

CONTENTS

| | |
|--|----|
| 1. Introduction | 2 |
| 2. Fretboard | 3 |
| 3. Shifting notes and chords | 4 |
| 3.1. <i>Horizontal</i> shift of 12 frets | 4 |
| 3.2. <i>Vertical</i> shifts of three strings | 5 |
| 3.3. Diagonal shifts: M3 tuning's regularity | 6 |
| 4. Basic chords: A dictionary | 7 |
| 5. Chord progressions | 10 |
| 5.1. I-IV-V | 10 |
| 6. Sevenths chords: Tertian harmonization of <i>C</i> -major scale | 10 |
| Appendix A. Standard tuning: An irregular tuning | 13 |
| A.1. Chords cannot keep the same note-pattern. | 13 |
| A.2. Sevenths are very difficult to play | 14 |
| Appendix B. Coda | 15 |
| B.1. Acknowledgments | 15 |
| B.2. Copyright | 15 |
| B.3. Colophon | 15 |
| References | 15 |

CHORD DIAGRAMS FOR MAJOR-THIRDS TUNING:

$A^b-C-E-A^b-C-E$

KIEFER WOLFOWITZ

ABSTRACT. Major-thirds tuning appeals to several types of guitarists: Beginners, intermediate guitarists studying the theory of music, composers, music educators, and jazz guitarists.

This document presents the fretboard of a popular major-thirds tuning $A^b-C-E-A^b-C-E$. Diagrams present major-third tuning's fundamental chords (major triads, minor triads, and dominant seventh chords). Diagonal, vertical, and horizontal shiftings of chords is illustrated. A $C-F-G7$ ($I-IV-V7$) chord progression is shown. At the end, the tertian construction of seventh chords by harmonizing the major scale in thirds is described; in M3 tuning the fingerings of seventh chords are consistent with their component triads, unlike in standard tuning (in which the beginner memorizes an ad-hoc collection of major/minor chords, each having different forms, which have little relation to their extensions as seventh chords). An appendix exhibits difficulties with standard tuning: Diagonally shifting chords requires (at least) three forms, and dominant seventh chords cannot be played in closed position.

©Copyright 2012, 2013. Uploaded to the Wikimedia Foundation's Commons under Creative Commons 3.0 Share-Alike and By-Attribution (CC 3.0 SA BY) license.

1. INTRODUCTION

This document contains diagrams for the fretboard and for selected chords for major-thirds (M3) tuning on a six-string guitar. The diagrams display the open-string notes $A\flat-C-E-A\flat-C-E$ of the most popular major-thirds tuning.

Major-thirds tuning appeals to several types of guitarists:

Beginning players: who want to make rapid progress in learning the fretboard and chords with less risk of injury.

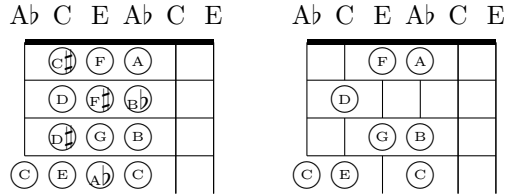
Mastery of the fundamentals of M3 tuning also entails basic knowledge of music theory. As a musician, a guitarist must be able to harmonize melodies, transpose music to different keys, and to discuss harmony with singers and keyboard players: These skills come naturally to students playing in M3 tuning.

In comparison, standard tuning's ad-hoc fingerings and inconsistent terminology hamper progress and musicianship.

Intermediate players: who appreciate M3 tuning's elegance and consistency: Closed positions, inversions, and drop voicings are natural in M3 tuning. Consequently sight-reading and improvisation are easier in M3 tuning.

2. FRETBOARD

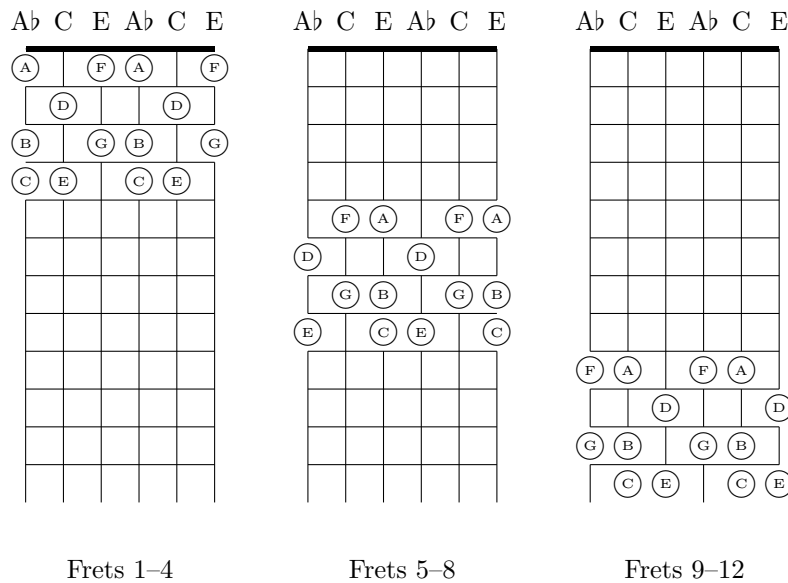
Each M3 tuning packs the *chromatic scale*'s 12 notes into 4 consecutive frets on 3–4 strings:



