Report

Project: 1958_Augusto Camacho/Quando os Sinos Dobram

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

Computed median BPM: 62.74

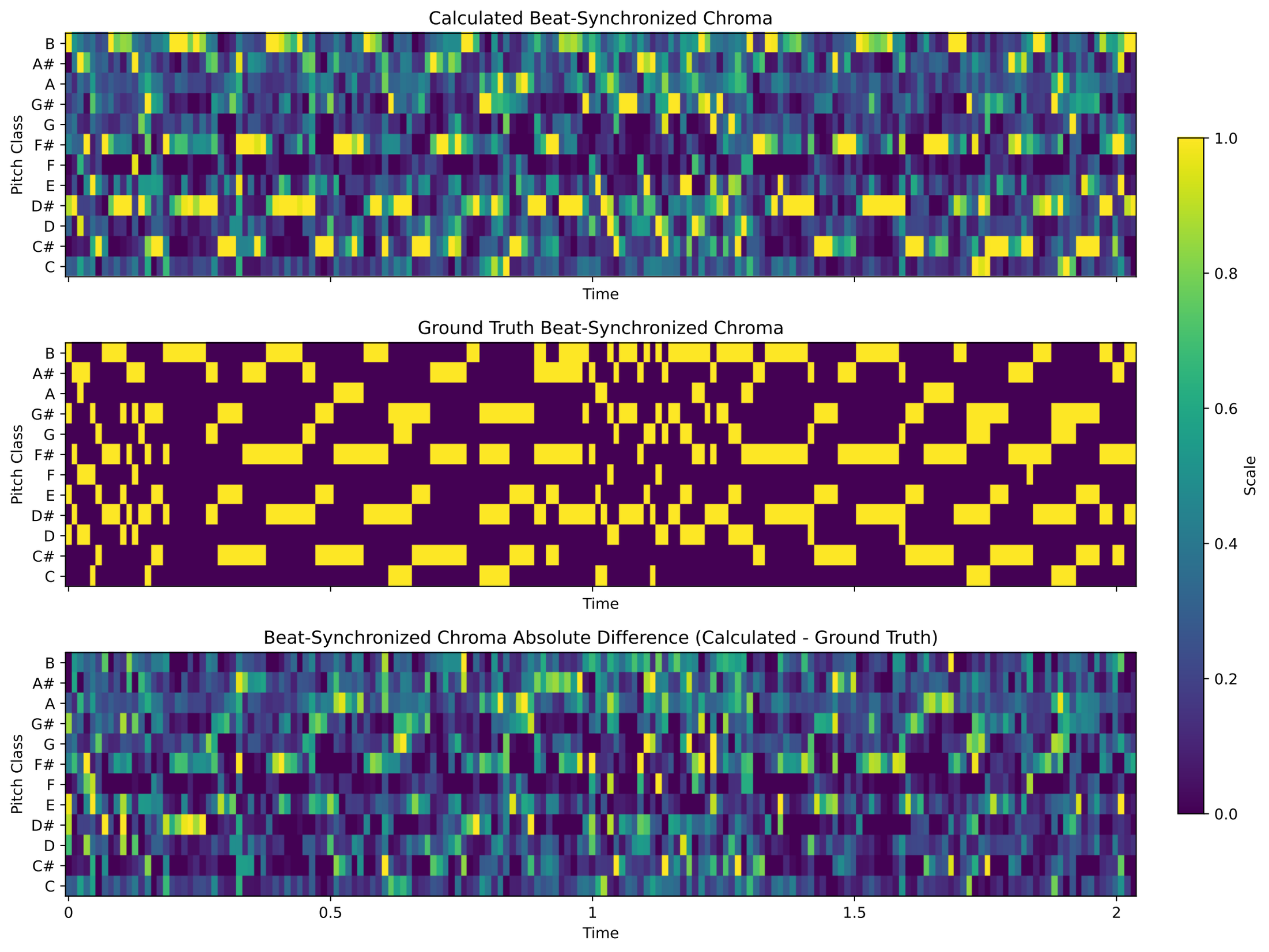
Beat-Synchronized HCF:
Pearson Correlation Coefficient (R): 0.5742
R-squared (R^2): 0.3297
P-value: 0.0000

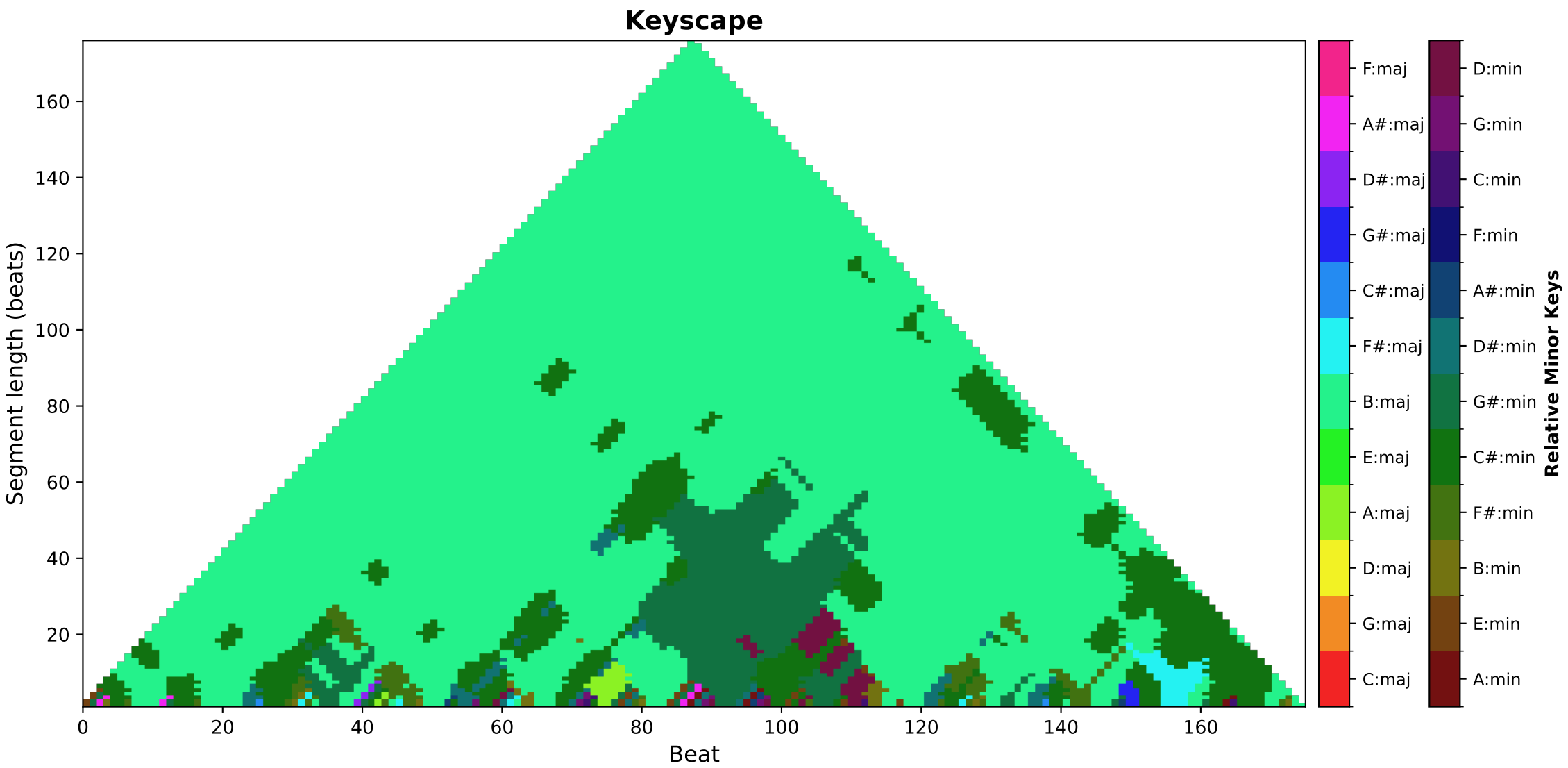
Frame-Level HCF:
Pearson Correlation Coefficient (R): 0.0316
R-squared (R^2): 0.0010
P-value: 0.0000

