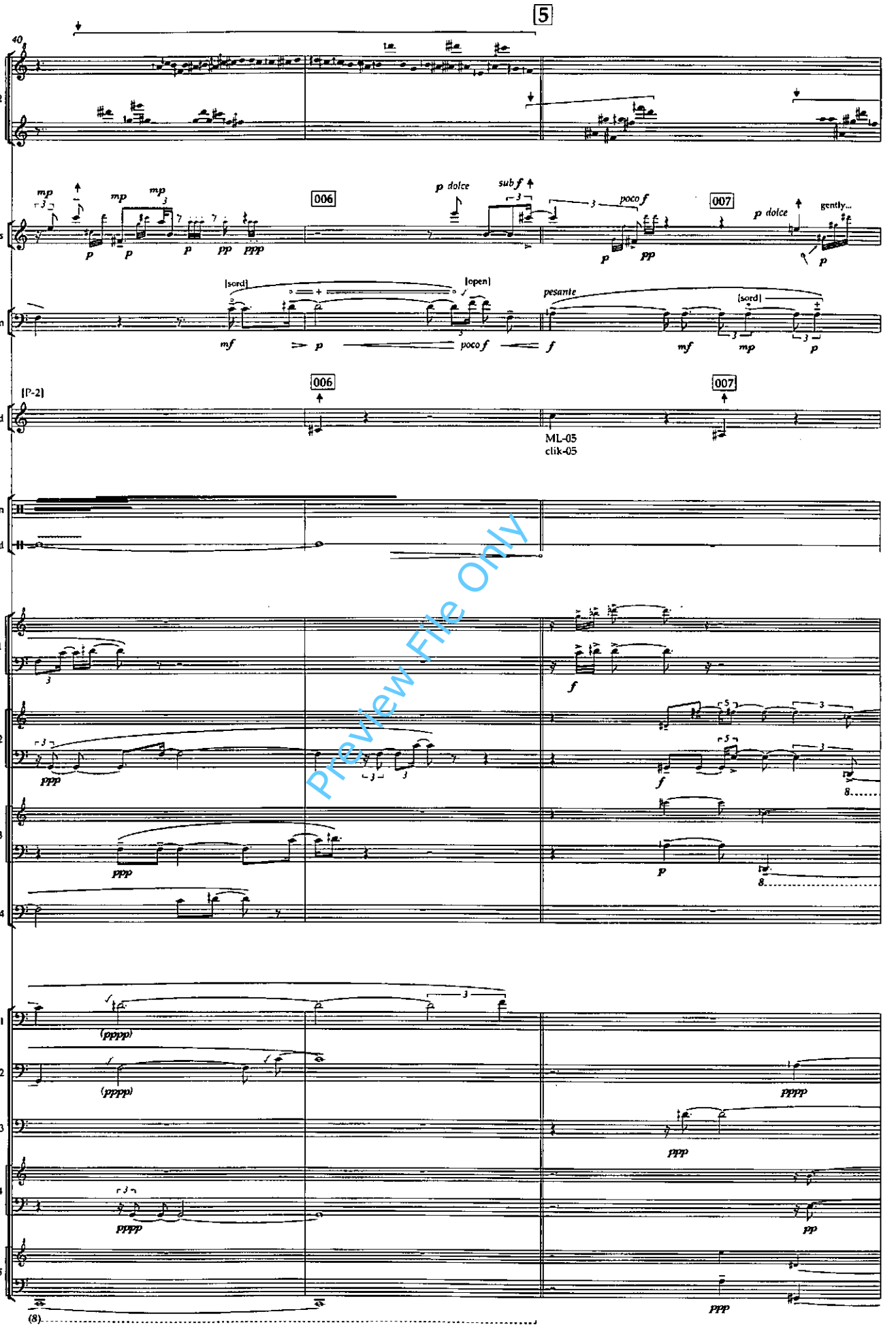

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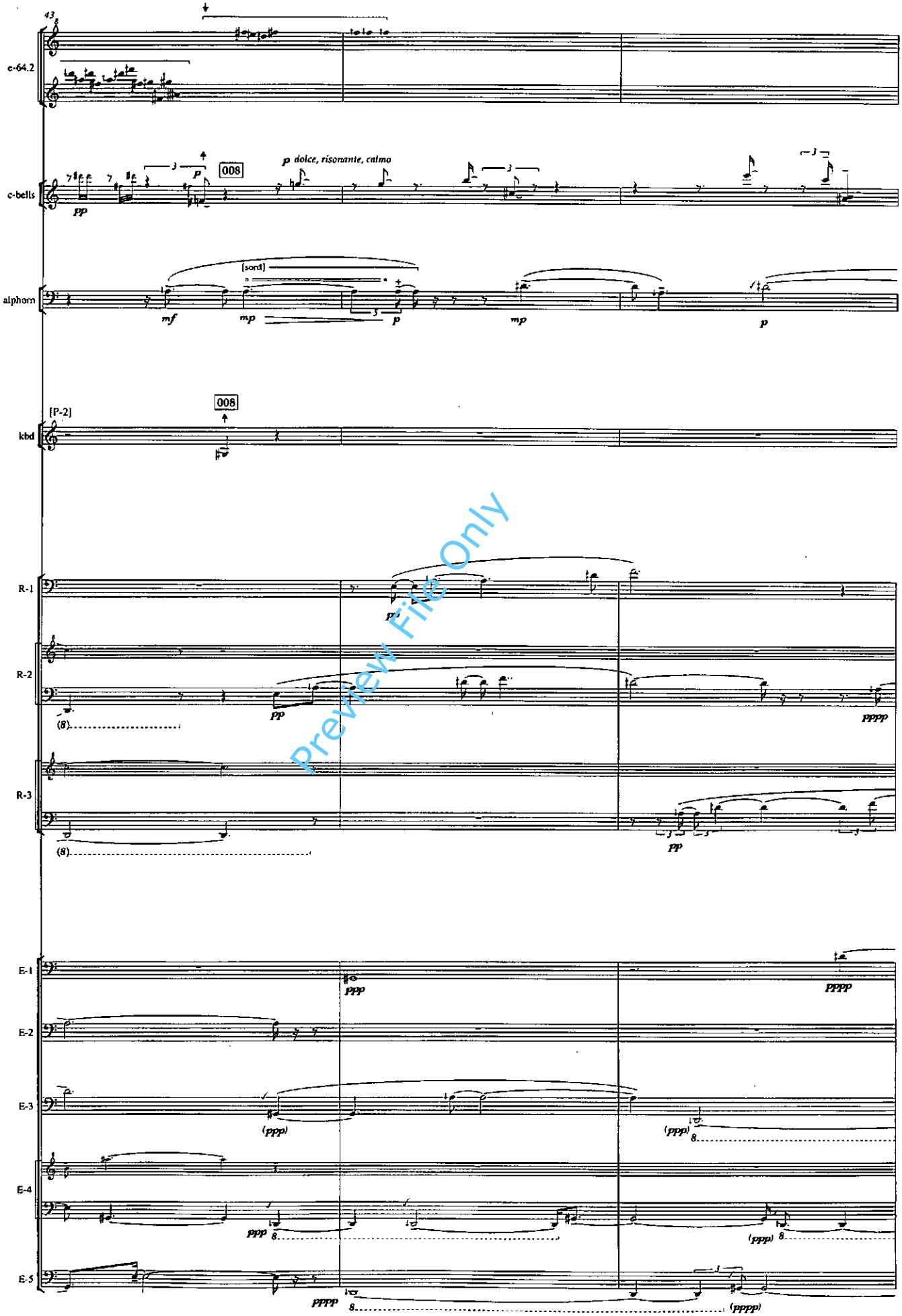
43
c-64.2
c-bells
alphorn
kbd
[P-2]
R-1
R-2
R-3
E-1
E-2
E-3
E-4
E-5
008
p dolce, risonante, calmo
[sord]
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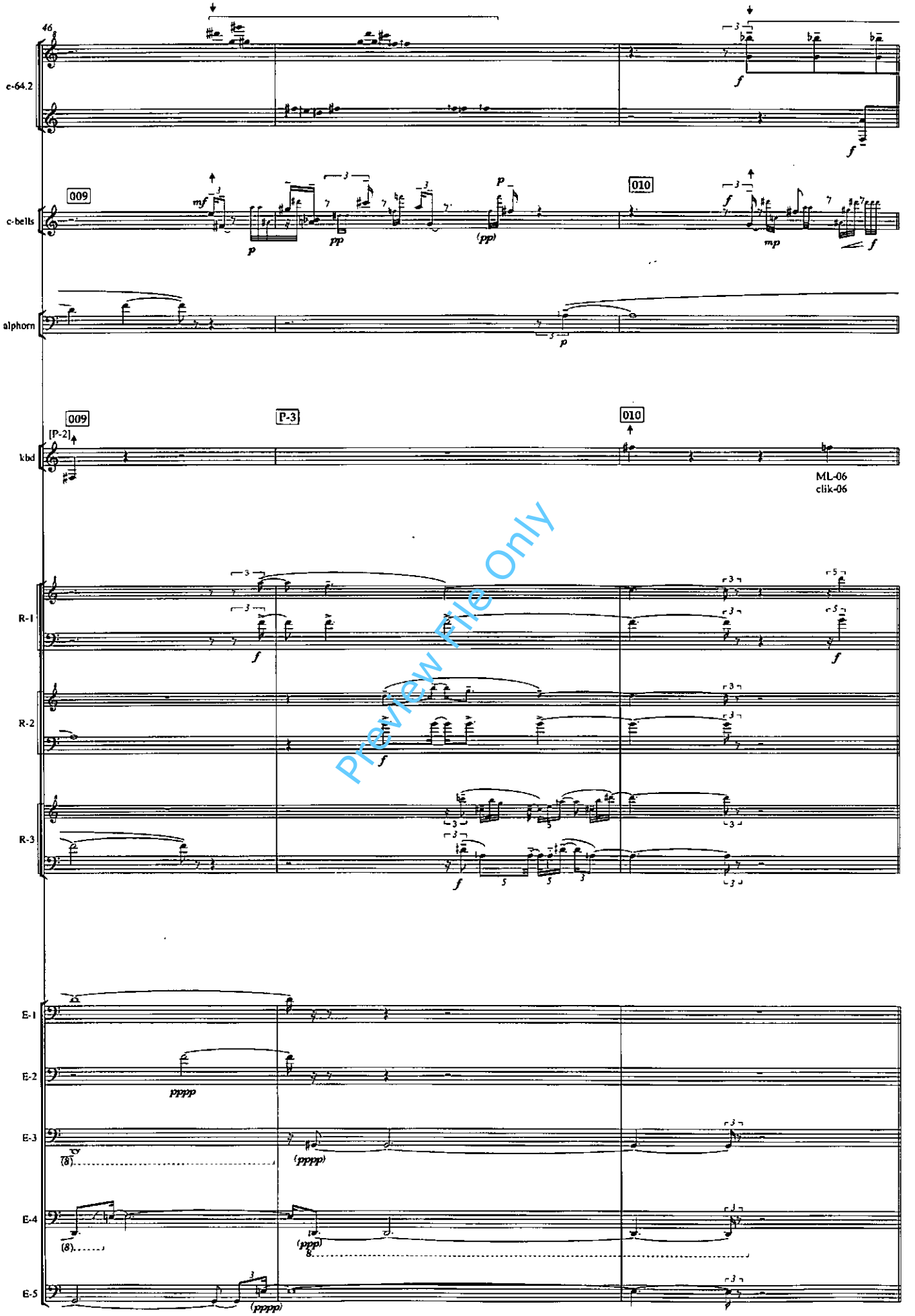

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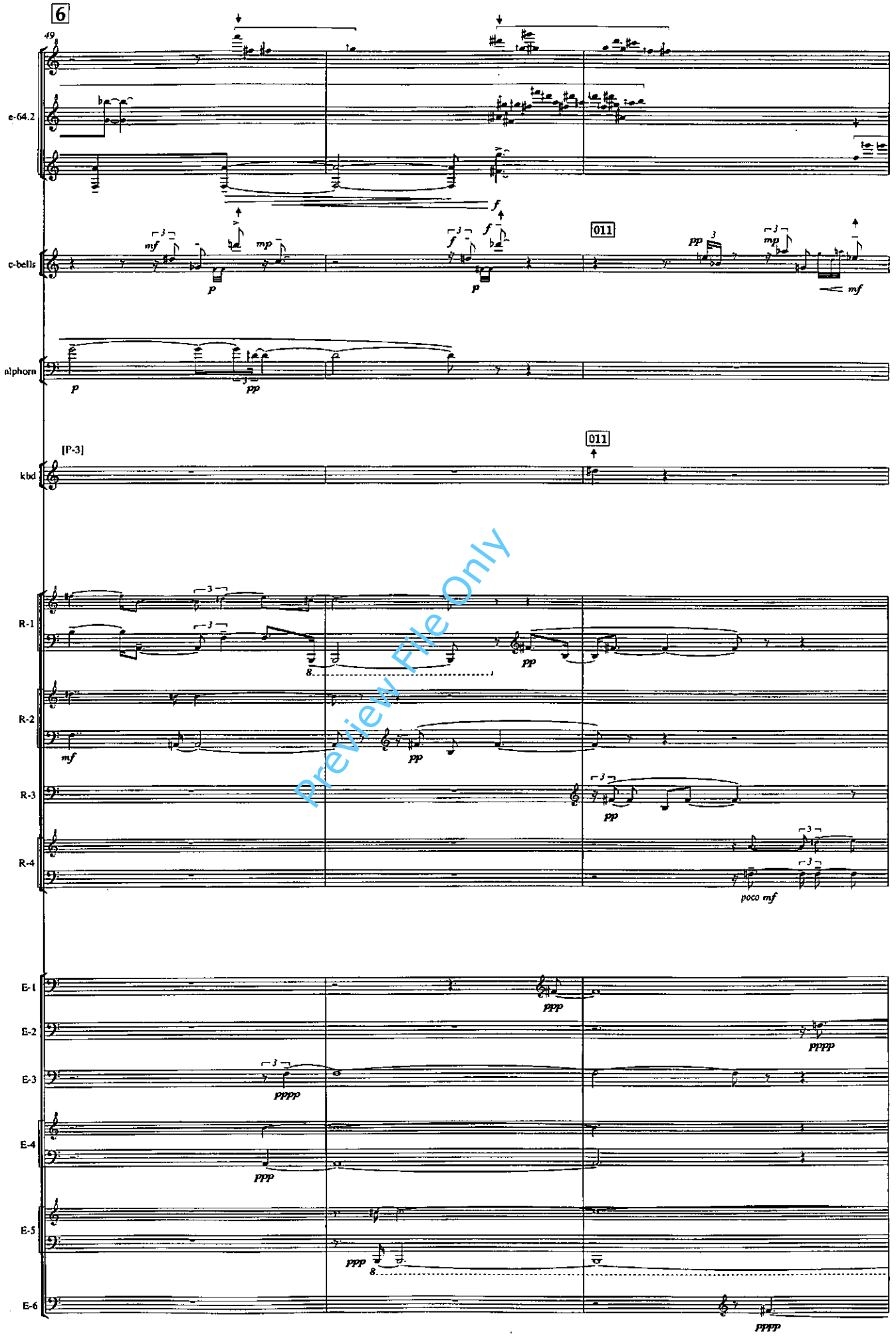

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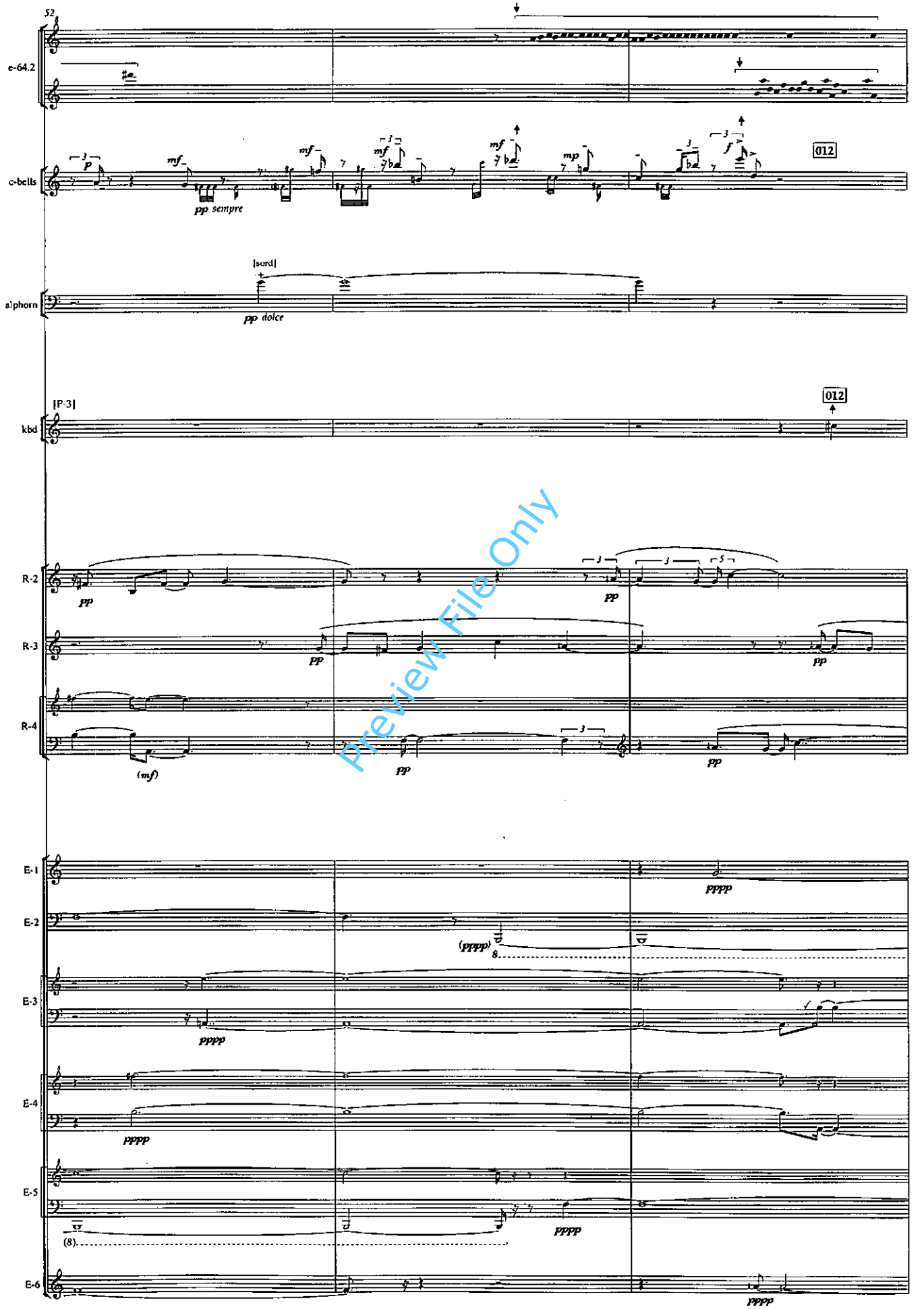

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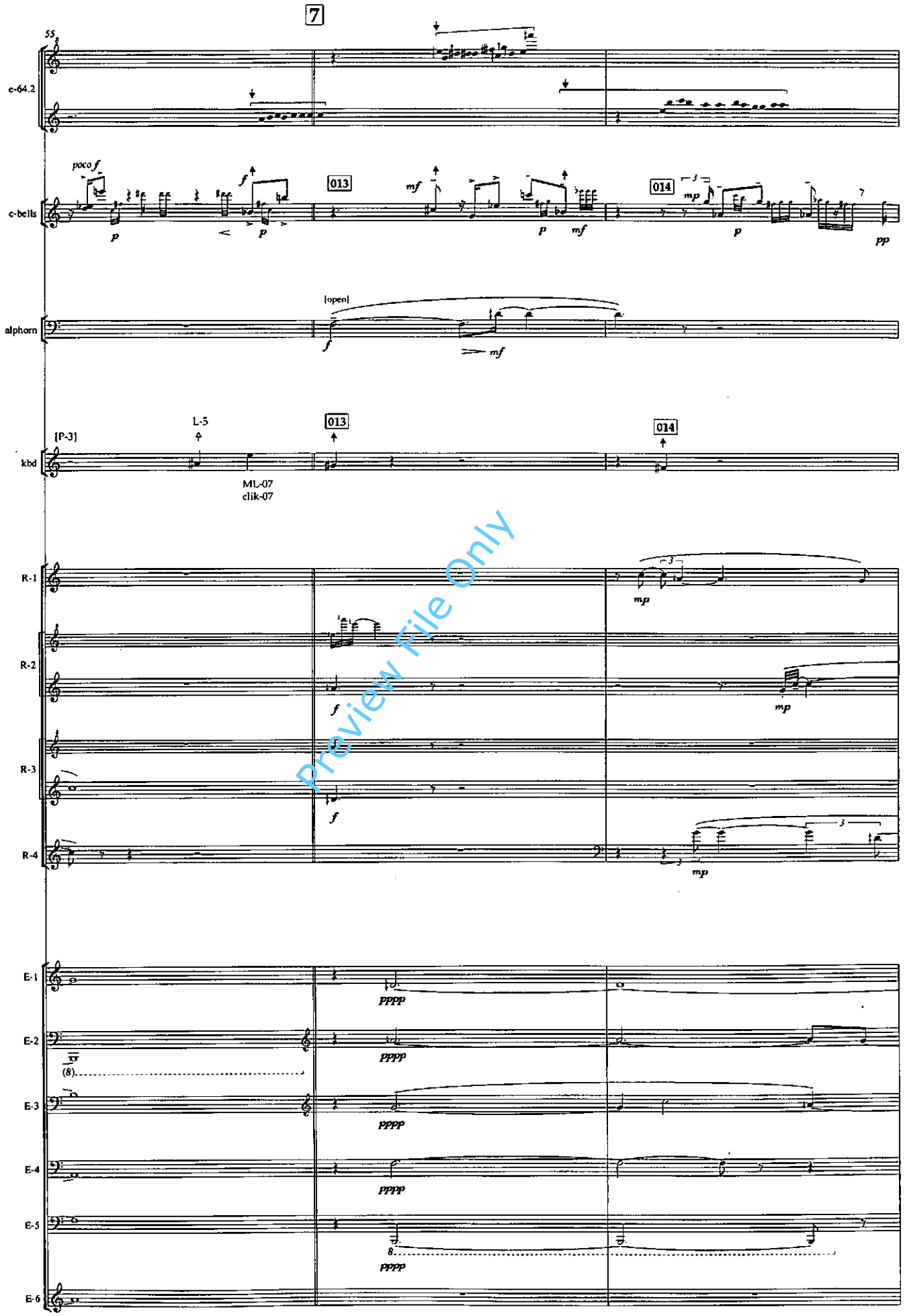

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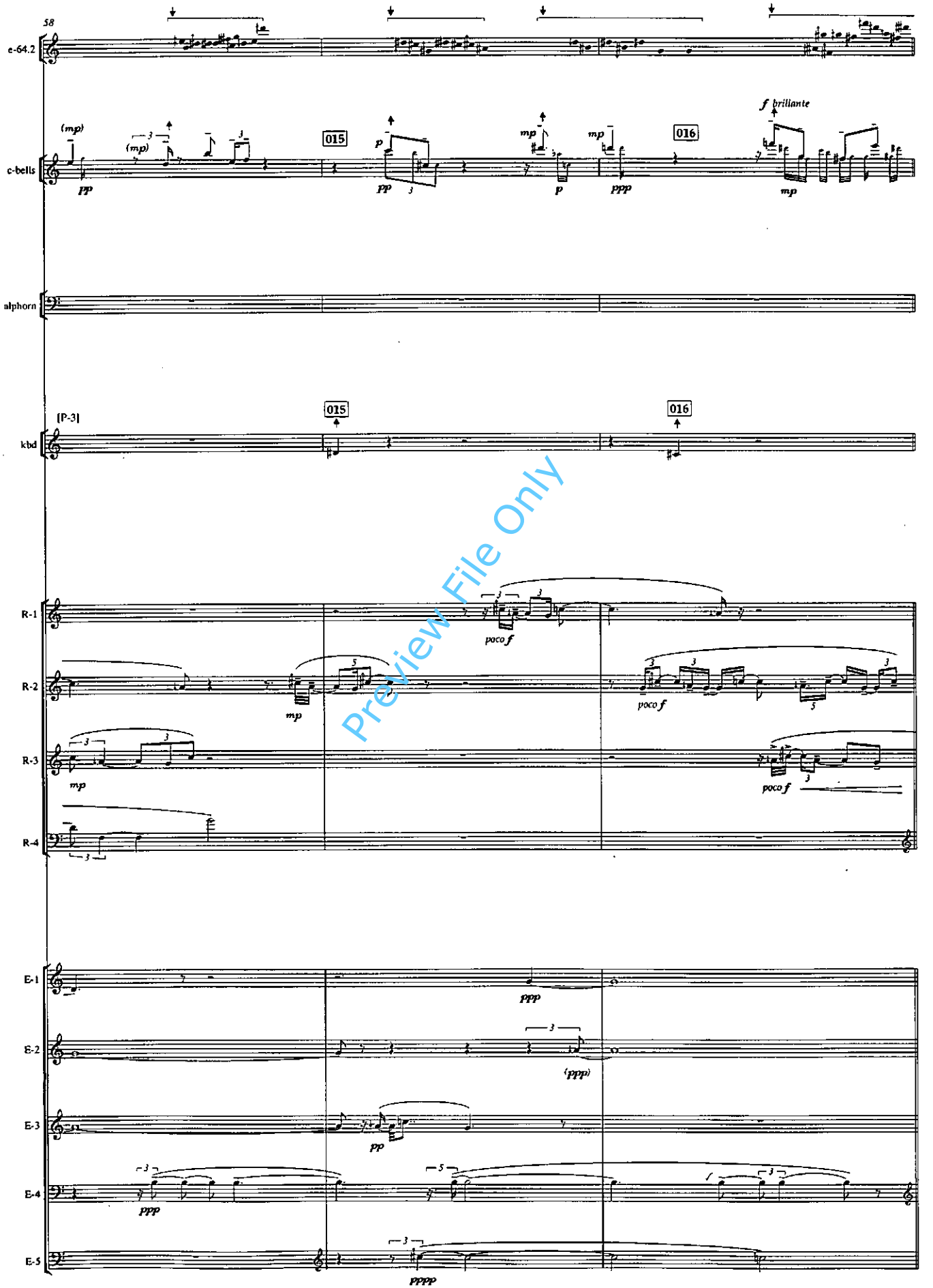

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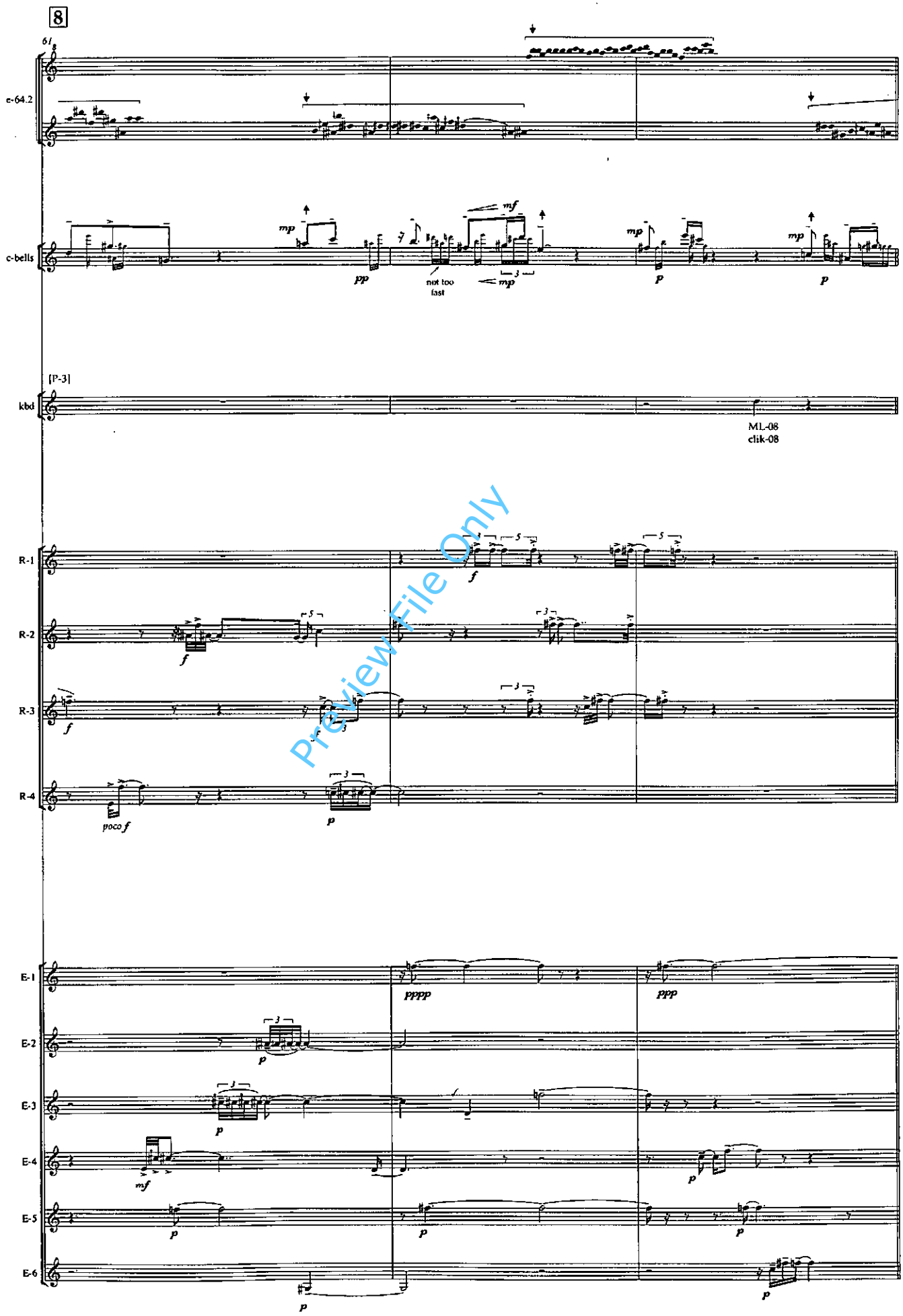

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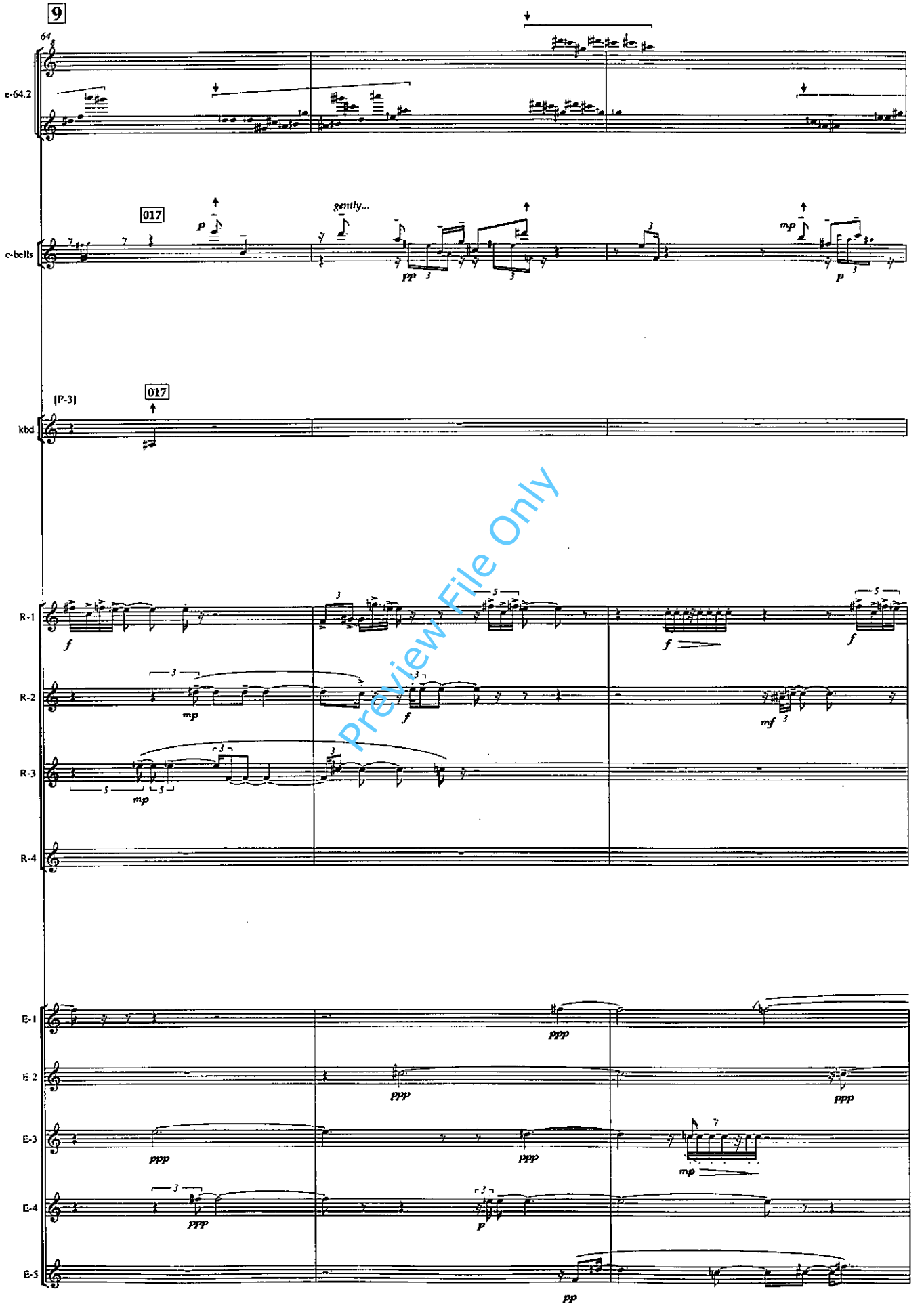