Chromatic scale on C Major scale on C

The chromatic scale contains the *C-major scale*.

Major-thirds tuning partitions the fretboard into four-fret segments; this segmentation allows a guitarist to fret each note with exactly one finger (in different hand positions), which simplifies sight-reading and improvisation [10, pp. 36–37].



Like the displayed *C-major scale*, other scales can be partitioned into four-fret segments. *Four* frets require less horizontal finger-stretching than the *five* frets of *standard* tuning (or the *seven* frets of *new standard* tuning); M3 tuning's four-fret segmentation is an advantage for beginners (especially adults) or for guitarists recovering from injuries associated with standard tuning. Beginners have been advised to begin learning guitar on interior frets by Jamie Andreas [1].¹

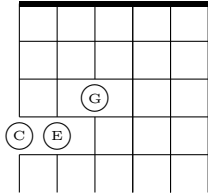
¹Learning the fretboard first with frets 5–8 or 9–12 before frets 0–4 promotes relaxation, reducing stretching and reducing tension in the fingers, arm, shoulder, and back.

3. SHIFTING NOTES AND CHORDS

The C -major triad (C, E, G) contains three intervals:

- The (C, E) -interval is a *major third* (four semitones),
- the (E, G) -interval is a *minor third* (three semitones);
- the composite (C, G) -interval is a *perfect fifth* (seven semitones).

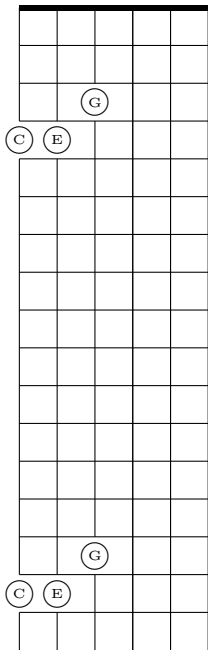
A^b C E A^b C E



C major (C, E, G)

3.1. **Horizontal shift of 12 frets.** For every guitar tuning, chords can be moved *horizontally* (on the same strings) twelve frets because the notes repeat themselves (on a higher octave).

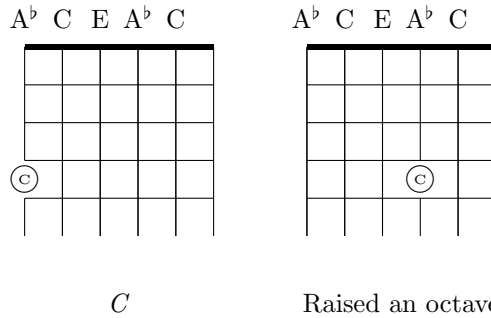
A^b C E A^b C E



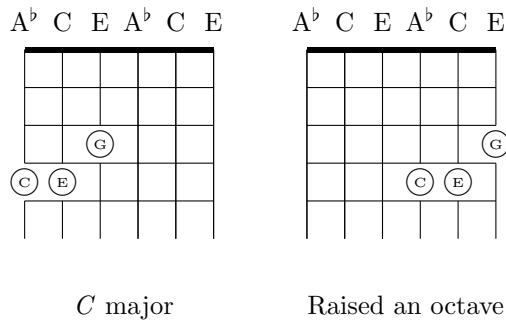
Horizontal shift of C major

3.2. *Vertical shifts of three strings.*

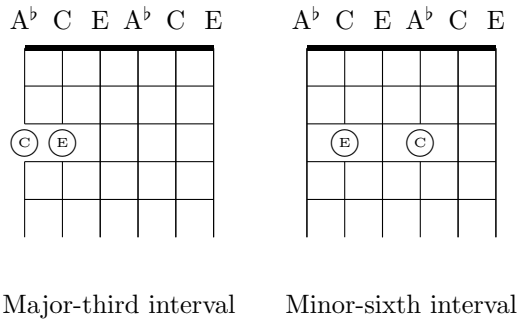
3.2.1. *Raising notes an octave.* Because major-thirds tuning repeats its three strings (in a higher octave), its notes can be shifted *vertically* by three strings on the same frets.



