Report

Project: 1967_Luiz Goes/Balada do Mar

Key (Global - All Beats): ('g', 'min')
Key (Section 2 Only): ('g', 'min')

Computed median BPM: 43.29

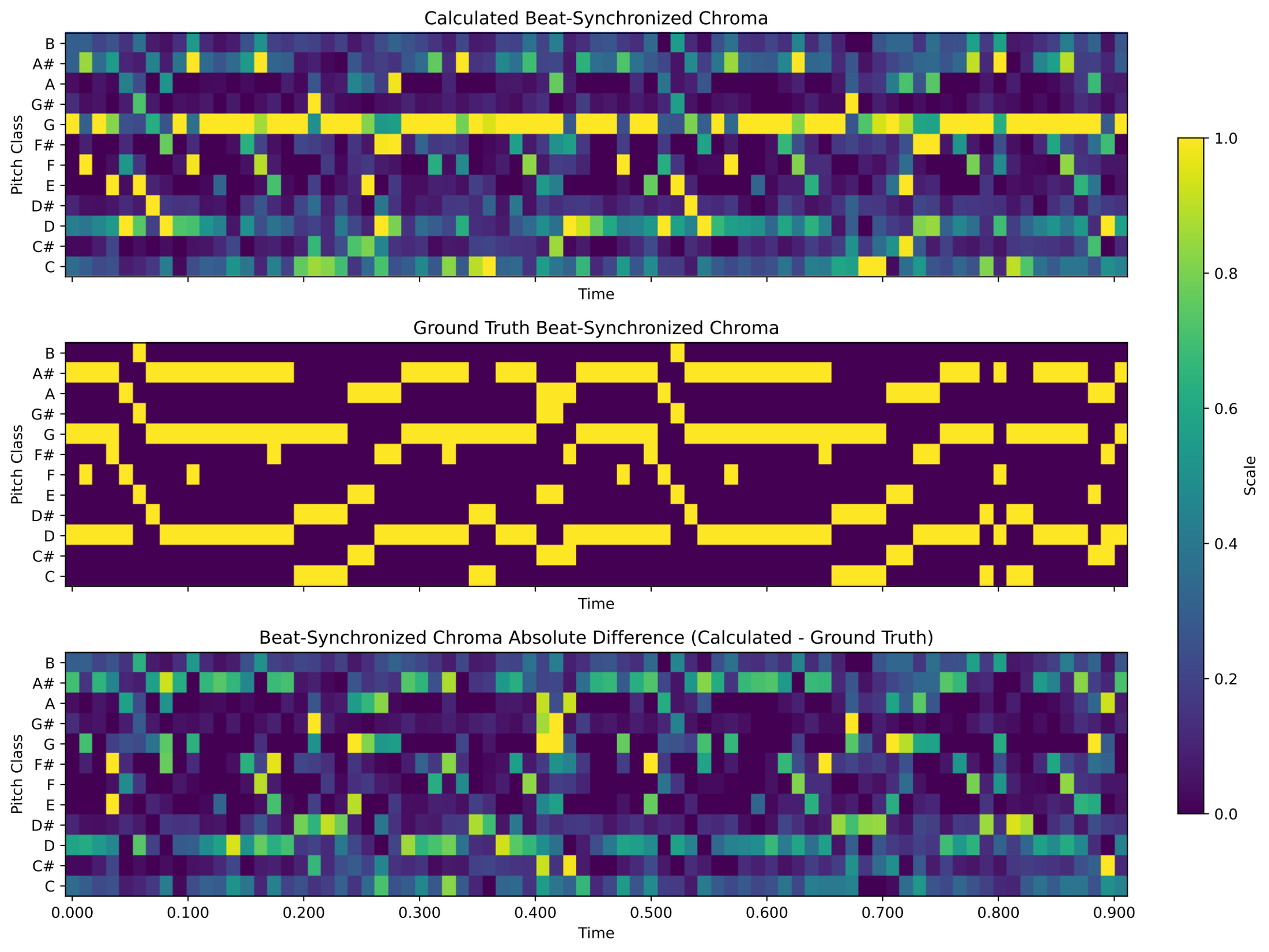
Beat-Synchronized HCF:
Pearson Correlation Coefficient (R): 0.5126
R-squared (R^2): 0.2627
P-value: 0.0000

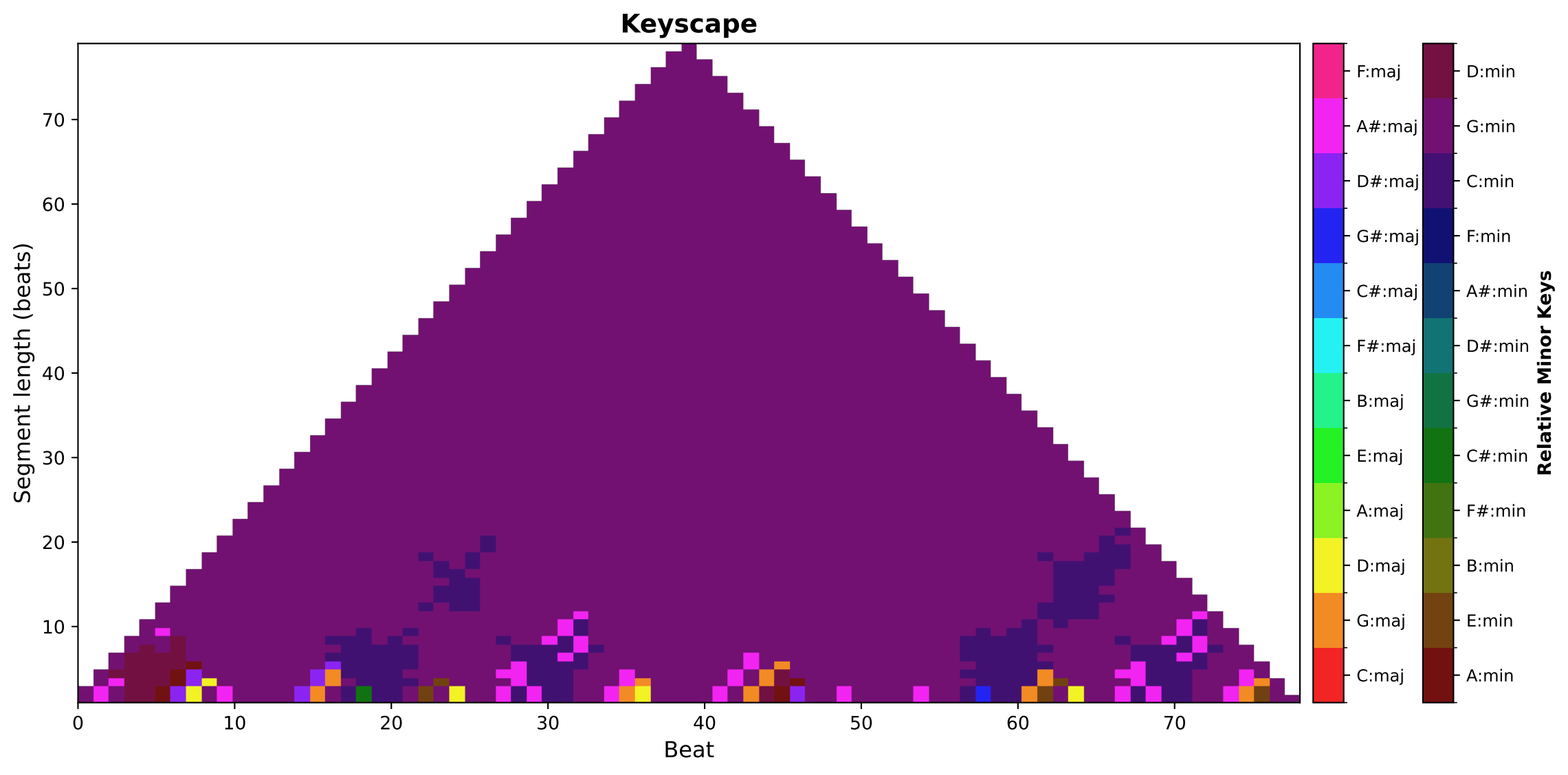
Frame-Level HCF:
Pearson Correlation Coefficient (R): 0.0360
R-squared (R^2): 0.0013
P-value: 0.0002