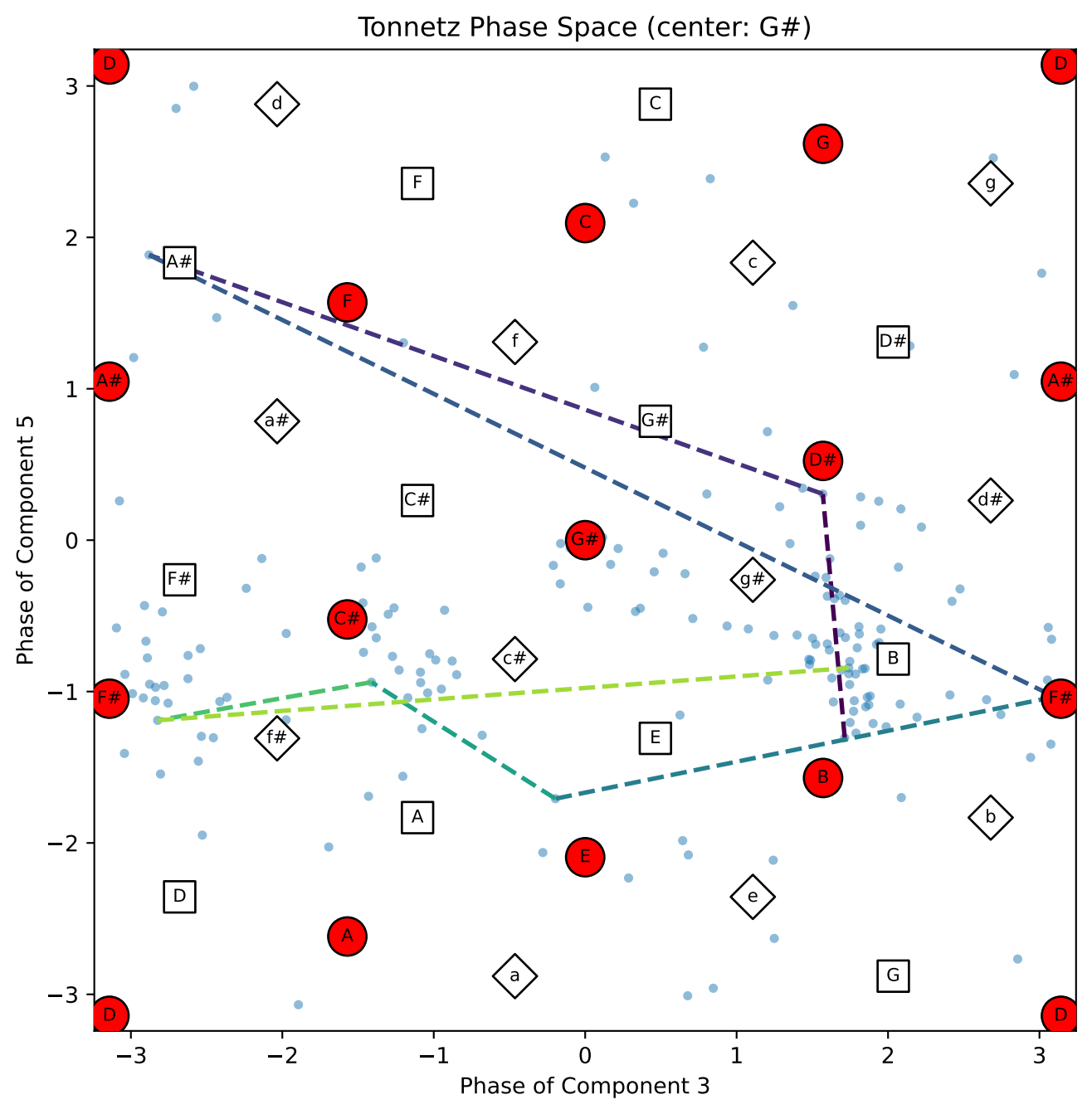
Beat-Synchronized Chroma Comparison:
Pearson Correlation Coefficient (R): 0.5864
R-squared (R^2): 0.3439
P-value: 0.0000
Sum of Absolute Differences: 553.1506
Sum of Squared Differences: 279.7261

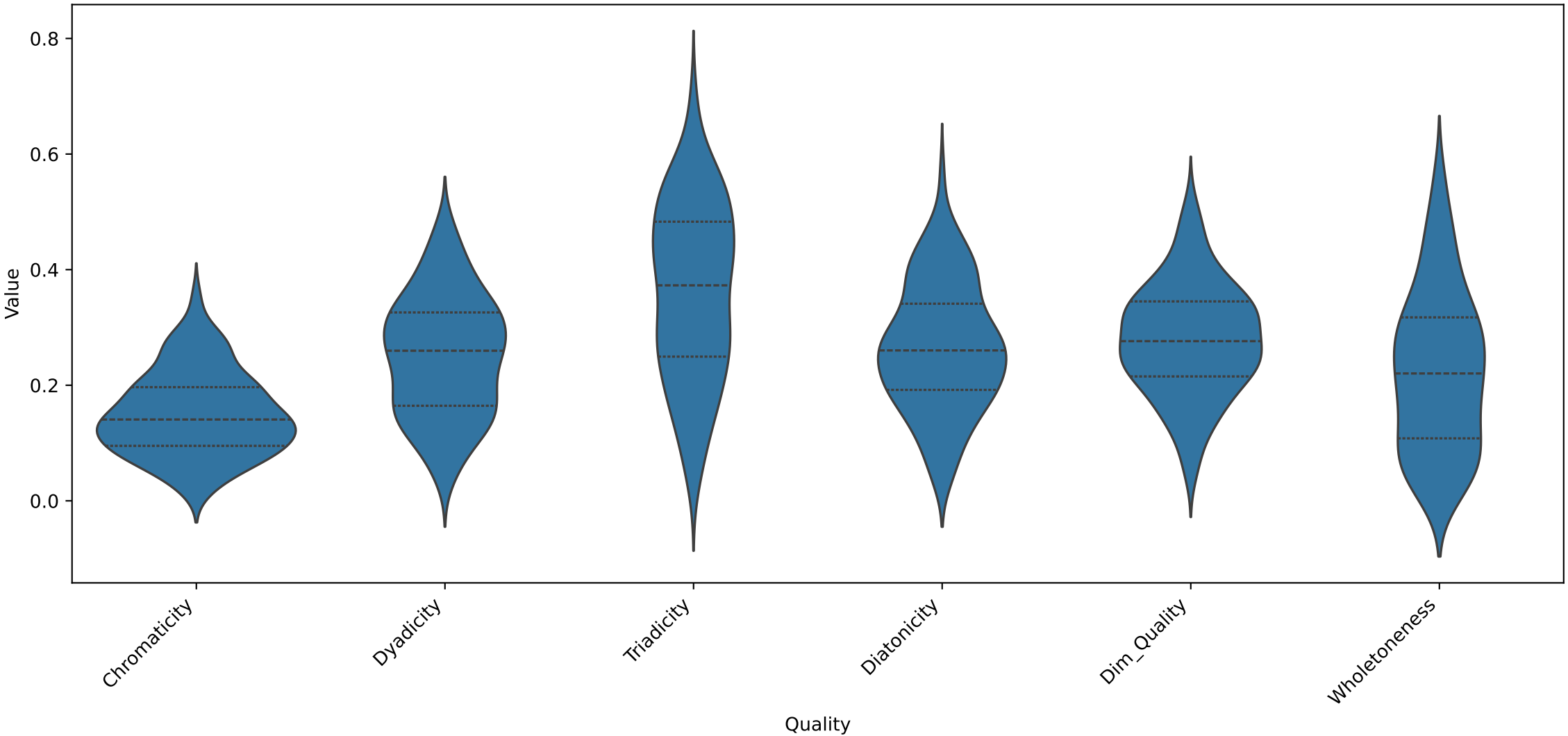
Sensory Dissonance and Tonal Dissonance:
Pearson Correlation Coefficient (R): 0.0648
R-squared (R^2): 0.0042
P-value: 0.3931