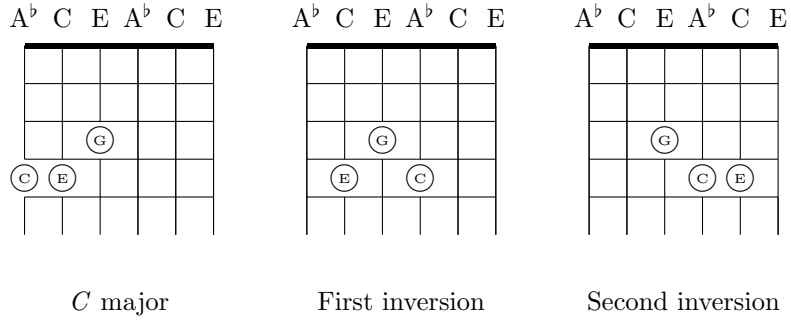
Like the displayed *C* notes, two notes that differ by an octave belong to the same *pitch class*. *Doubling* a note in different octaves reinforces the lower note. Just as notes can be shifted by three strings on the same frets, so can chords be shifted.



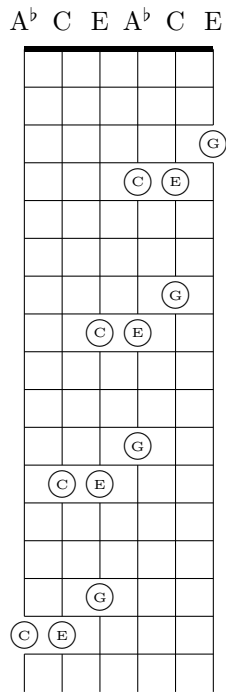
3.2.2. *Inverting intervals and chords.* Musical intervals are inverted by raising the lowest note by an octave. For example the inverse interval for the major third (*C,E*) is the minor sixth (*E,C*). In M3 tuning, intervals are inverted by raising the lowest note by three strings on the same fret:



Chords are inverted by inverting their intervals—shifting by three strings in M3 tuning. Inverting the (C,E) interval in the C -major chord while maintaining the (E,G) interval yields the first inversion of the C -major triad, (E,G,C) :



3.3. Diagonal shifts: M3 tuning's regularity. In major-thirds tuning, for each fret, the notes of consecutive strings differ by exactly a major third. Consequently, the shape of a chord may be moved *diagonally*, by four horizontal-shifts and one vertical-shift.

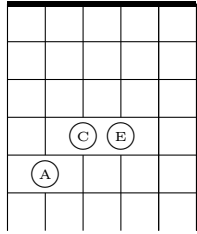


Diagonal shift of C major

4. BASIC CHORDS: A DICTIONARY

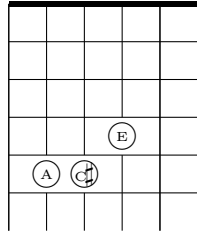
For each of the natural notes A – G , we display three commonly used chords—namely, the minor, major, and dominant seventh chords.