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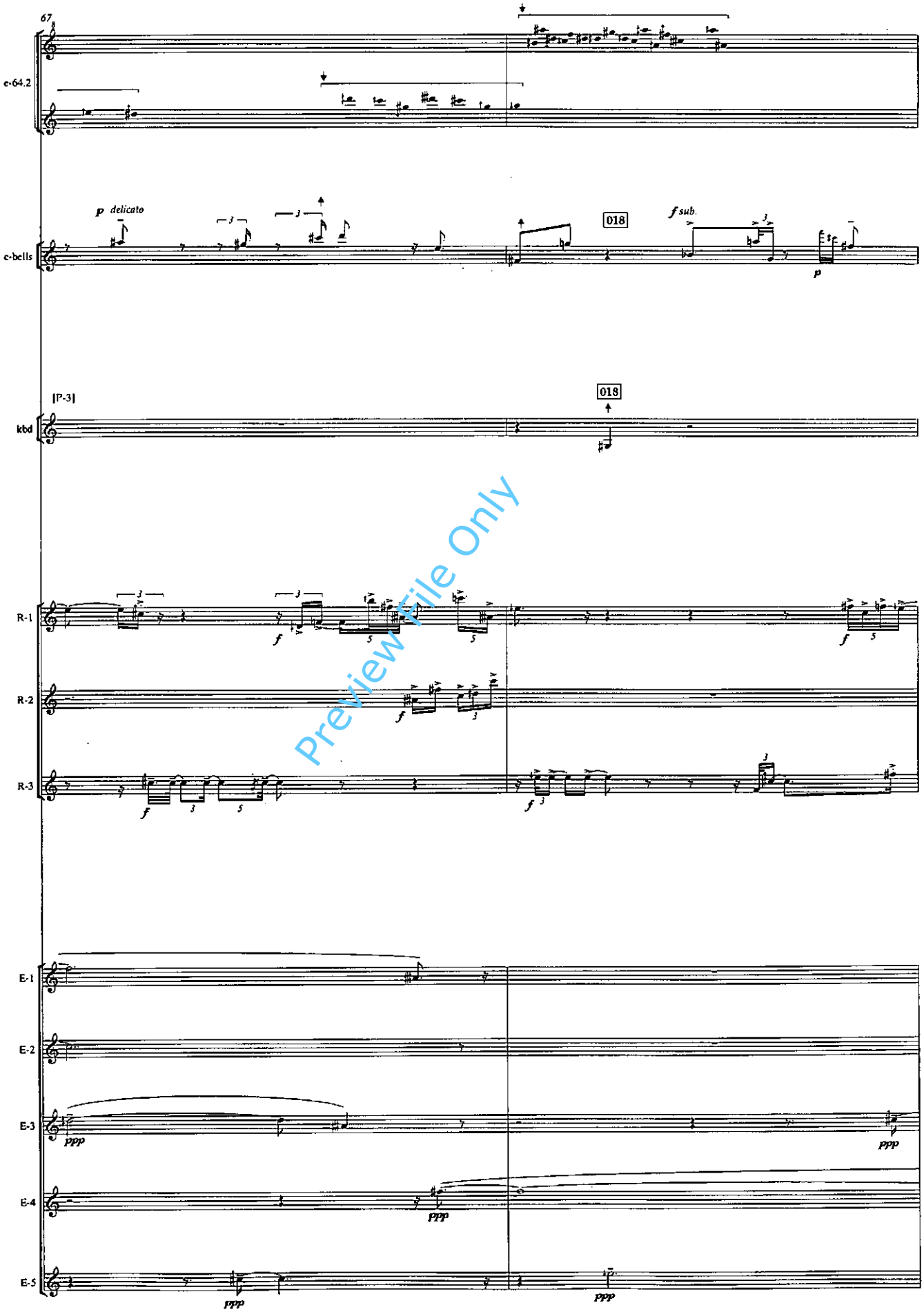

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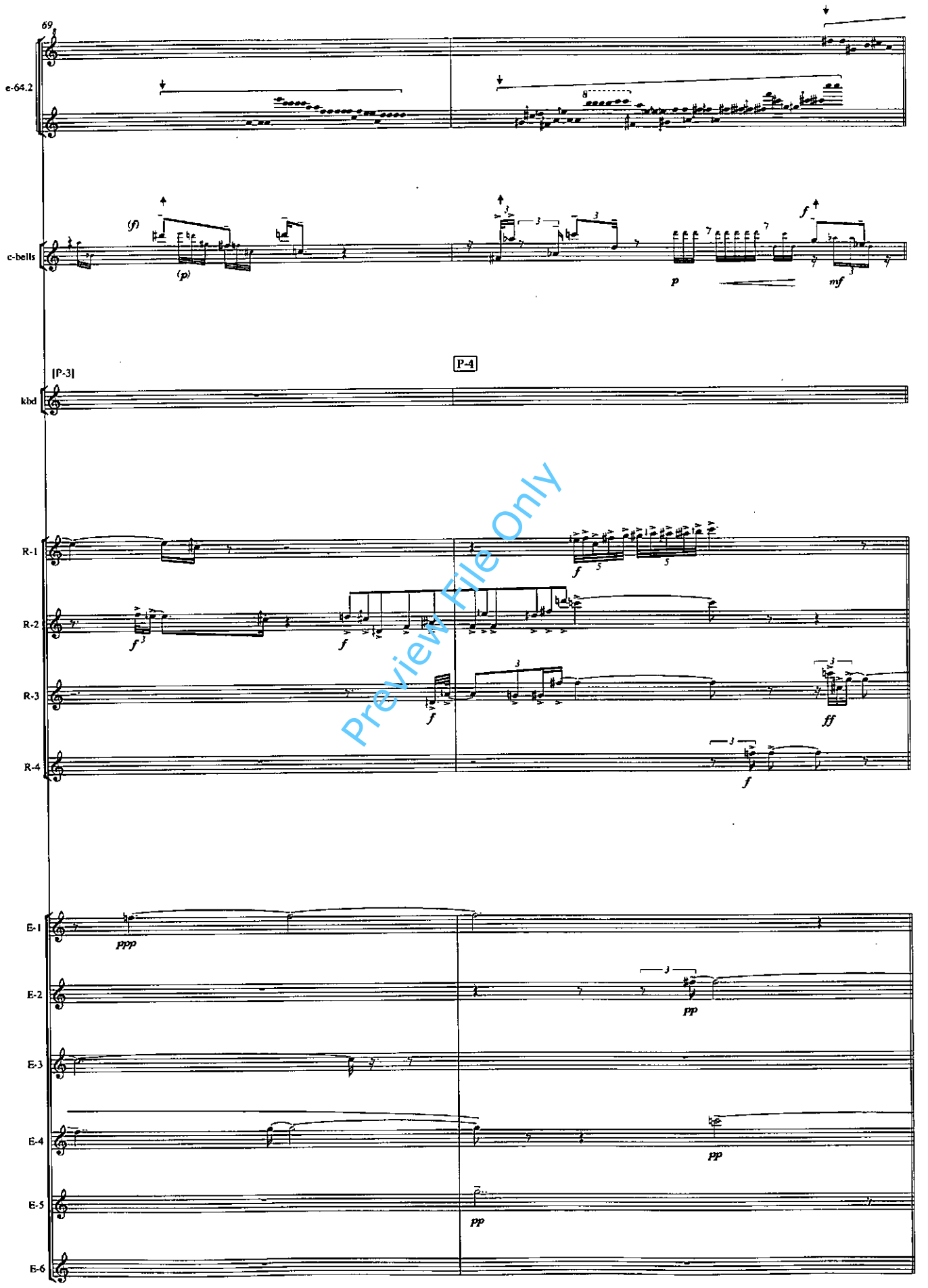

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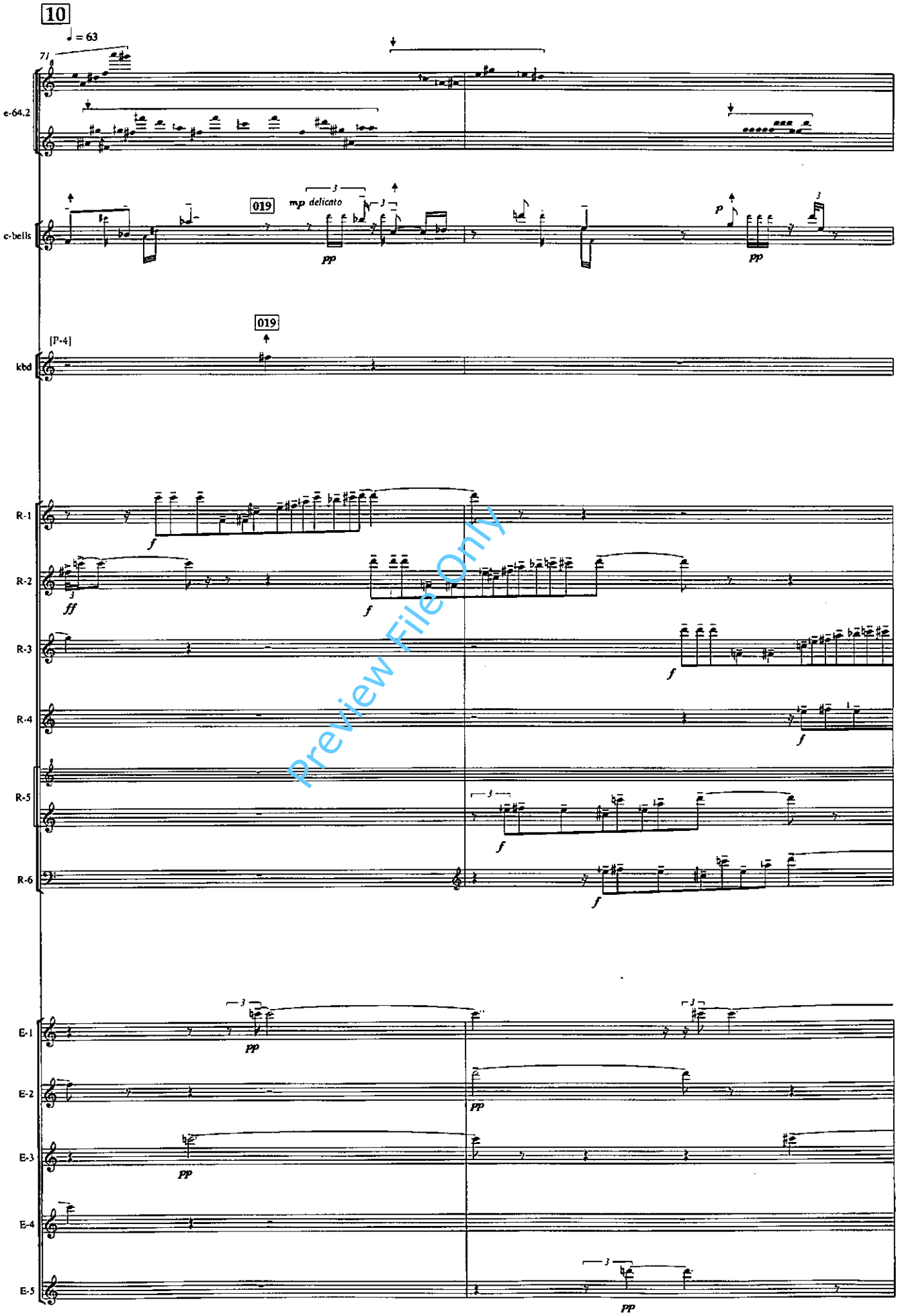

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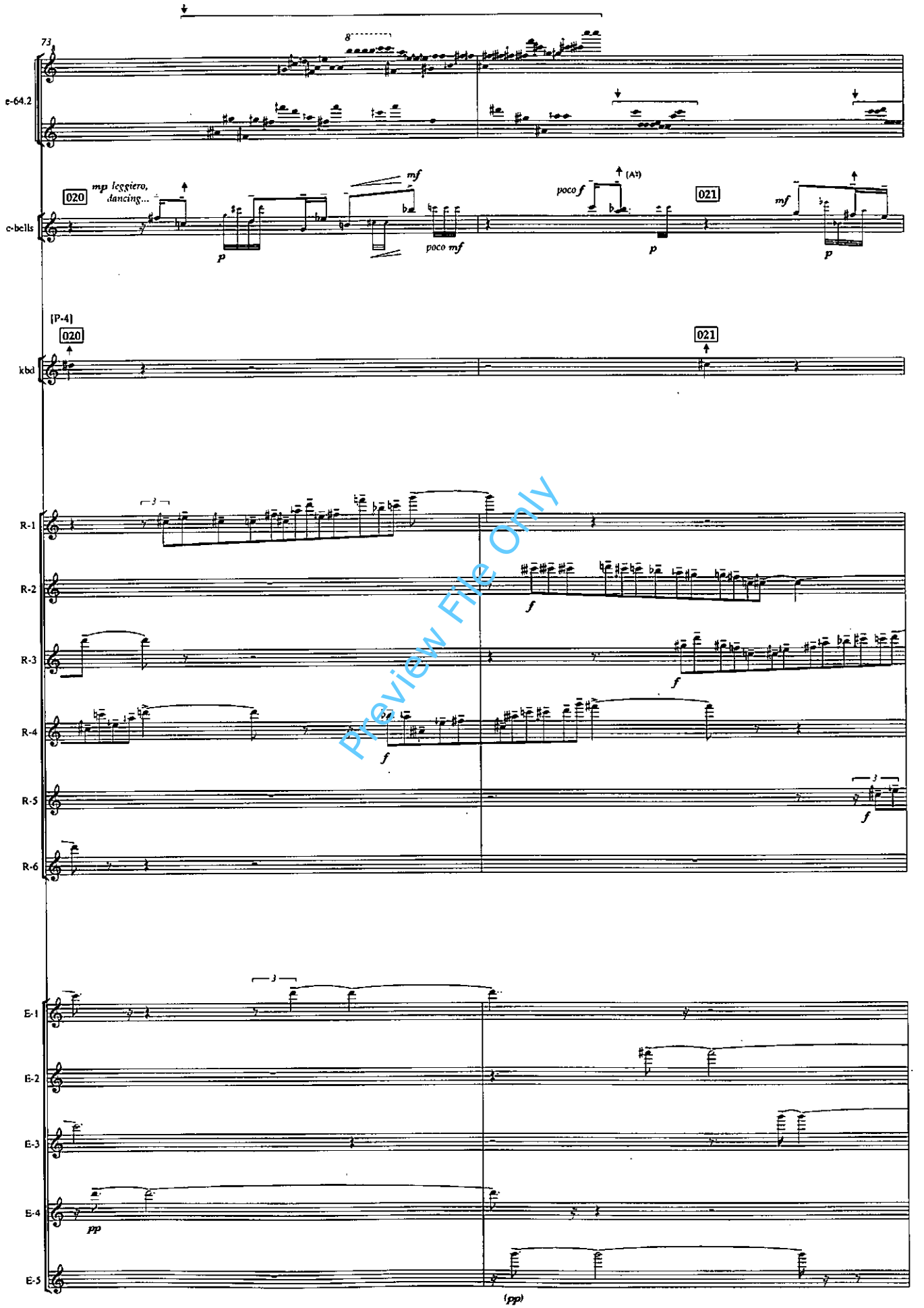

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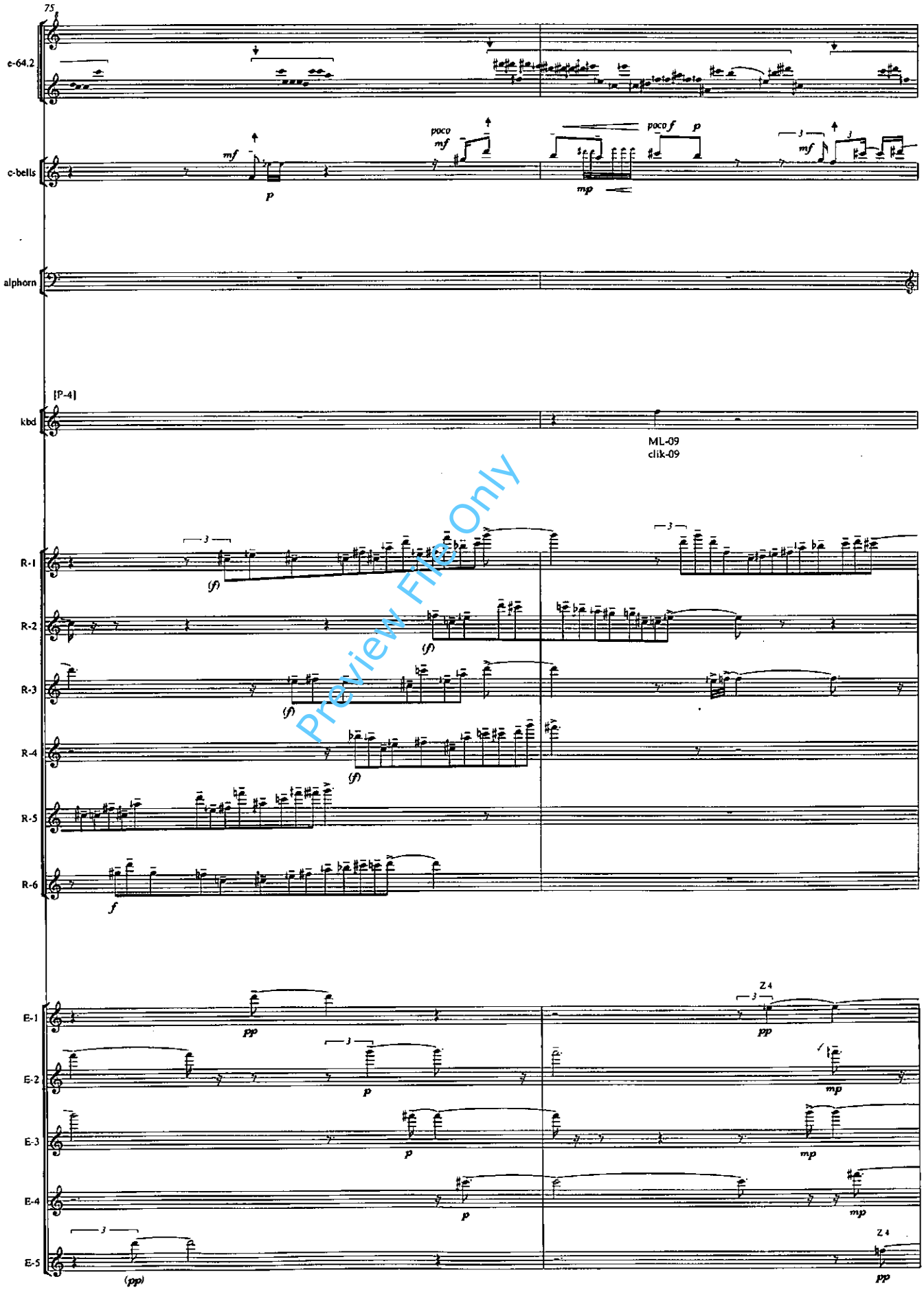

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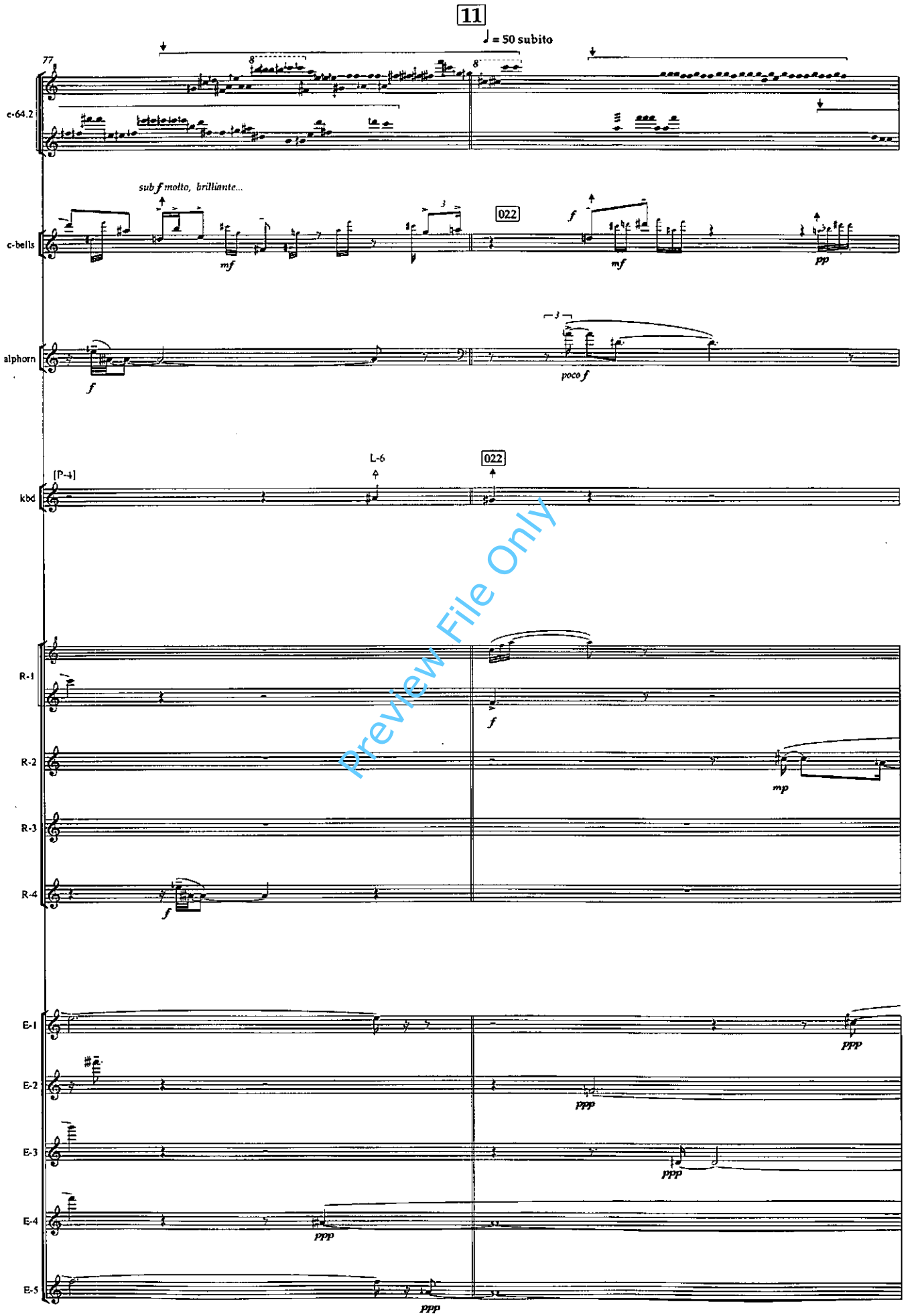

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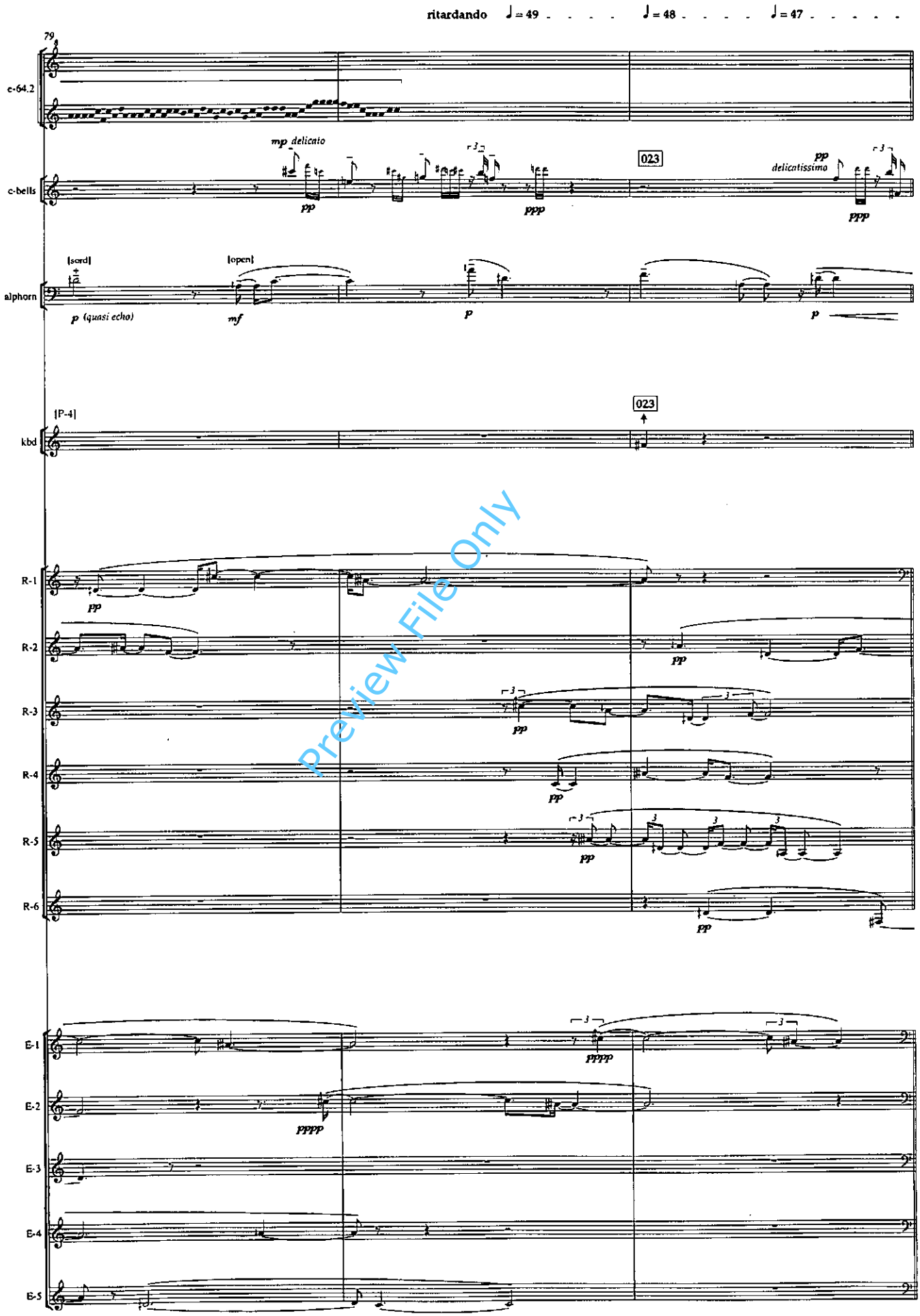

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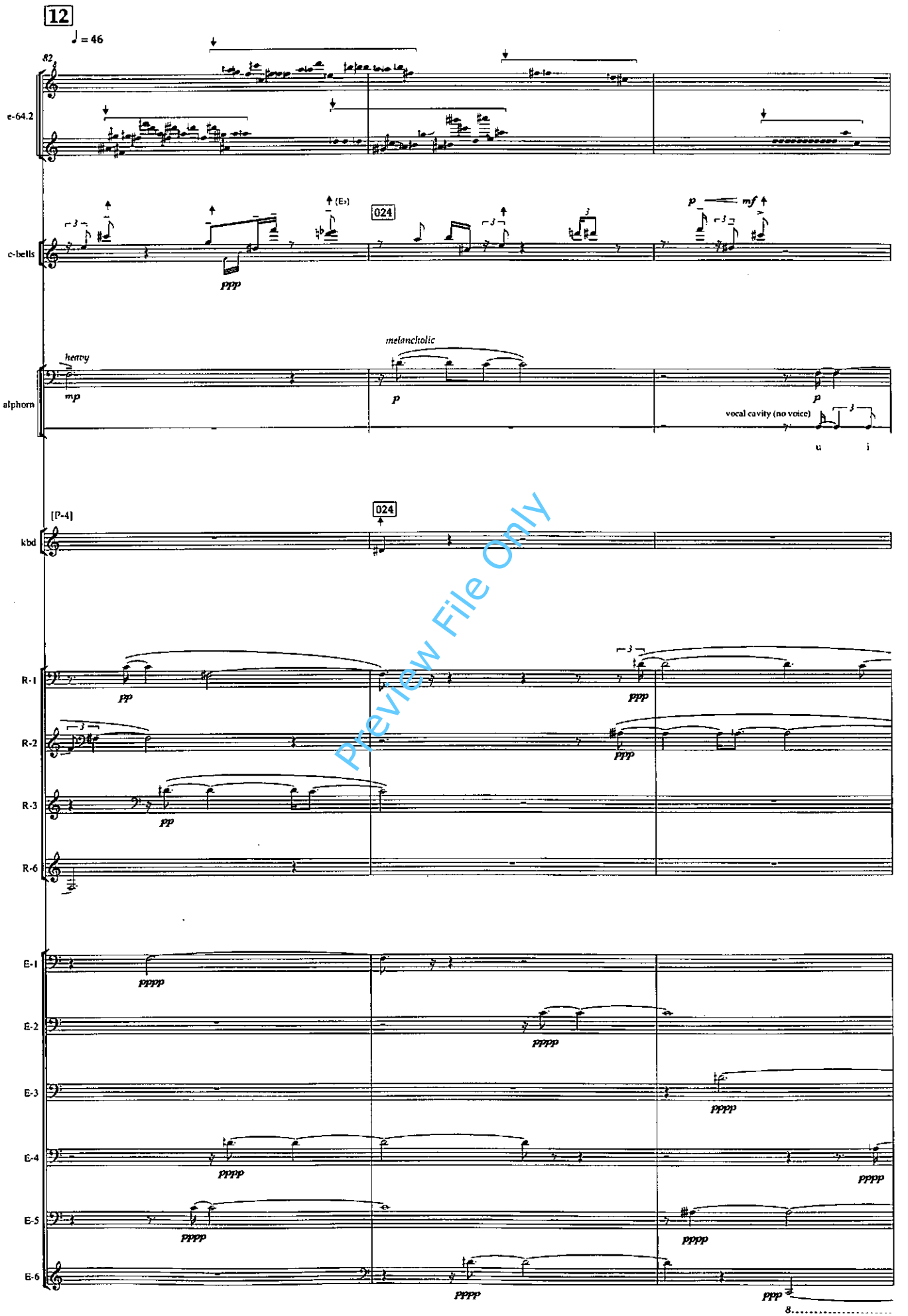