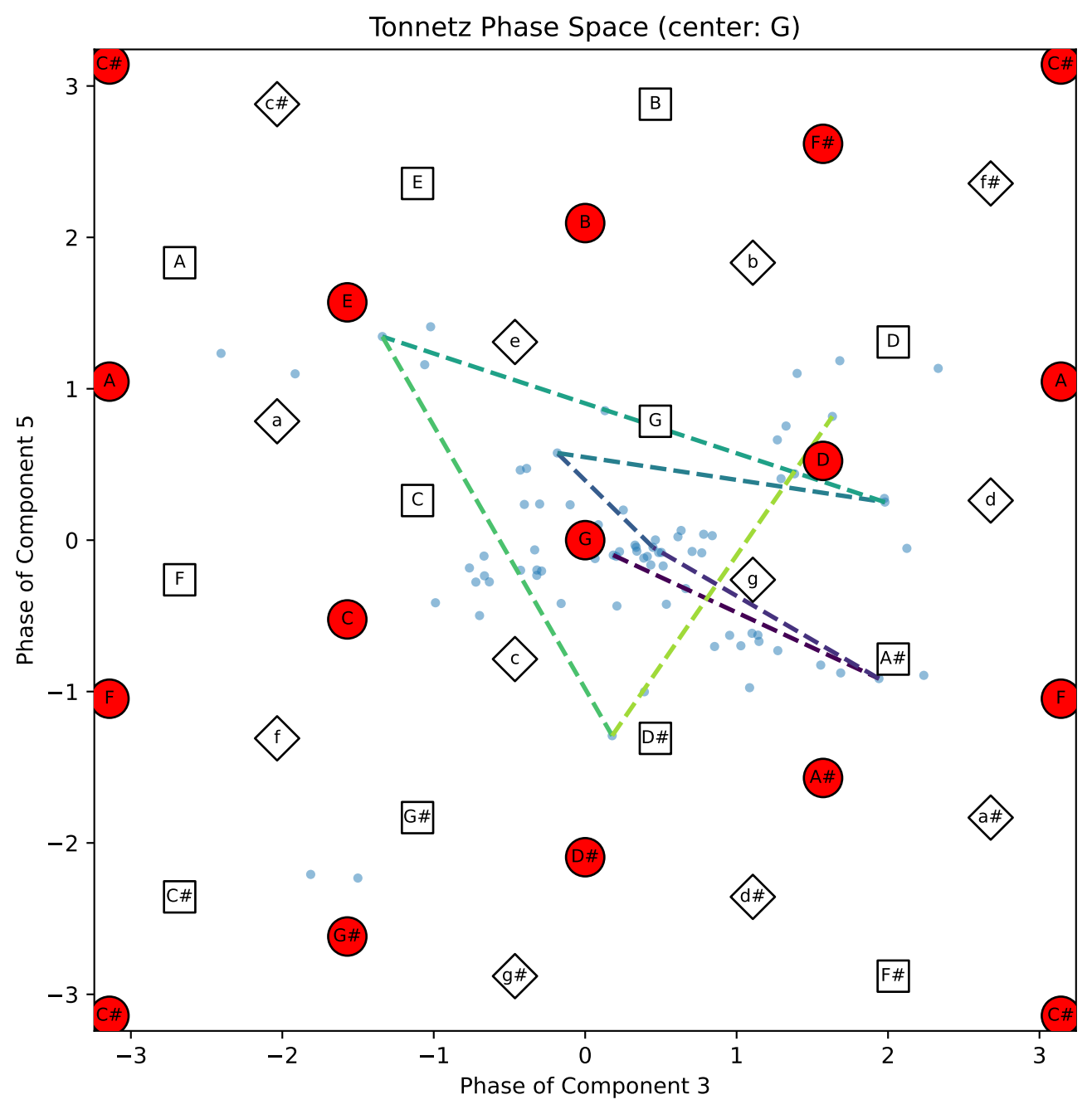
Beat-Synchronized Chroma Comparison:
Pearson Correlation Coefficient (R): 0.6518
R-squared (R^2): 0.4248
P-value: 0.0000
Sum of Absolute Differences: 205.9777
Sum of Squared Differences: 106.4395

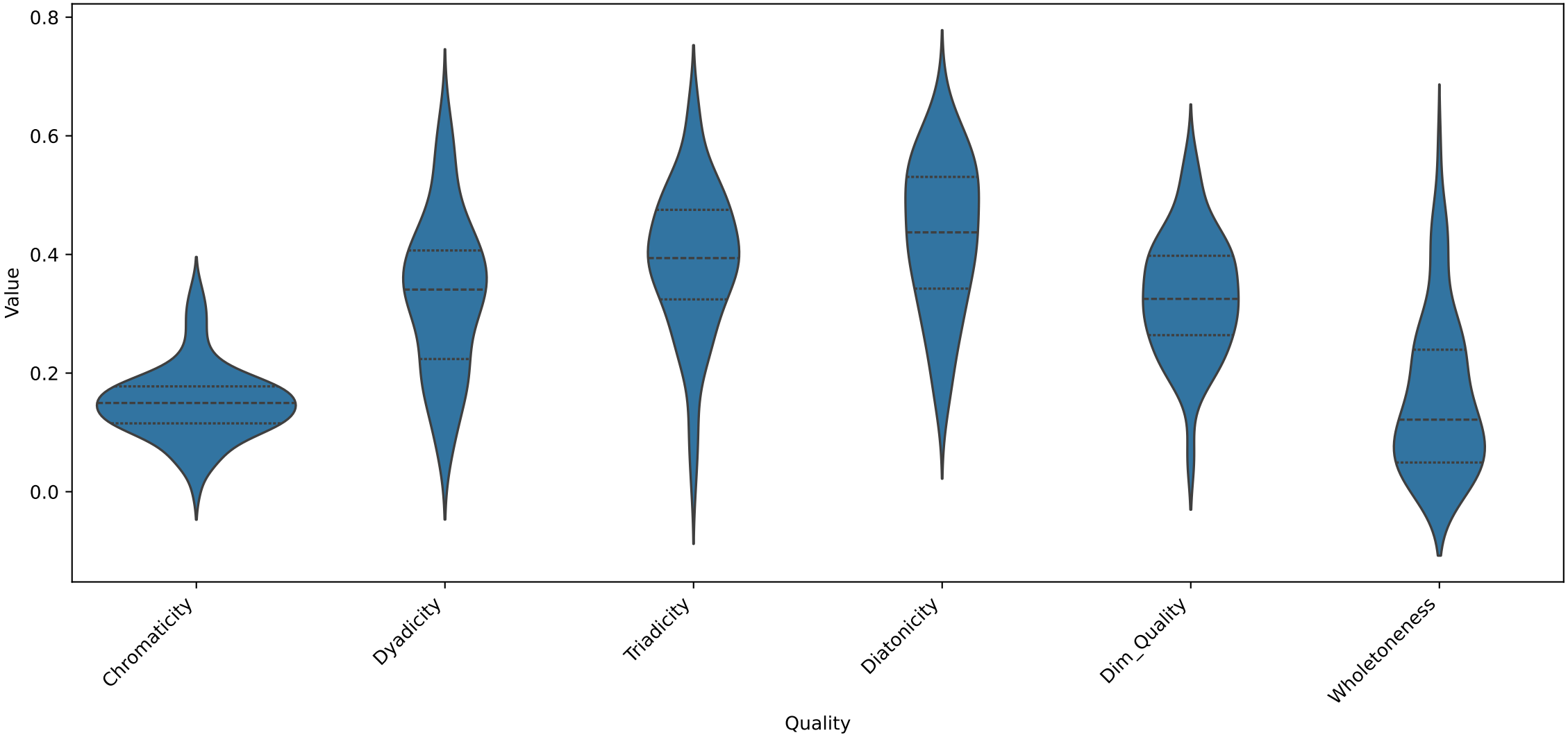
Sensory Dissonance and Tonal Dissonance:
Pearson Correlation Coefficient (R): -0.0640
R-squared (R^2): 0.0041
P-value: 0.5751