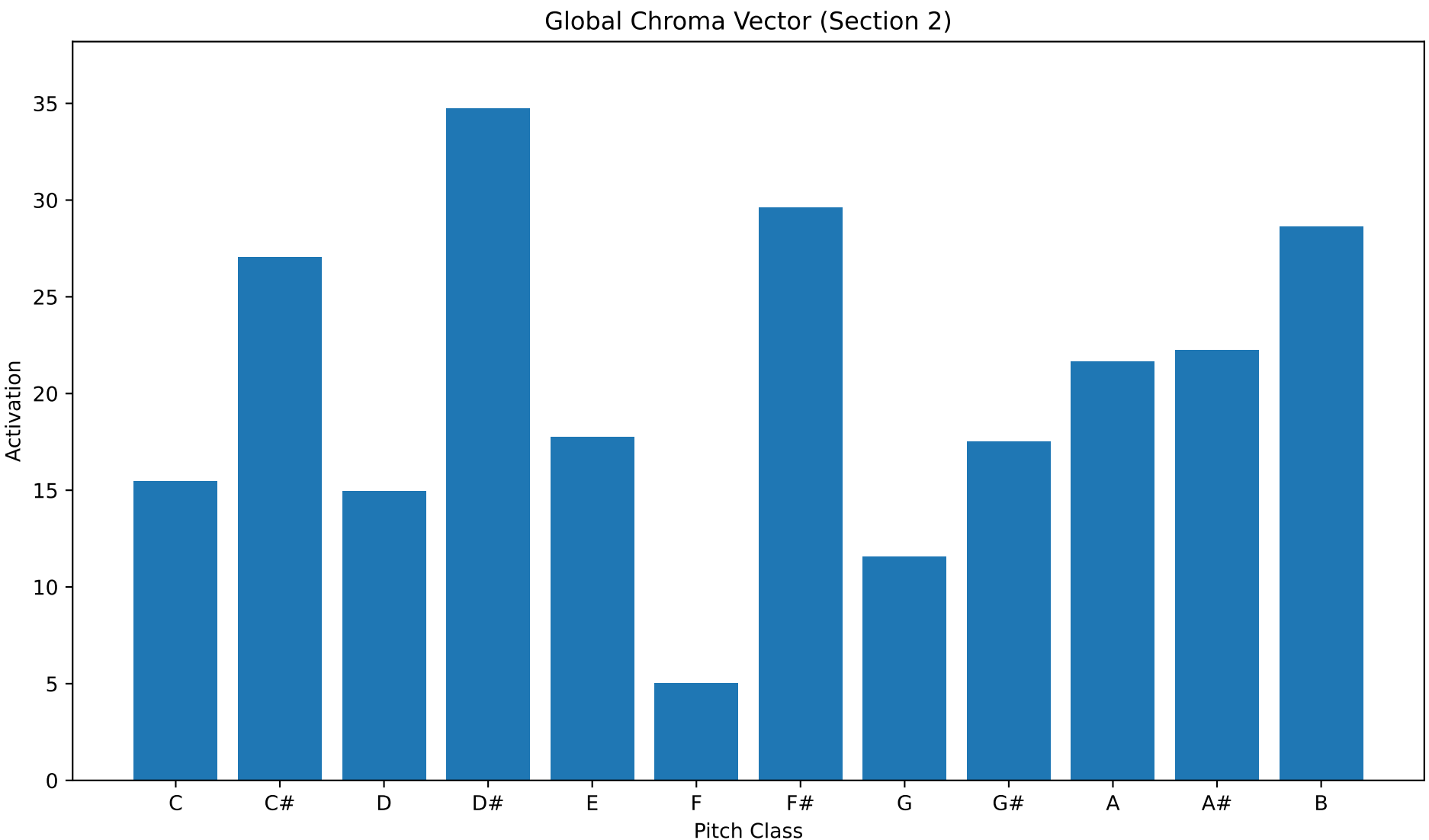
Tonal Dispersion (Audio vs. Ground Truth):
Pearson Correlation Coefficient (R): 0.5407
R-squared (R^2): 0.2924
P-value: 0.0000

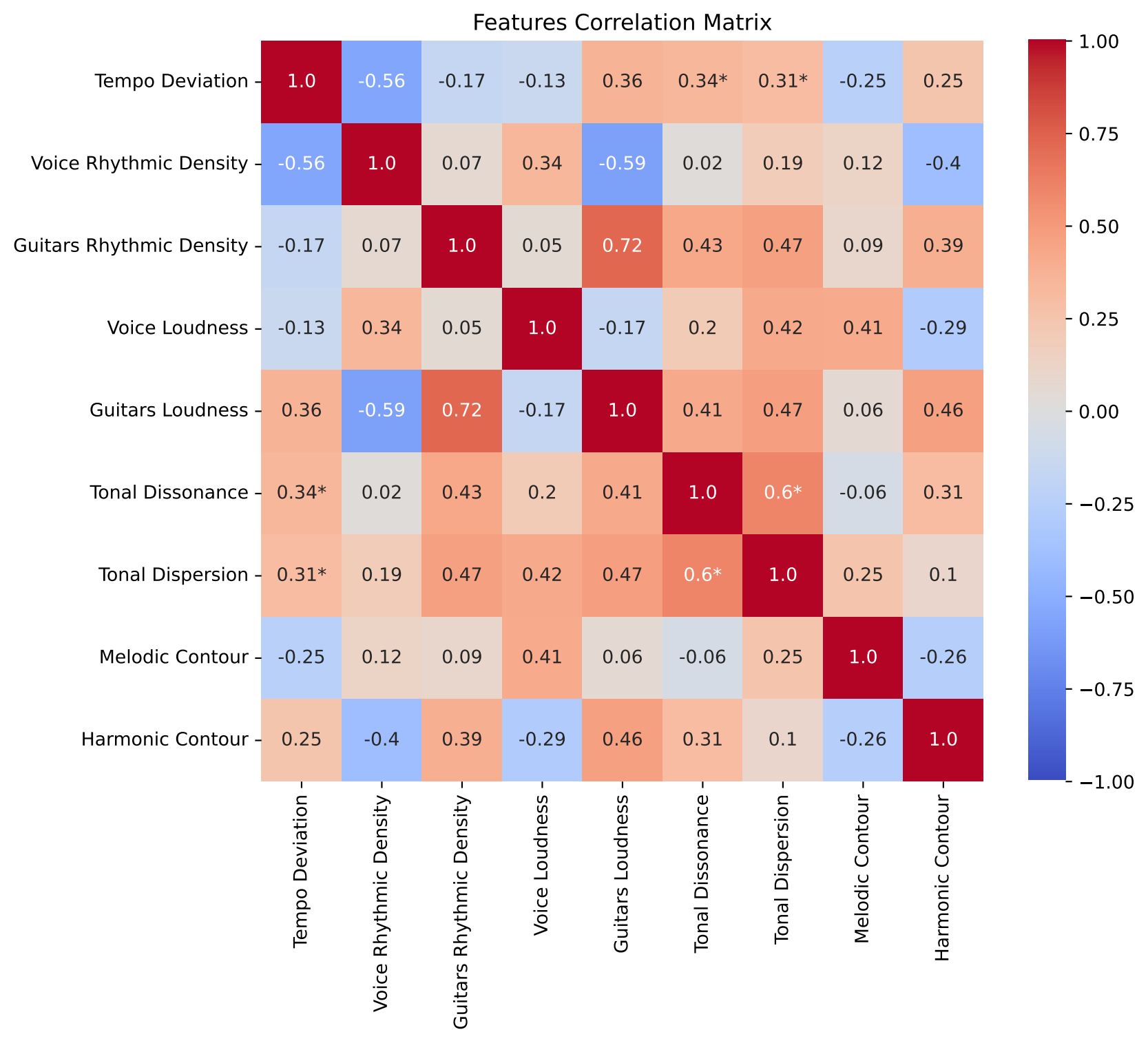

Calculated Beat-Synchronized Chroma
Ground Truth Beat-Synchronized Chroma
Beat-Synchronized Chroma Absolute Difference (Calculated - Ground Truth)
Pitch Class
B
A#
A
G#
G
F#
F
E
D#
D
C#
C
Time
0
0.5
1
1.5
2
Scale
1.0
0.8
0.6
0.4
0.2
0.0