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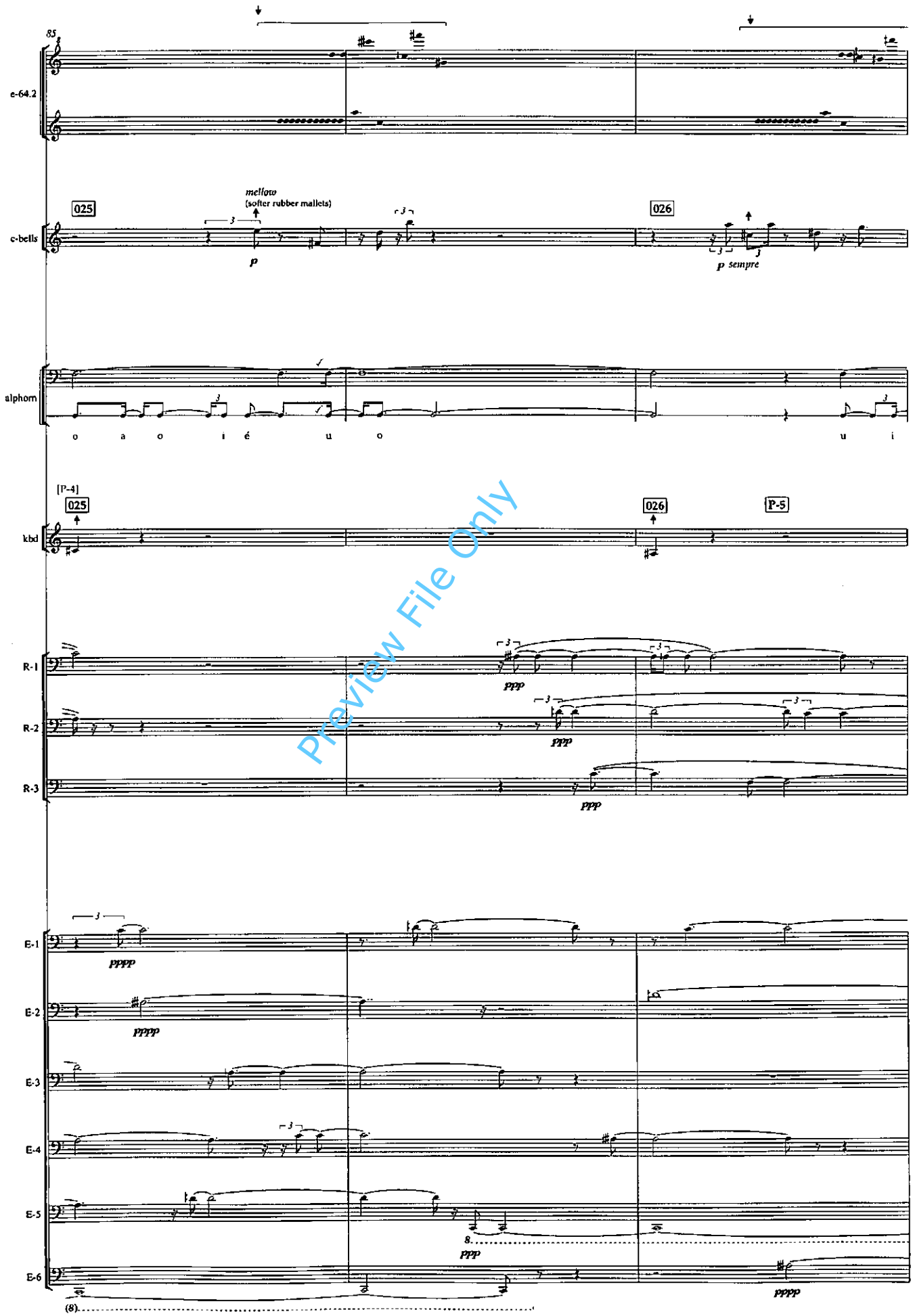

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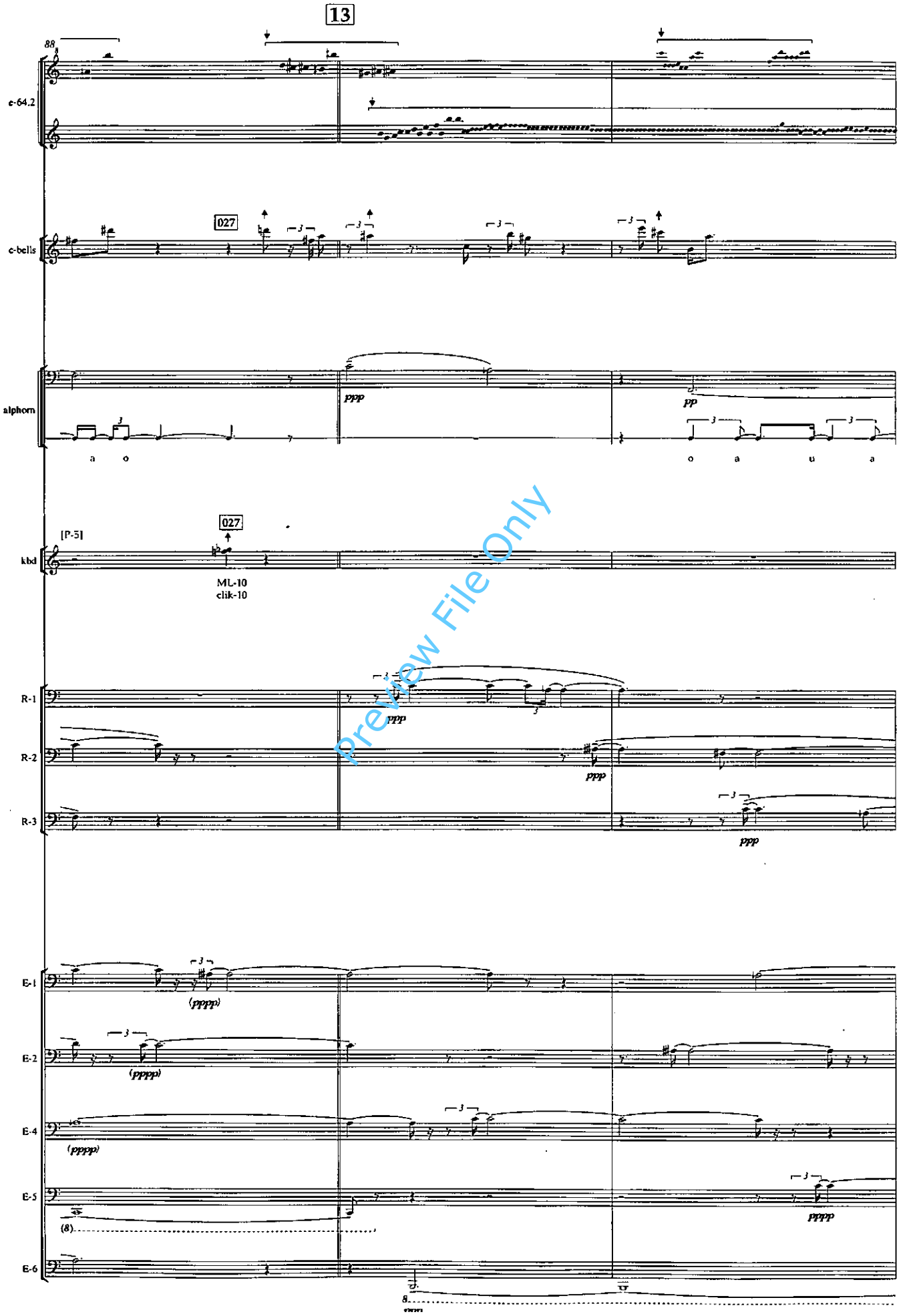

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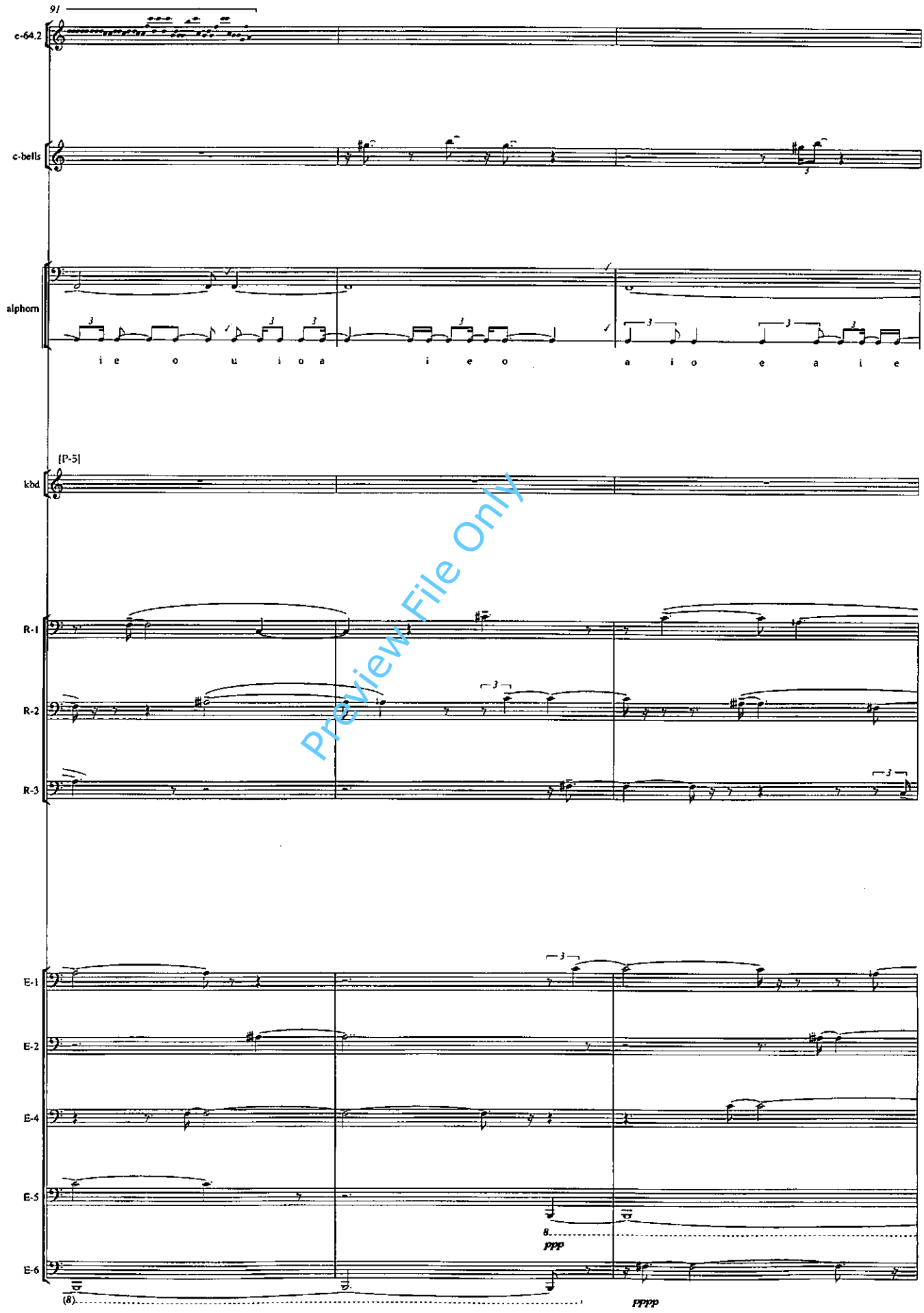

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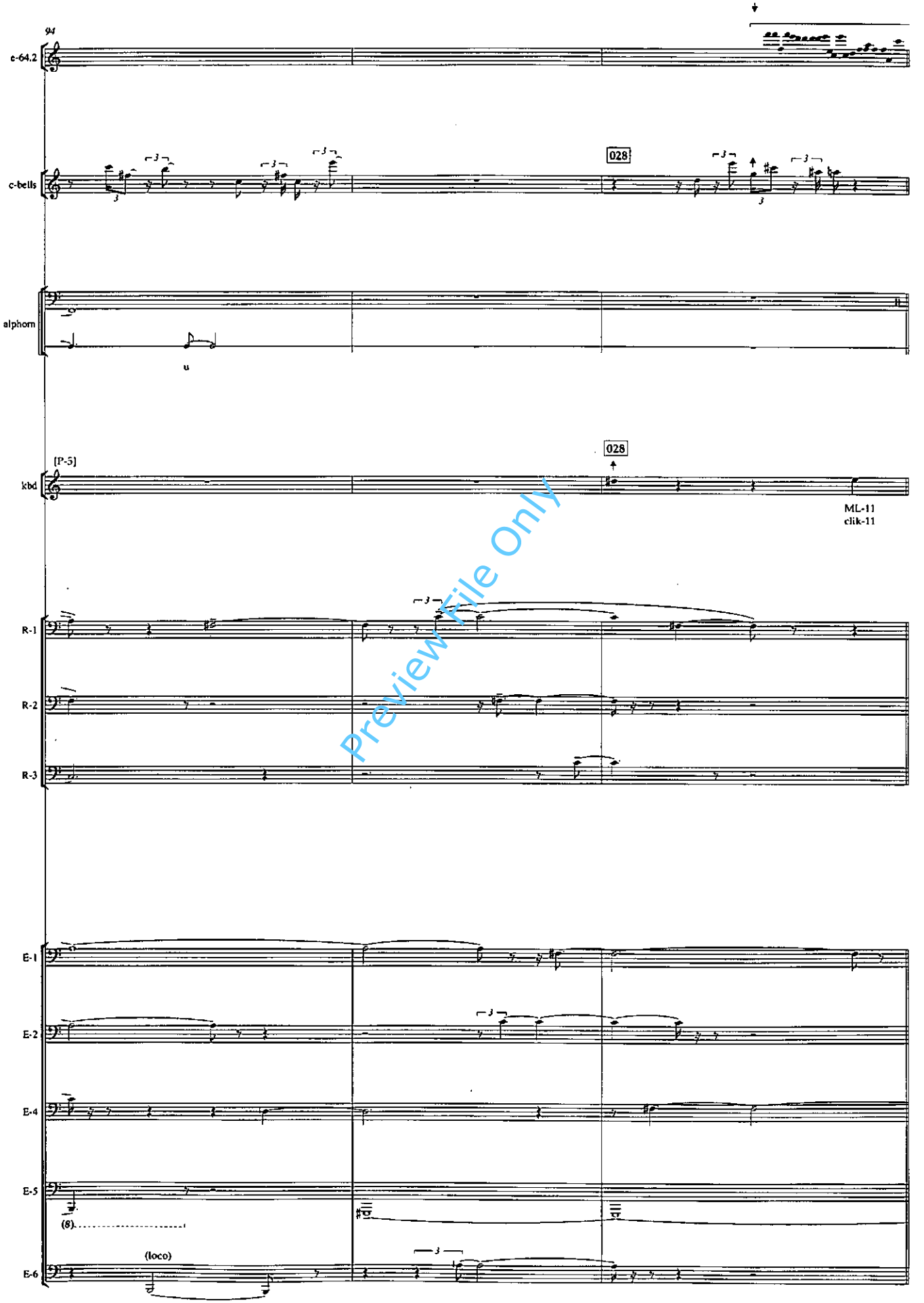

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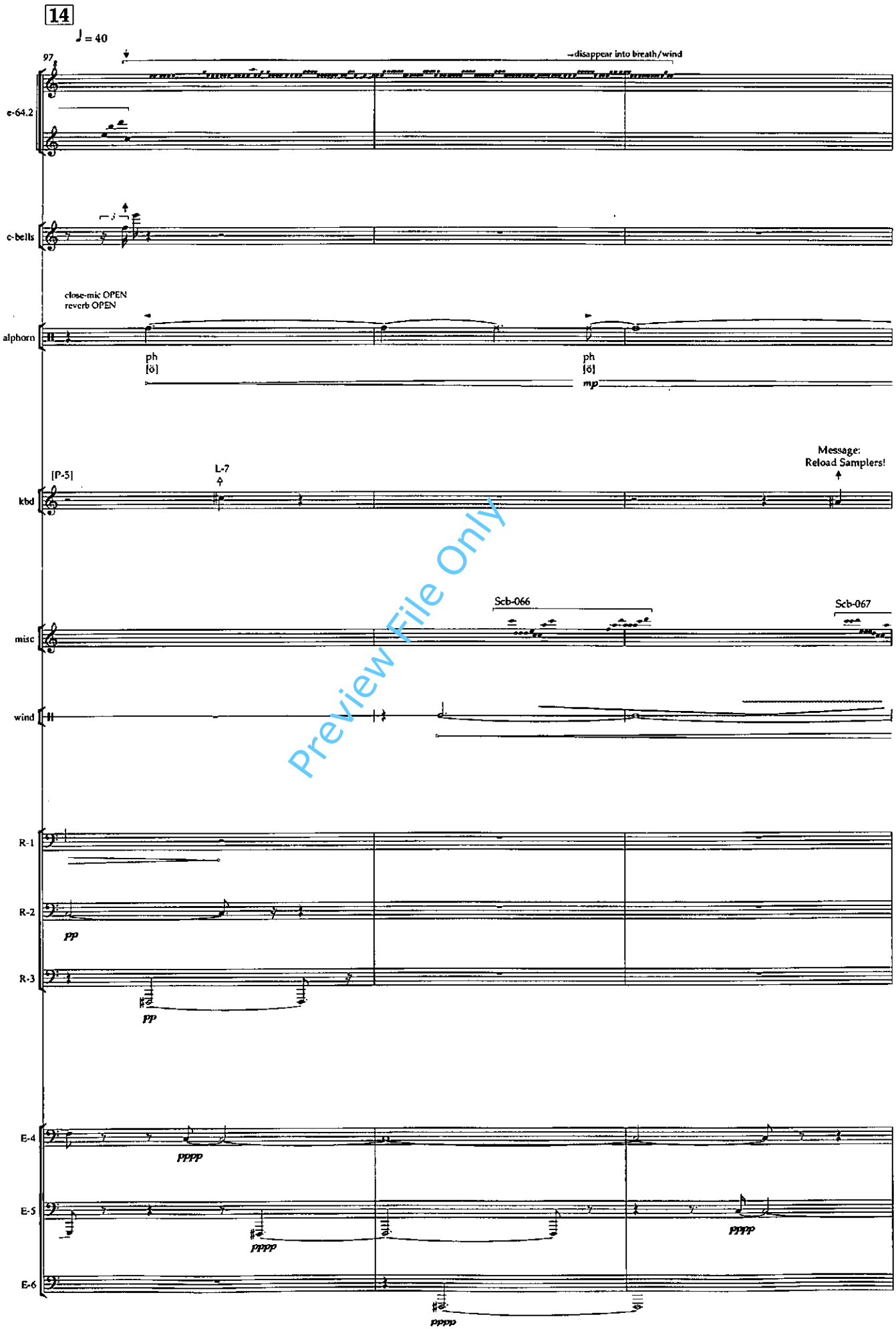

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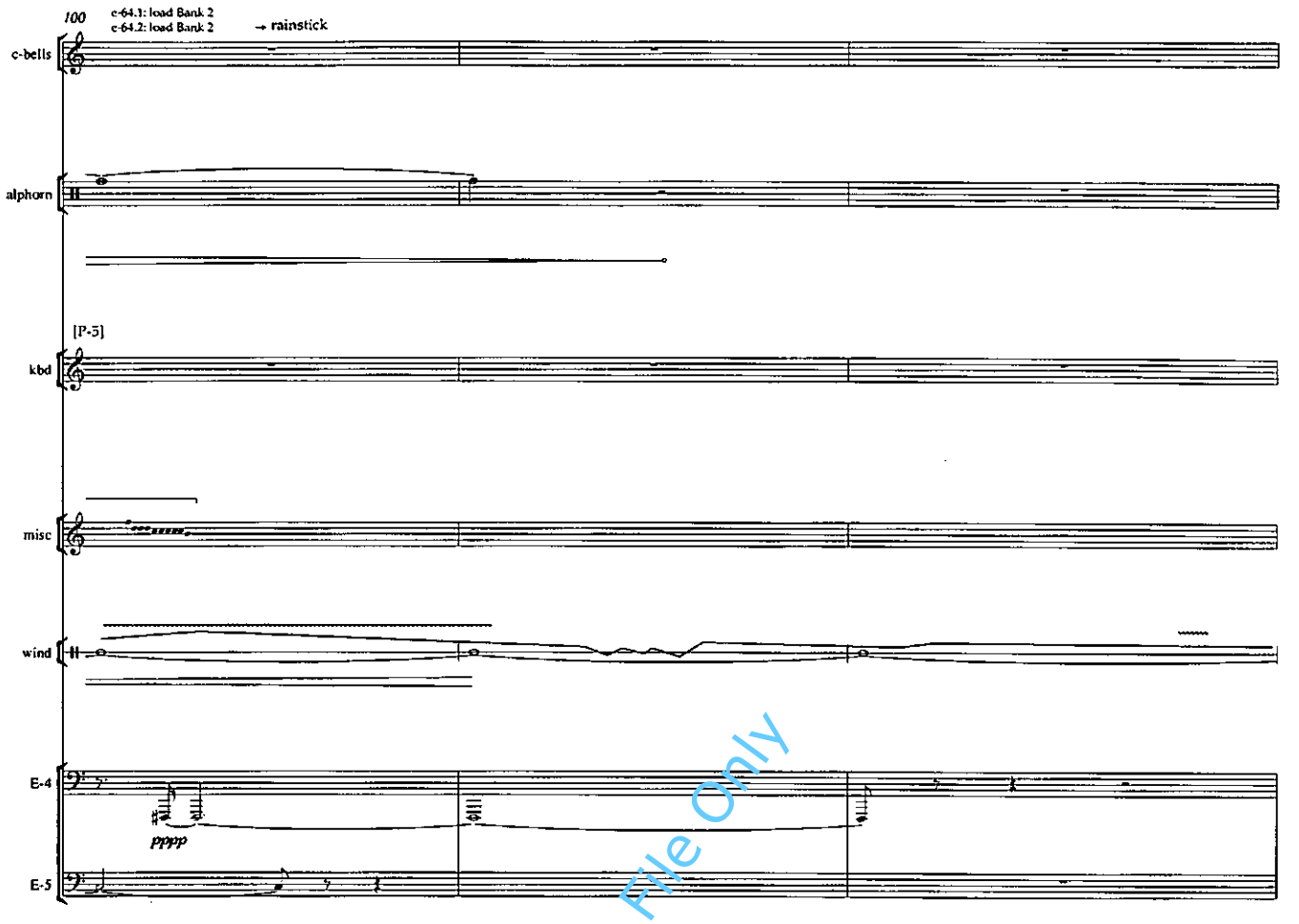

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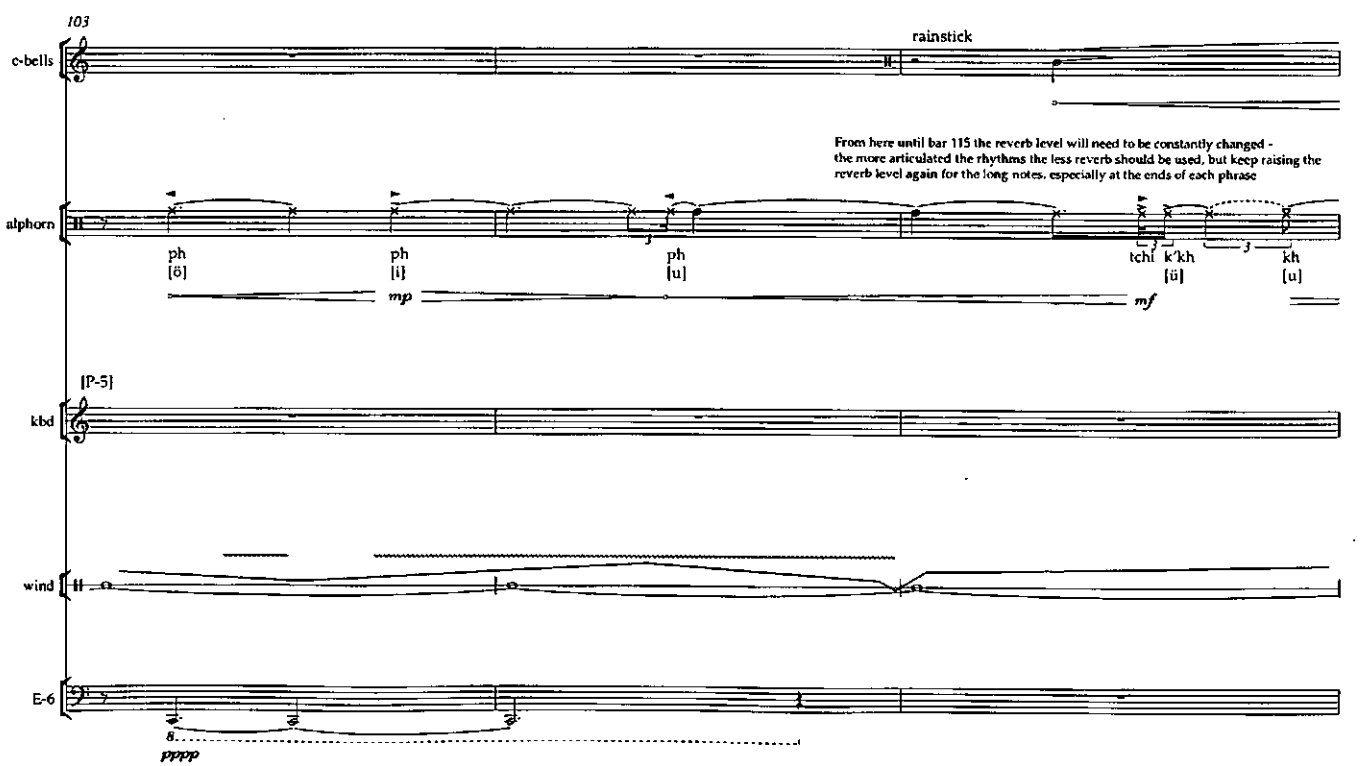

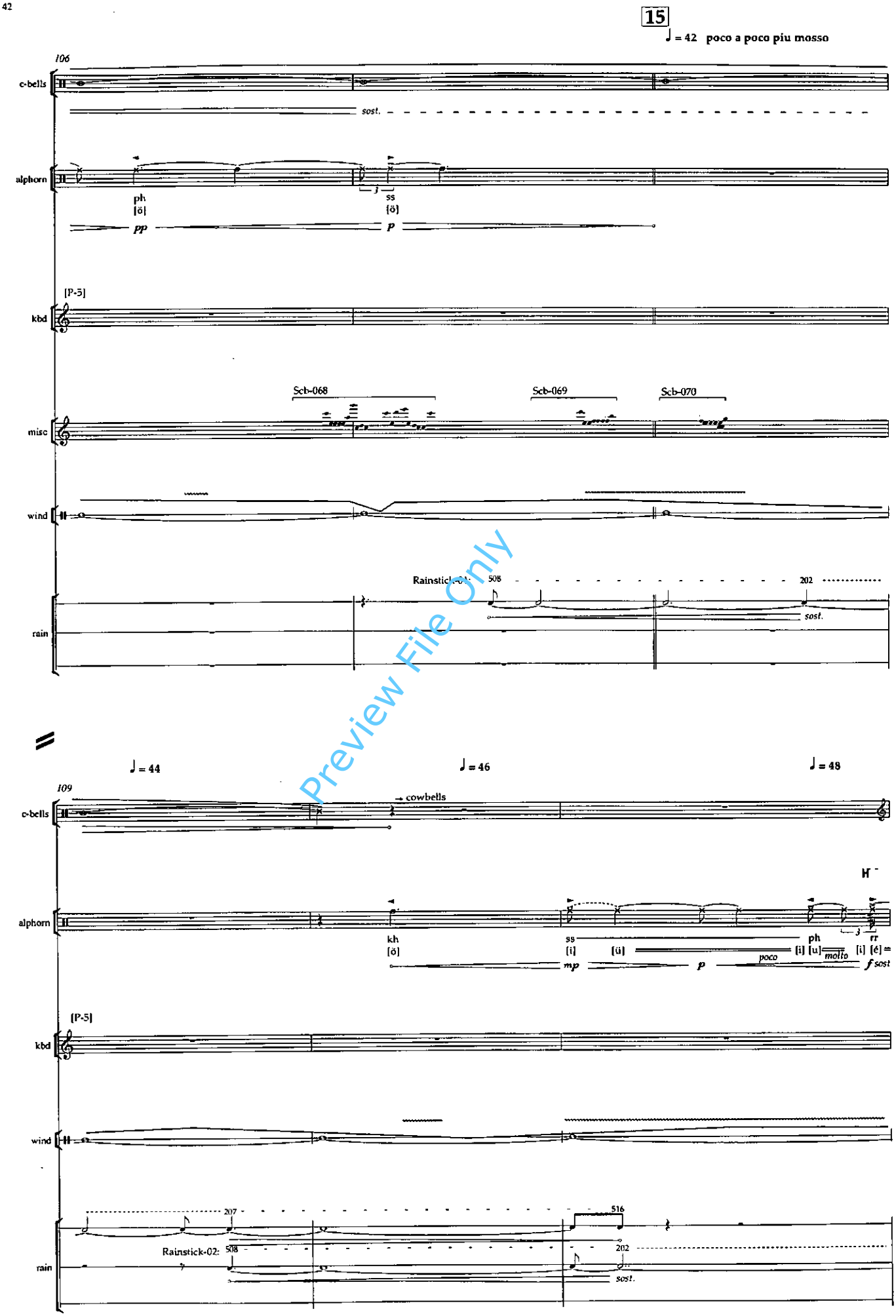

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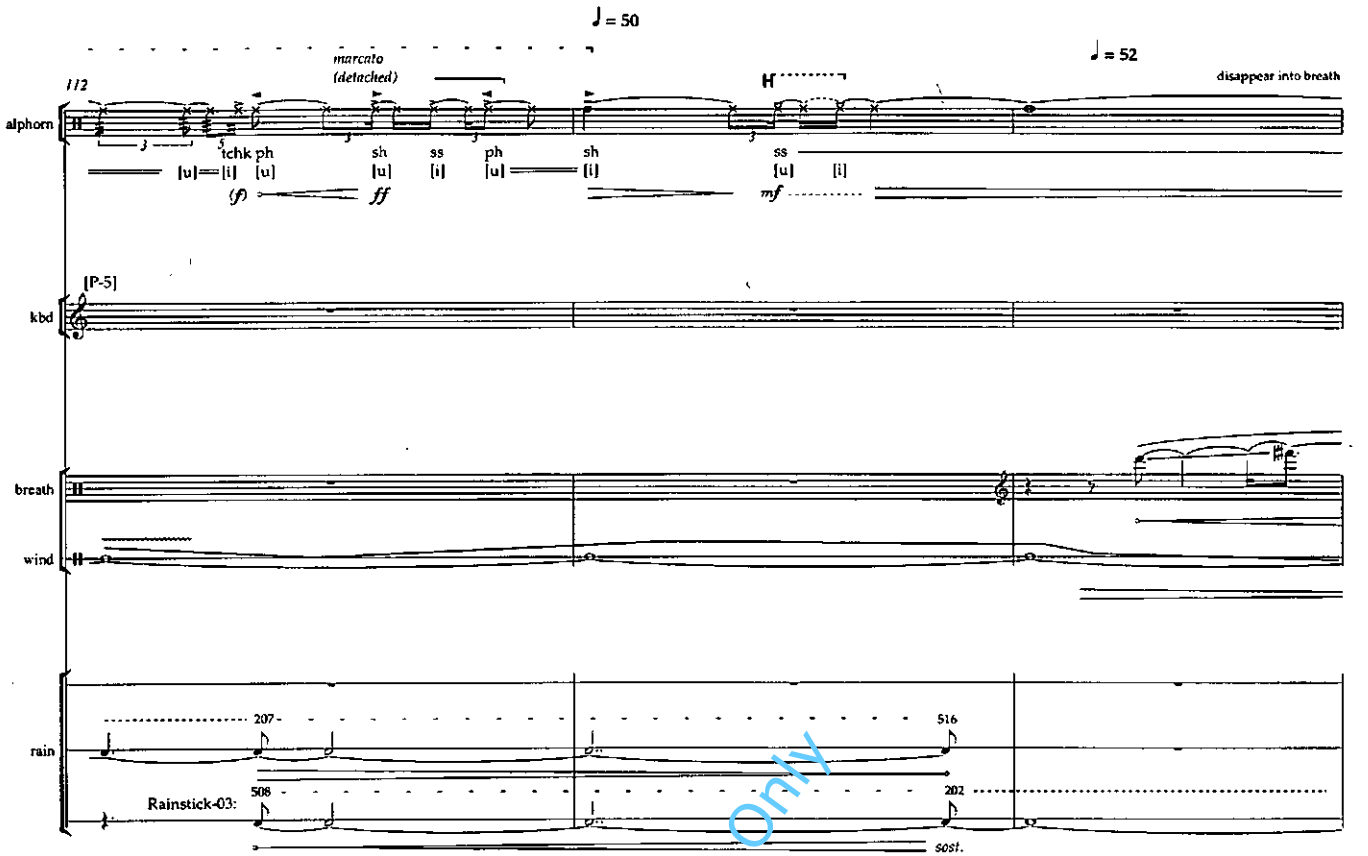