$A^b C E A^b C E$



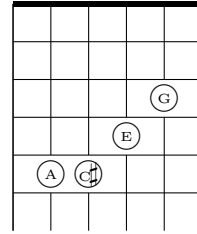
A minor

$A^b C E A^b C E$



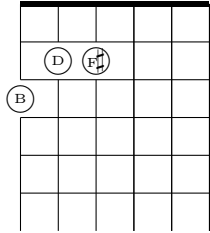
A major

$A^b C E A^b C E$



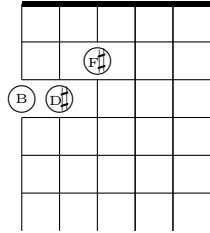
A 7

$A^b C E A^b C E$



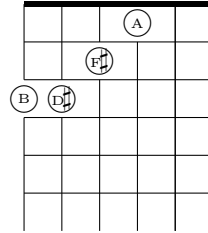
B minor

$A^b C E A^b C E$



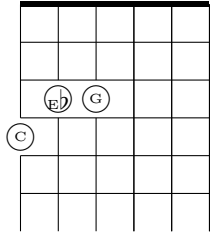
B major

$A^b C E A^b C E$



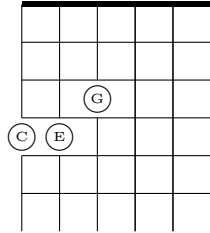
B 7

$A^b C E A^b C E$



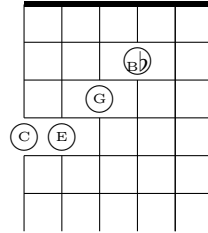
C minor

$A^b C E A^b C E$

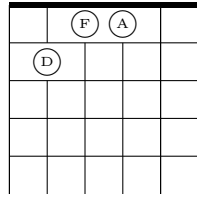
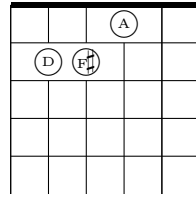
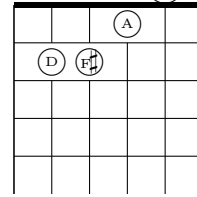
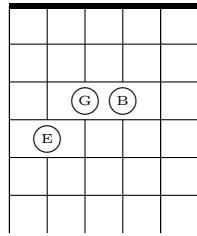
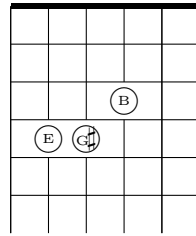
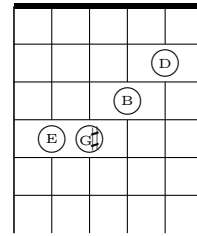
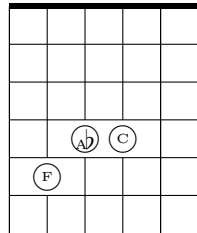
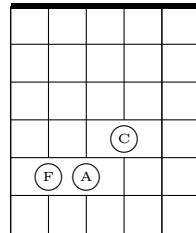
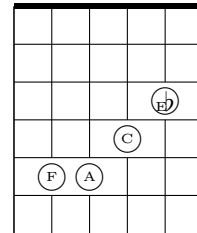


C major

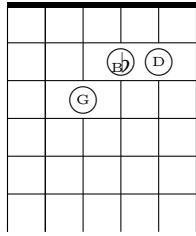
$A^b C E A^b C E$



C 7

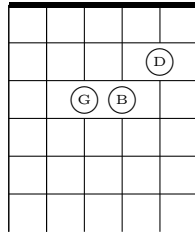
A^b C E A^b C E*D* minorA^b C E A^b C E*D* majorA^b C E A^b C E*D* 7A^b C E A^b C E*E* minorA^b C E A^b C E*E* majorA^b C E A^b C E*E* 7A^b C E A^b C E*F* minorA^b C E A^b C E*F* majorA^b C E A^b C E*F* 7