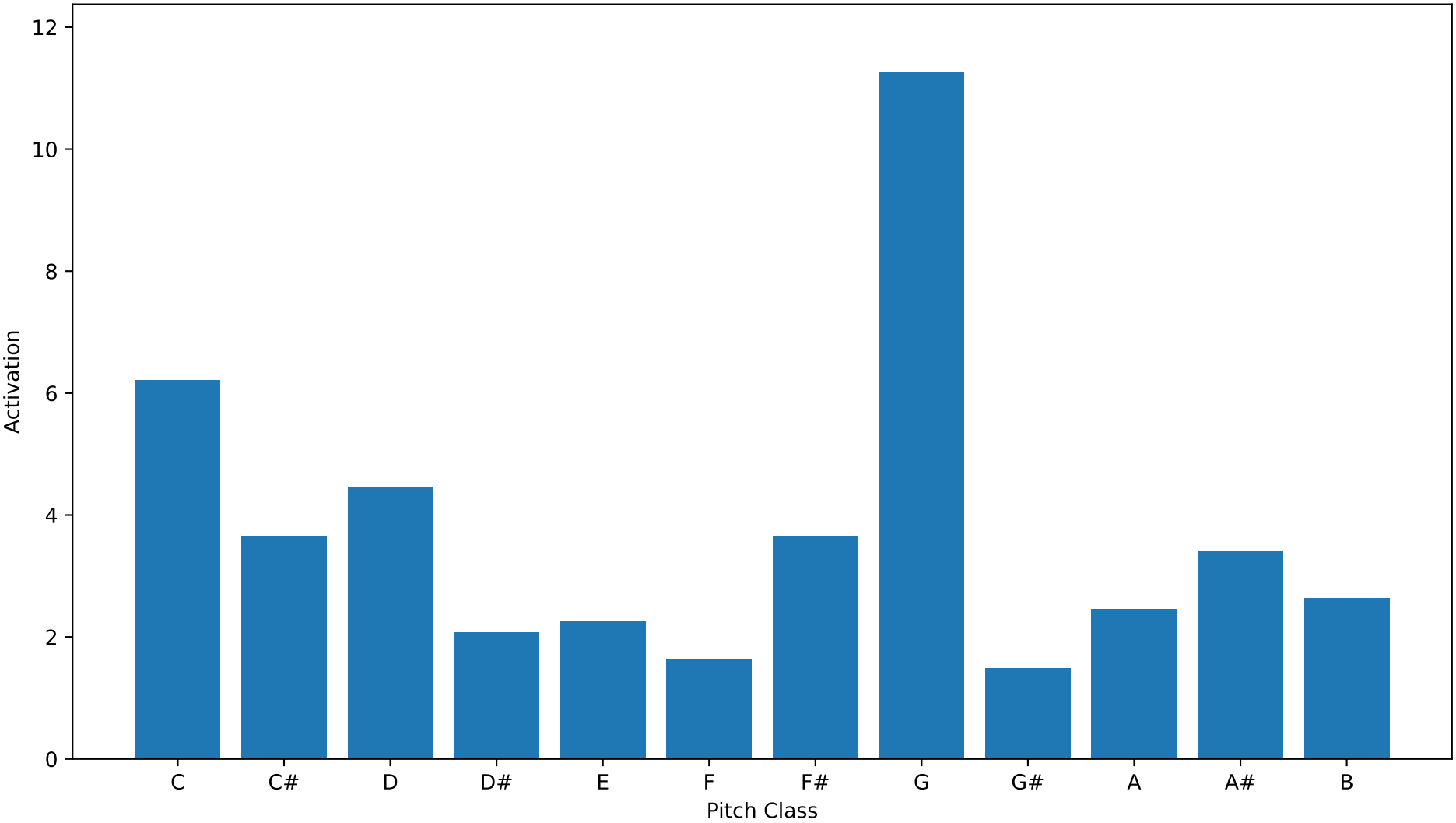
Tonal Dispersion (Audio vs. Ground Truth):
Pearson Correlation Coefficient (R): 0.5748
R-squared (R^2): 0.3304
P-value: 0.0000

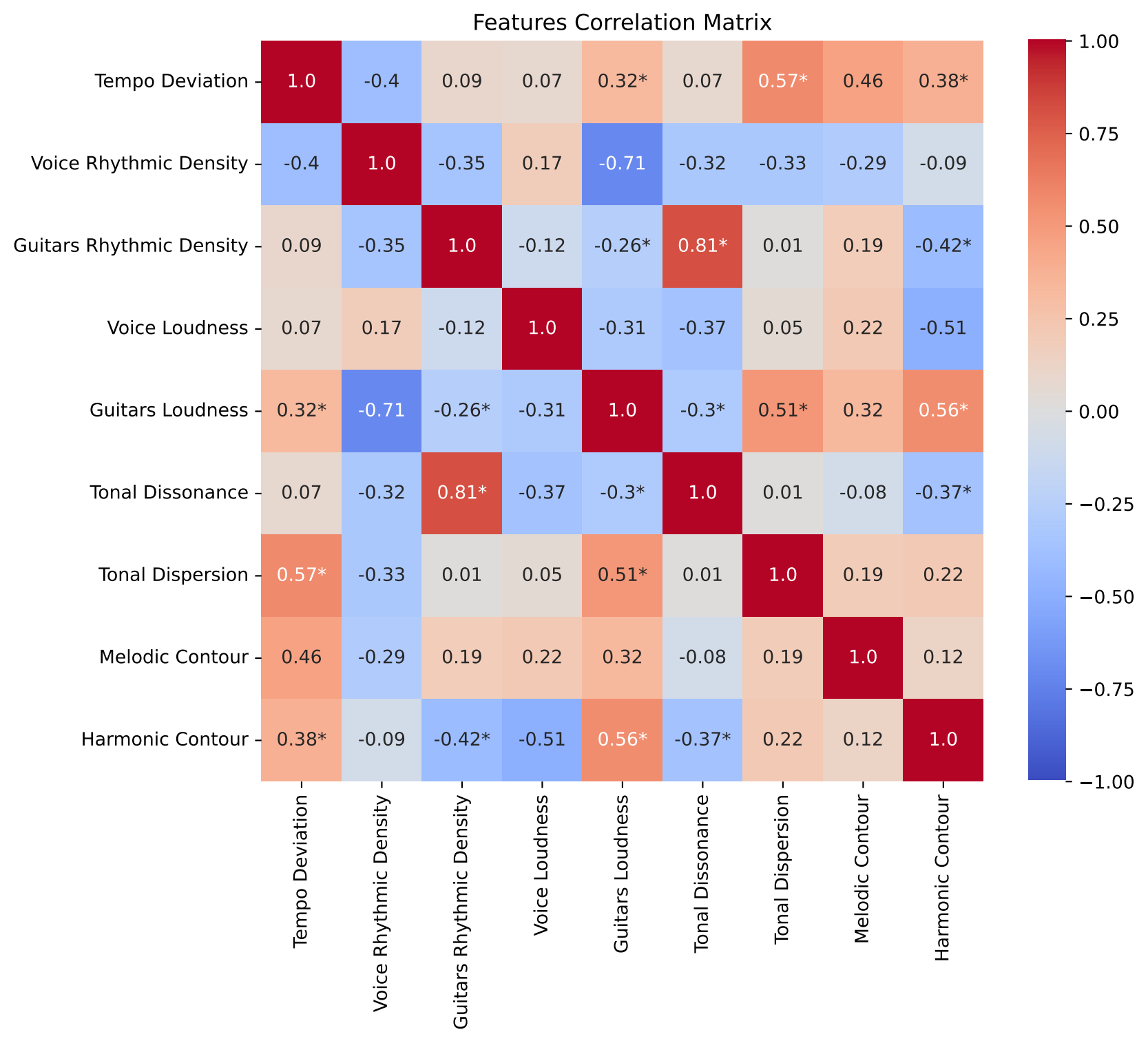

Calculated Beat-Synchronized Chroma
Ground Truth Beat-Synchronized Chroma
Beat-Synchronized Chroma Absolute Difference (Calculated - Ground Truth)
Pitch Class
B
A#
A
G#
G
F#
F
E
D#
D
C#
C
Time
0.000
0.100
0.200
0.300
0.400
0.500
0.600
0.700
0.800
0.900
Scale
1.0
0.8
0.6
0.4
0.2
0.0