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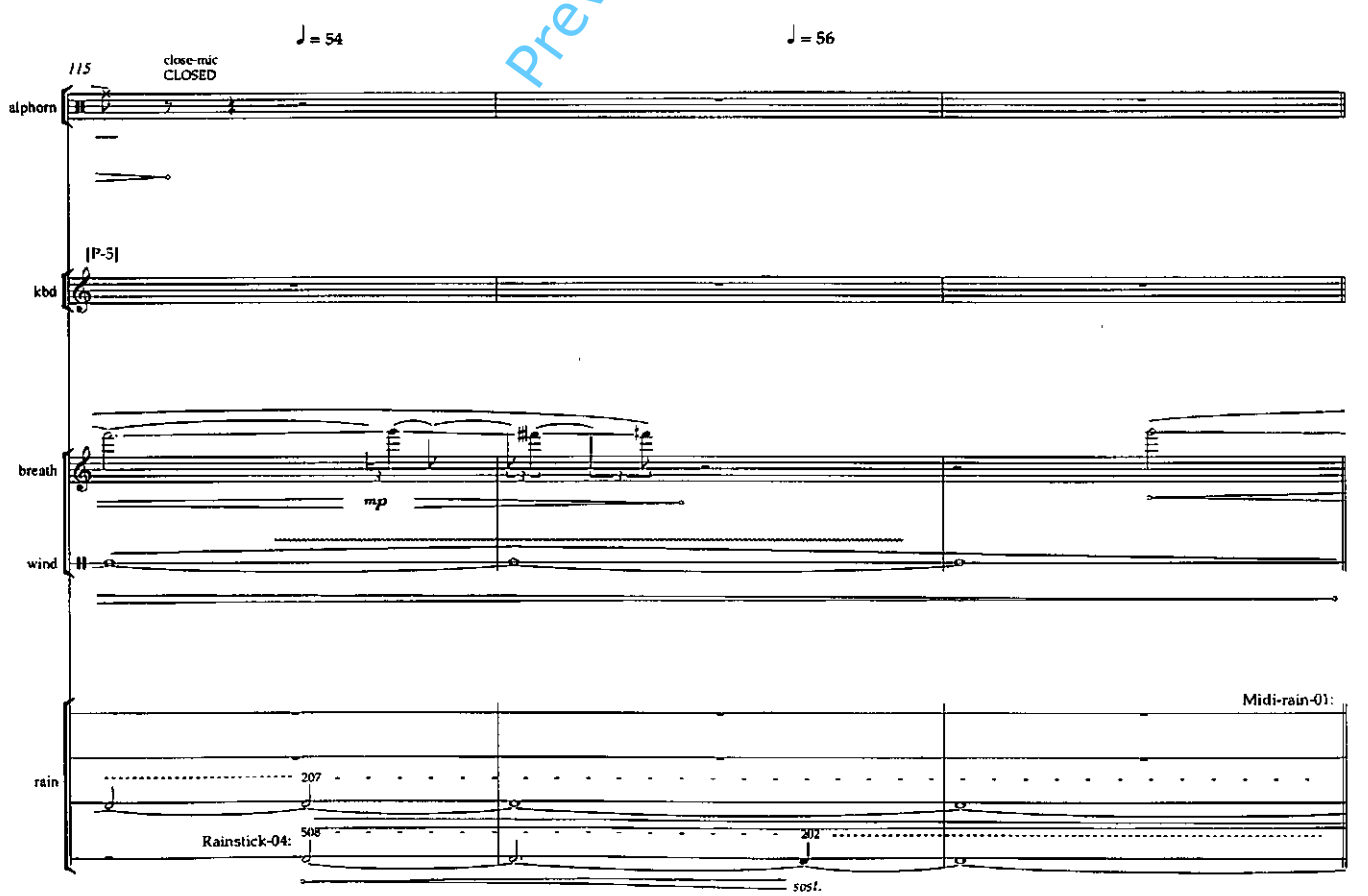

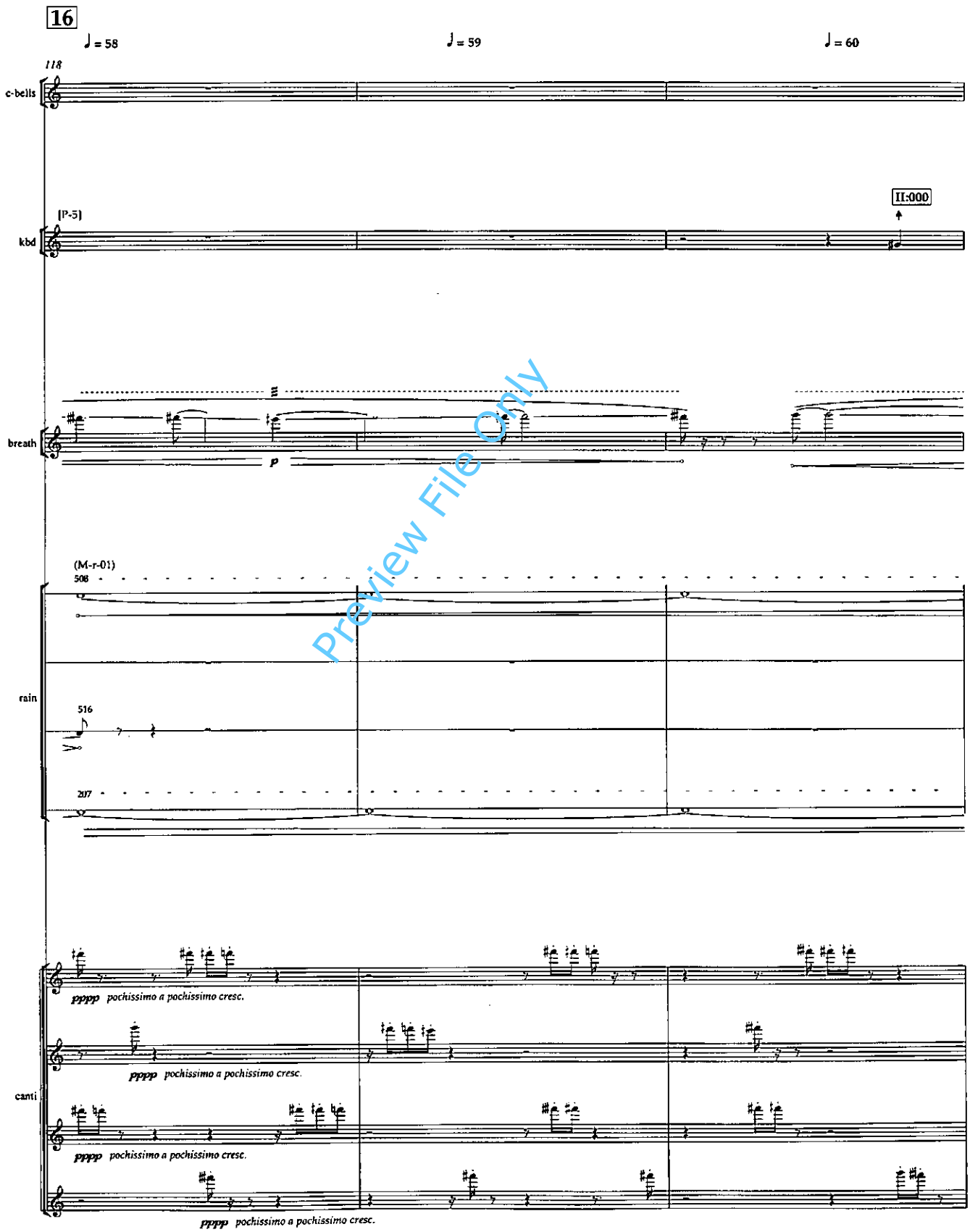

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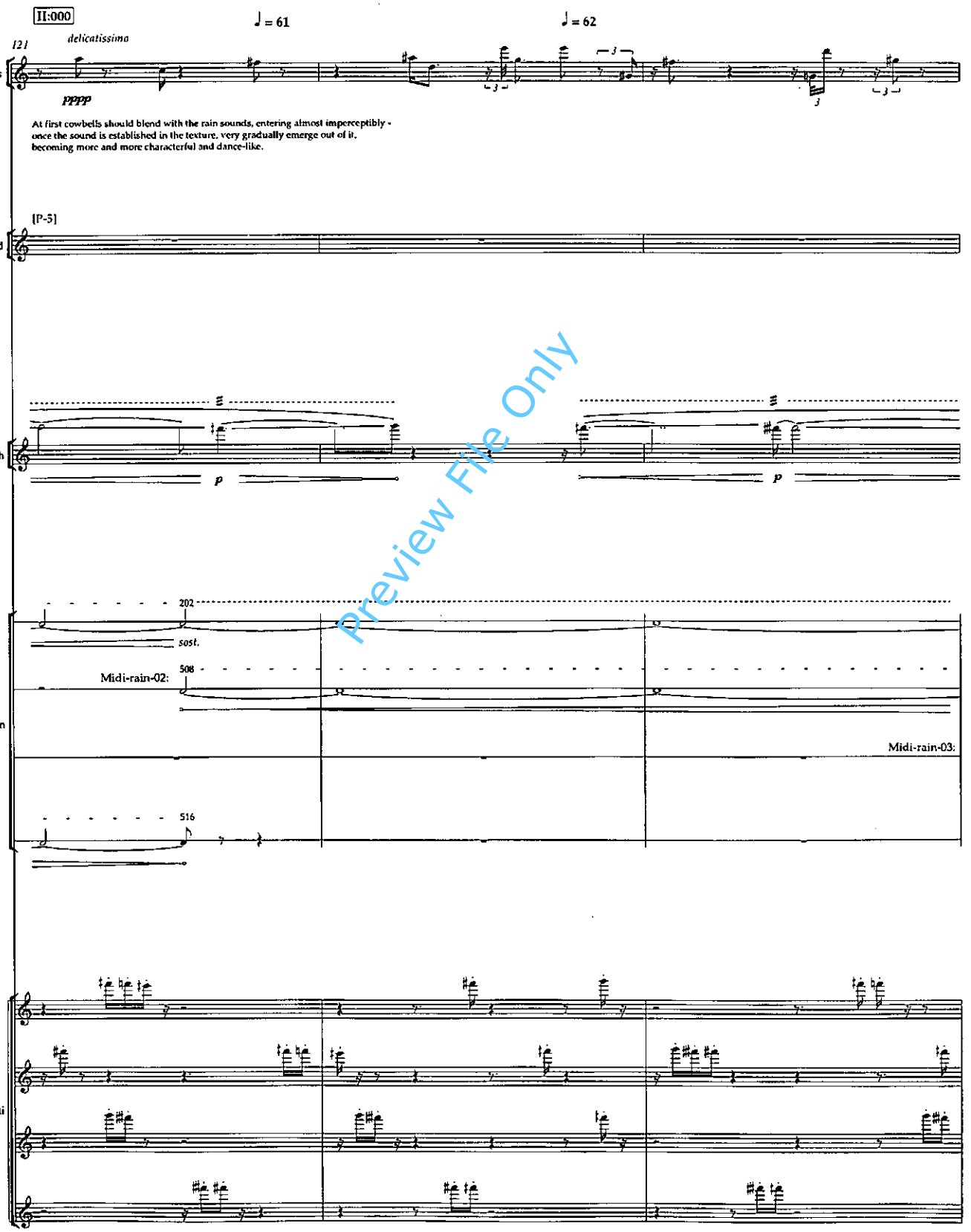

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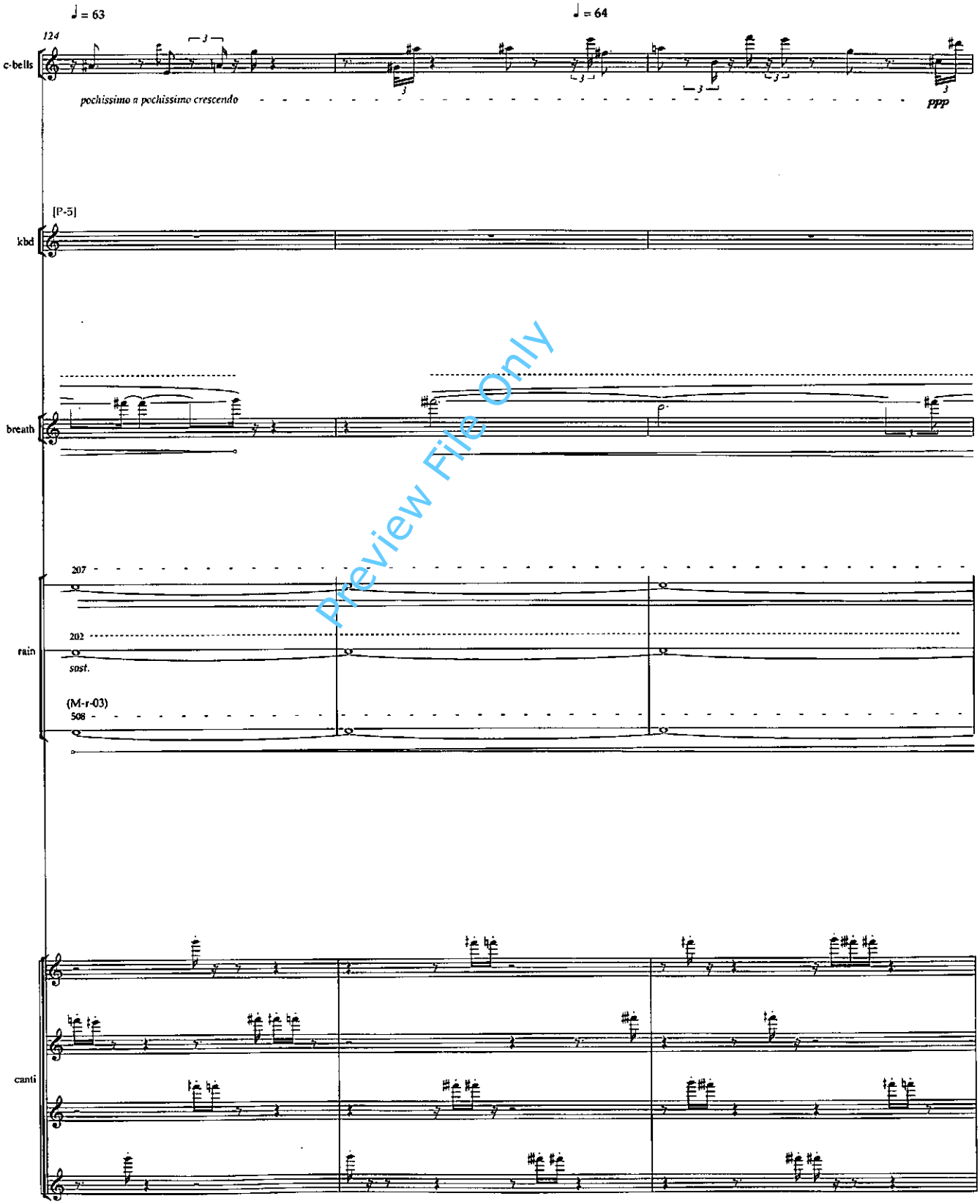

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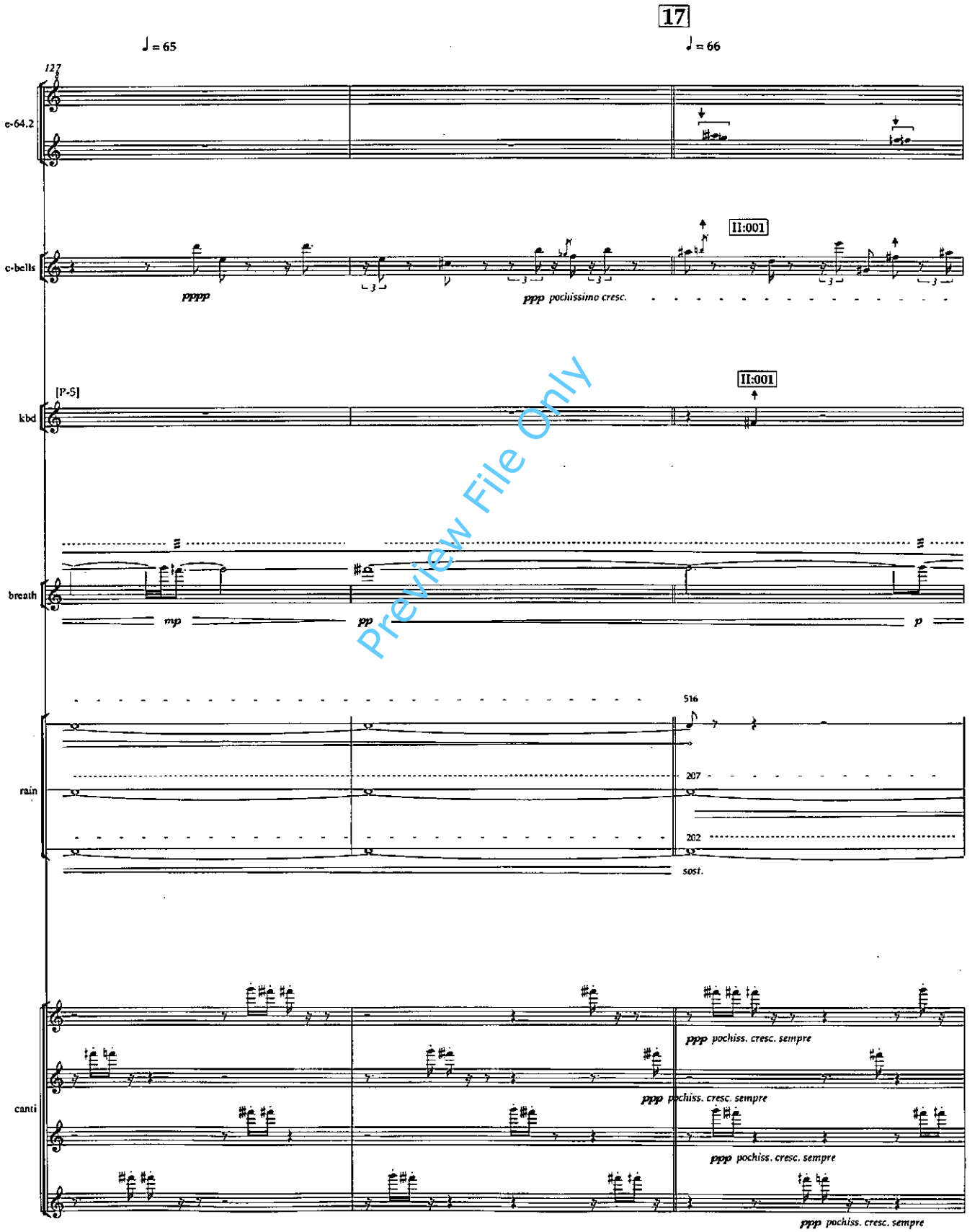

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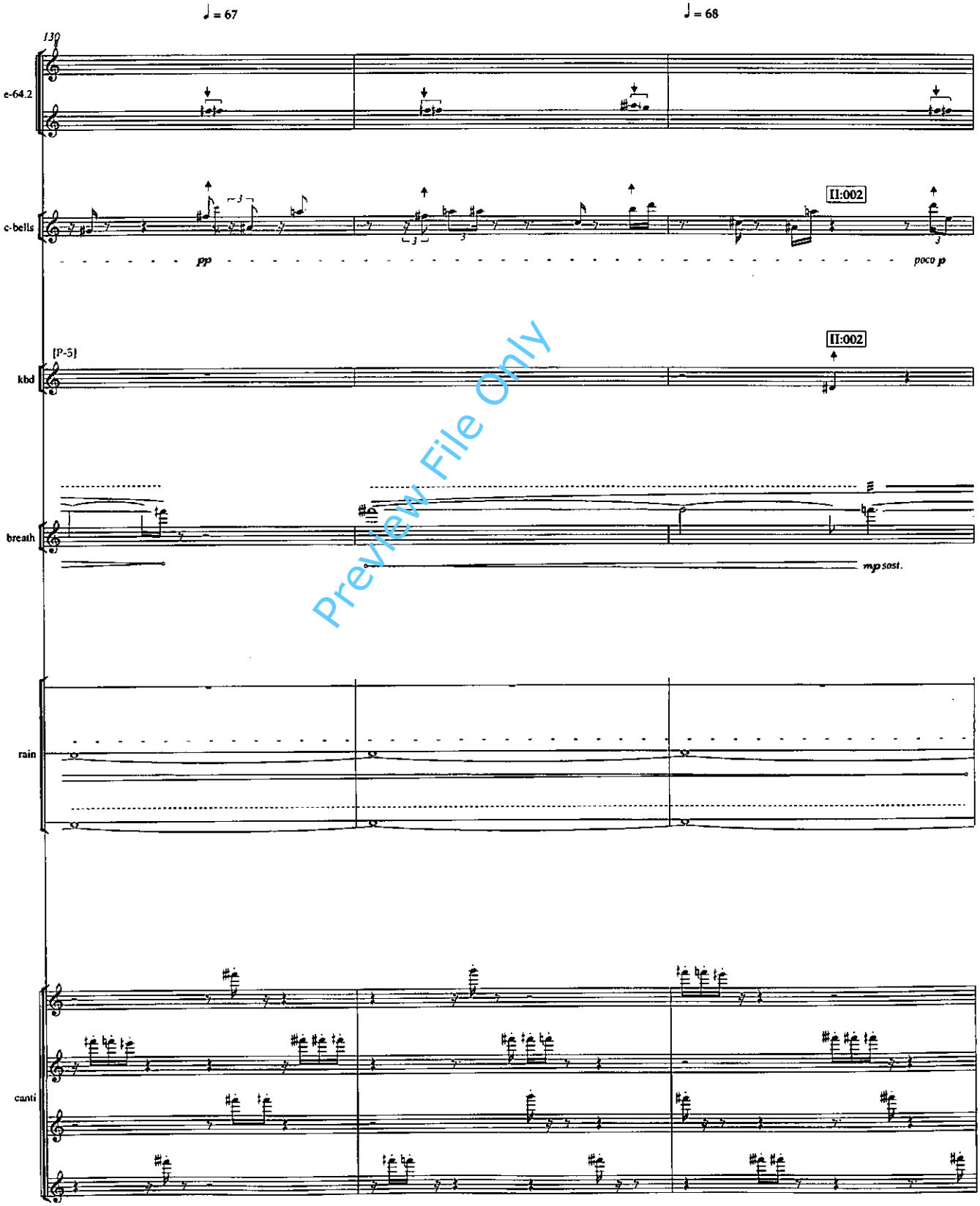

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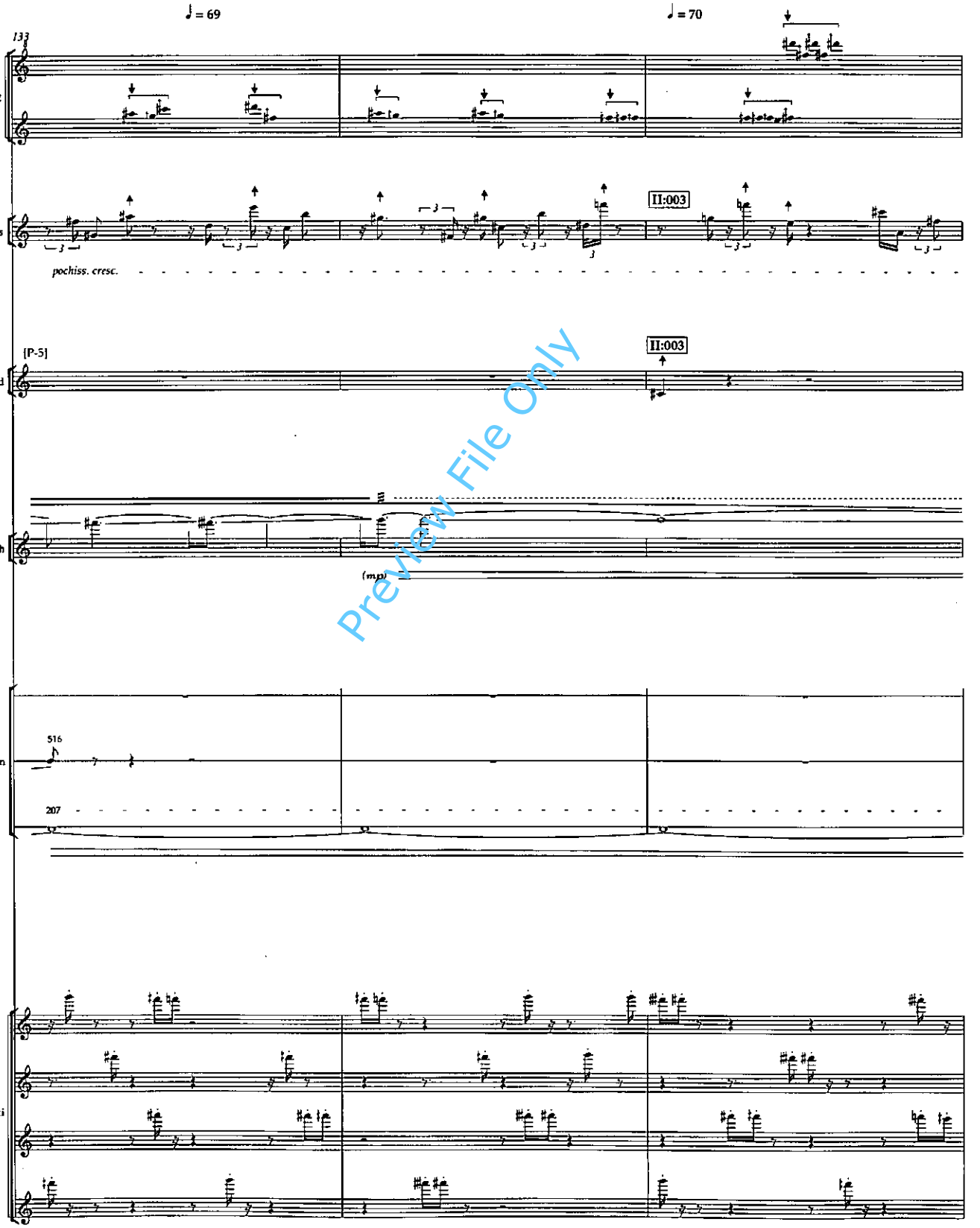

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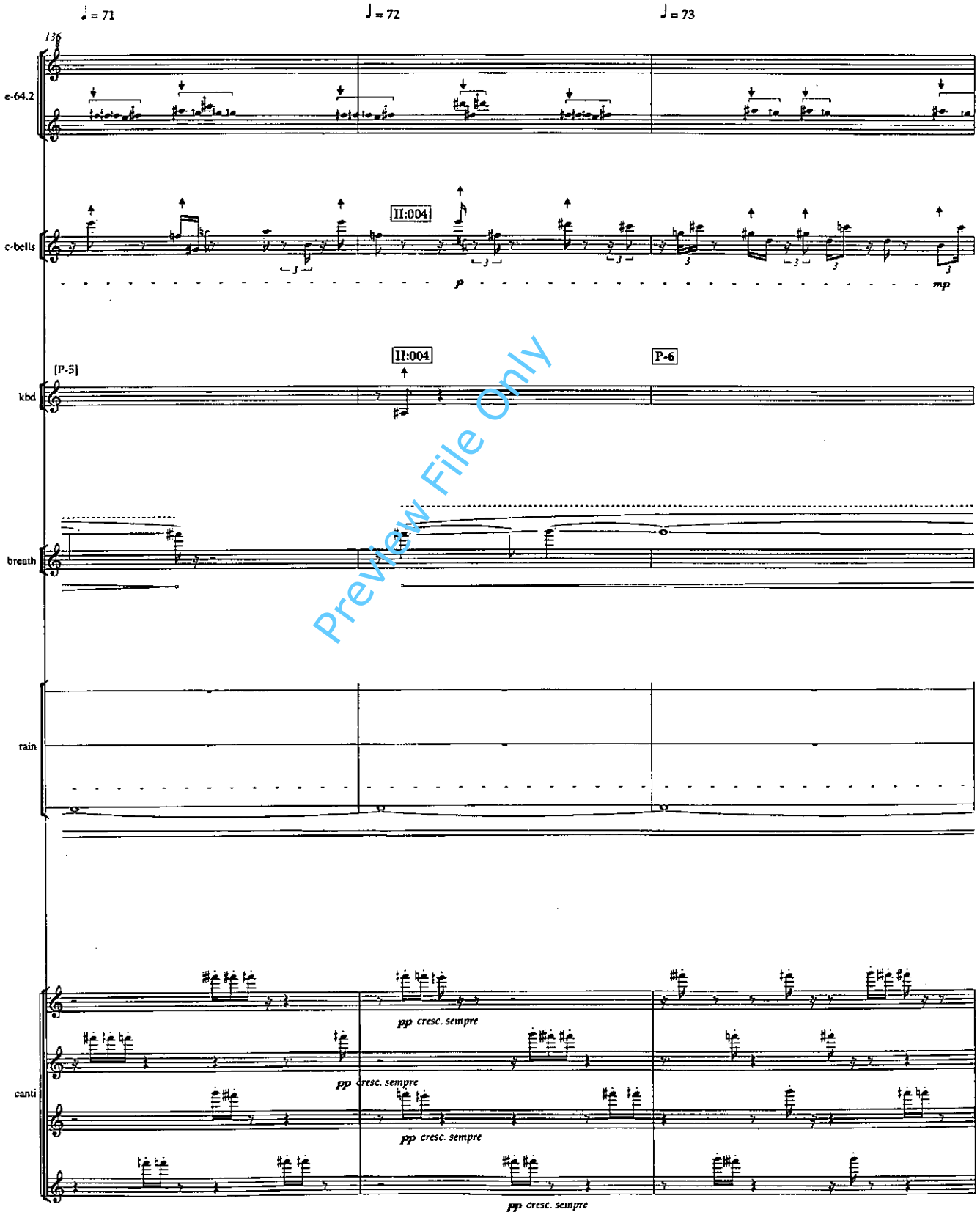

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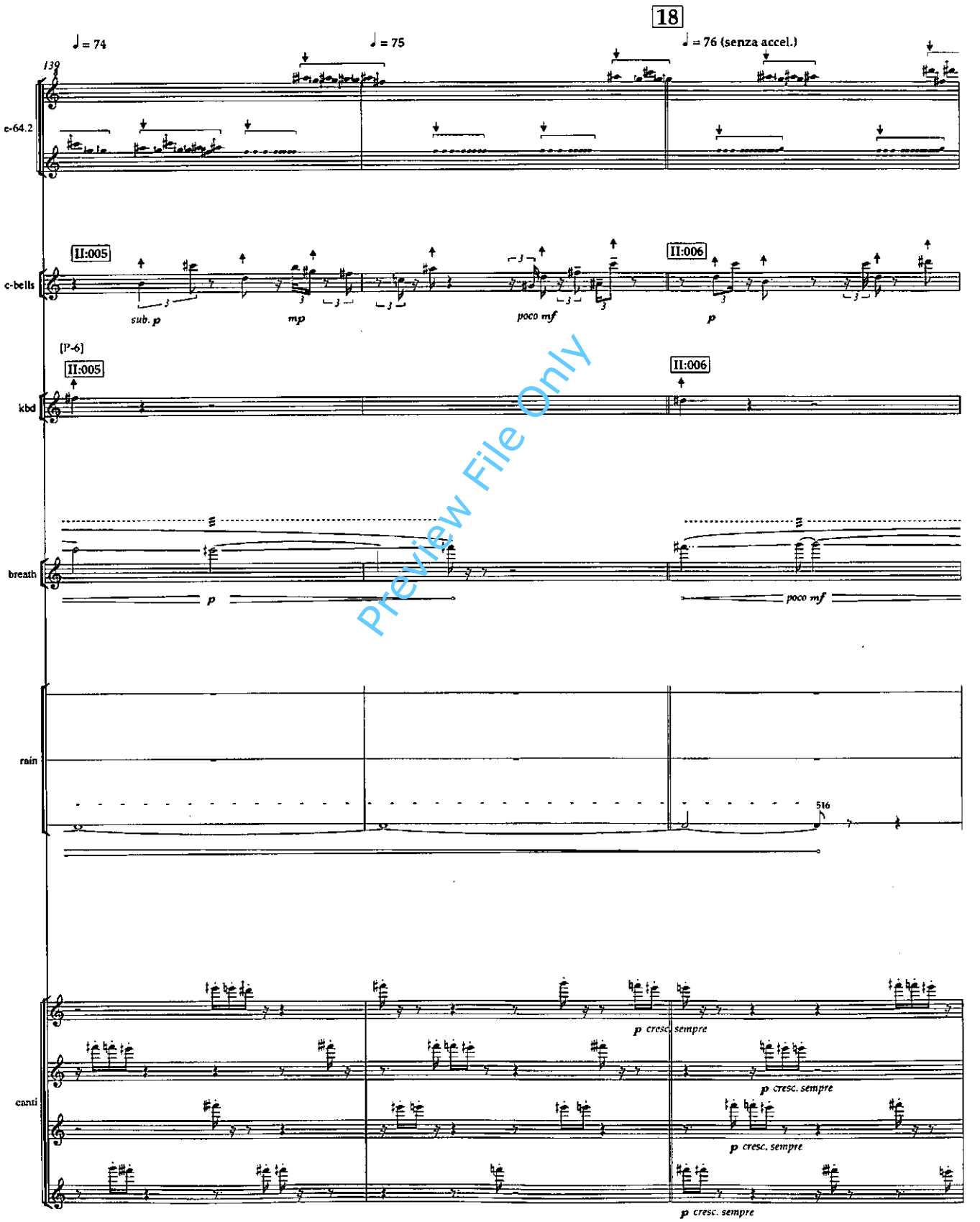