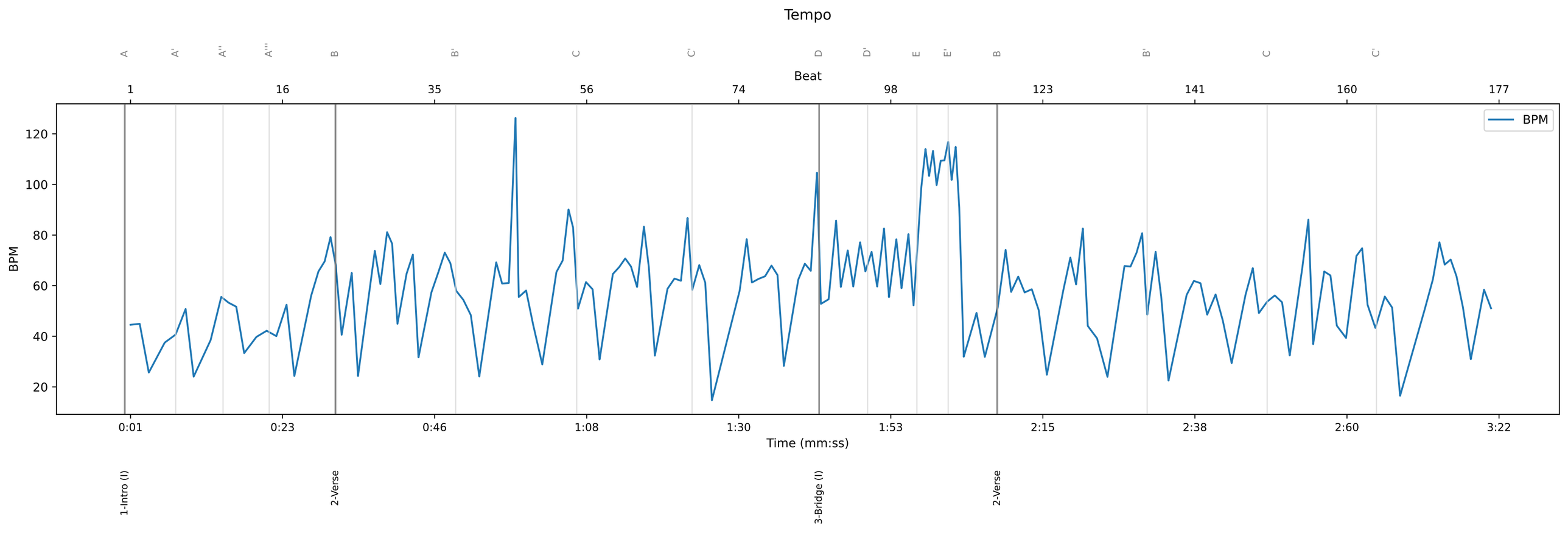

Keyscape
Segment length (beats)
Beat
0
20
40
60
80
100
120
140
160
F:maj
A#:maj
D#:maj
G#:maj
C#:maj
F#:maj
B:maj
E:maj
A:maj
D:maj
G:maj
C:maj
D:min
G:min
C:min
F:min
A#:min
D#:min
G#:min
C#:min
F#:min
B:min
E:min
A:min
Relative Minor Keys

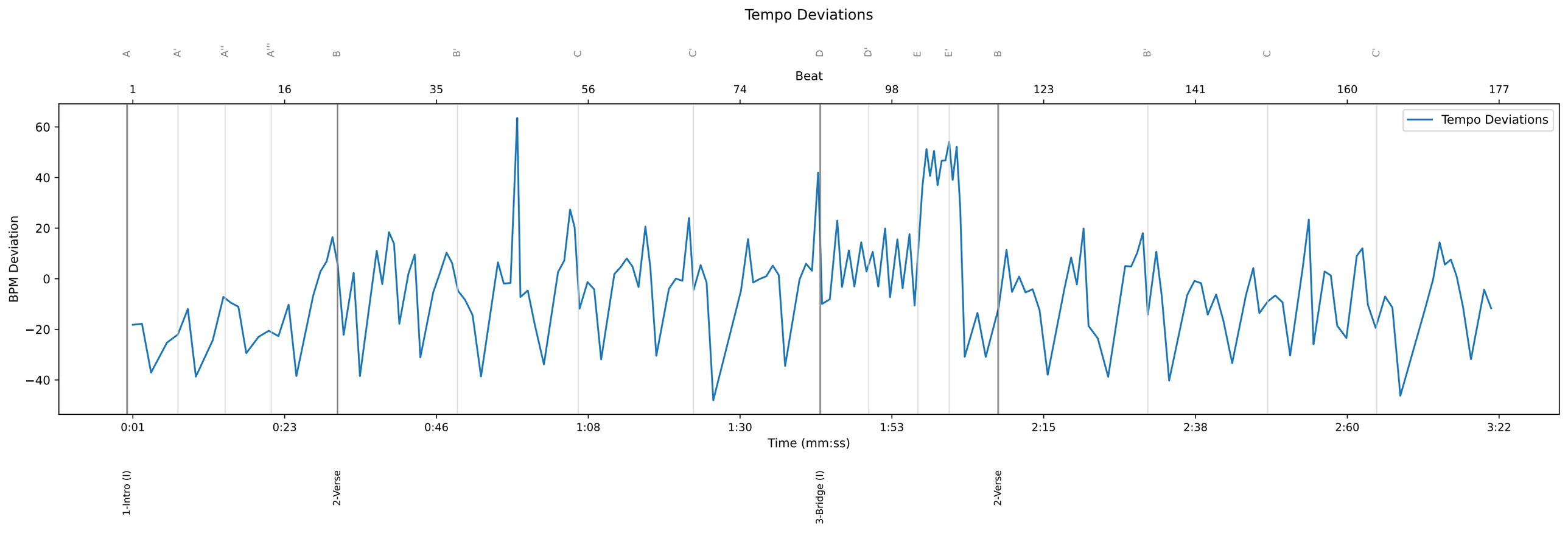

Tonnetz Phase Space (center: G#)
Phase of Component 5
Phase of Component 3
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
D
d
C
G
g
F
C
A#
c
F
f
D#
A#
A#
a#
G#
D#
C#
d#
G#
F#
g#
C#
c#
B
F#
F#
f#
E
B
A
b
D
E
e
A
a
G
D
D
D
D