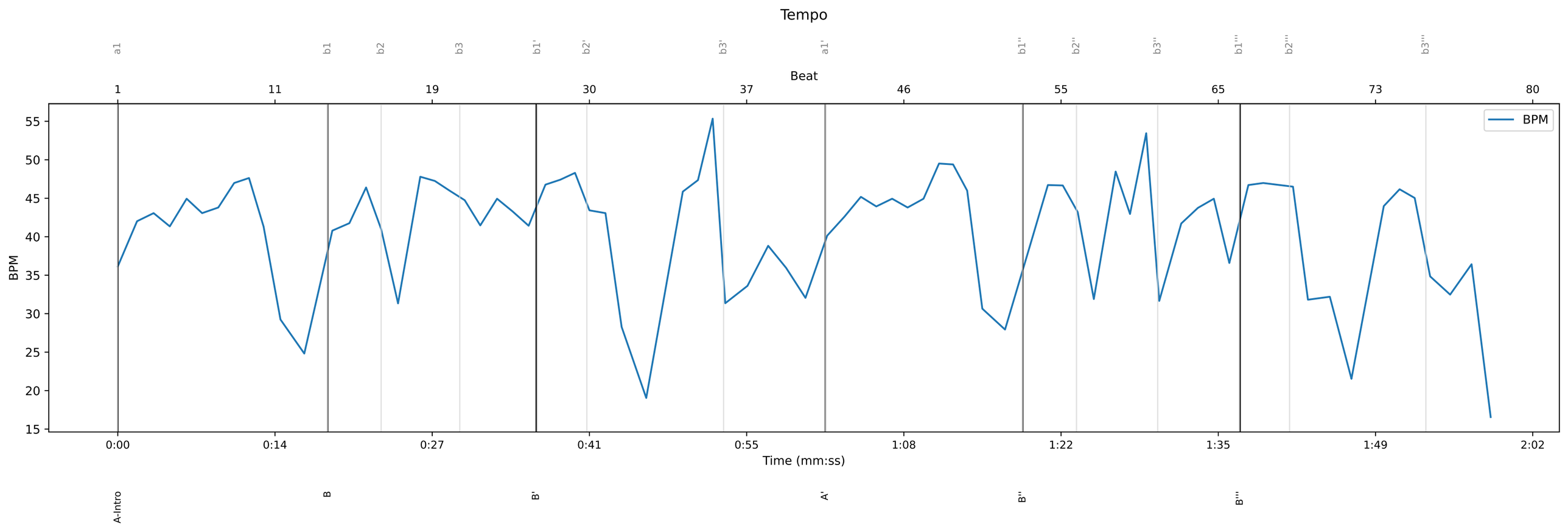

Keyscape
Segment length (beats)
Beat
0
10
20
30
40
50
60
70
F:maj
A#:maj
D#:maj
G#:maj
C#:maj
F#:maj
B:maj
E:maj
A:maj
D:maj
G:maj
C:maj
D:min
G:min
C:min
F:min
A#:min
D#:min
G#:min
C#:min
F#:min
B:min
E:min
A:min
Relative Minor Keys

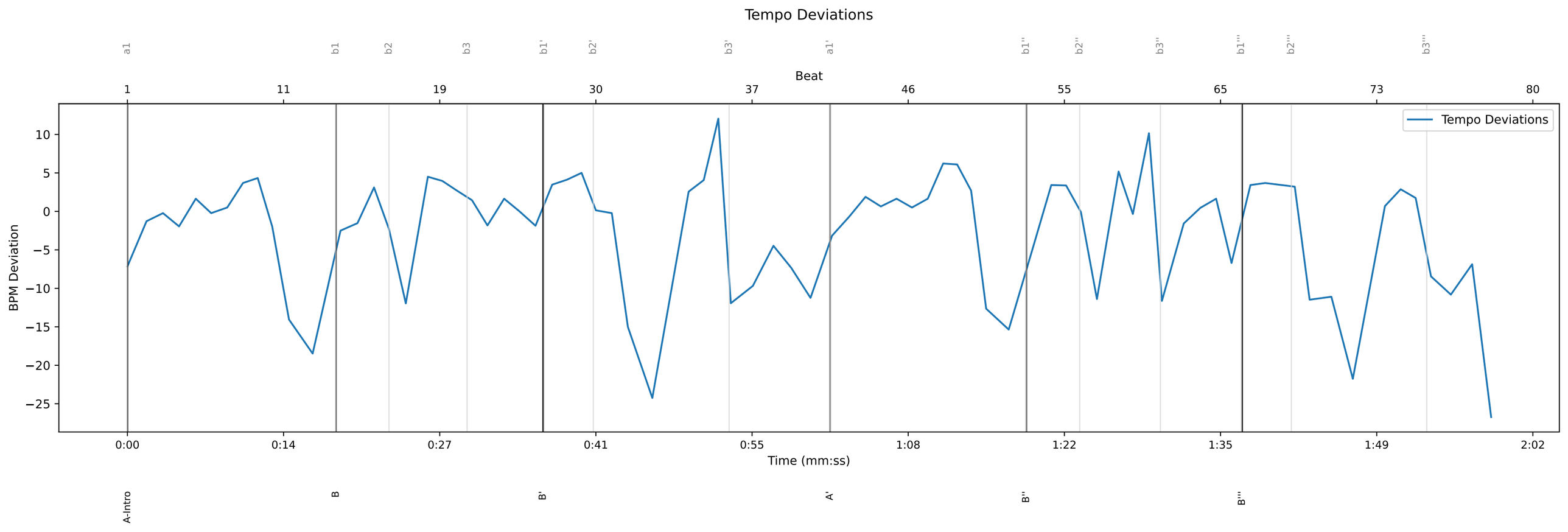

Tonnetz Phase Space (center: G)
Phase of Component 5
Phase of Component 3
C#
c#
B
F#
f#
E
B
A
b
E
e
D
A
a
G
D
C
d
G
F
g
C
c
A#
F
f
D#
A#
G#
a#
D#
C#
d#
G#
g#
F#
C#
C#
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3

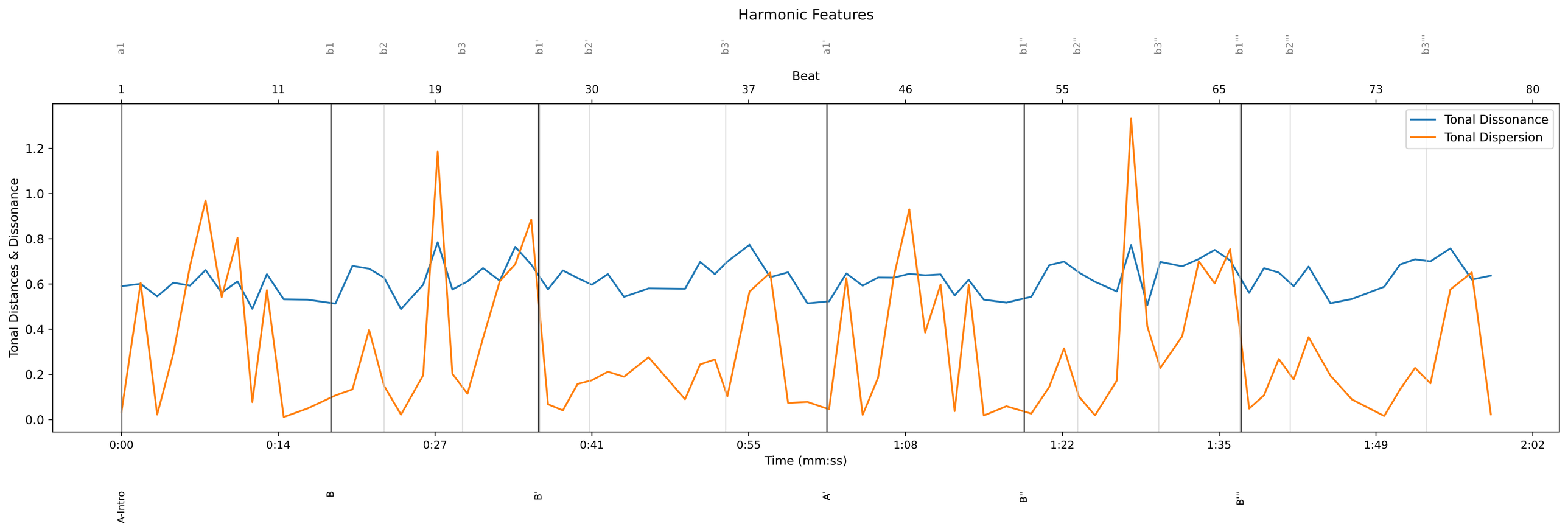

Distribution of Tonal Qualities
Value
0.8
0.6
0.4
0.2
0.0
Chromaticity
Dyadicity
Triadicity
Diatonicity
Dim_Quality
Wholetoneness
Quality

