

Violin Acoustics - Repertoire Examples

Joshua Modney

Legend:

+2, -14, etc: cent deviations from tempered (i.e., piano) tuning system

 : altered pitches (accompanied by cent deviation indication)

◆ : diamond noteheads indicate the most strongly perceived undertones resulting from a given diad

× : cross noteheads represent dissonant (i.e., complex) undertones

 : resonance from open strings

Top Staff (treble) = sustained diads and melodic material

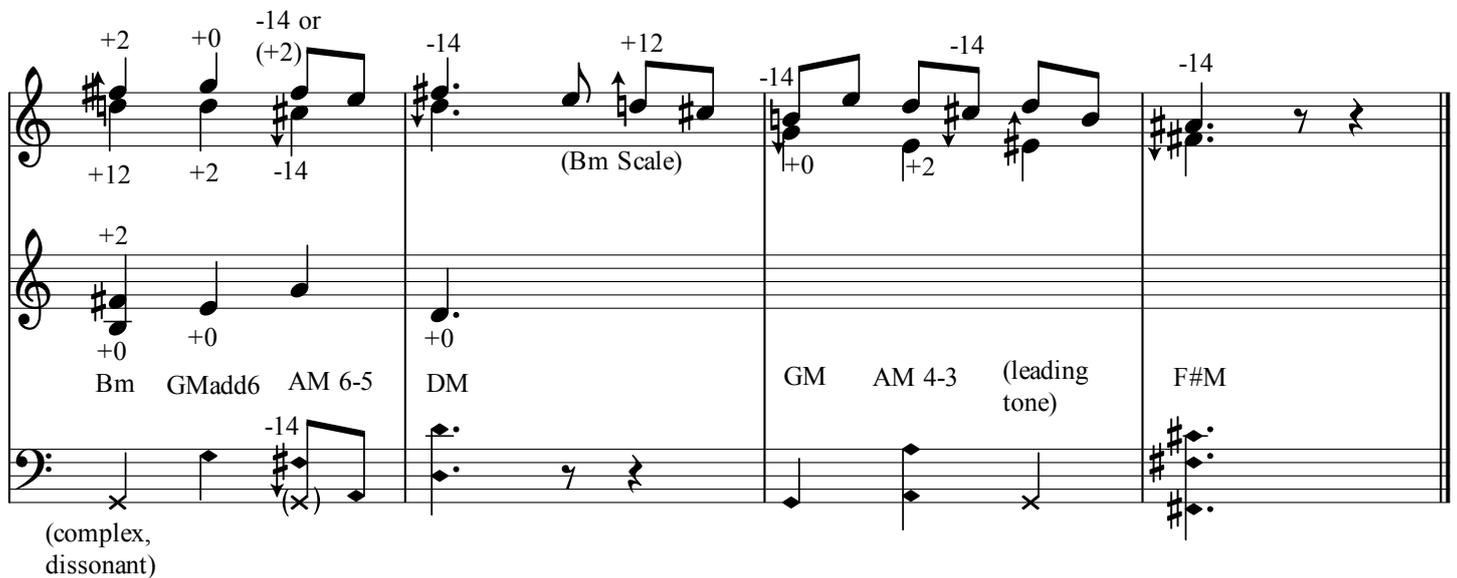
Middle Staff (treble) = notes which are not sustained and thus do not significantly effect perceived undertones

Bottom Staff (bass) = resultant undertones and resonances

N.B., Chord symbols refer to functional harmony except in Method II: *Open String Rule*, where several relate to tuning procedure.