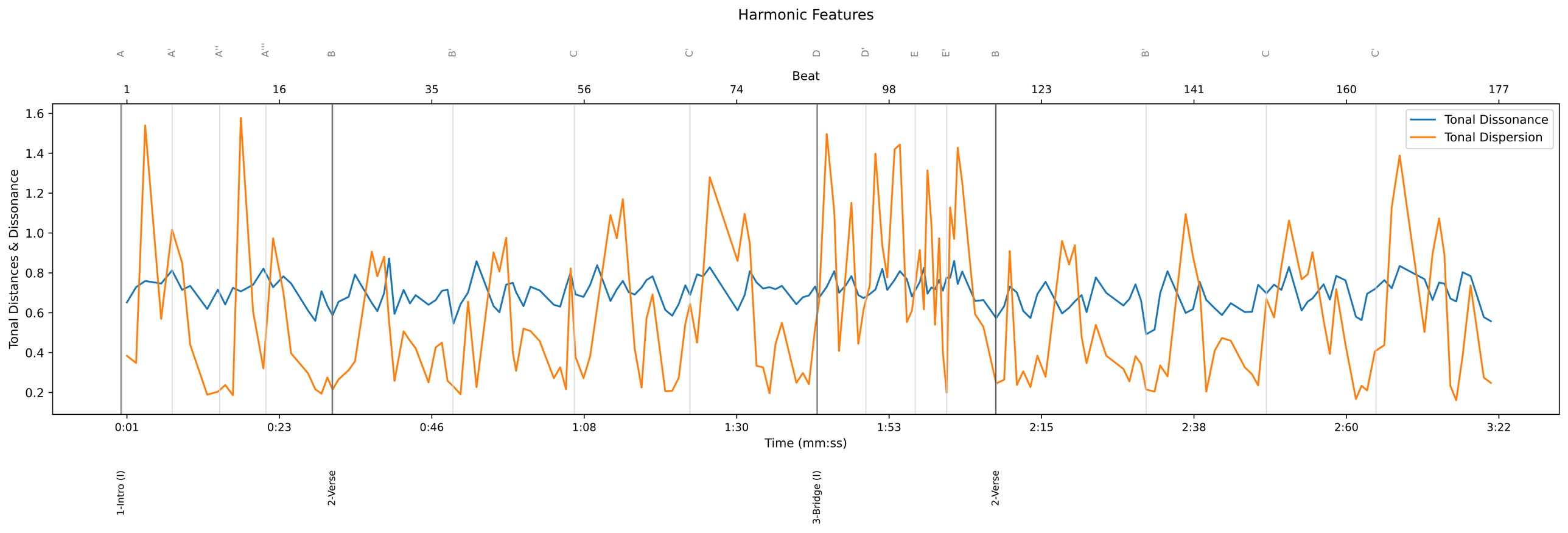

Distribution of Tonal Qualities
Value
0.8
0.6
0.4
0.2
0.0
Chromaticity
Dyadicity
Triadicity
Diatonicity
Dim_Quality
Wholetoneness
Quality

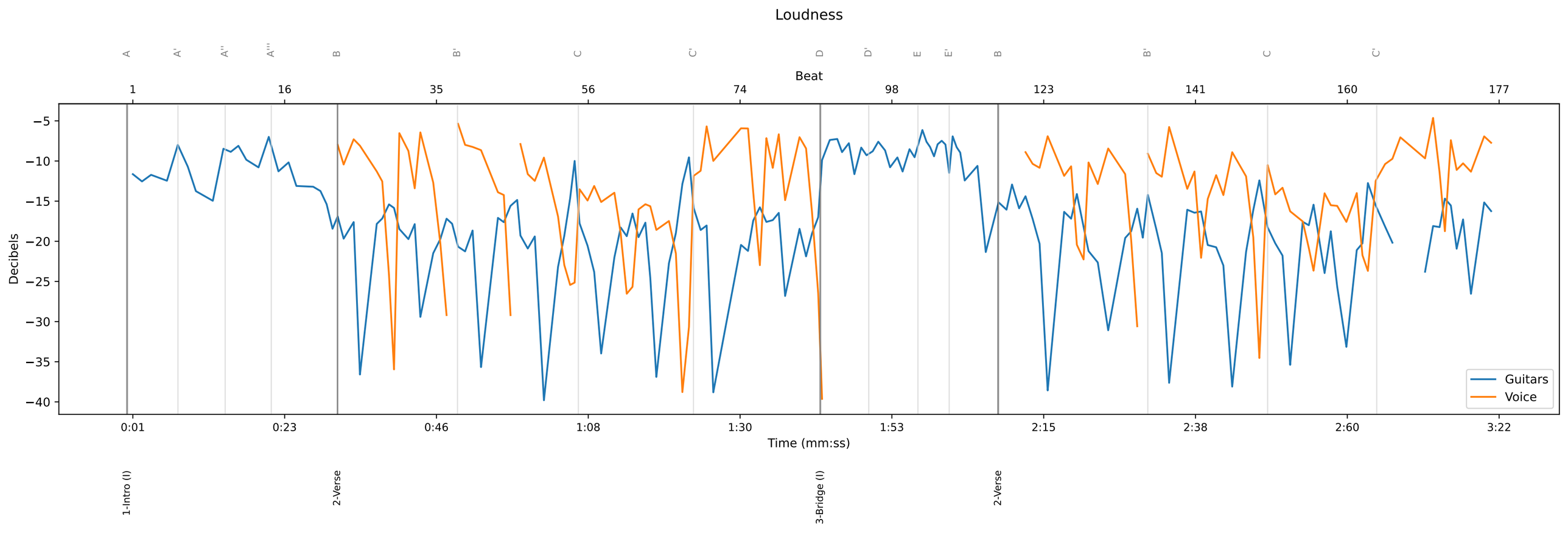

Global Chroma Vector (Section 2)
Activation
0
5
10
15
20
25
30
35
C
C#
D
D#
E
F
F#
G
G#
A
A#
B
Pitch Class

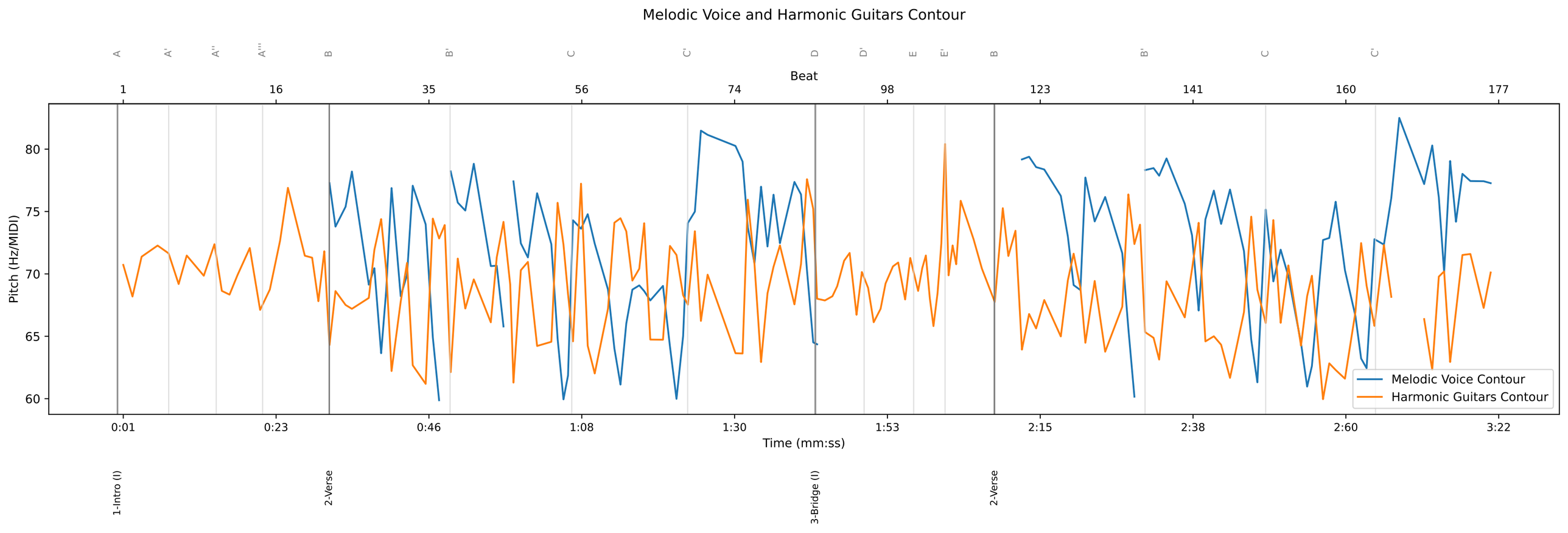

Features Correlation Matrix
Tempo Deviation
Voice Rhythmic Density
Guitars Rhythmic Density
Voice Loudness
Guitars Loudness
Tonal Dissonance
Tonal Dispersion
Melodic Contour
Harmonic Contour
1.0 -0.56 -0.17 -0.13 0.36 0.34* 0.31* -0.25 0.25
-0.56 1.0 0.07 0.34 -0.59 0.02 0.19 0.12 -0.4
-0.17 0.07 1.0 0.05 0.72 0.43 0.47 0.09 0.39
-0.13 0.34 0.05 1.0 -0.17 0.2 0.42 0.41 -0.29
0.36 -0.59 0.72 -0.17 1.0 0.41 0.47 0.06 0.46
0.34* 0.02 0.43 0.2 0.41 1.0 0.6* -0.06 0.31
0.31* 0.19 0.47 0.42 0.47 0.6* 1.0 0.25 0.1
-0.25 0.12 0.09 0.41 0.06 -0.06 0.25 1.0 -0.26
0.25 -0.4 0.39 -0.29 0.46 0.31 0.1 -0.26 1.0
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00