A^b C E A^b C E



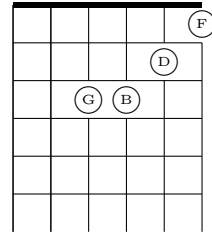
G minor

A^b C E A^b C E



G major

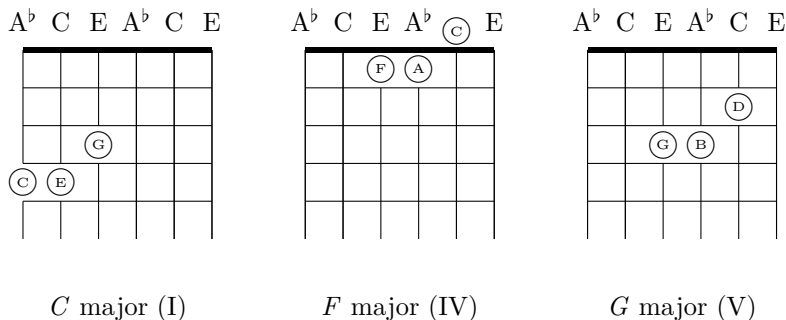
A^b C E A^b C E



G 7

5. CHORD PROGRESSIONS

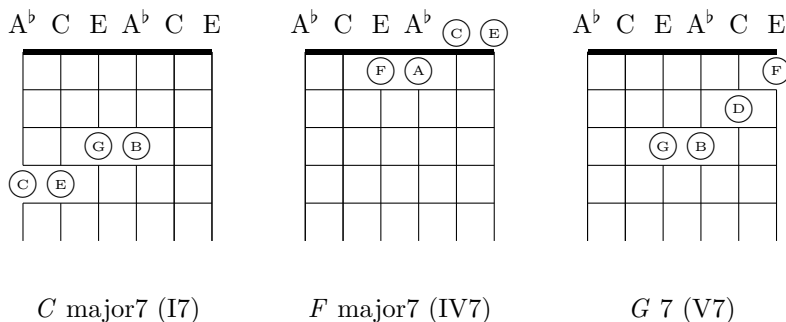
5.1. **I–IV–V.** The I–IV–V chord progression shifts the tonic chord (I) by one perfect-fourth (six semitones) to produce the subdominant chord (IV), which is shifted by one major-second (two semitones) to produce the dominant chord (V). This pattern of shifts appears in the C – F – G progression of major triads in major-thirds tuning:

6. SEVENTHS CHORDS: TERTIAN HARMONIZATION OF C -MAJOR SCALE

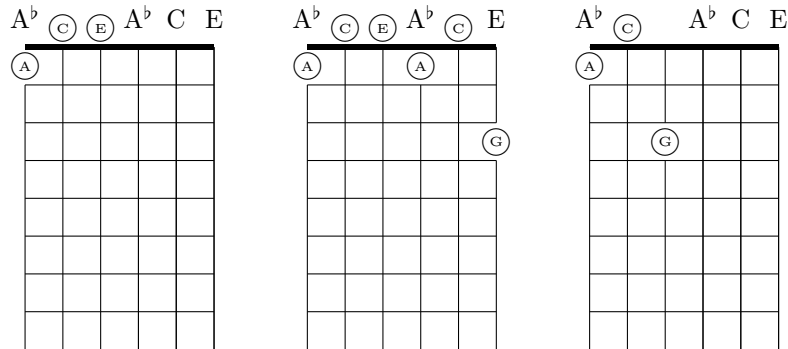
Beginning guitarists may skip this section, which covers an intermediate topic in guitar playing.

Sevenths chords are important in all modern music, especially in jazz. Wikipedia’s article on “Guitar chords” explains the construction of sevenths chords by “stacking thirds” on the major scale. This construction is performed with the major scale on C . The sevenths chords shown belong to the keys of C major and A minor.

Fretboard diagrams display notes, without prescribing fingerings. A beginning guitarist should practice fingerings for intervals and then triads that truncate good fingerings for the seventh chords; with this strategy, the guitarist shall build a solid foundation and avoid wasting time with bad habits that must be unlearned. For example, in the above C – F – G progression, the major triads truncate the seventh chords shown here:



The next page displays the harmonization of the C-major scale in sevenths chords.



A minor (vi)

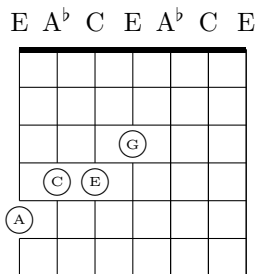
A minor7 (vi7)

A minor7 (vi7)

The first measure contains the *A*-minor seventh and related chords:

- (1) The *A*-minor triad appears (for beginners to master),
- (2) a six-string *A*-minor seventh doubling the bass and minor-third notes (which beginners should avoid), and
- (3) an *A*-minor seventh omitting the fifth (which is appropriate for beginners).

The first measure's *A*-minor seventh can be played easily using a seven-string guitar:²



A minor7 (vi7)

After the first measure, all chords can be practised as notes, intervals, triads, and sevenths, the learning sequence recommended earlier.

Some remarks:

- The eighth measure contains two *A*-minor seventh chords (on frets 3–5 and 7–9), each of which should be learned.
- The harmonization of the major scale introduces the diminished triad and half-diminished seventh chords (built on *B*), which are less commonly used than the other chords.

²A seven-string guitar gives major-thirds tuning the *E–E* range of standard tuning.

Sevenths chords in C-major and A-minor keys

Tertian harmonization of C-major and A-minor scales

Stacking thirds: A-Aeolian and C-Ionian modes

Major-thirds guitar-tuning Ab-C-E-Ab-C-E/G#-C-E-G#-C-E Kiefer Wolfowitz

The score consists of three systems of music, each with a treble clef staff and a guitar staff. Chord diagrams are shown above the treble staff, and fret numbers are written on the guitar staff.