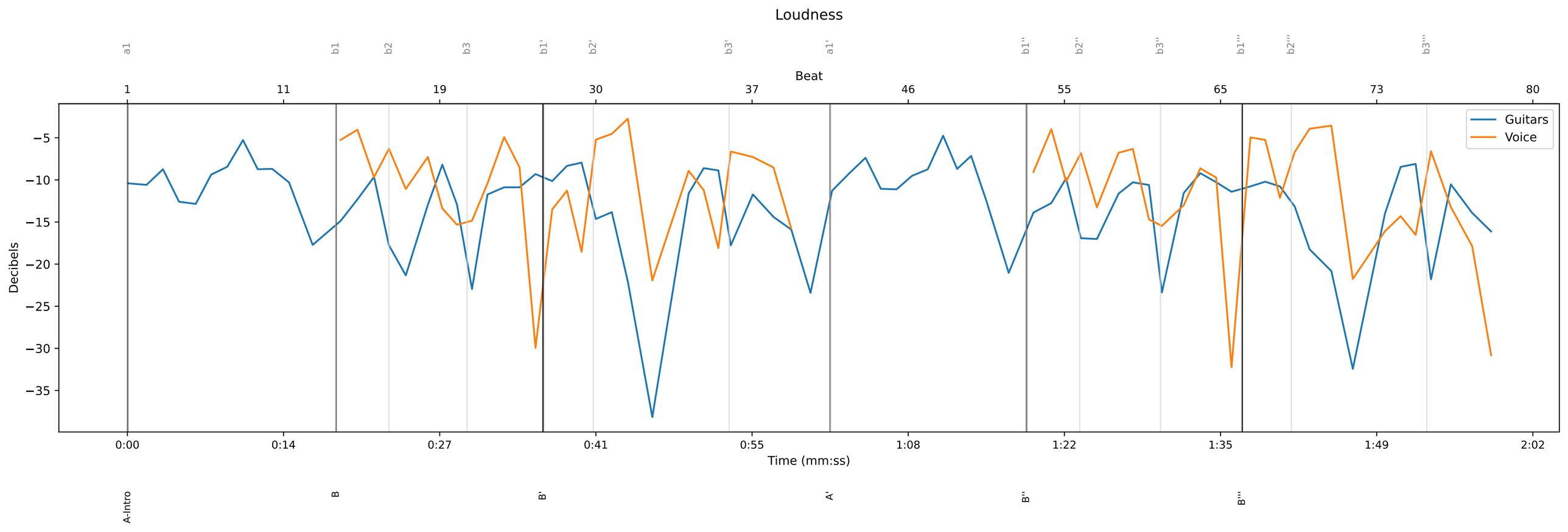

Global Chroma Vector (Section 2)
Activation
0
2
4
6
8
10
12
C
C#
D
D#
E
F
F#
G
G#
A
A#
B
Pitch Class

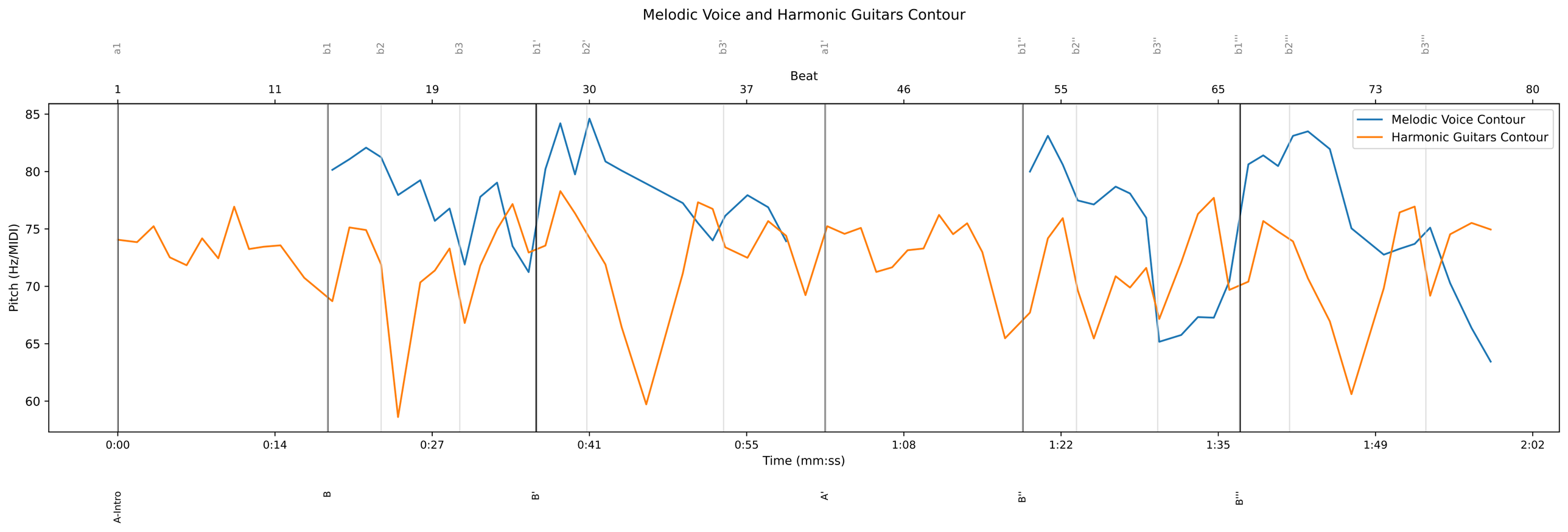

Features Correlation Matrix
Tempo Deviation
Voice Rhythmic Density
Guitars Rhythmic Density
Voice Loudness
Guitars Loudness
Tonal Dissonance
Tonal Dispersion
Melodic Contour
Harmonic Contour
1.0 -0.4 0.09 0.07 0.32* 0.07 0.57* 0.46 0.38*
-0.4 1.0 -0.35 0.17 -0.71 -0.32 -0.33 -0.29 -0.09
0.09 -0.35 1.0 -0.12 -0.26* 0.81* 0.01 0.19 -0.42*
0.07 0.17 -0.12 1.0 -0.31 -0.37 0.05 0.22 -0.51
0.32* -0.71 -0.26* -0.31 1.0 -0.3* 0.51* 0.32 0.56*
0.07 -0.32 0.81* -0.37 -0.3* 1.0 0.01 -0.08 -0.37*
0.57* -0.33 0.01 0.05 0.51* 0.01 1.0 0.19 0.22
0.46 -0.29 0.19 0.22 0.32 -0.08 0.19 1.0 0.12
0.38* -0.09 -0.42* -0.51 0.56* -0.37* 0.22 0.12 1.0
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00