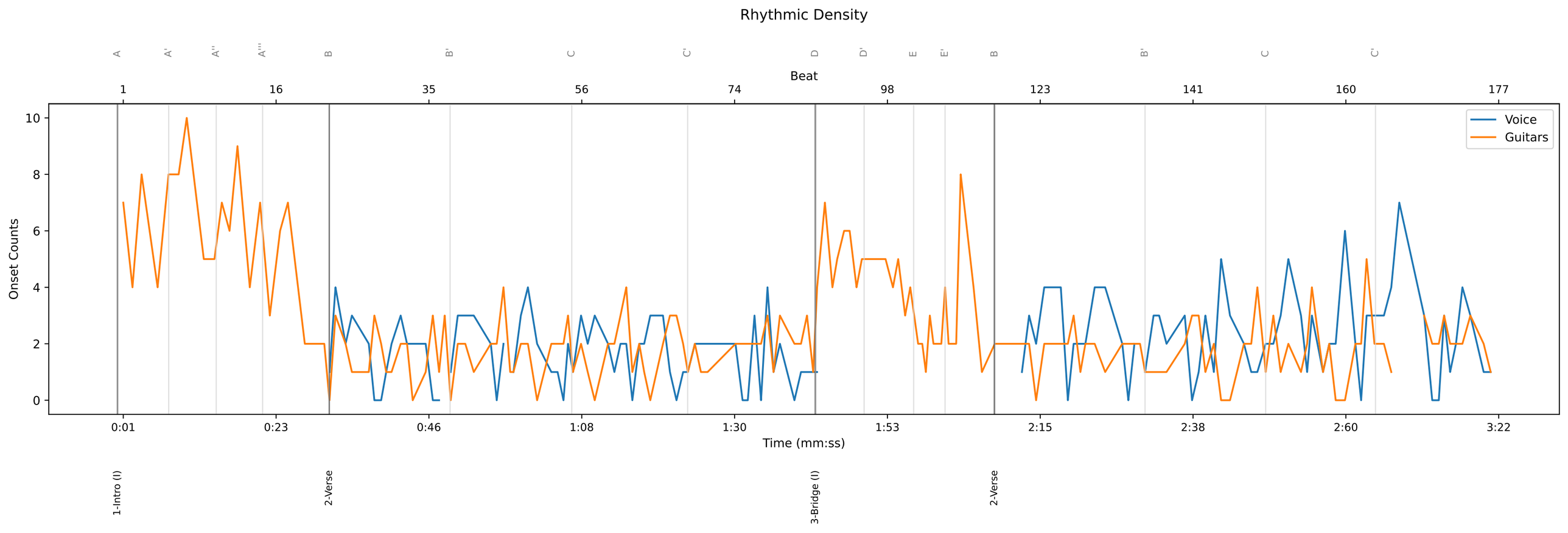

Tempo
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
BPM
120
100
80
60
40
20
BPM
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

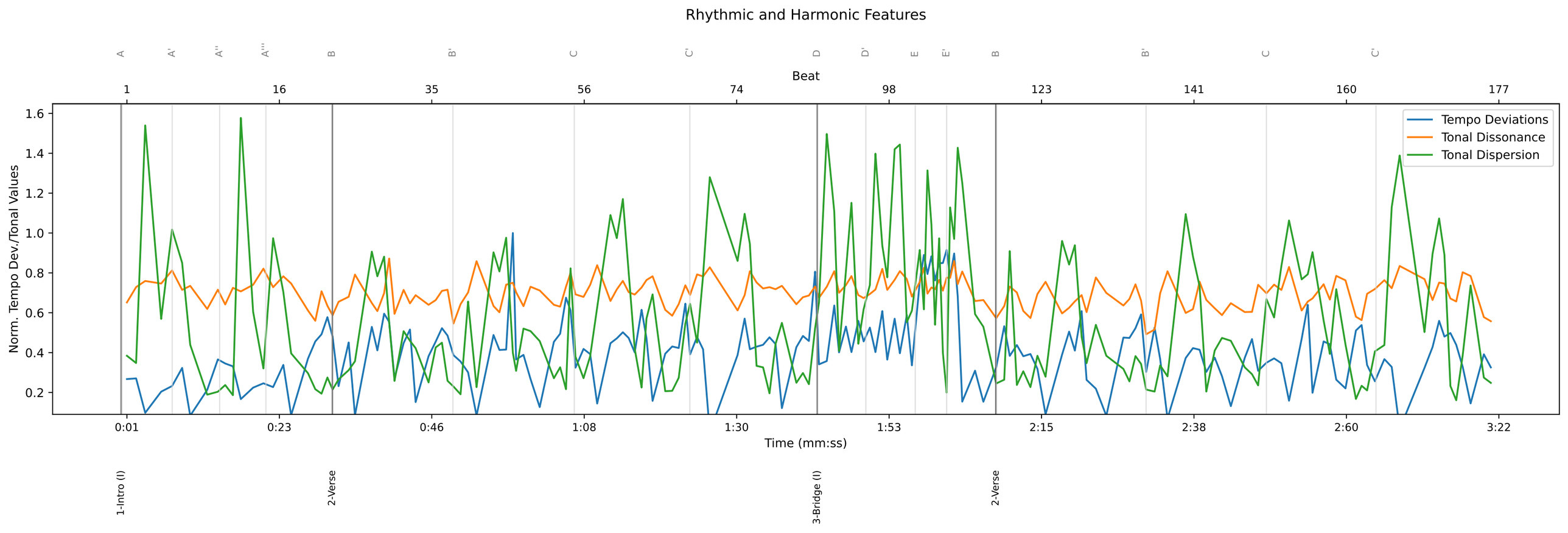

Tempo Deviations
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Tempo Deviations
BPM Deviation
60
40
20
0
−20
−40
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