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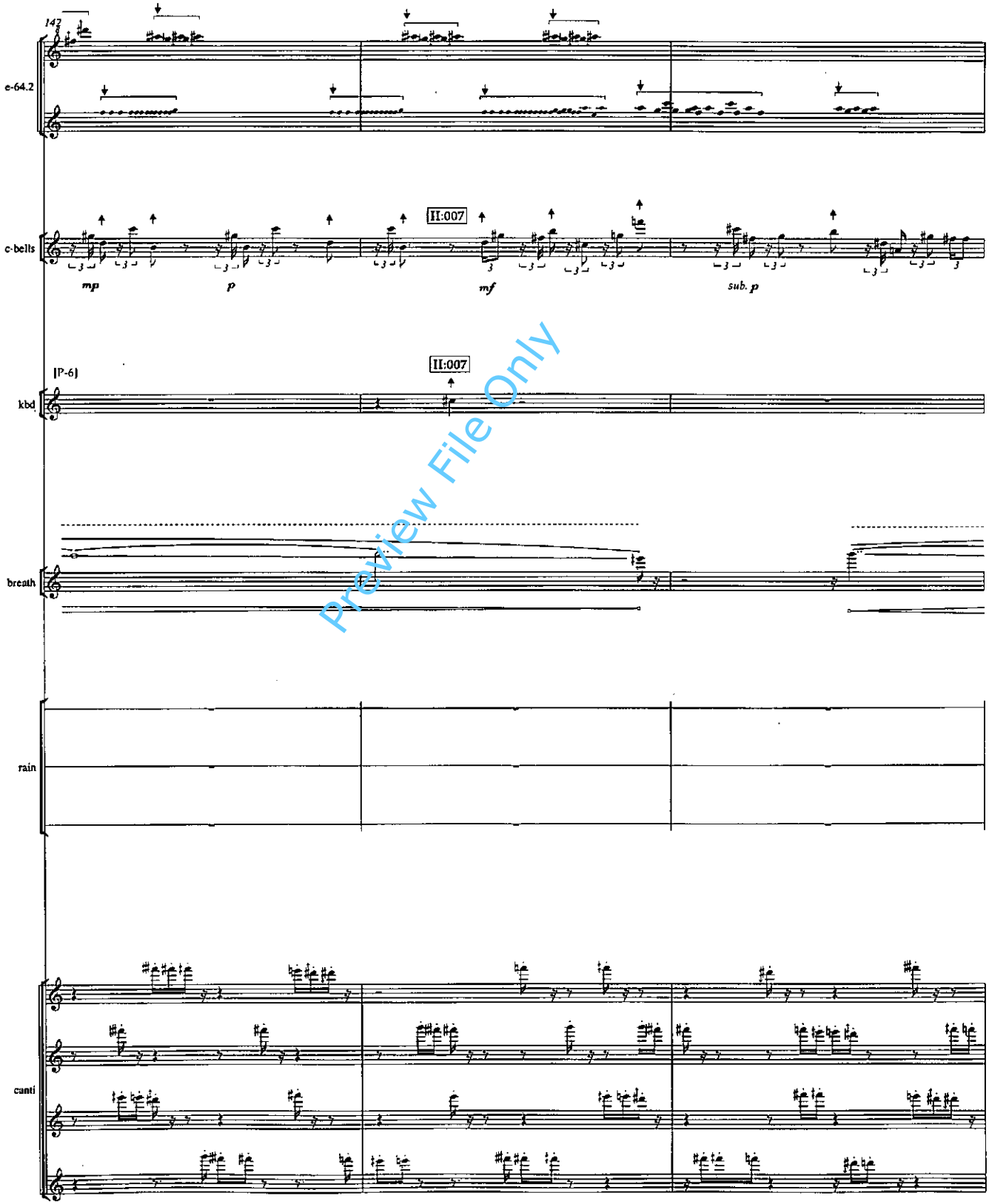

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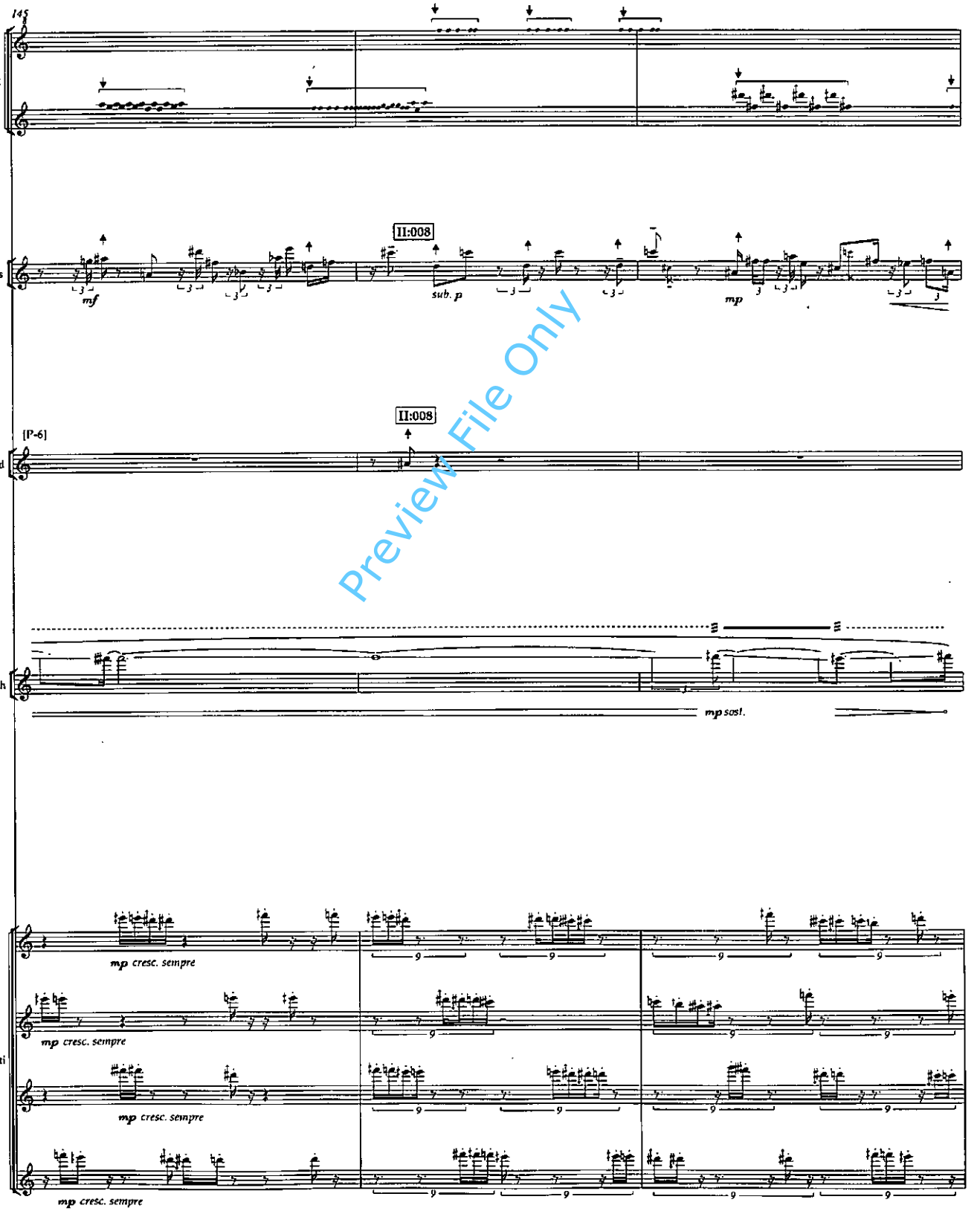

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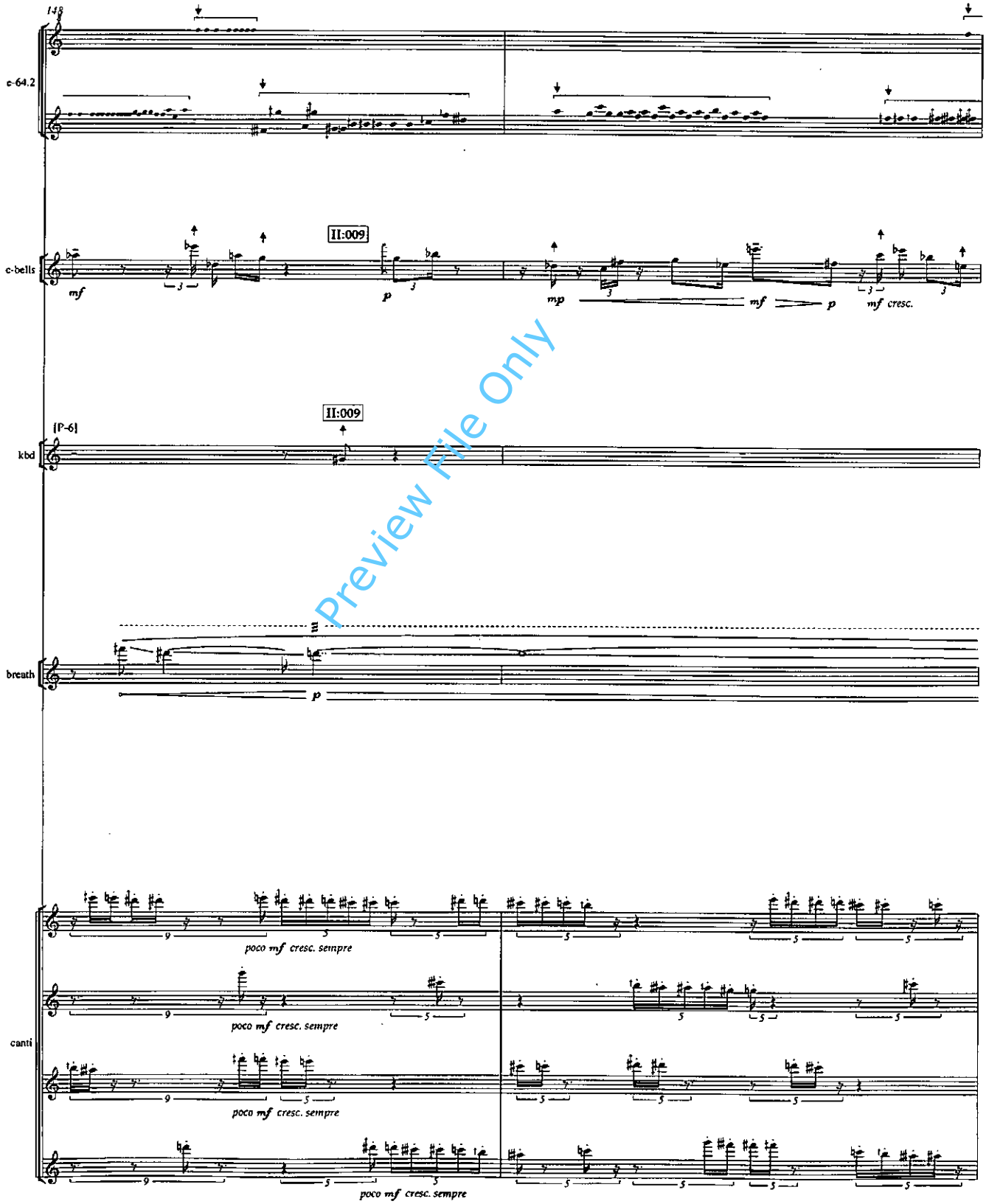

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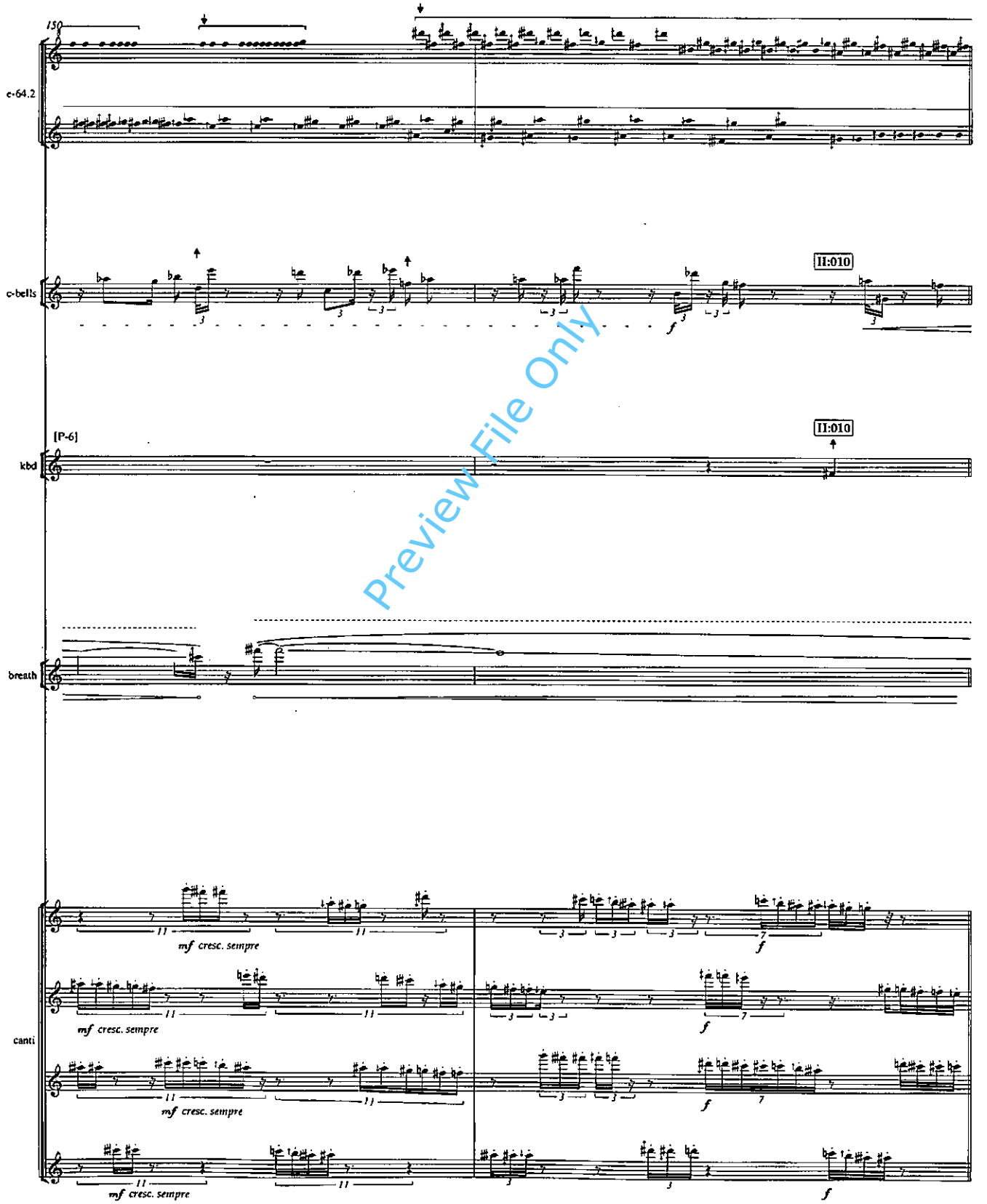

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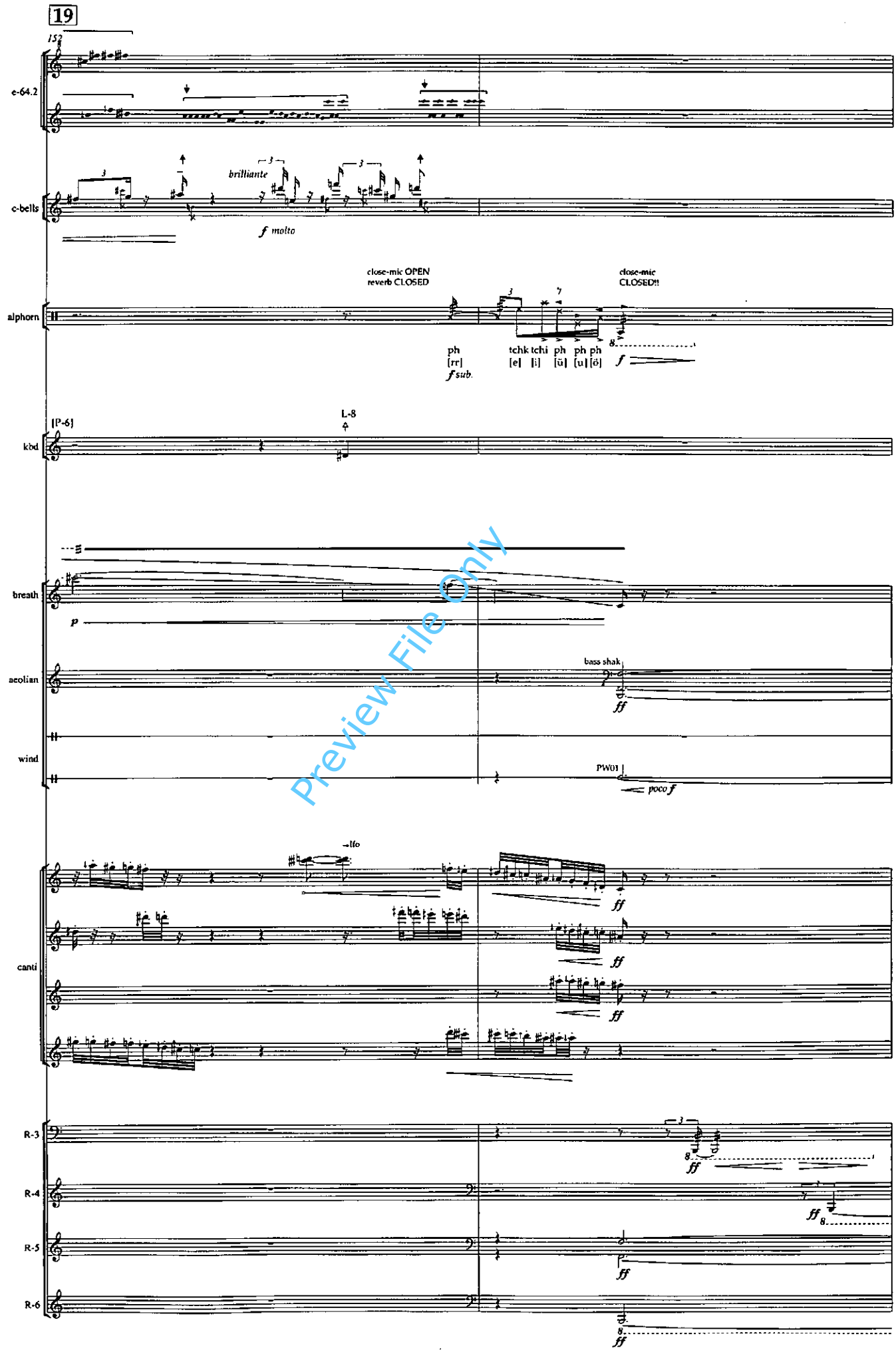

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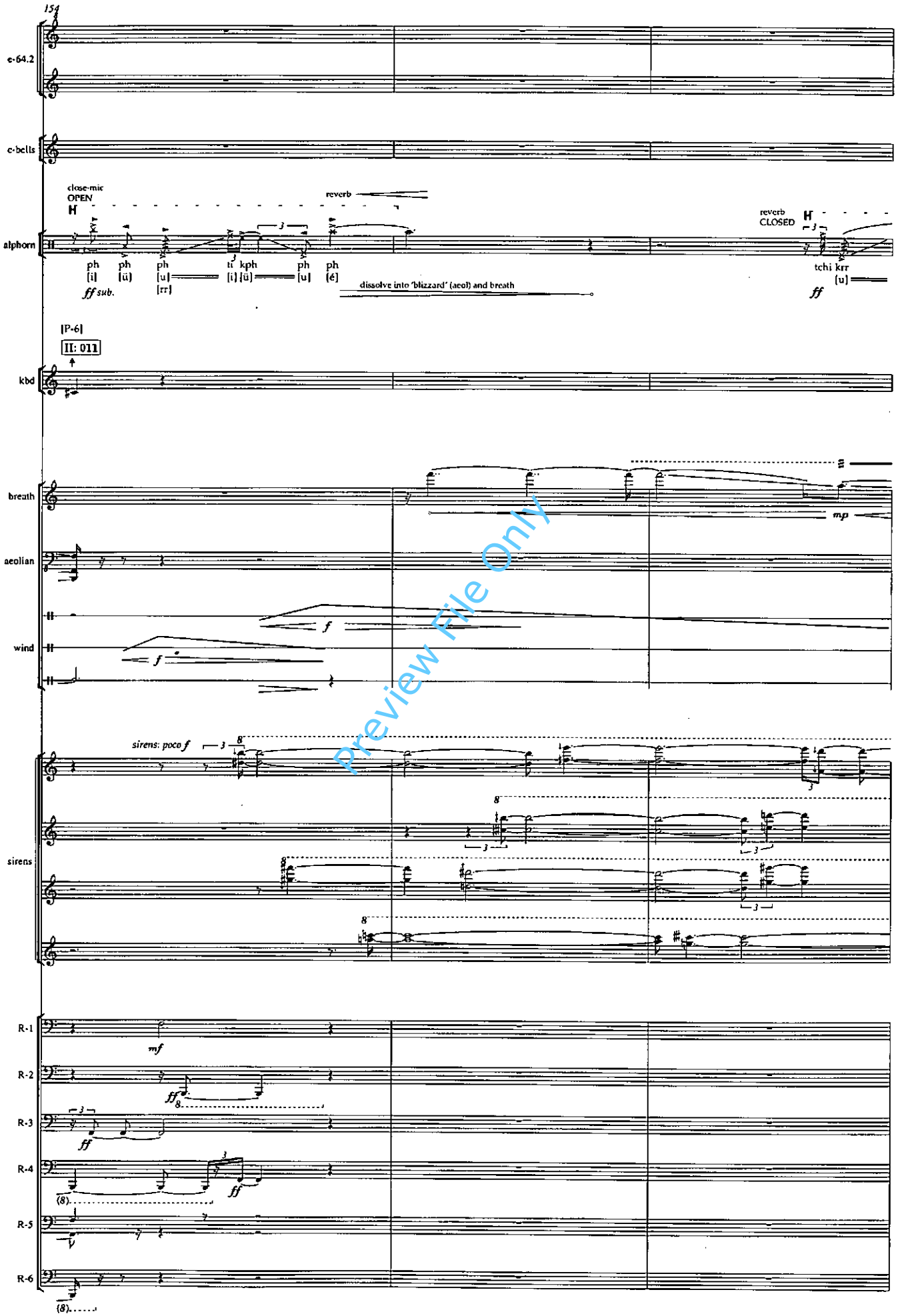

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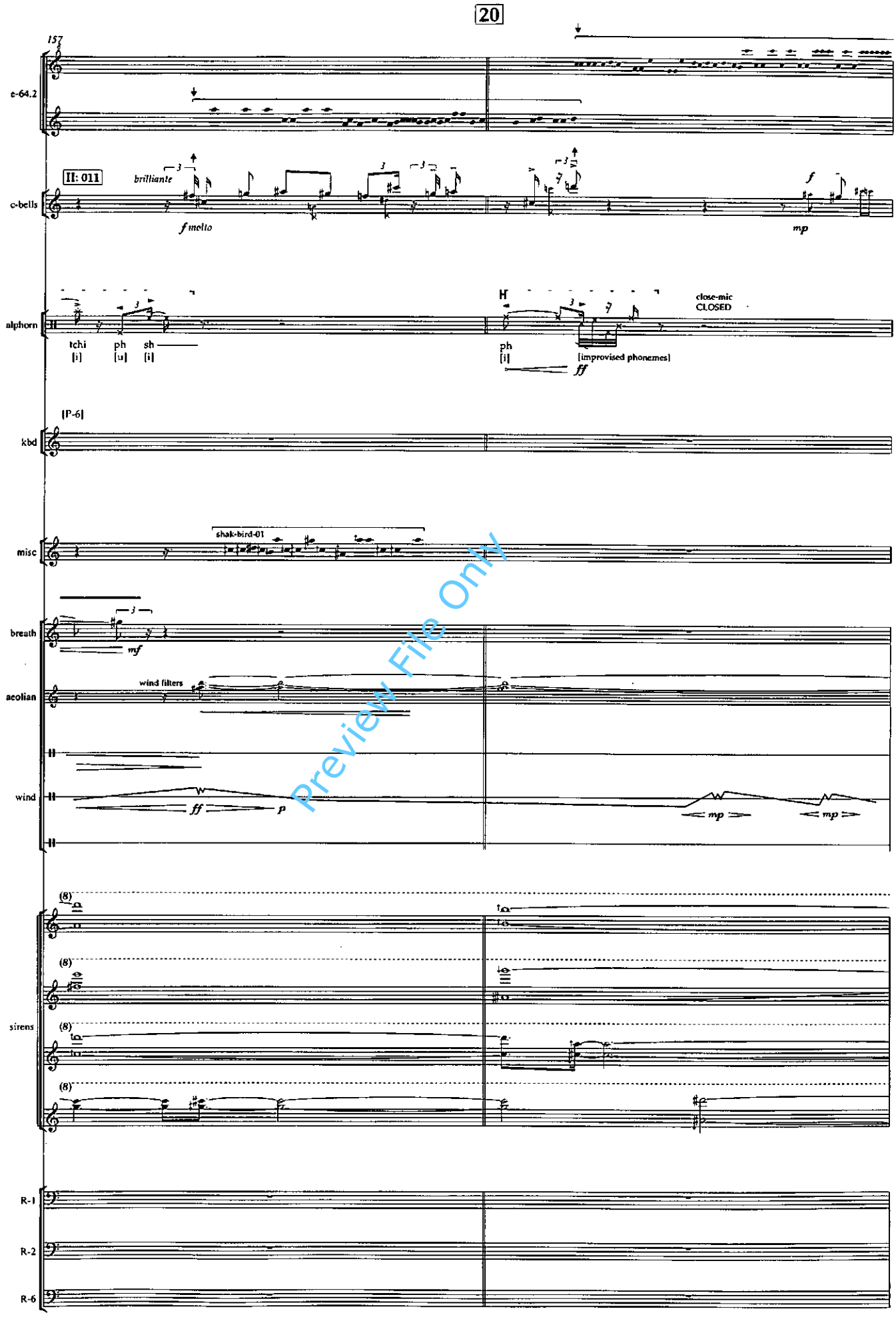

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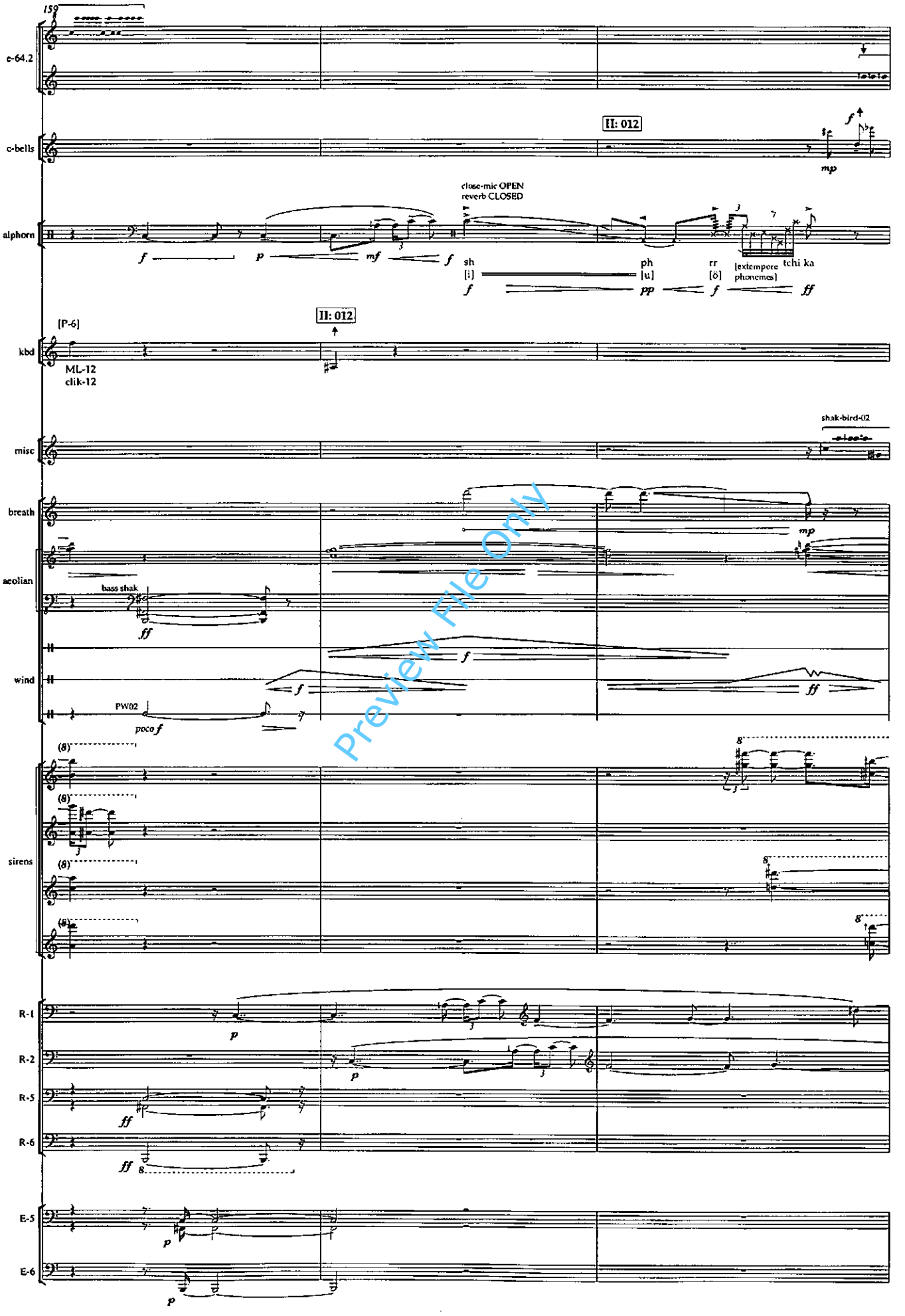

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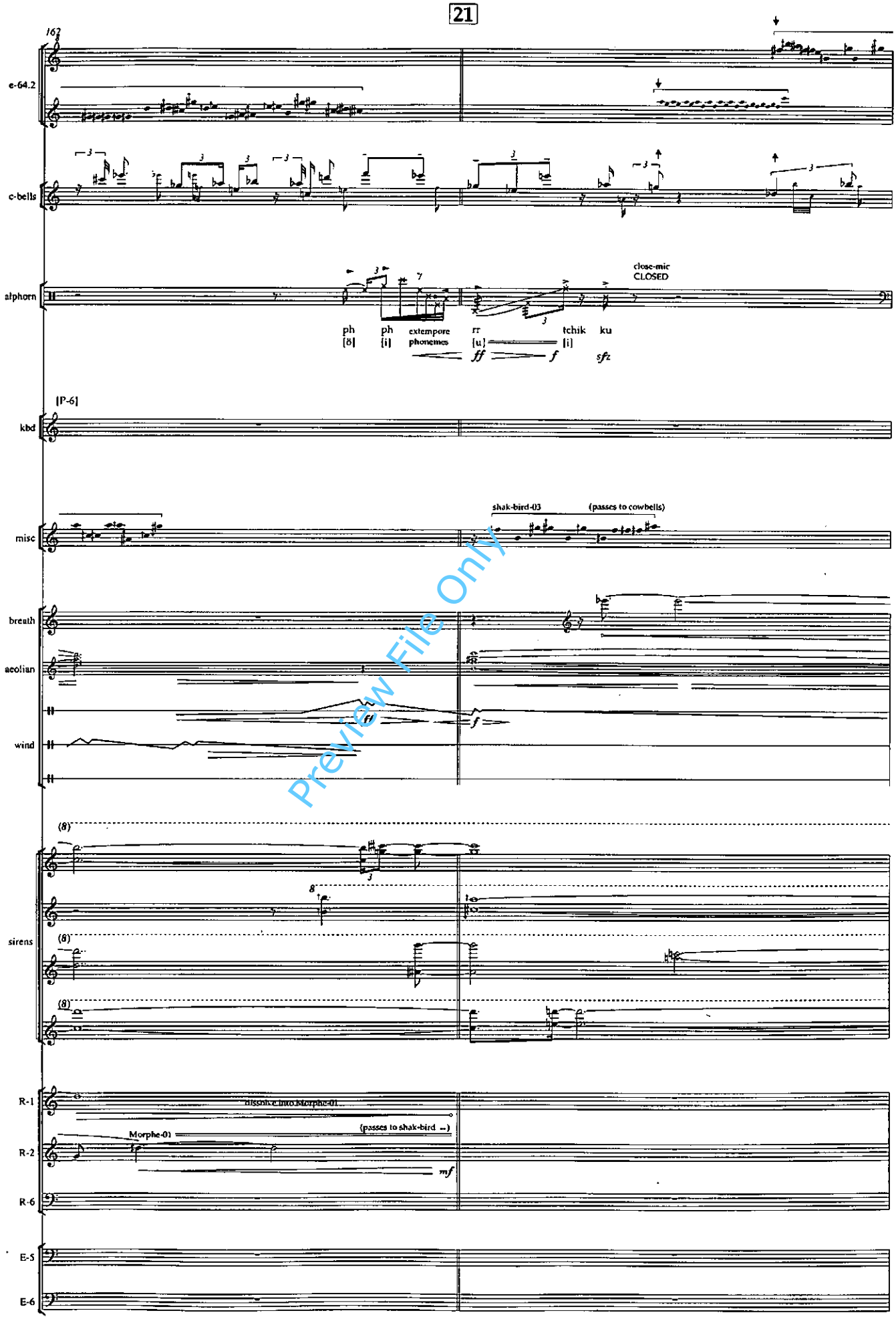