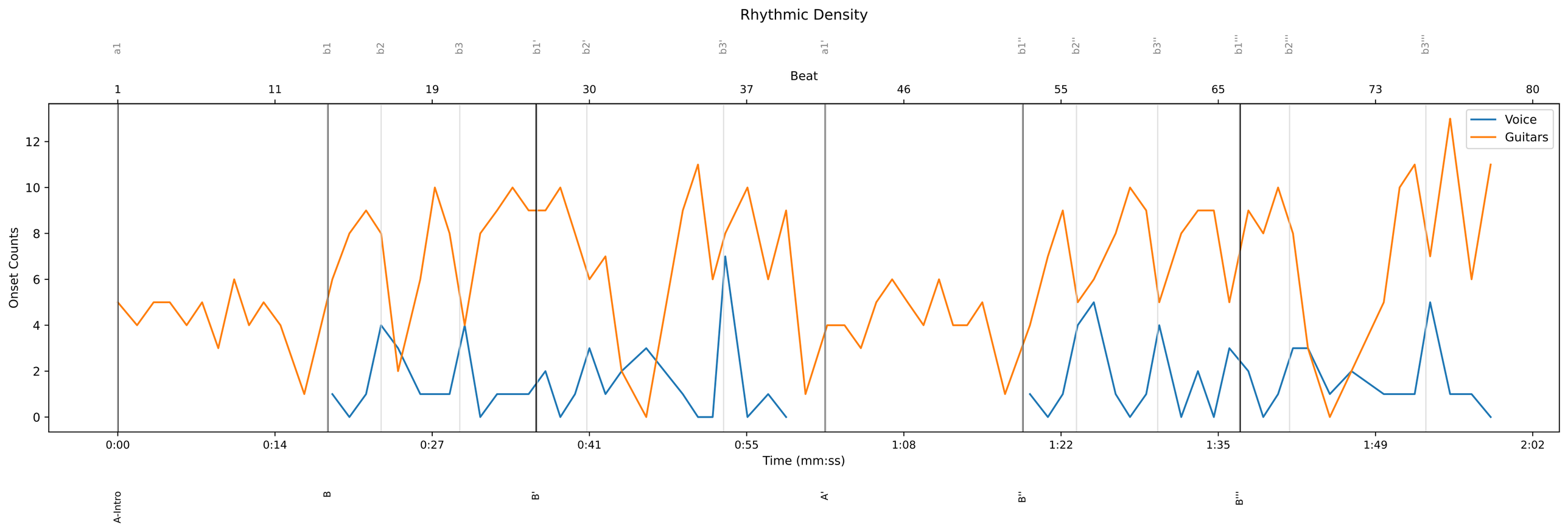

Tempo
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
BPM
55
50
45
40
35
30
25
20
15
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

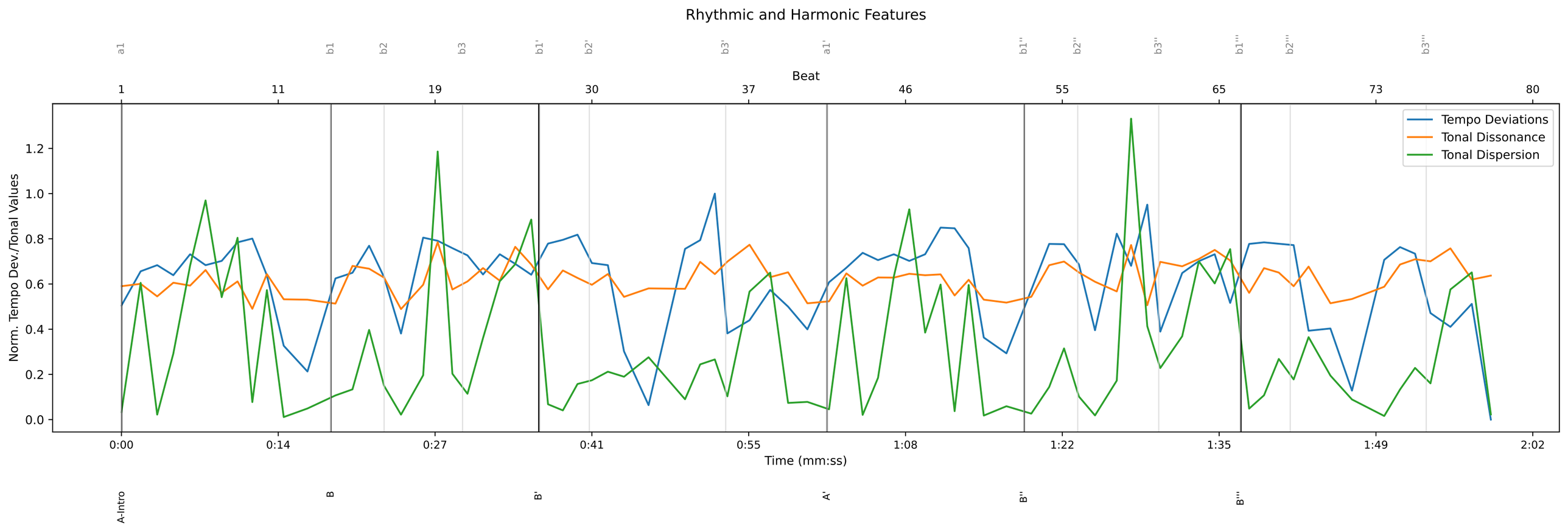

Tempo Deviations
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Tempo Deviations
BPM Deviation
10
5
0
−5
−10
−15
−20
−25
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

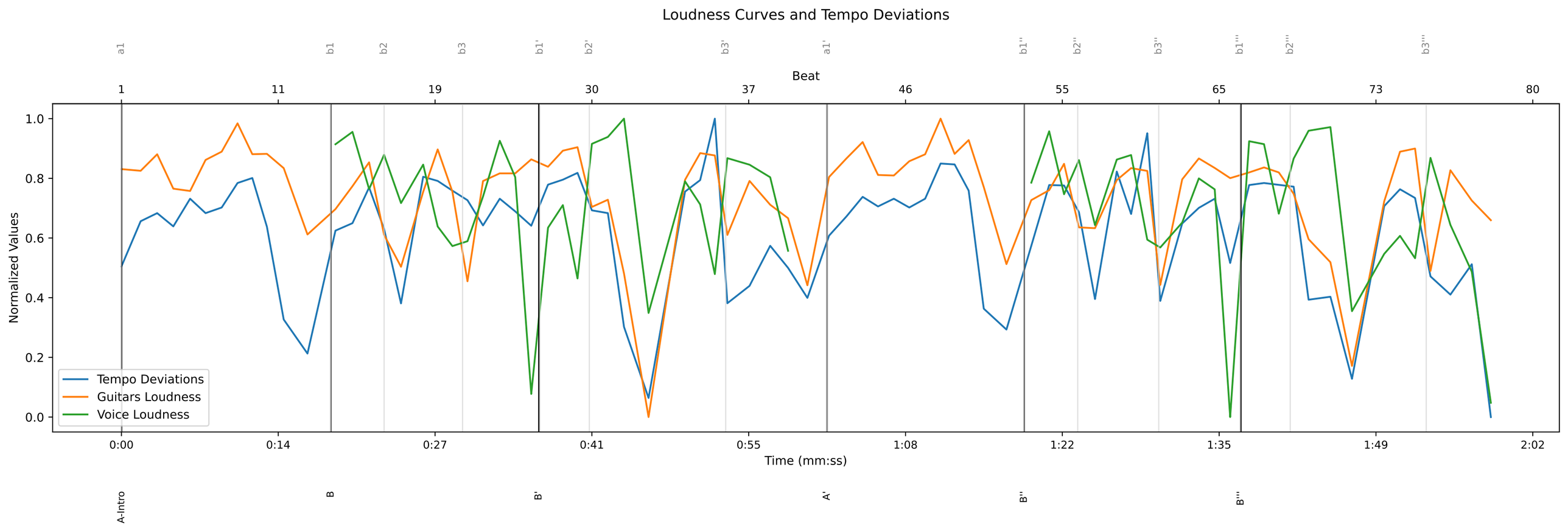

Harmonic Features
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Tonal Dissonance
Tonal Dispersion
Tonal Distances & Dissonance
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