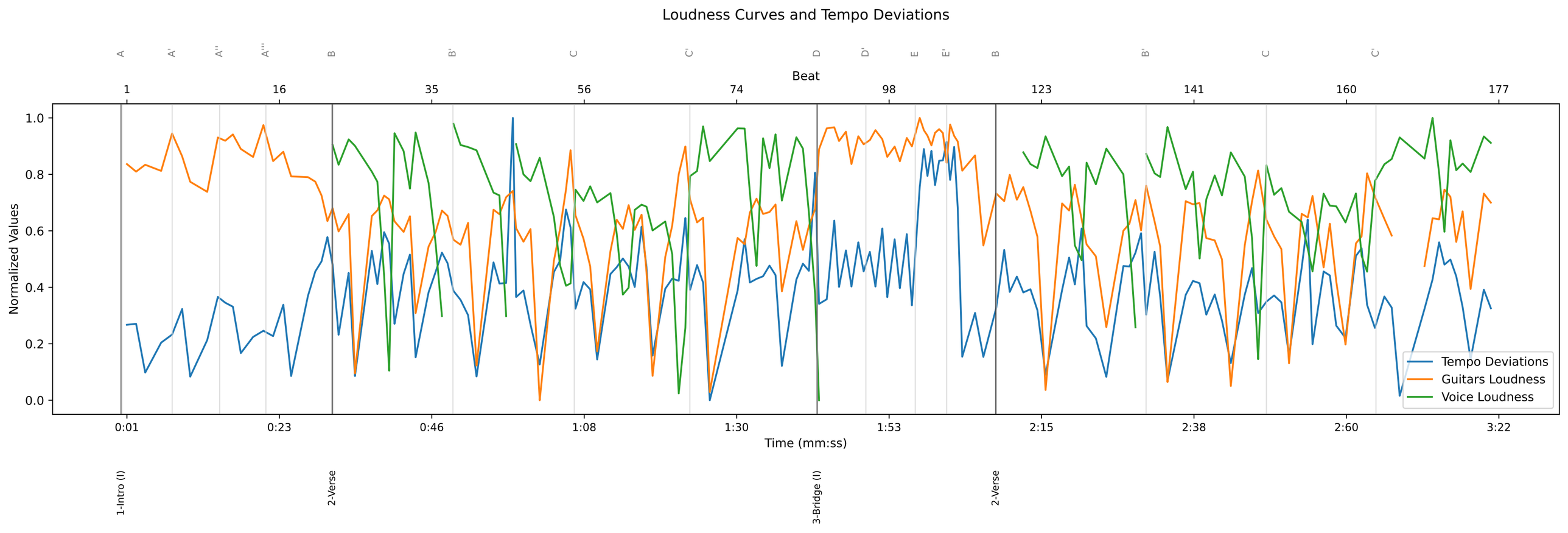

Harmonic Features
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Tonal Distances & Dissonance
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
Tonal Dissonance
Tonal Dispersion
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

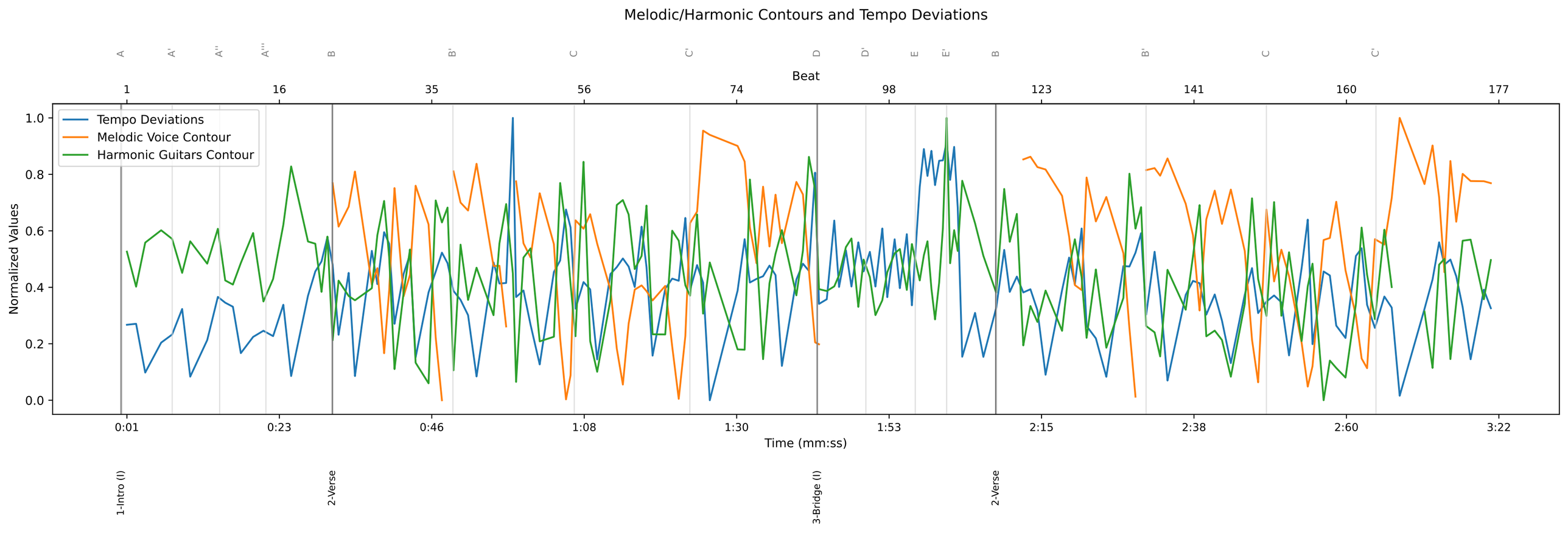

Loudness
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
−5
−10
−15
−20
−25
−30
−35
−40
Decibels
Guitars
Voice
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

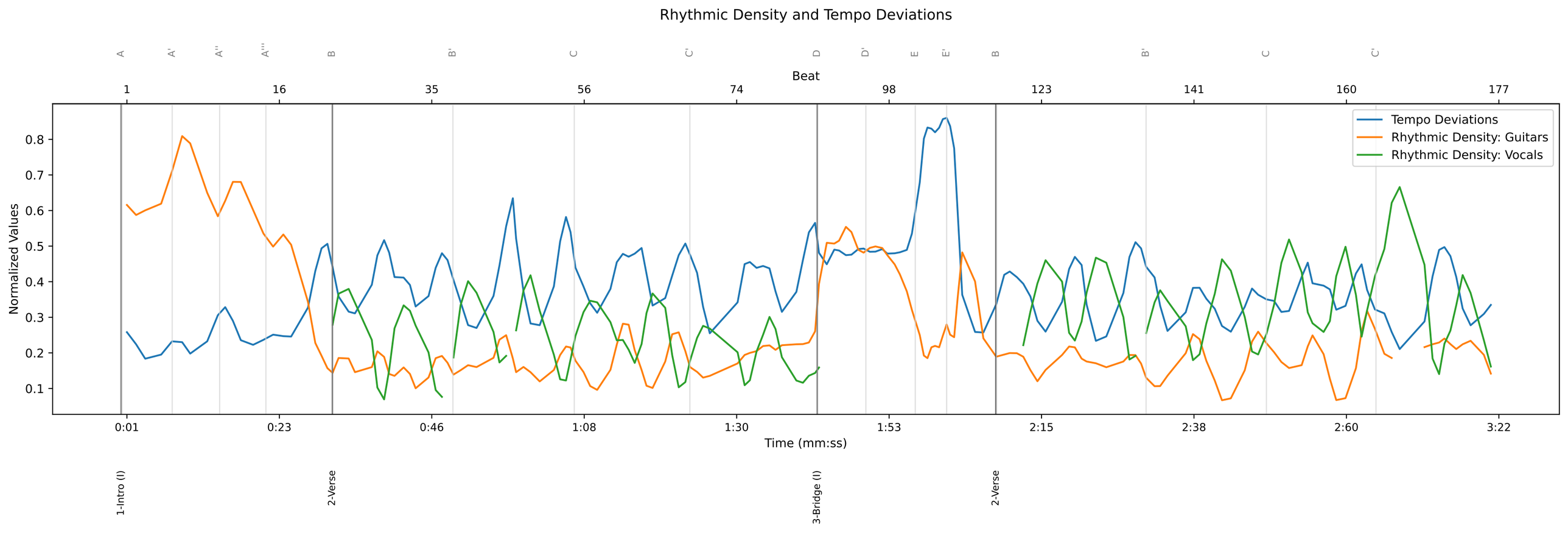

Melodic Voice and Harmonic Guitars Contour
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Pitch (Hz/MIDI)
80
75
70
65
60
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
Melodic Voice Contour
Harmonic Guitars Contour
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