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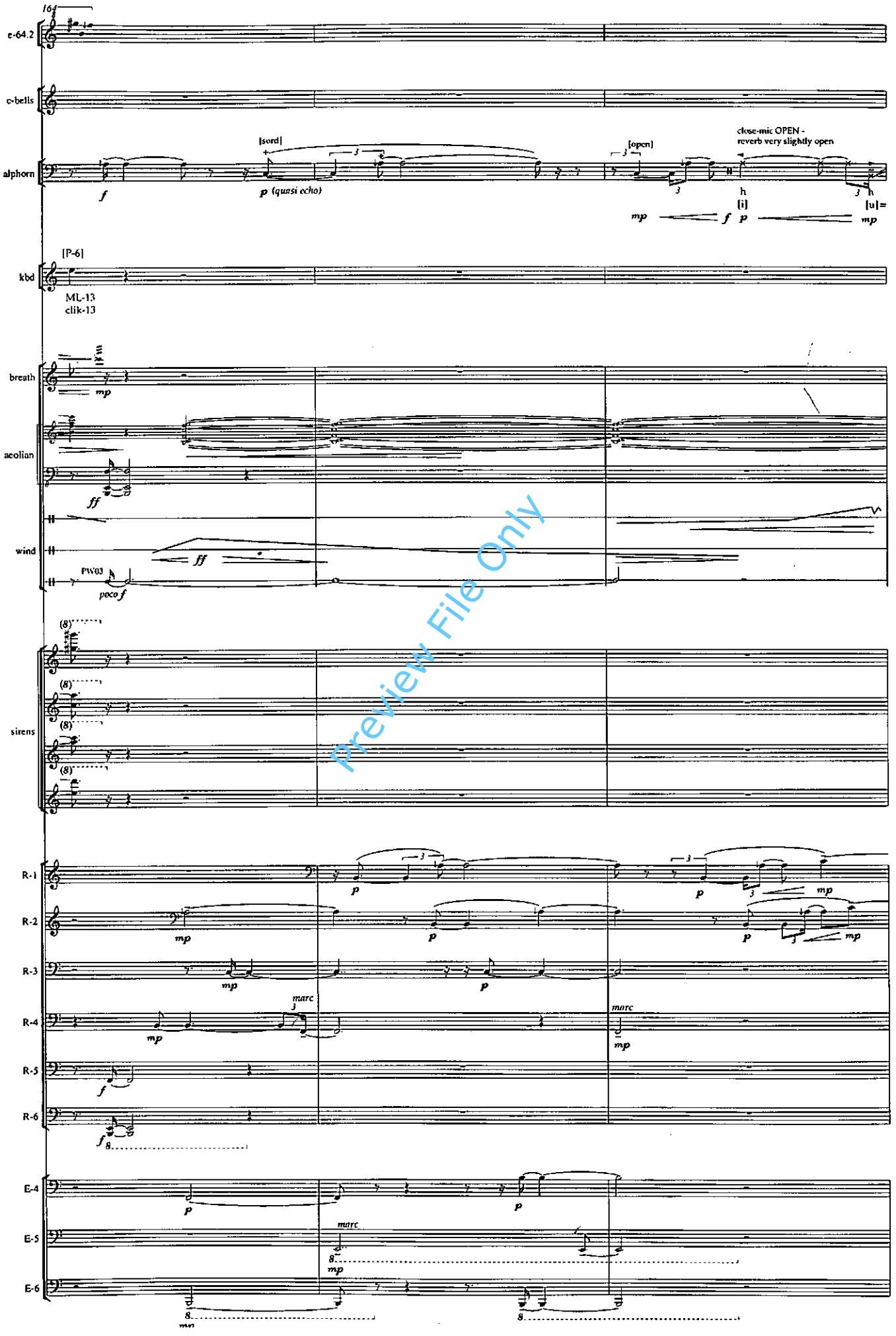

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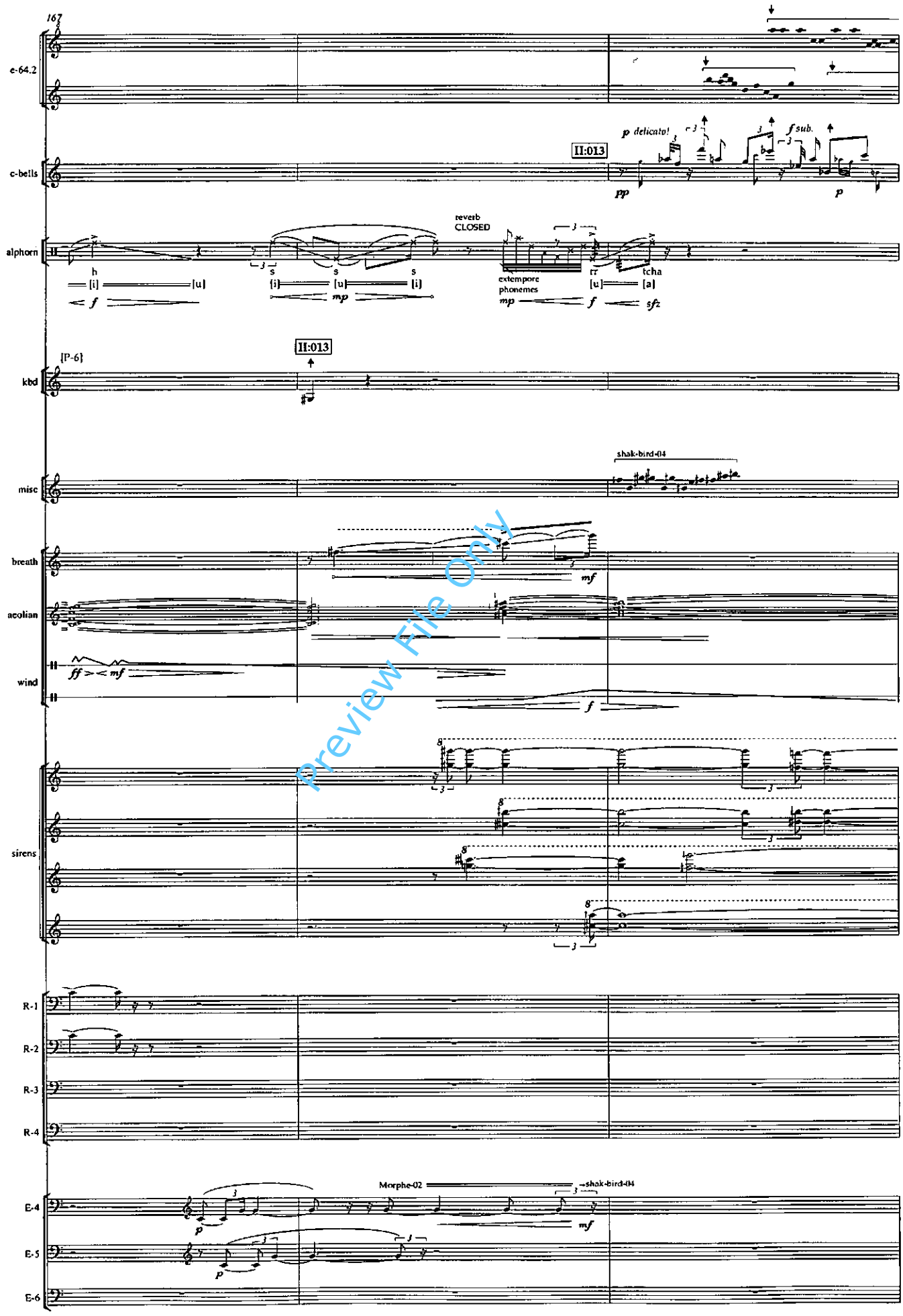

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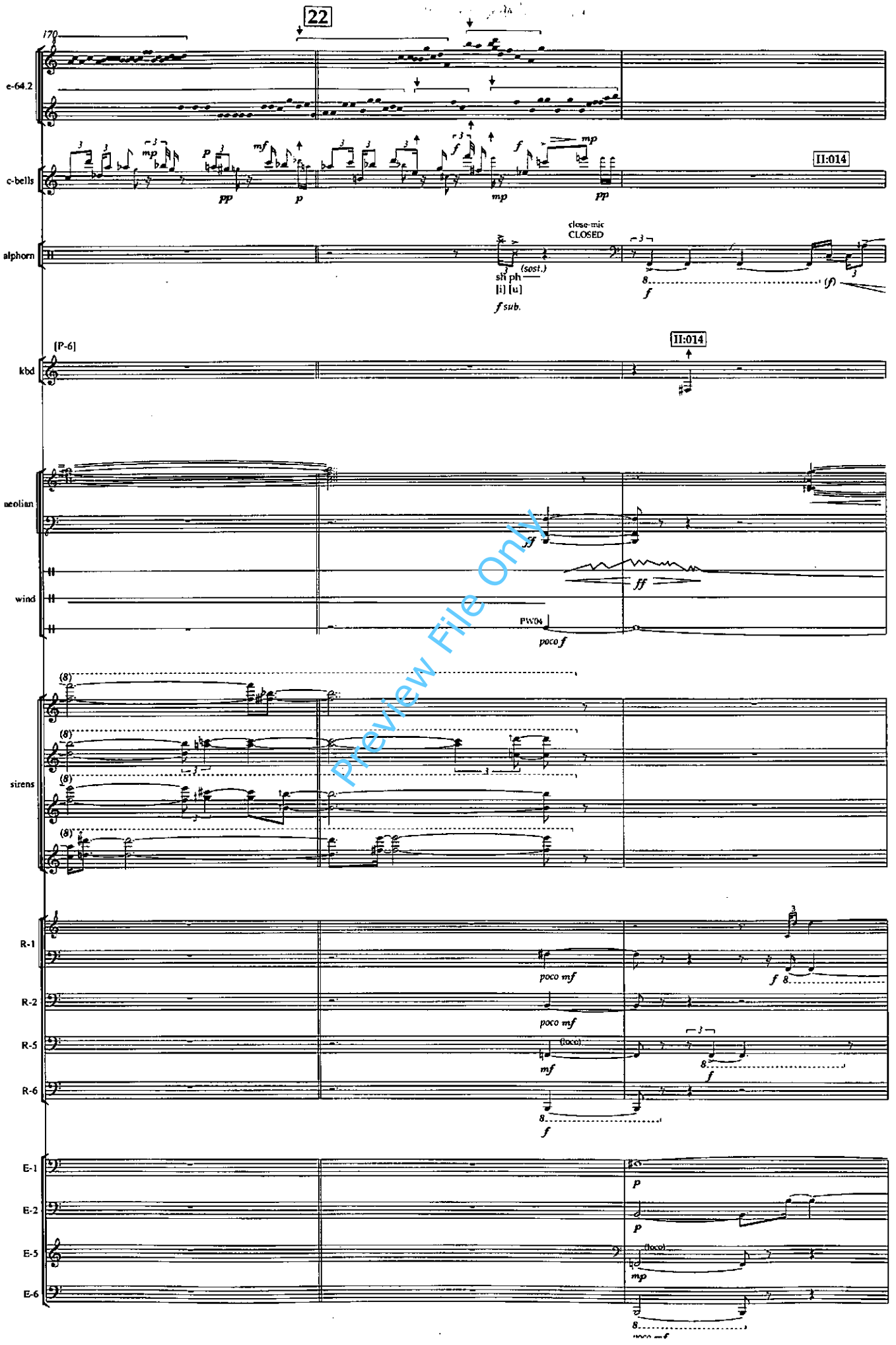
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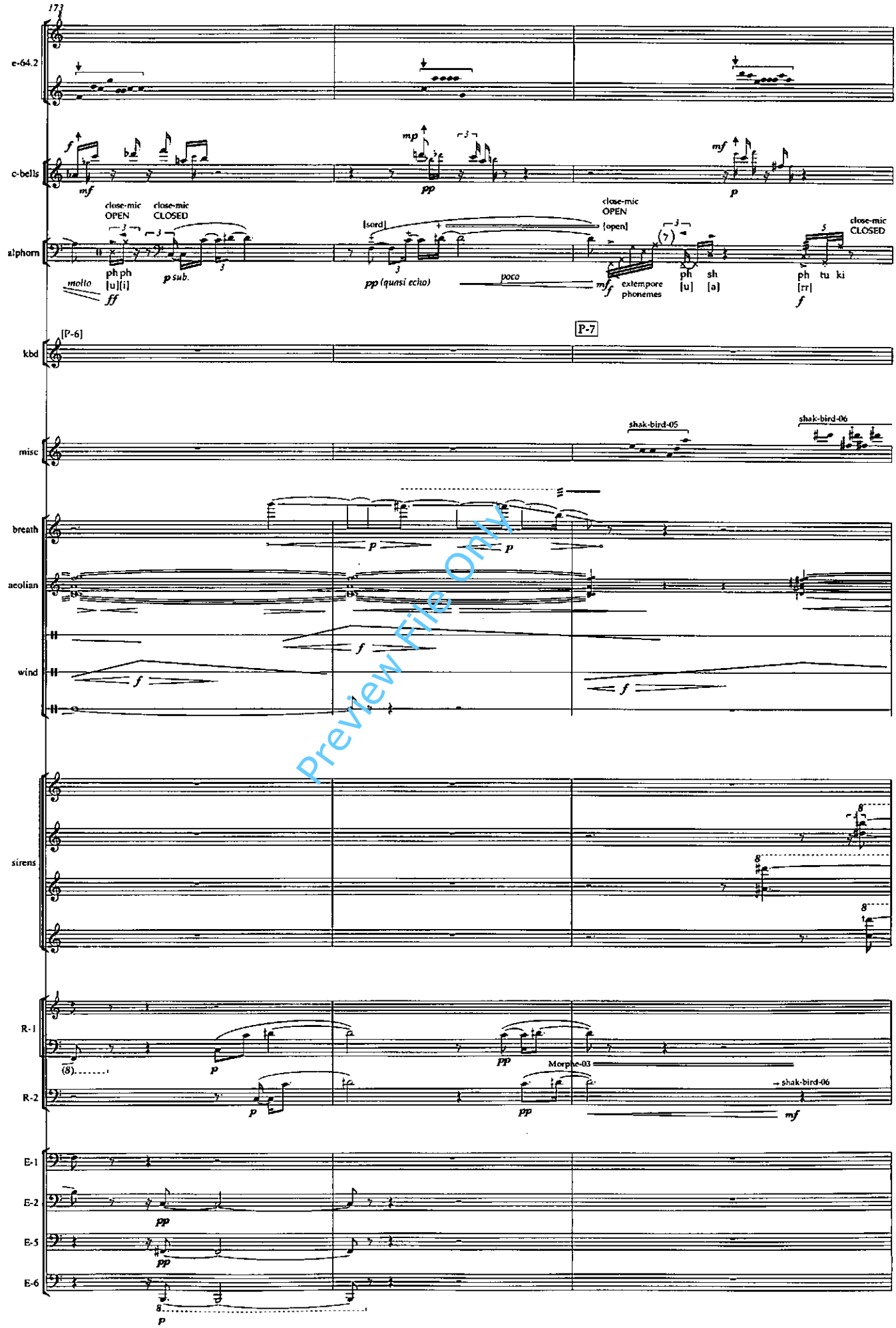

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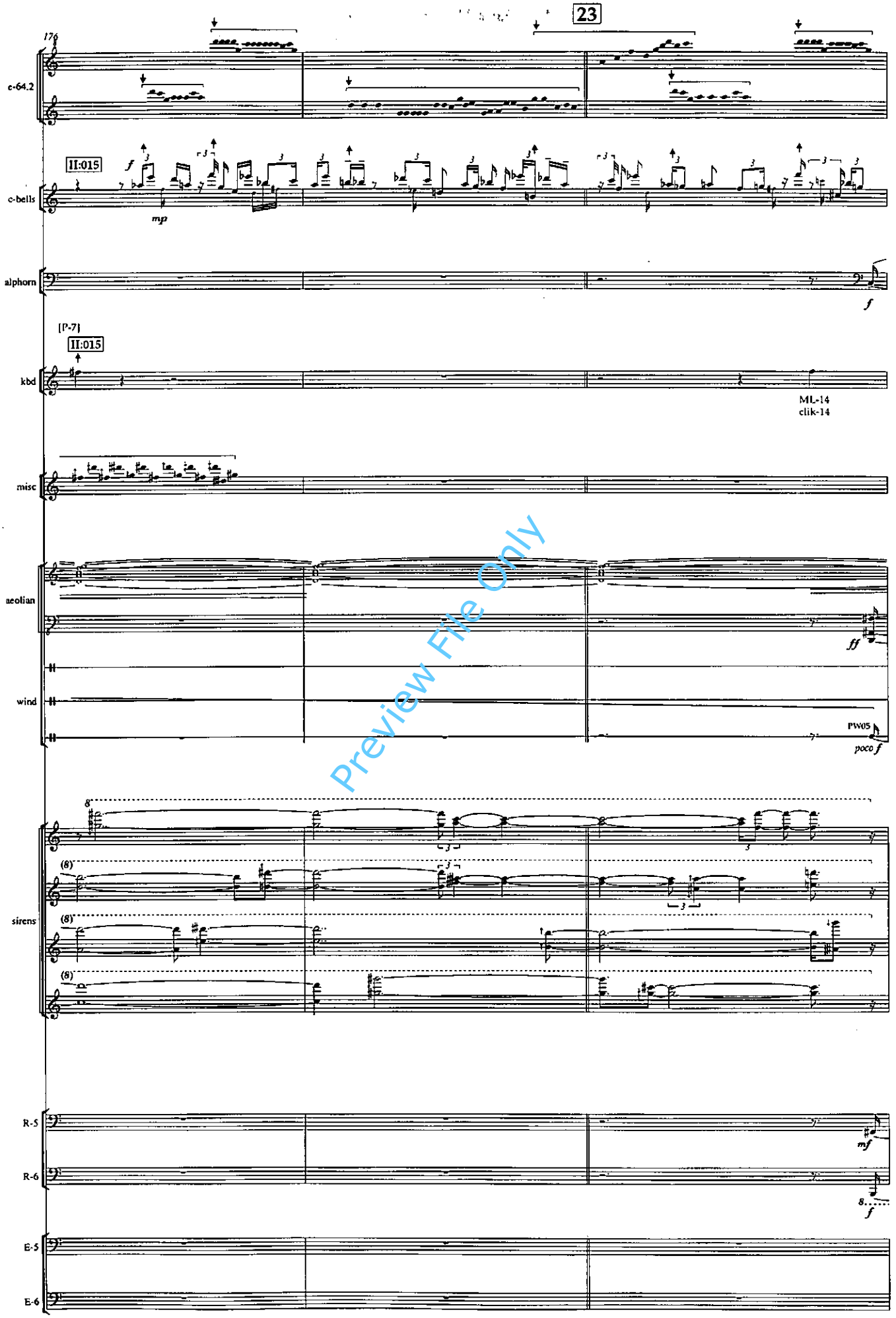

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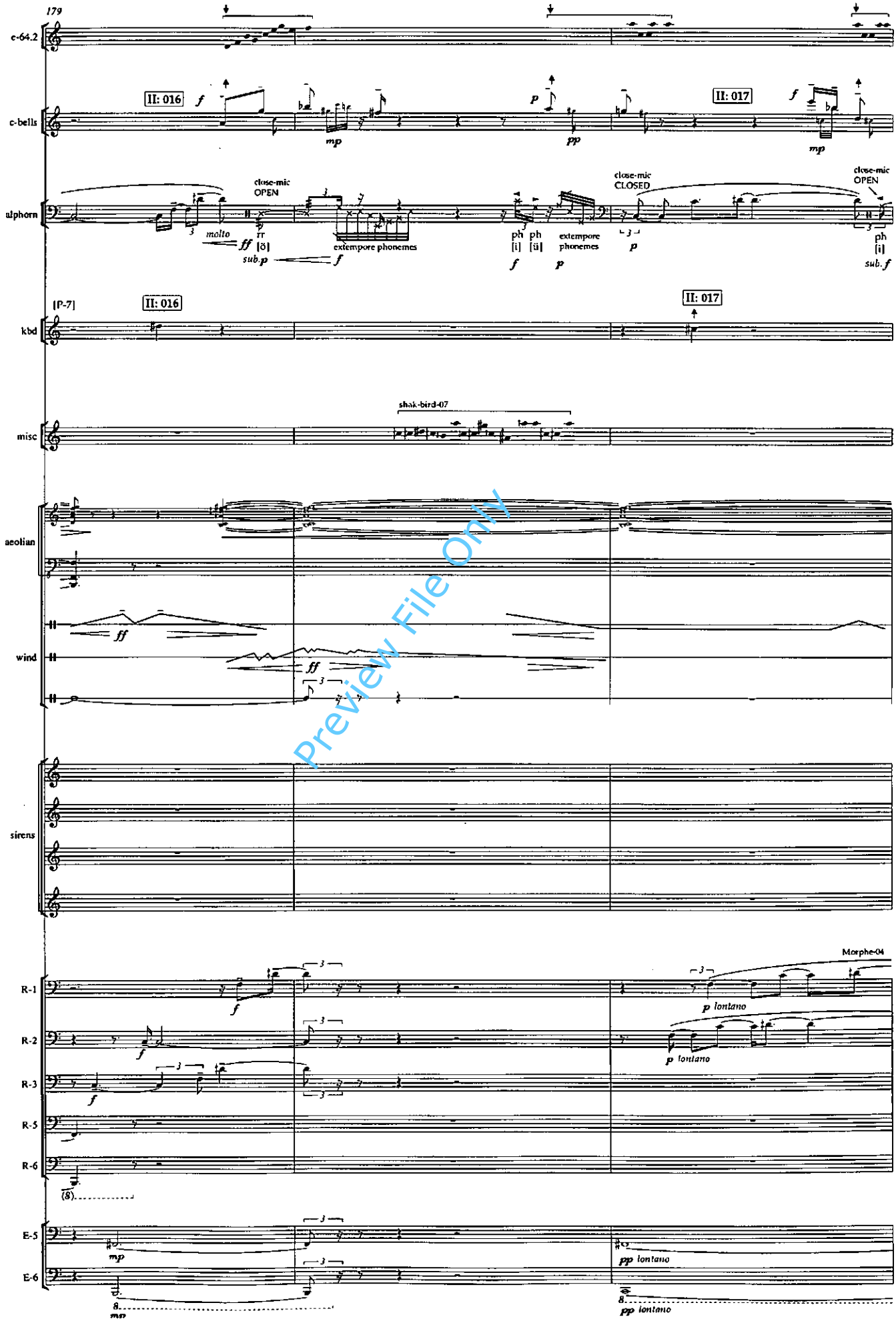

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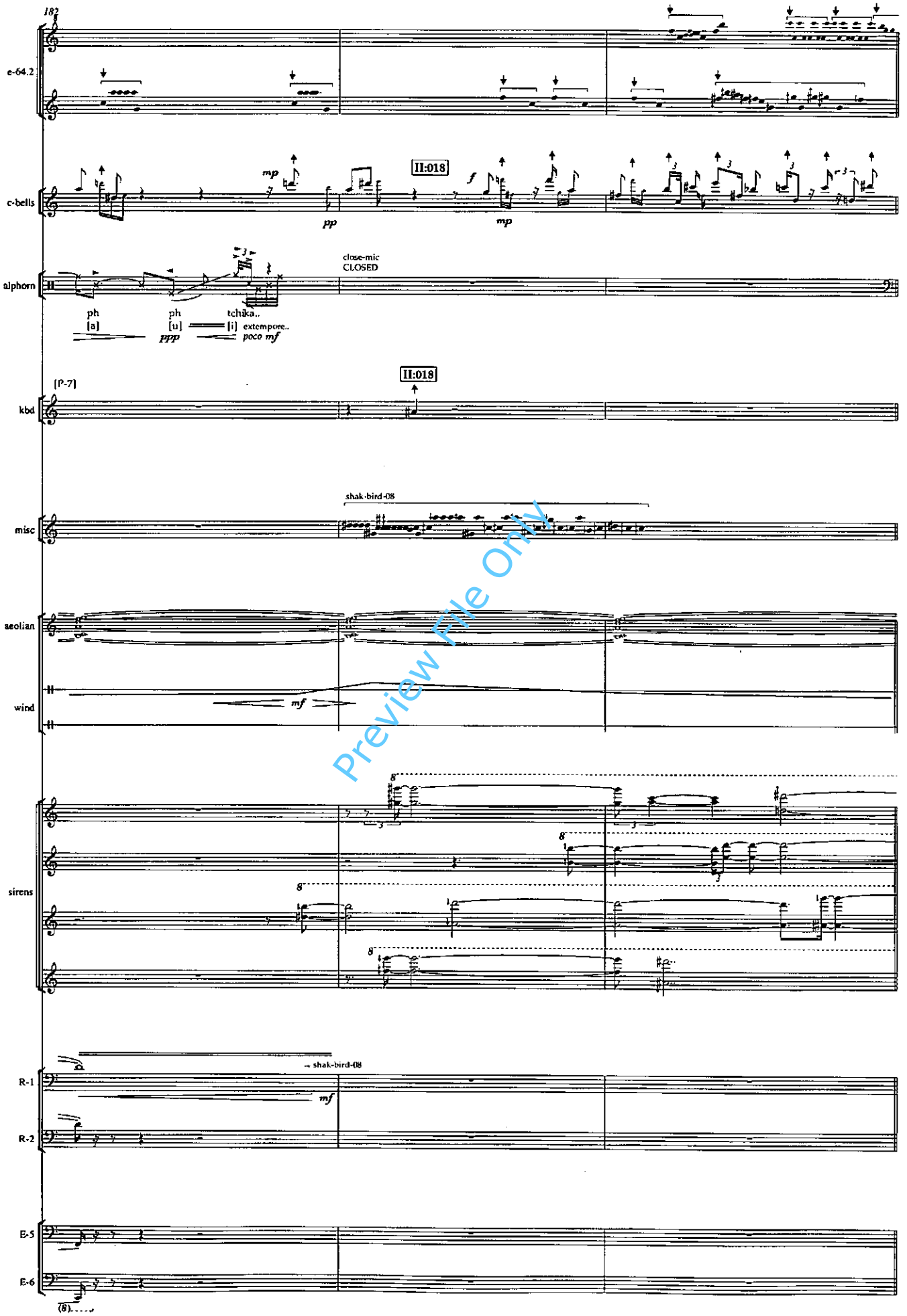

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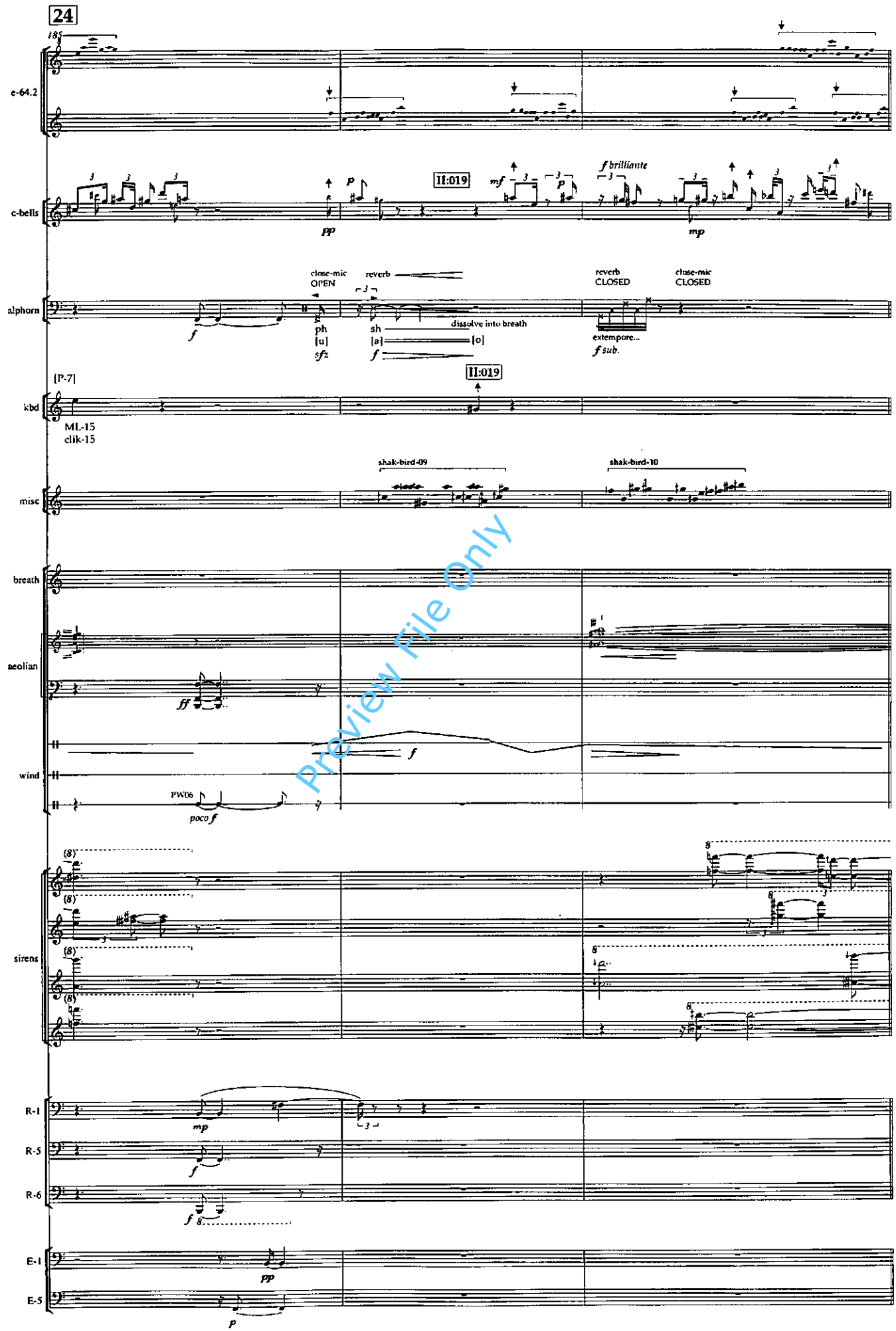

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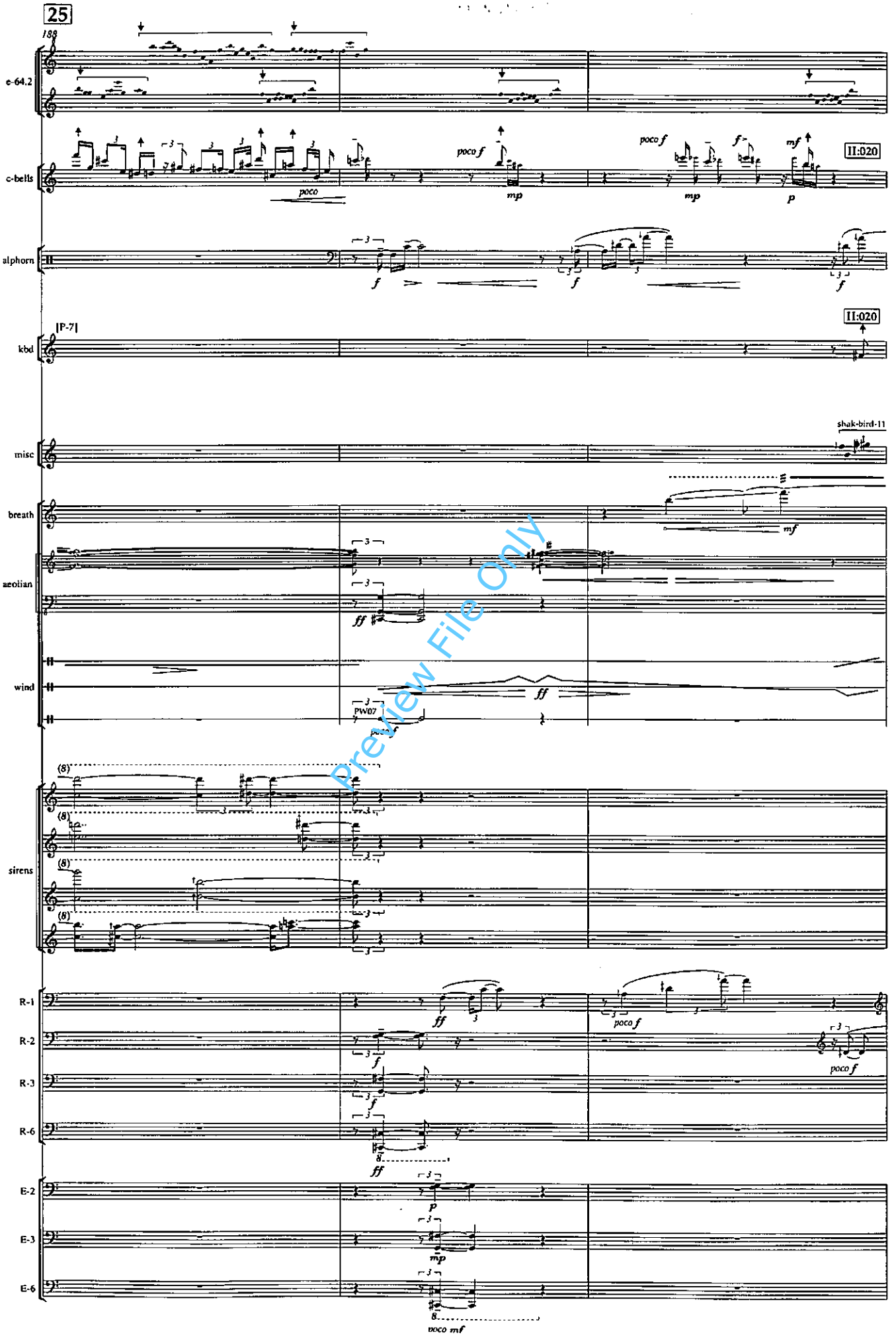