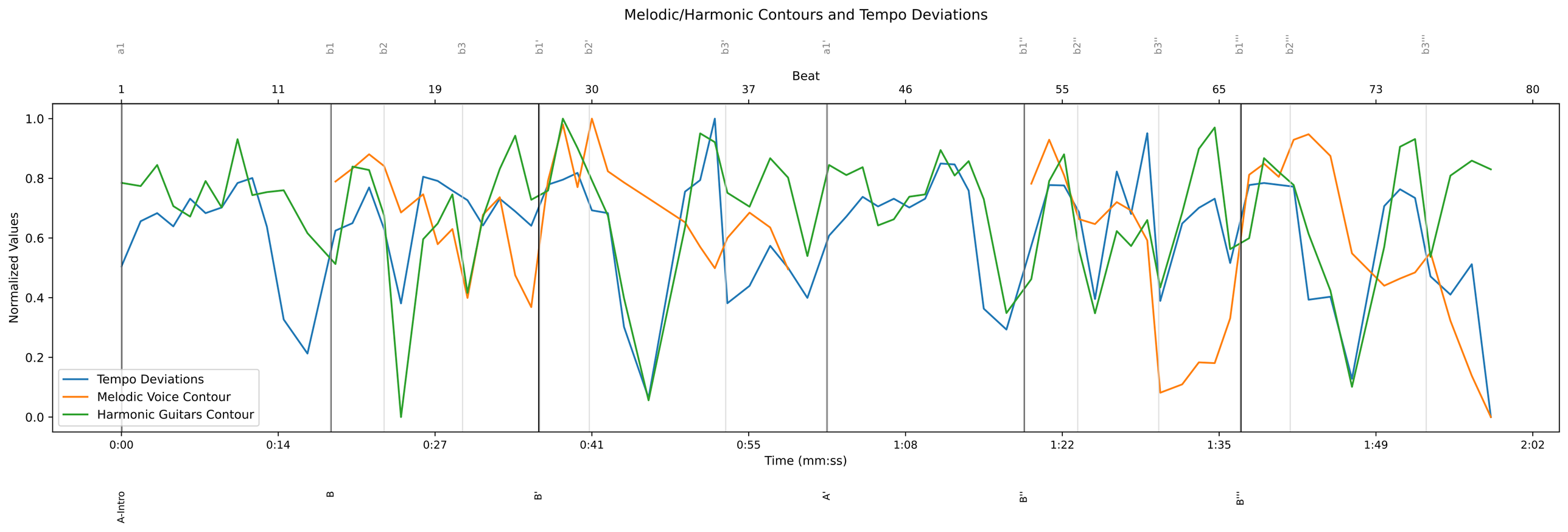

Loudness
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Guitars
Voice
Decibels
−5
−10
−15
−20
−25
−30
−35
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

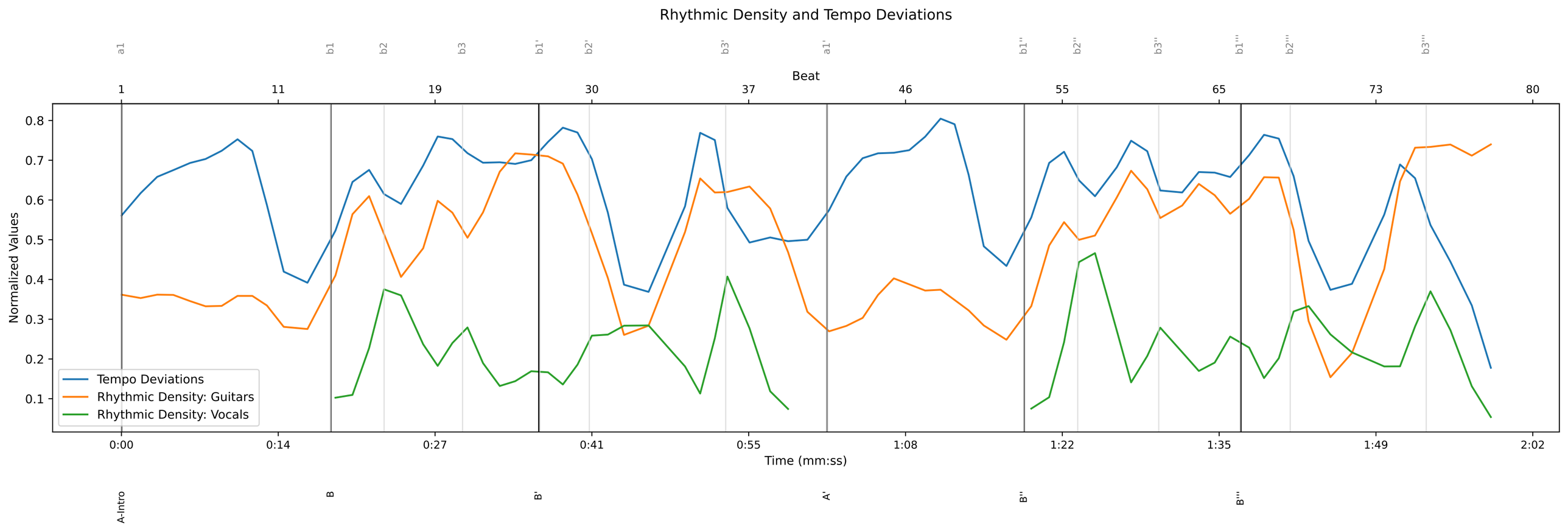

Melodic Voice and Harmonic Guitars Contour
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
85
80
75
70
65
60
Pitch (Hz/MIDI)
Melodic Voice Contour
Harmonic Guitars Contour
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

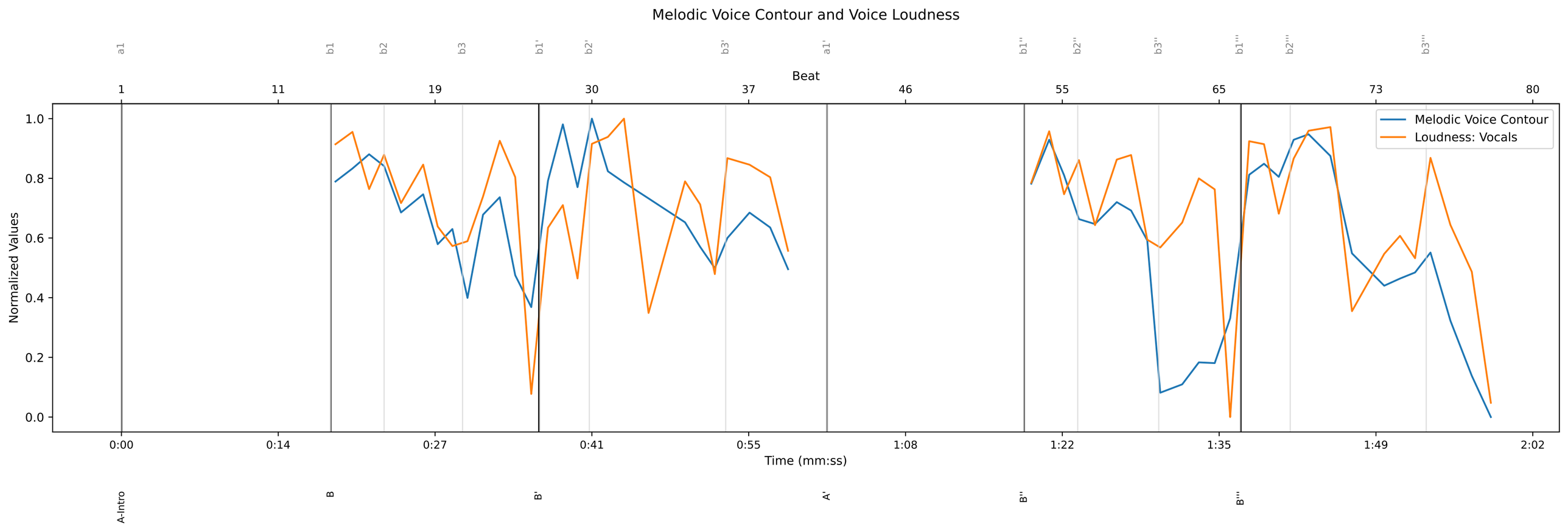

Rhythmic Density
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Voice
Guitars
Onset Counts
0
2
4
6
8
10
12
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