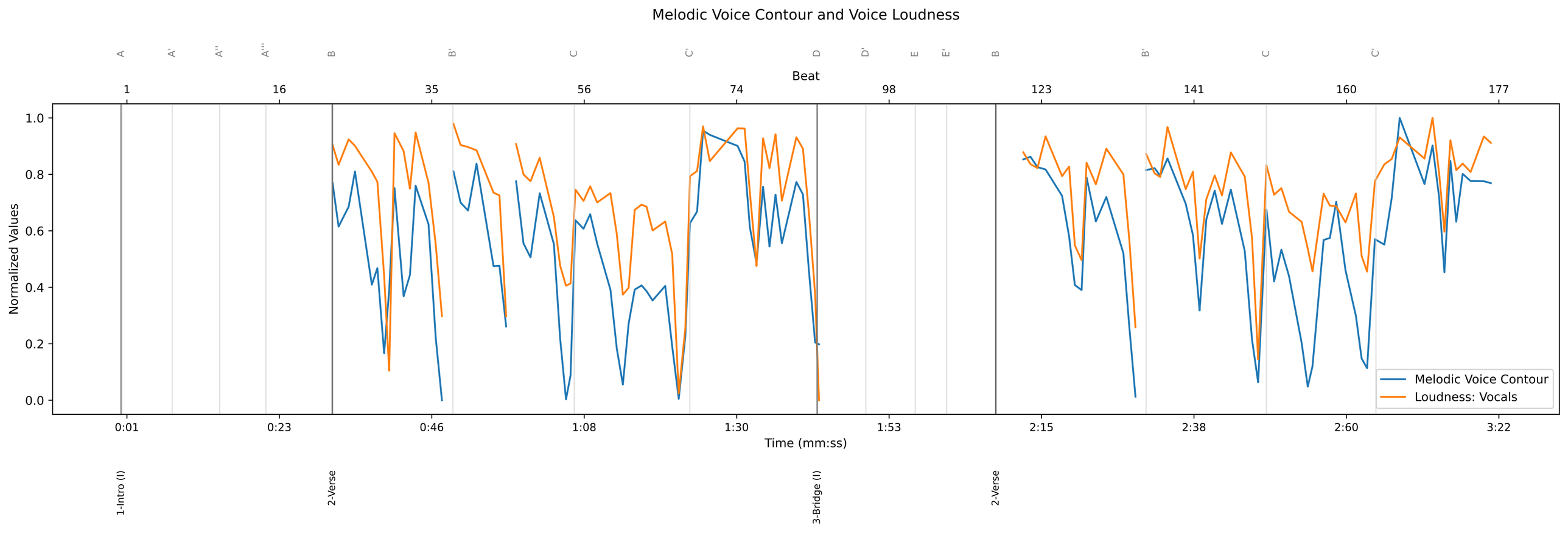

Rhythmic Density
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Voice
Guitars
Onset Counts
0
2
4
6
8
10
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse

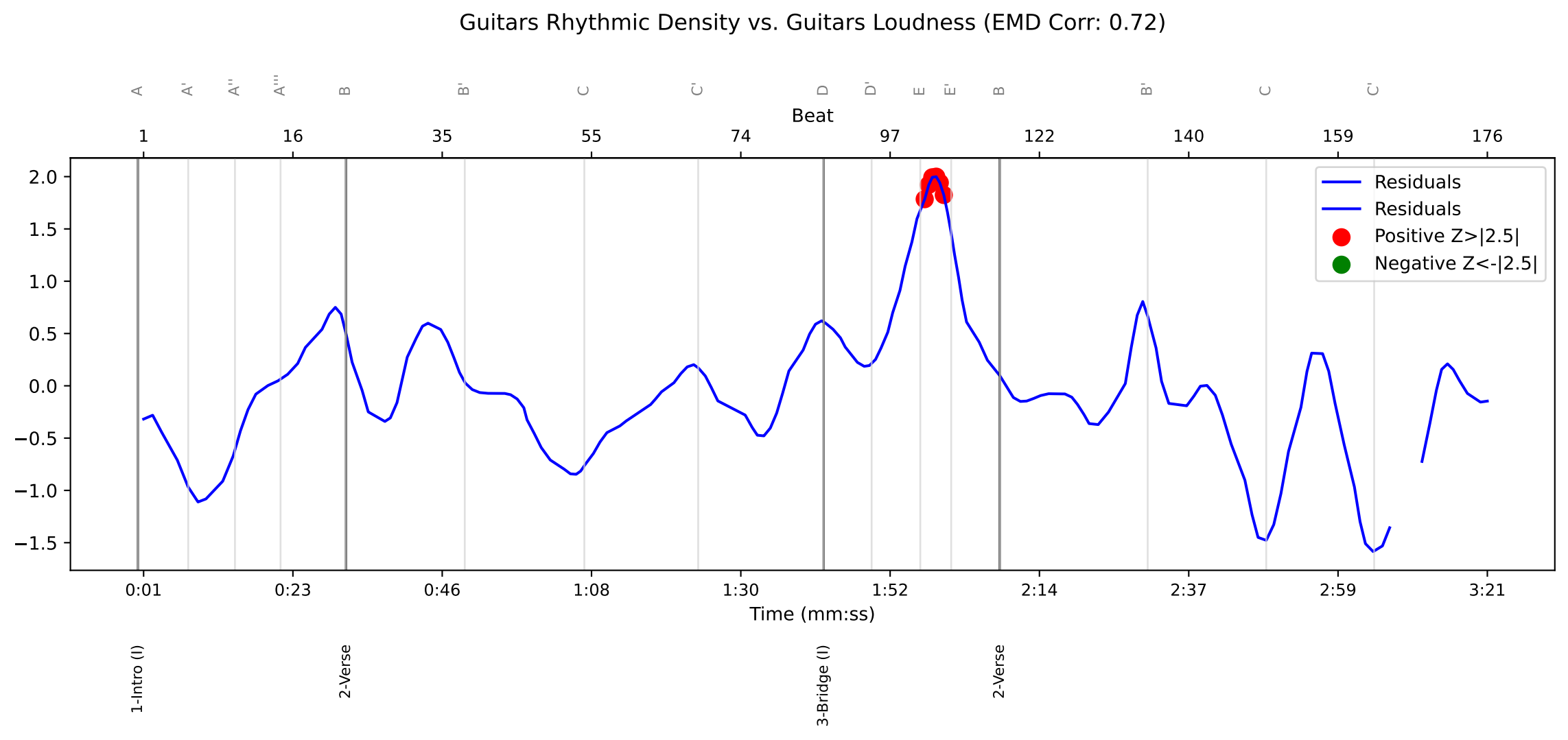

Rhythmic and Harmonic Features
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Tempo Deviations
Tonal Dissonance
Tonal Dispersion
Norm. Tempo Dev./Tonal Values
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse


Loudness Curves and Tempo Deviations
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
Tempo Deviations
Guitars Loudness
Voice Loudness
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse


Melodic/Harmonic Contours and Tempo Deviations
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Tempo Deviations
Melodic Voice Contour
Harmonic Guitars Contour
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse


Rhythmic Density and Tempo Deviations
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Tempo Deviations
Rhythmic Density: Guitars
Rhythmic Density: Vocals
Normalized Values
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse


Melodic Voice Contour and Voice Loudness
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
56
74
98
123
141
160
177
Normalized Values
1.0
0.8
0.6
0.4
0.2
0.0
Melodic Voice Contour
Loudness: Vocals
0:01
0:23
0:46
1:08
1:30
1:53
2:15
2:38
2:60
3:22
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse


Guitars Rhythmic Density vs. Guitars Loudness (EMD Corr: 0.72)
A
A'
A''
A'''
B
B'
C
C'
D
D'
E
E'
B
B'
C
C'
Beat
1
16
35
55
74
97
122
140
159
176
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
Residuals
Residuals
Positive Z>|2.5|
Negative Z<-|2.5|
0:01
0:23
0:46
1:08
1:30
1:52
2:14
2:37
2:59
3:21
Time (mm:ss)
1-Intro (I)
2-Verse
3-Bridge (I)
2-Verse