Example 1: Bach B Minor Sarabande

Method I: B Minor Inflection (Just Intonation based on chord function)

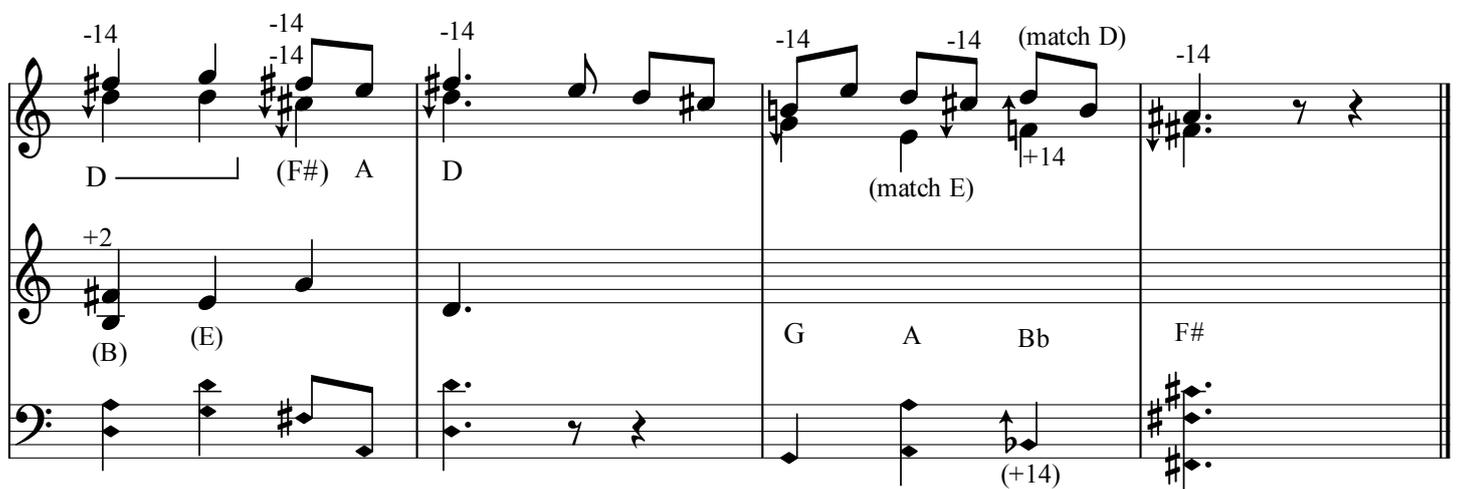


Cent deviations: +2, +0, -14 or (+2), -14, +12, -14, -14, -14.

Chord symbols: Bm, GMadd6, AM 6-5, DM, GM, AM 4-3 (leading tone), F#M.

Notes: (complex, dissonant)

Method II: Open String Rule (Just Intonation based on open string resonance and perfect intervals)



Cent deviations: -14, -14, -14, -14, -14, -14.

Chord symbols: D, (F#), A, D, G, A, Bb, F#.

Notes: (match D), (match E), (+14)

Example 2: Bach Ciaccona

+12
 or
 lead to D (melodic)***
 -14 (A7)
 +12
 +14**
 -0 to -39*
 -14
 +12
 +14**
 Dm Gm6 A7 Dm Bb Gm Dm A7 Dm4-3 Dm
 8va
 (very close to 8:5 in F spectrum, so an F undertone will likely occur)
 (open string resonance)

+12 (G)
 or
 lead to A (melodic)***
 +12
 +14**
 -14
 +12
 +14**
 -0 to -39*
 -14
 Gm6 A7 Dm Bb Gaug6 A Dm
 8va

*For the seventh of this chord, anywhere from a tempered interval (i.e., match open G string) to the Justly Tuned seventh (i.e., seventh partial, -39 c.) can work. The Just Intonation approach sounds extreme to modern ears, I'd love to hear somebody try it.

**The +14 cent deviation is a strategy to maintain the integrity of D and F throughout the bar. In the B \flat chord, raising the root and fifth by 14 cents creates a justly tuned B \flat Major sonority while maintaining a pure octave between D5 (the third of the chord) and D4 (the open string).

***There are two cases in this opening phrase, both at cadence points, where I find that a melodic approach to intonation is more interesting than an adherence to vertical harmony (though both are valid possibilities). In the first case, playing the C# high, as a leading tone to D, heightens the dissonance of the A7 chord and sets up a more satisfying release into Dm. Likewise in the second case, a very low B \flat leading to A creates more complex overtones before the cadence.