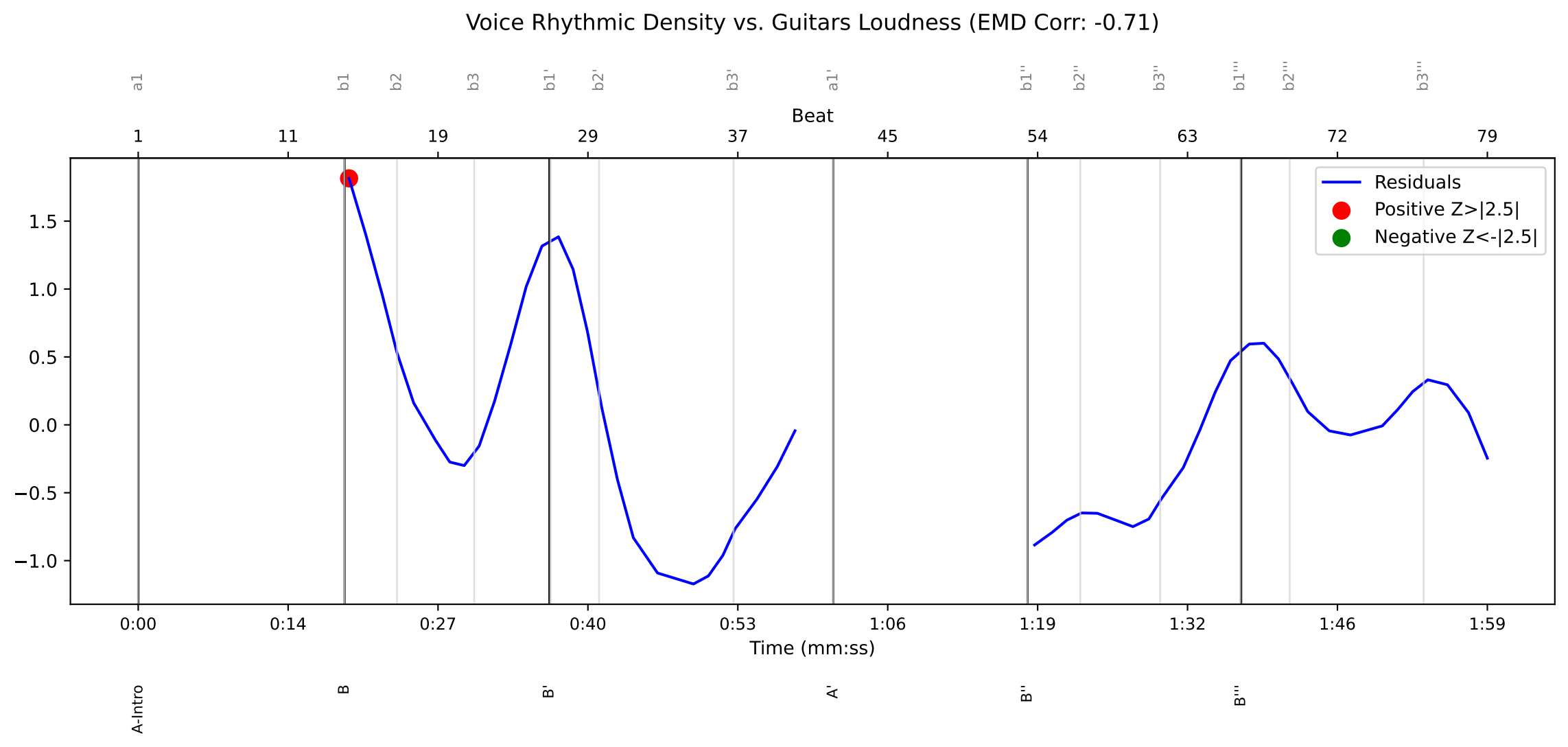

Rhythmic and Harmonic Features
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Tempo Deviations
Tonal Dissonance
Tonal Dispersion
Norm. Tempo Dev./Tonal Values
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''

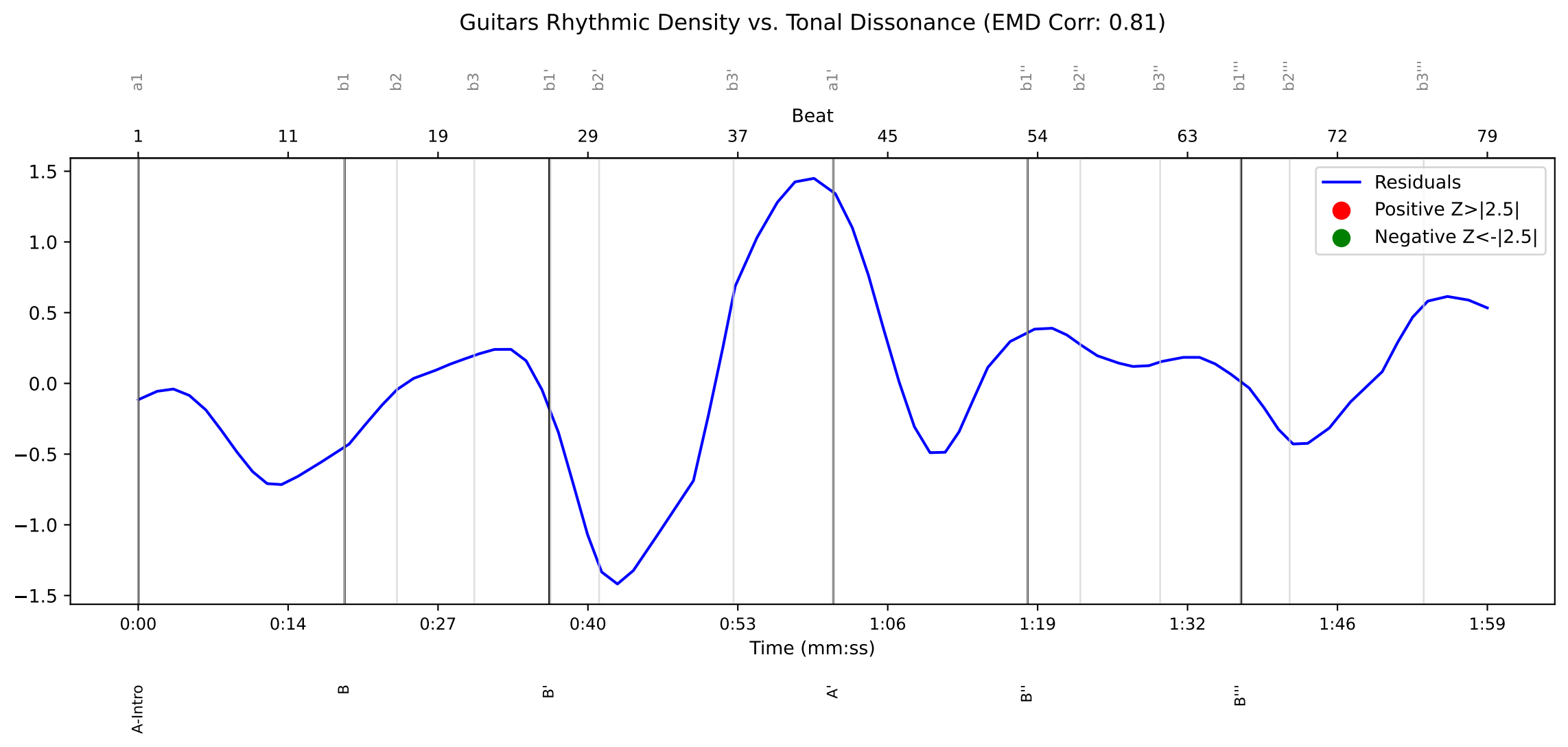

Loudness Curves and Tempo Deviations
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
Tempo Deviations
Guitars Loudness
Voice Loudness
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''


Melodic/Harmonic Contours and Tempo Deviations
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
Tempo Deviations
Melodic Voice Contour
Harmonic Guitars Contour
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''


Rhythmic Density and Tempo Deviations
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Normalized Values
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Tempo Deviations
Rhythmic Density: Guitars
Rhythmic Density: Vocals
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''


Melodic Voice Contour and Voice Loudness
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
30
37
46
55
65
73
80
Melodic Voice Contour
Loudness: Vocals
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
0:00
0:14
0:27
0:41
0:55
1:08
1:22
1:35
1:49
2:02
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''


Voice Rhythmic Density vs. Guitars Loudness (EMD Corr: -0.71)
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
29
37
45
54
63
72
79
Residuals
Positive Z>|2.5|
Negative Z<-|2.5|
1.5
1.0
0.5
0.0
−0.5
−1.0
0:00
0:14
0:27
0:40
0:53
1:06
1:19
1:32
1:46
1:59
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''


Guitars Rhythmic Density vs. Tonal Dissonance (EMD Corr: 0.81)
a1
b1
b2
b3
b1'
b2'
b3'
a1'
b1''
b2''
b3''
b1'''
b2'''
b3'''
Beat
1
11
19
29
37
45
54
63
72
79
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
Residuals
Positive Z>|2.5|
Negative Z<-|2.5|
0:00
0:14
0:27
0:40
0:53
1:06
1:19
1:32
1:46
1:59
Time (mm:ss)
A-Intro
B
B'
A'
B''
B'''