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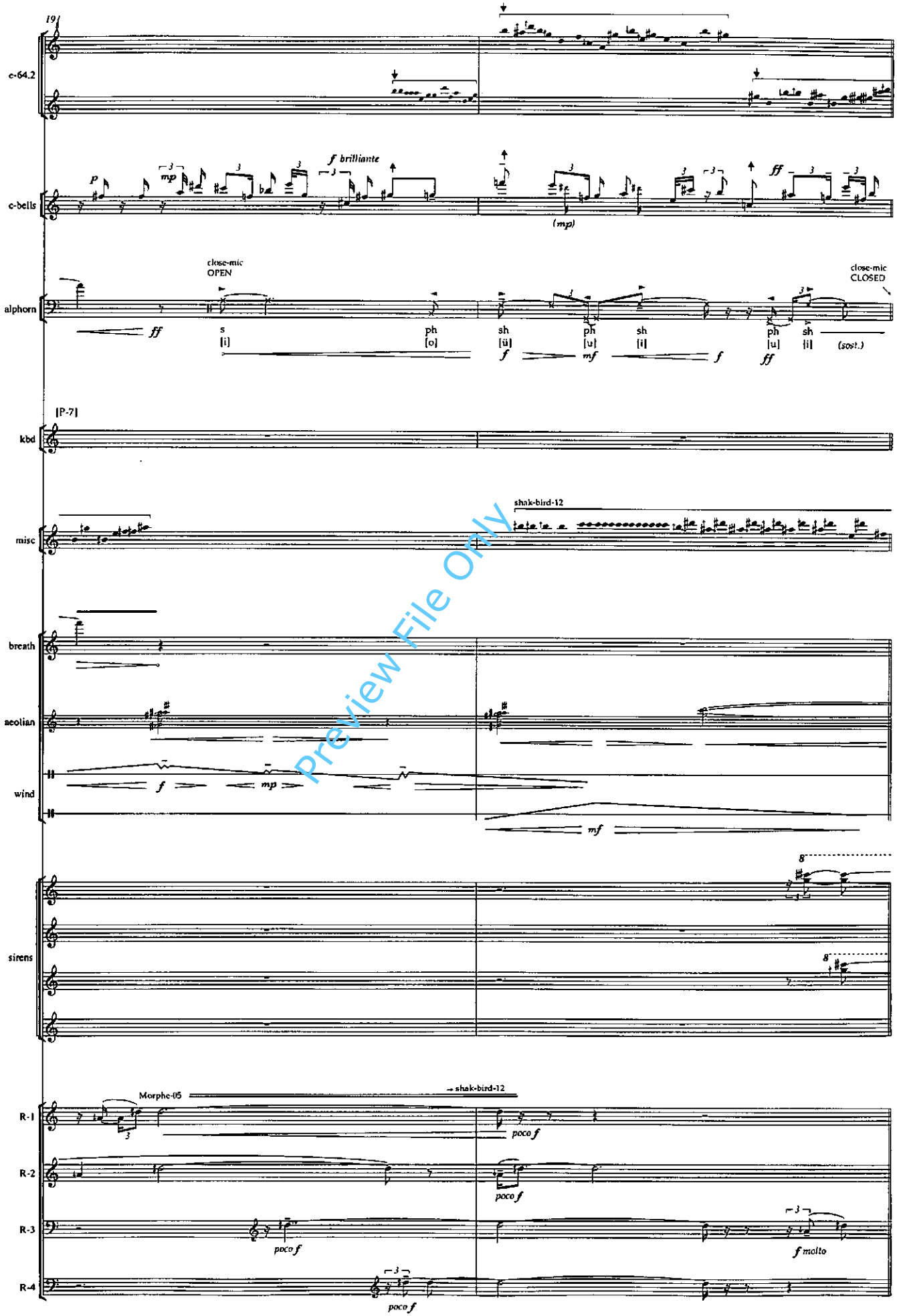

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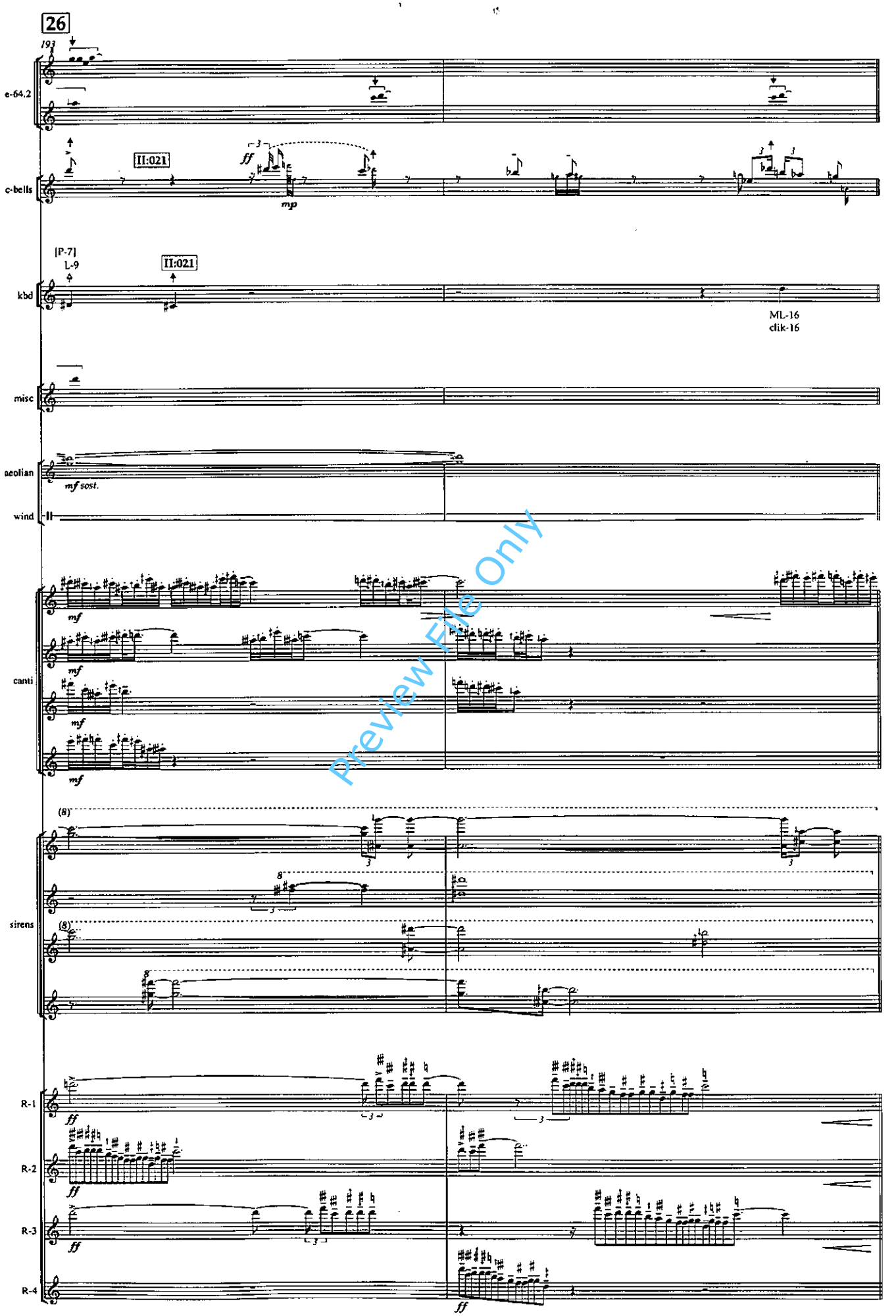

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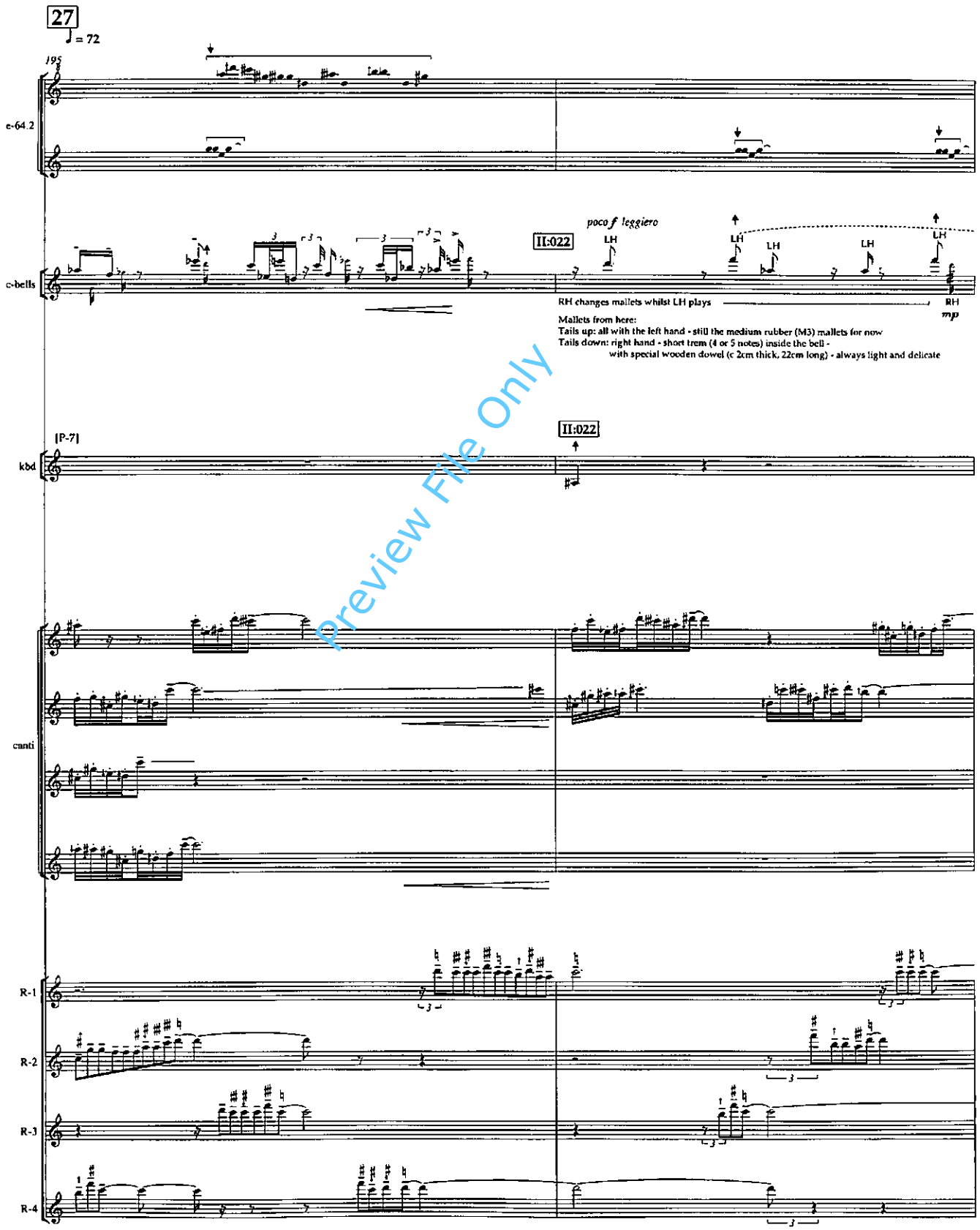

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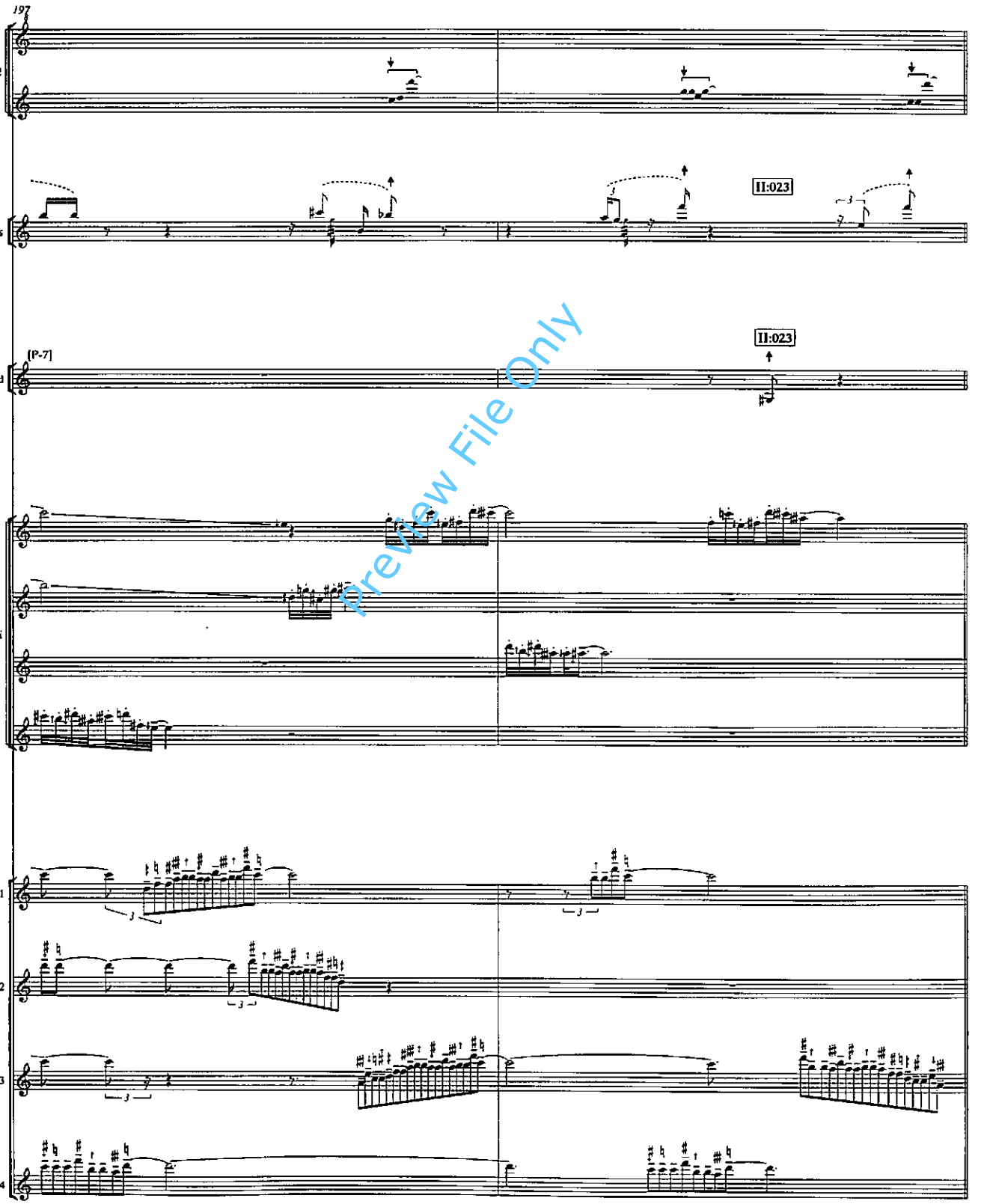

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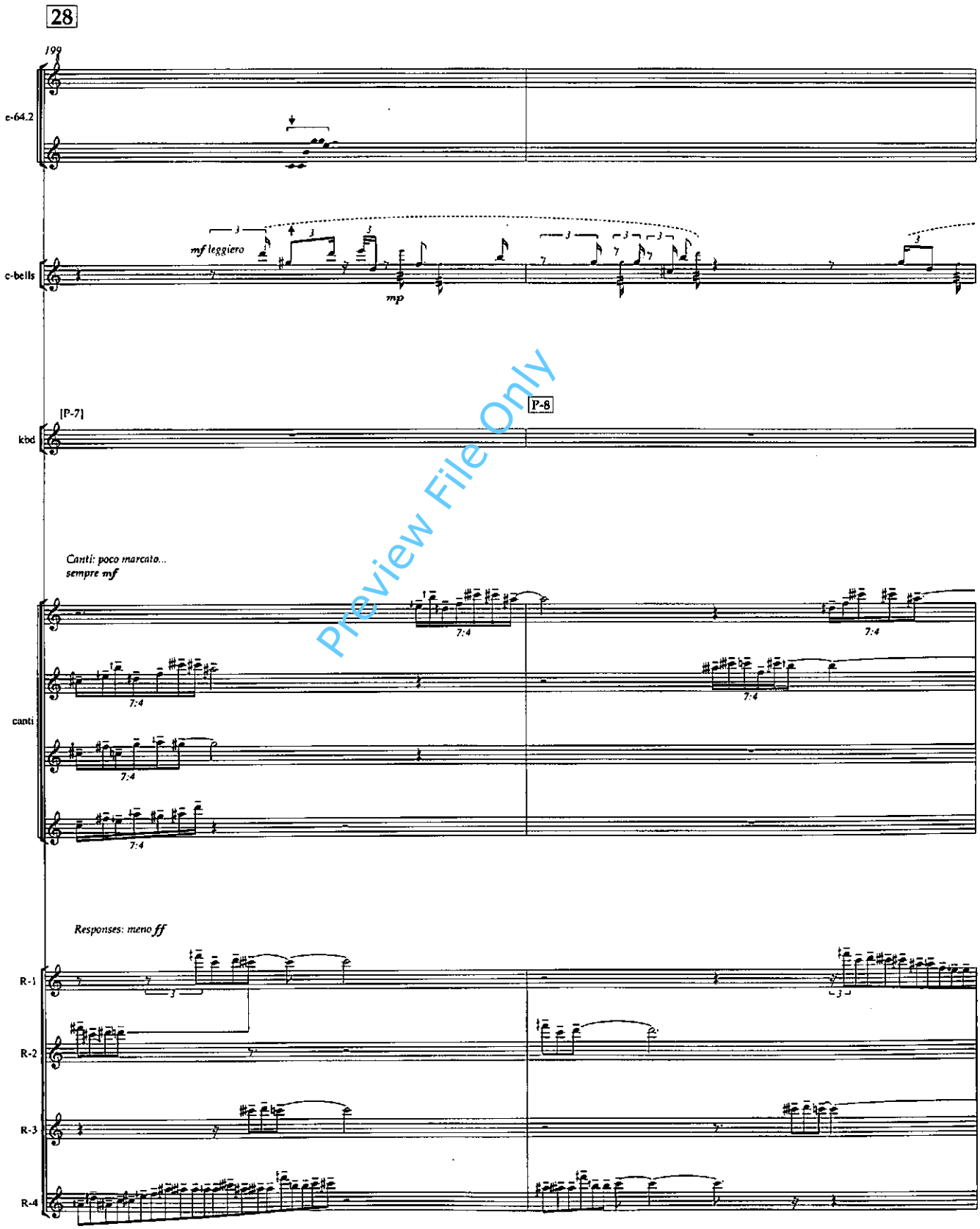

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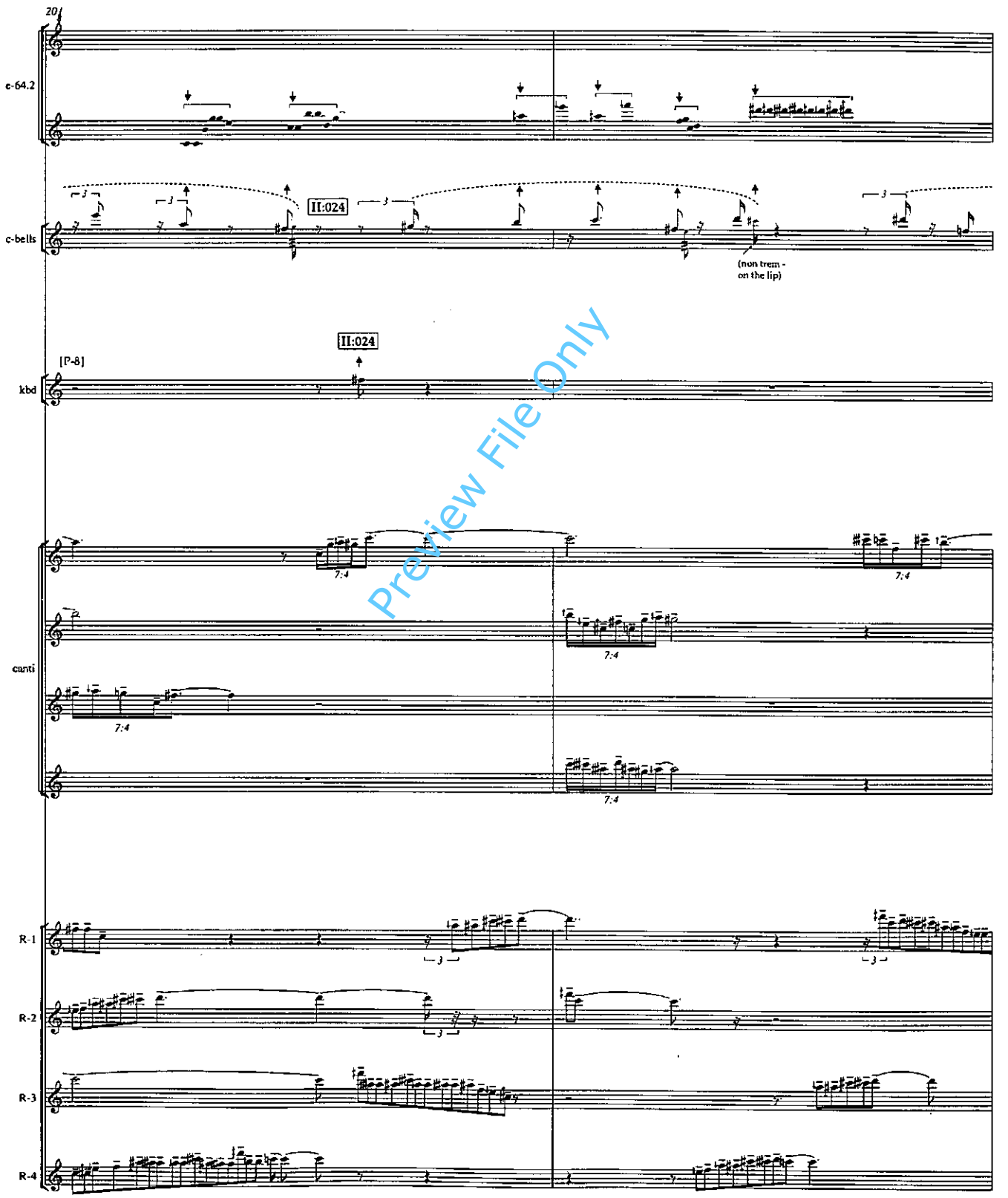

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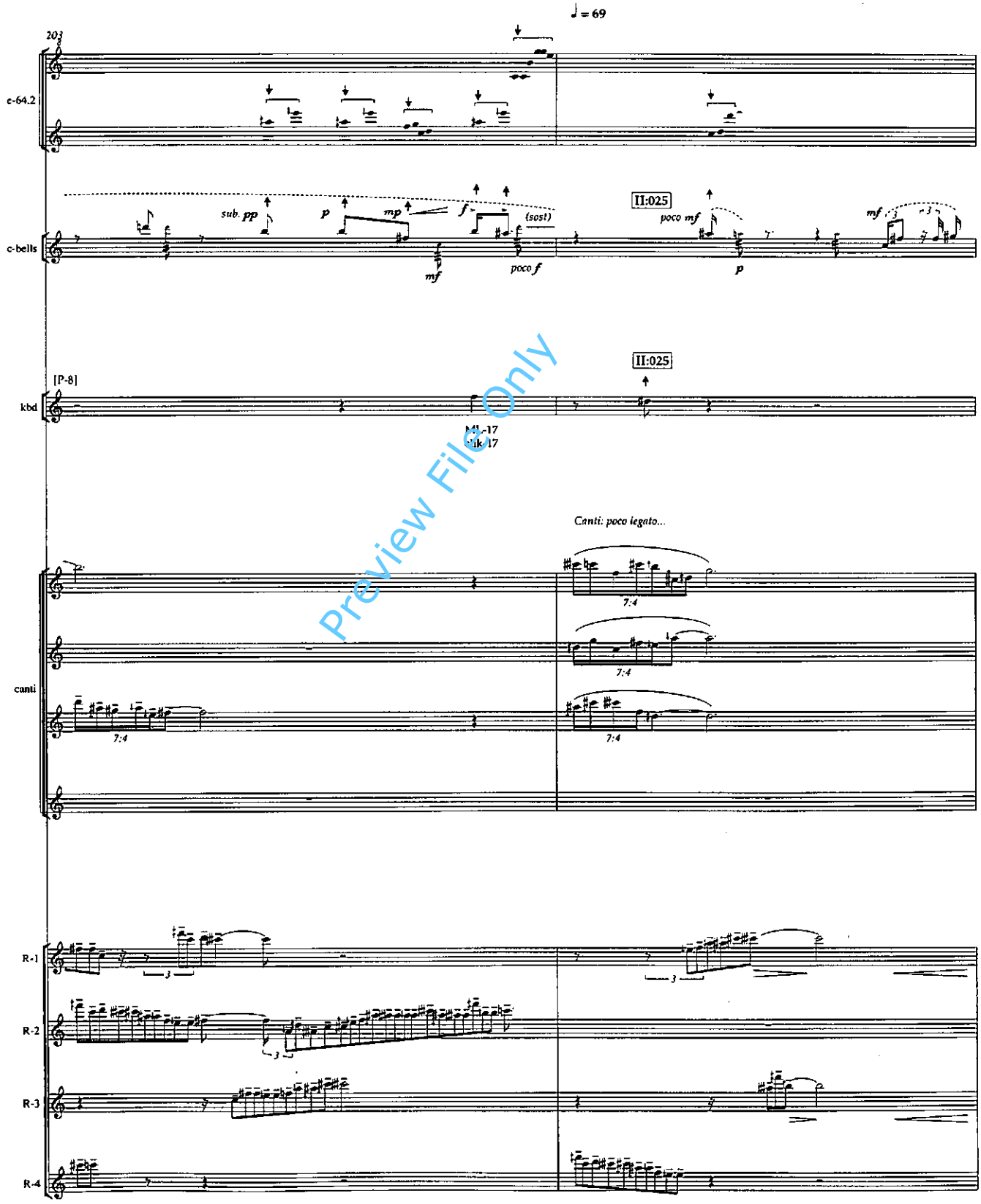

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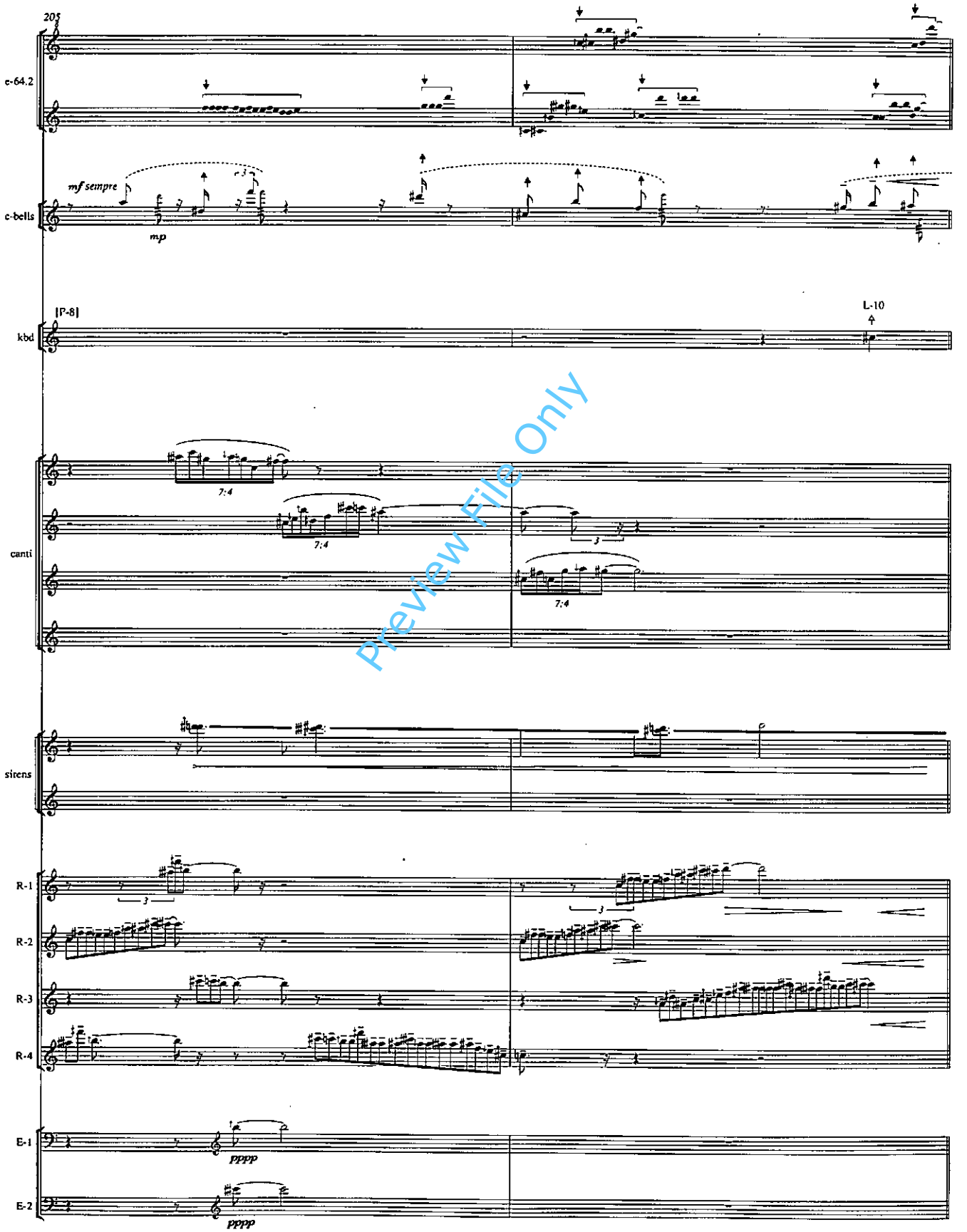

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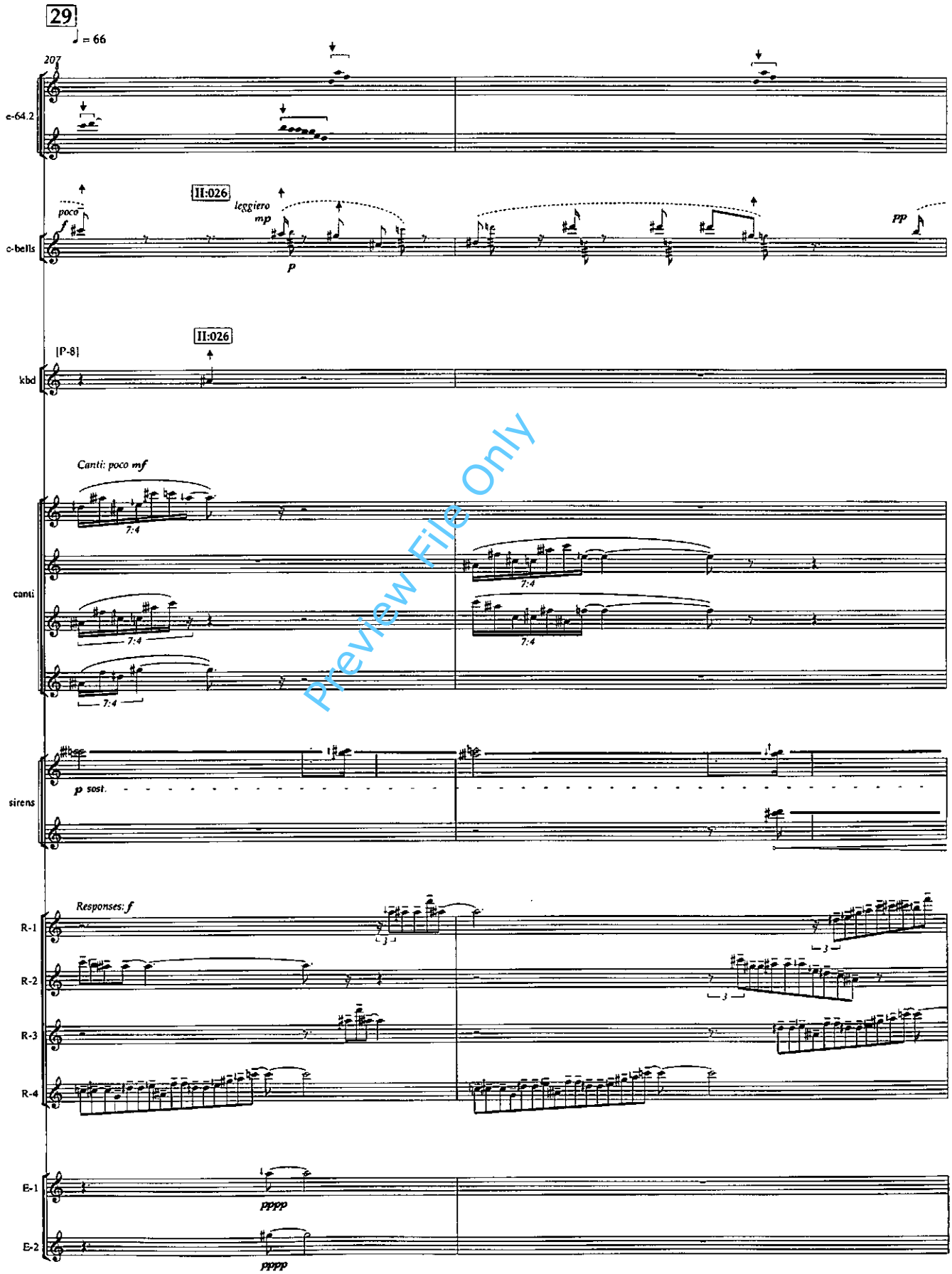

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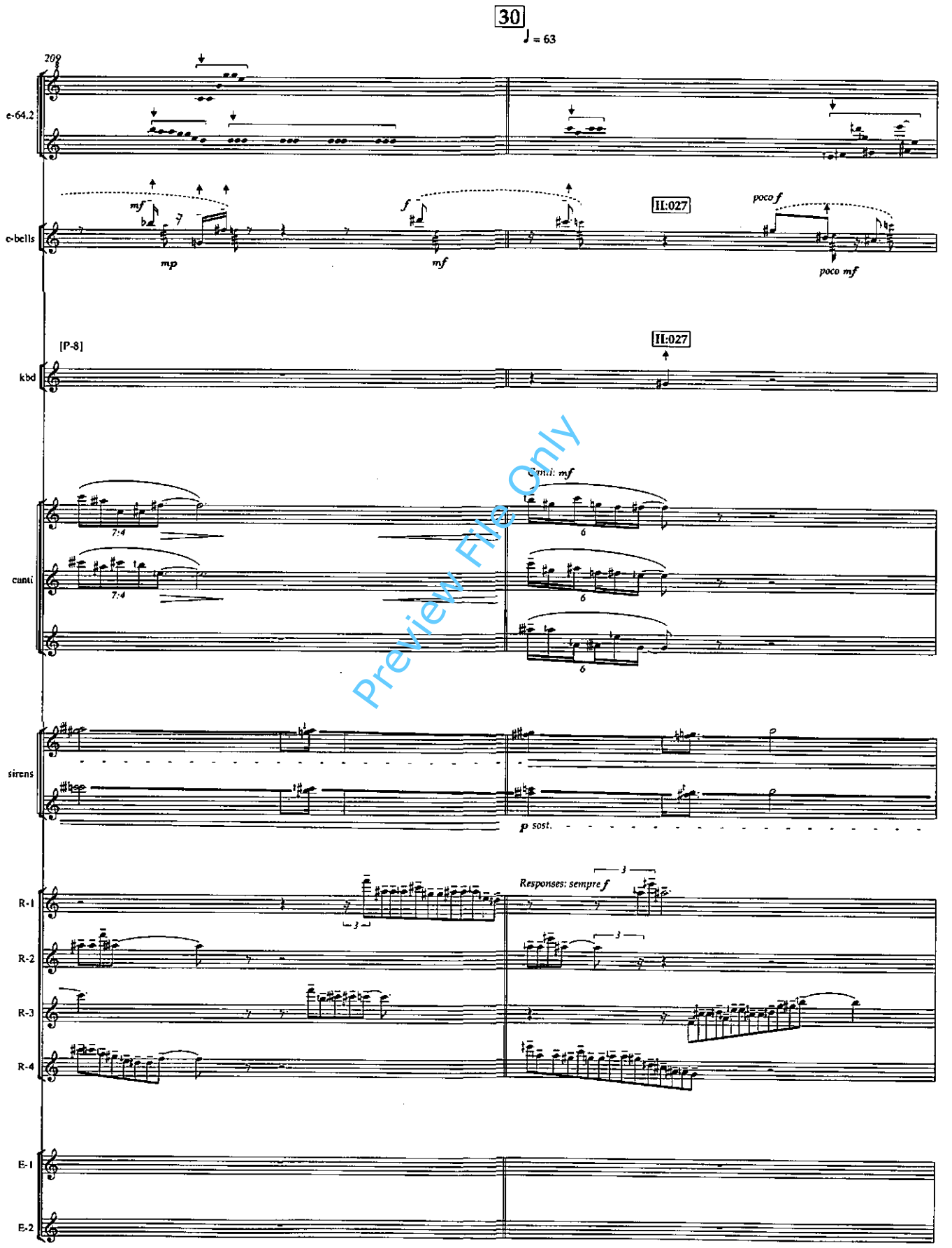

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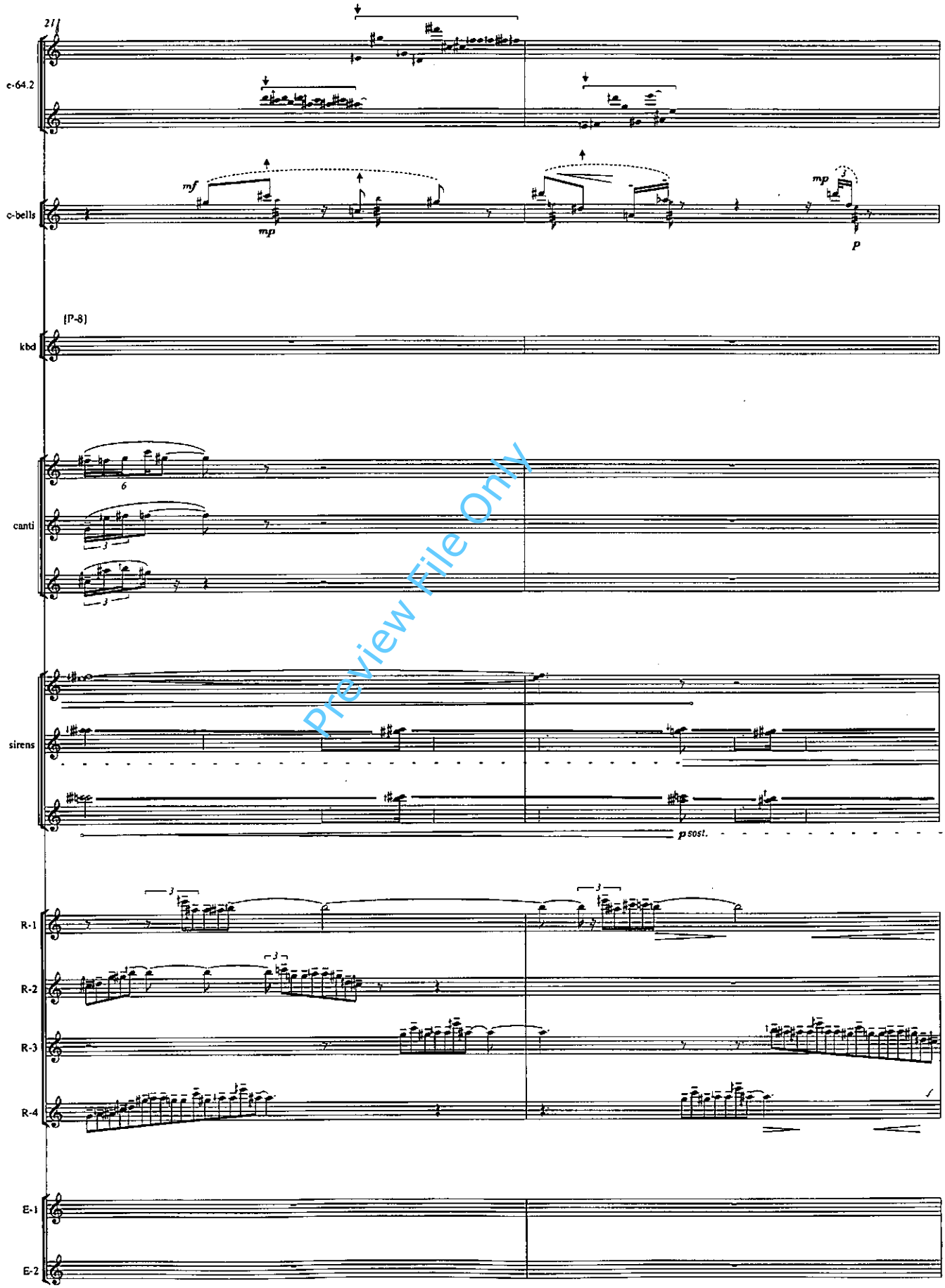

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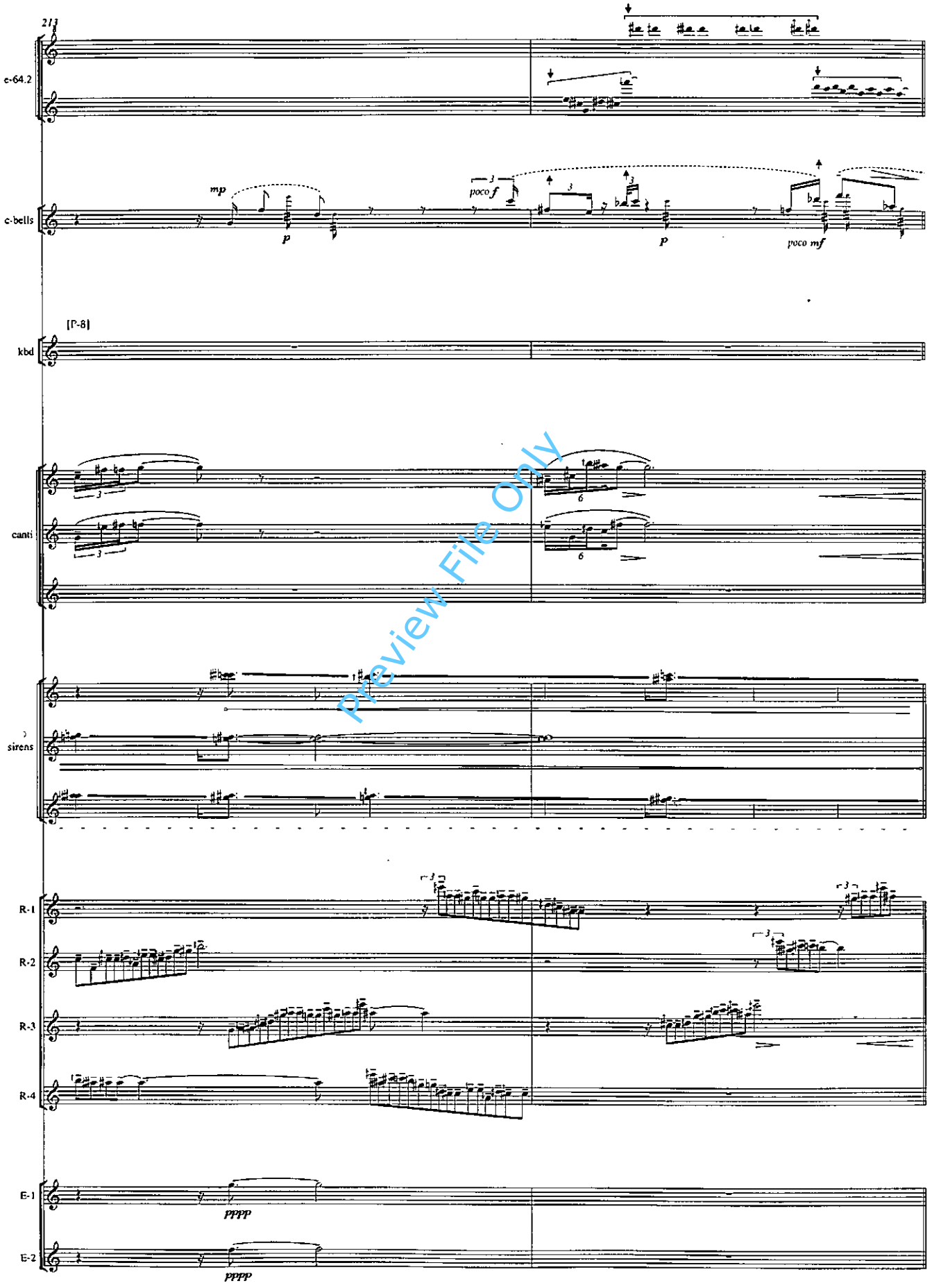

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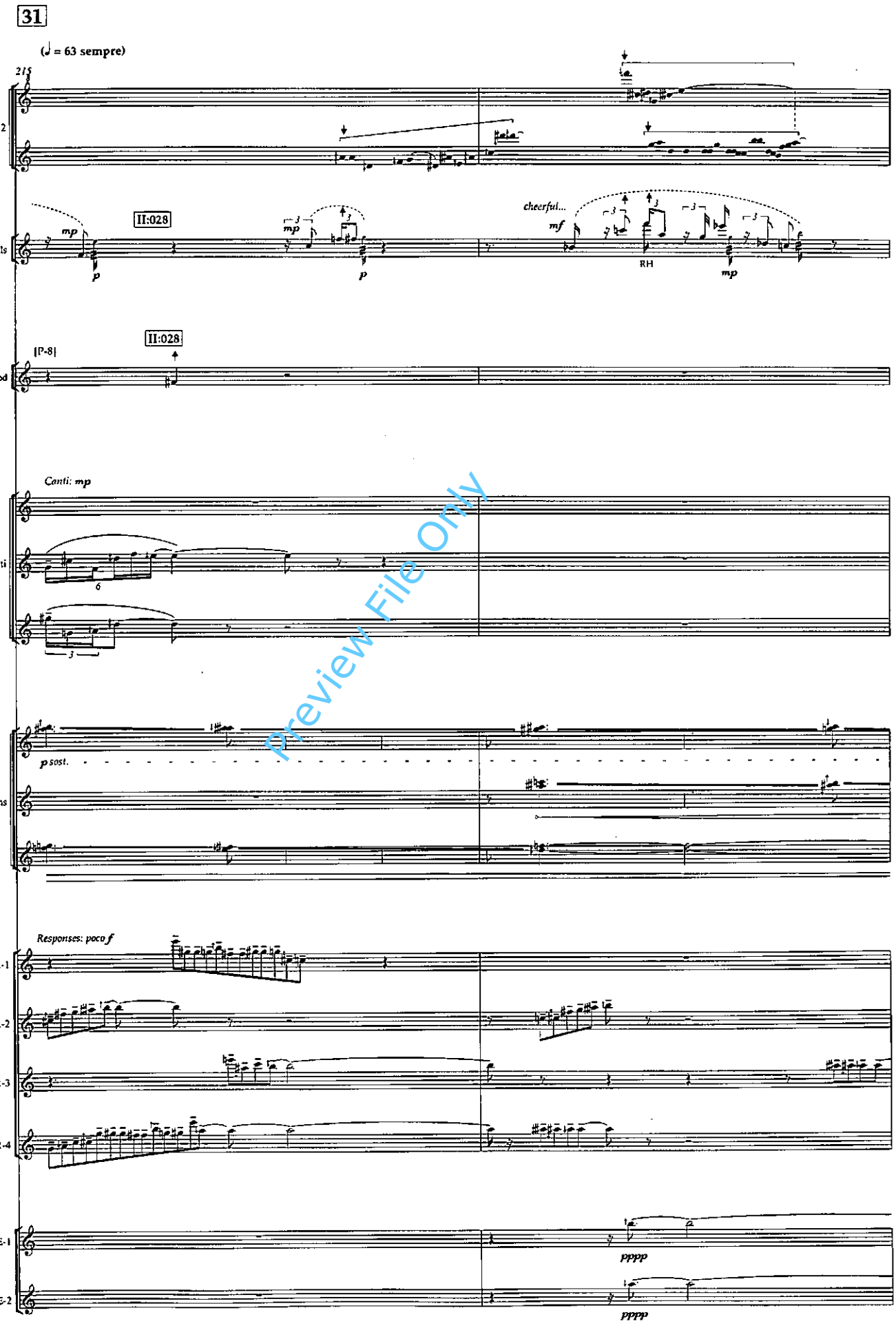

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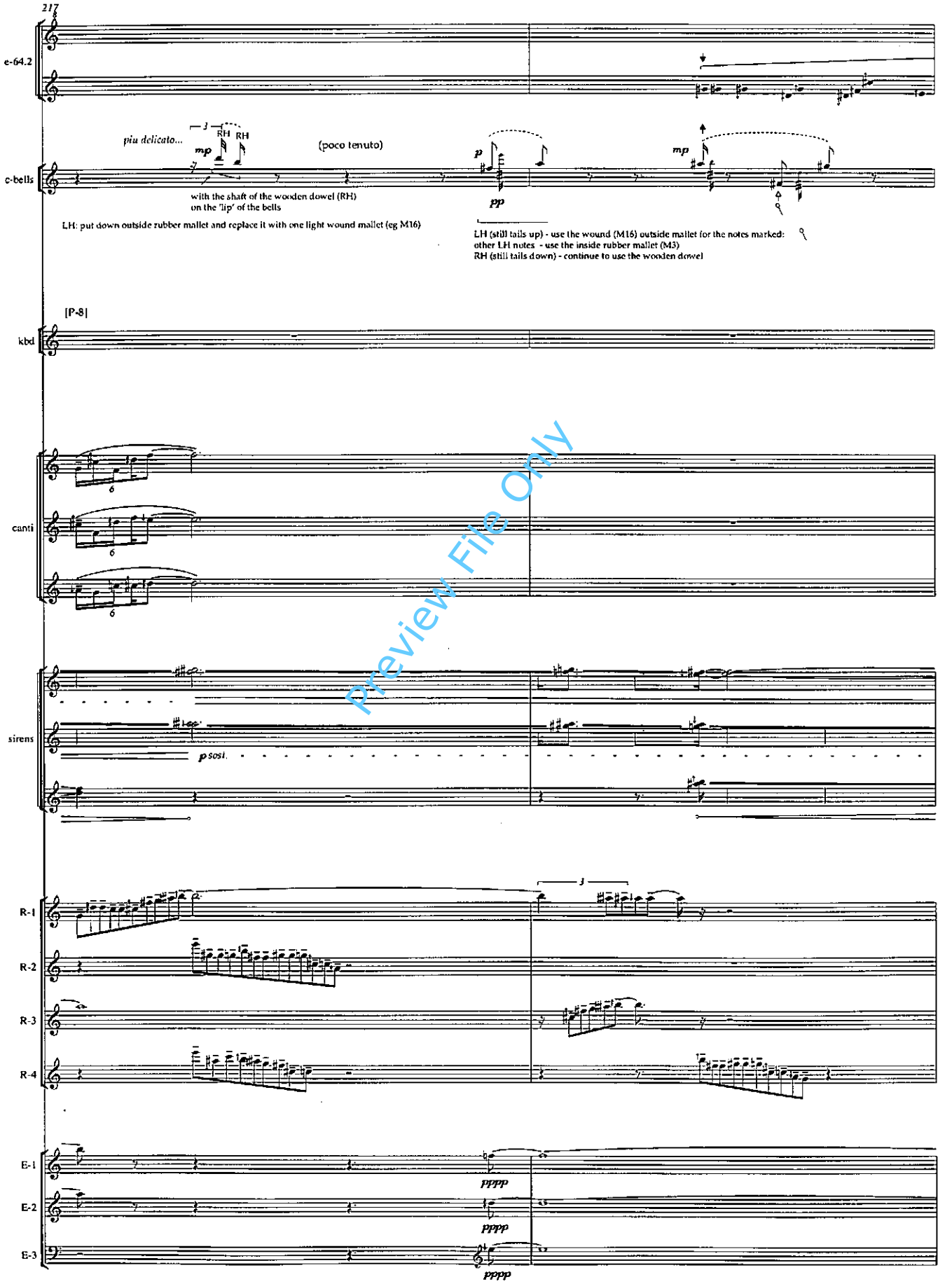

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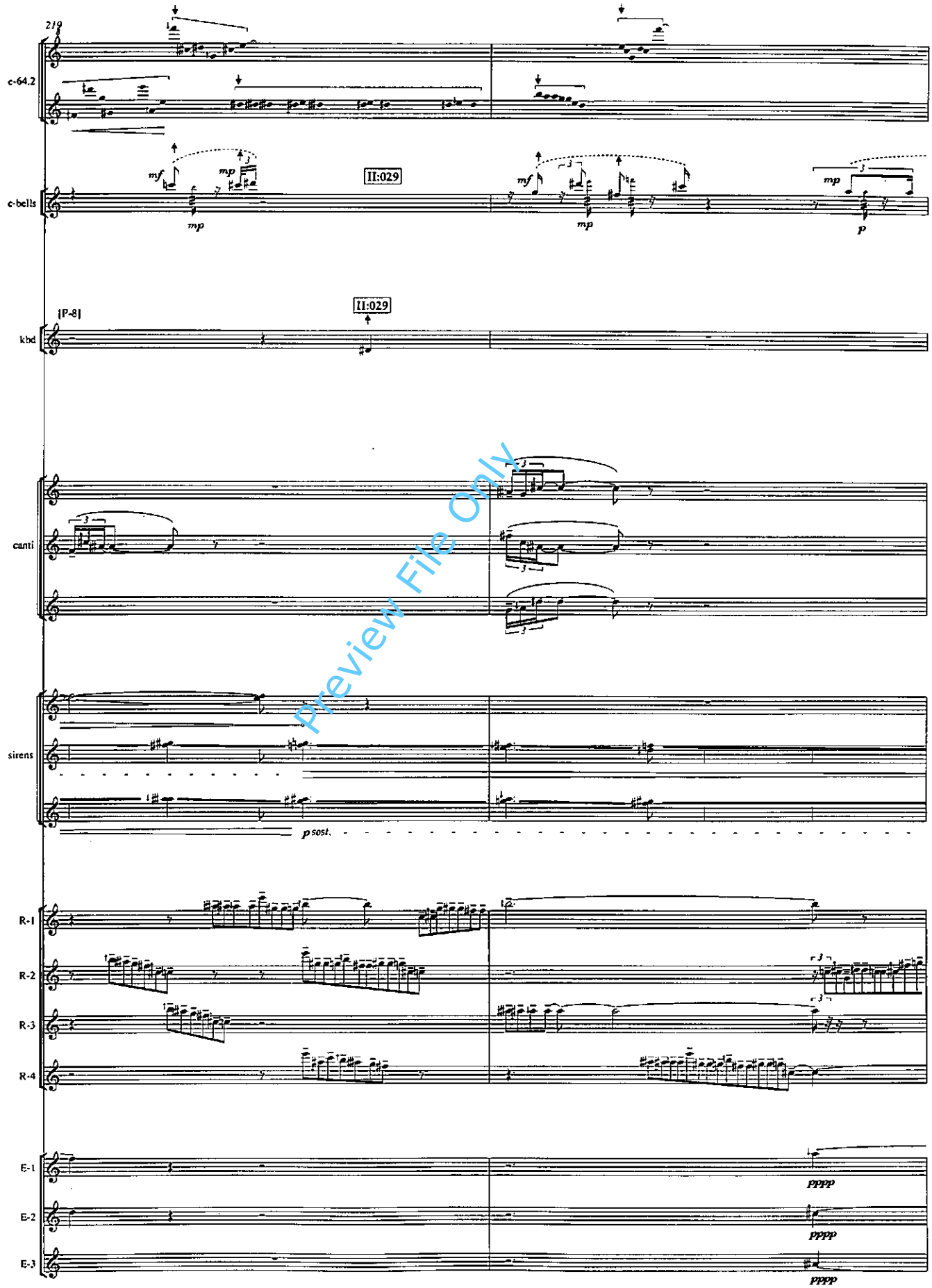

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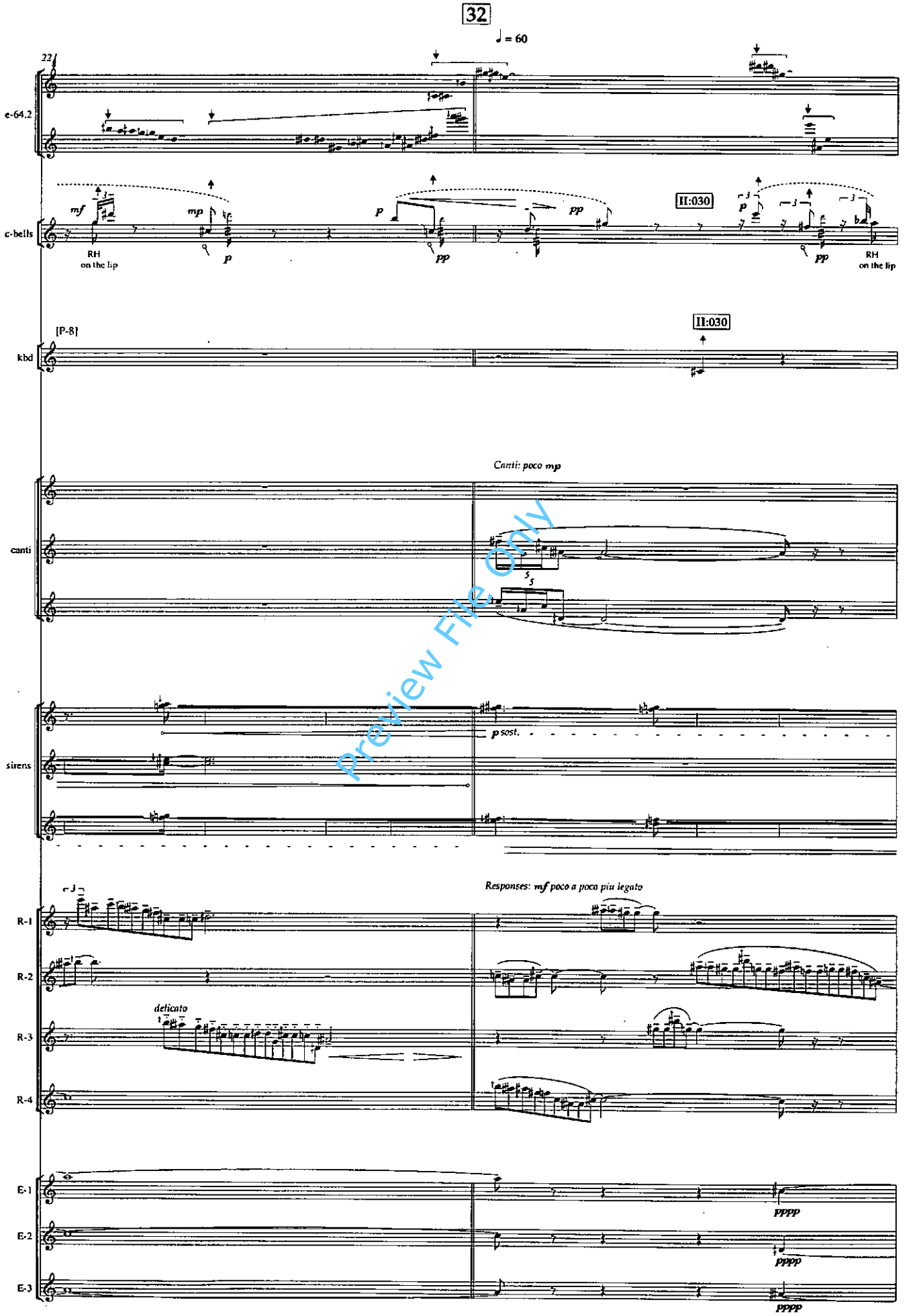

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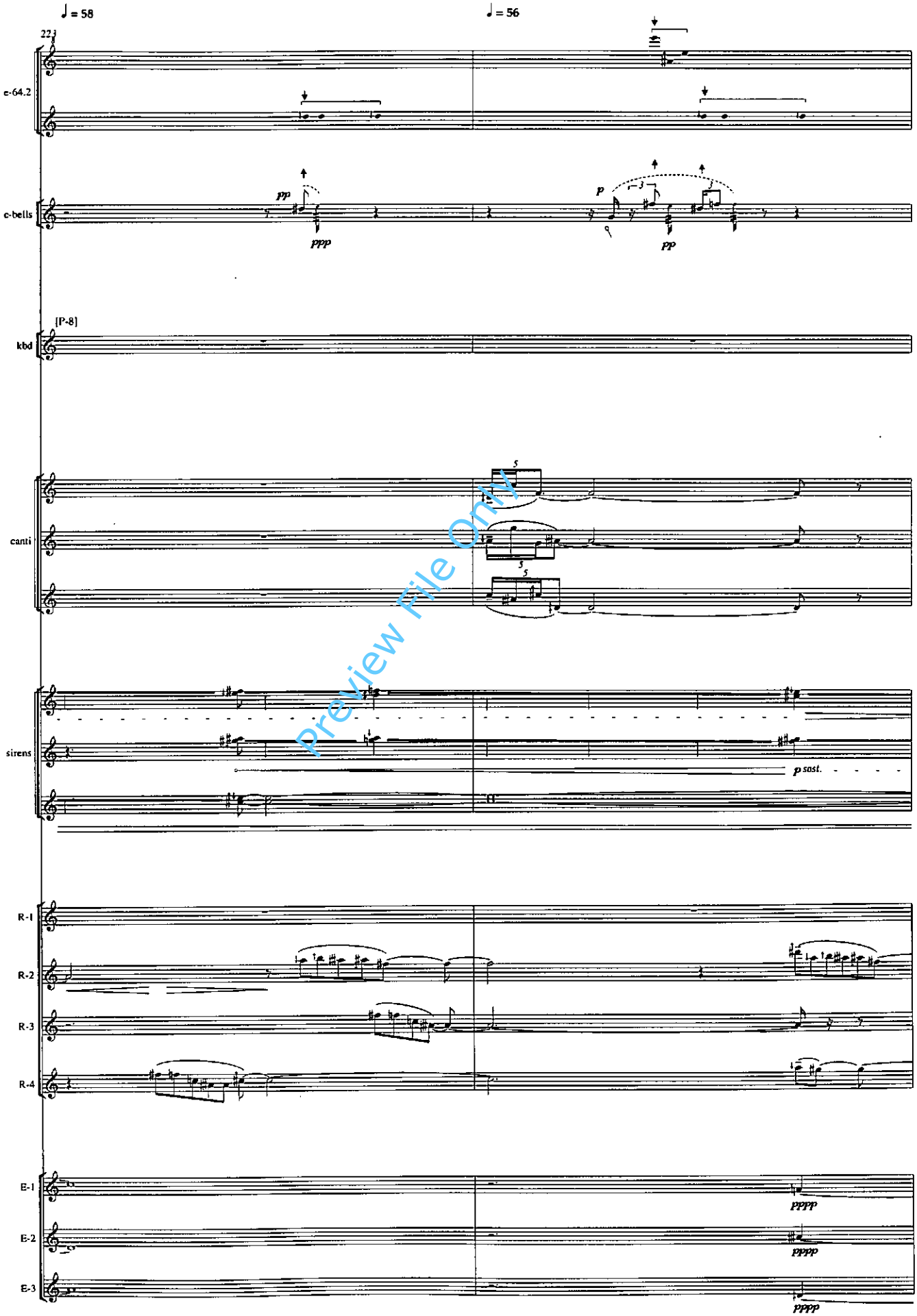

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