System 1 (Measures 1-5):

- Measure 1: Am (0 0 x x x)
- Measure 2: Am7 (0 0 1 0 1)
- Measure 3: Am7 (no 5th) (0 x x x)
- Measure 4: BØ (x x x x)
- Measure 5: Cmaj7 (x x)

System 2 (Measures 6-10):

- Measure 6: Dm7 (x x x x)
- Measure 7: Em7 (x x x x)
- Measure 8: Fmaj7 (x x 0 0)
- Measure 9: G7 (x x x x)
- Measure 10: Am7 (x x x x iii)

System 3 (Measures 11-15):

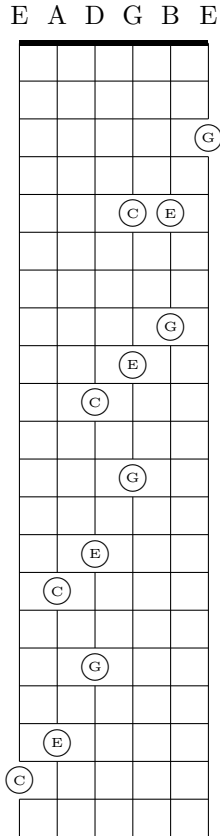
- Measure 11: Am7 (x x x x vii)
- Measure 12: BØ (x x x x v)
- Measure 13: Cmaj7 (x x x x vii)
- Measure 14: Dm7 (x x x x viii)
- Measure 15: Em7 (x x x x x)

APPENDIX A. STANDARD TUNING: AN IRREGULAR TUNING

Standard tuning is mostly tuned in *perfect fourths*, which means that there are *five* semitones between the notes of 4 of its 5 successive string-pairs.

However, the B-string is above the G-string by only a *major third* (*four* semitones), an irregularity that complicates guitar playing.

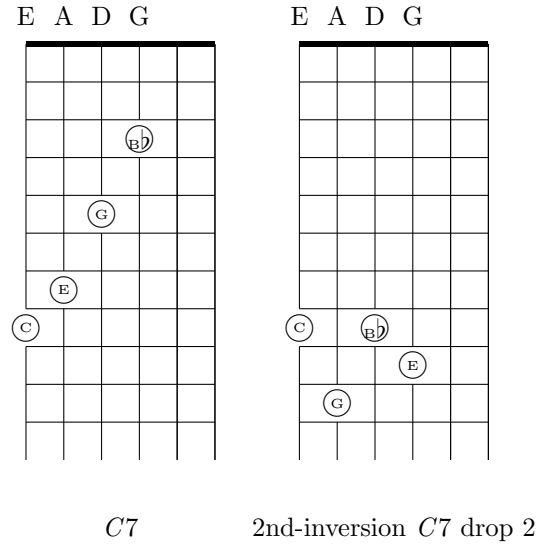
A.1. **Chords cannot keep the same note-pattern.** First, chords must be adapted to standard tuning's irregularity. Depending on the string position, there are three or more different shapes for the same chord.



Diagonal shift of *C*-major

A.2. Sevenths are very difficult to play. A dominant seventh is a four-note chord combining a major triad and a minor seventh. For example, the $C7$ dominant-seventh chord adds $B\flat$ to the C -major chord (C, E, G).³

In standard tuning, the dominant-seventh chord ($C, E, G, B\flat$) spans six frets from fret 3 to fret 8 [13]; such seventh chords “contain some pretty serious stretches in the left hand”.⁴ An illustration shows a naive $C7$ chord, which would be extremely difficult to play [13], besides the variant $C7$ chord that is conventional in standard tuning [13]. The standard-tuning implementation of a $C7$ chord is a *second-inversion $C7$ drop 2* chord: The second-highest note in a second inversion of the $C7$ chord is lowered by an octave ([13, pp. 92–93] and [4, pp. 30–33]).



³[7, Chapter 6: Harmonizing the major scale, Diatonic seventh chords, pp. 37-38]

⁴[7, Chapter 6: Harmonizing the major scale: Diatonic seventh chords, p. 37]

APPENDIX B. CODA

B.1. **Acknowledgments.** For discussions and valuable suggestions, I thank Alexandre Oberlin, Wikipedia’s `User:Hyacinth`, and Paul Sametz (ammo fuzztone).

B.2. **Copyright.** ©2012, 2013. This copyrighted document has been uploaded to the Wikimedia Foundation under the terms of the Creative Commons 3.0 Share-Alike and By-Attribution license.

B.3. **Colophon.** This document was typeset with **AMS-L^AT_EX** 2.0, using the `amsart` style, the `pdfpages` and `gchords` (Kasper Peters) packages, and the **TeXMaker X** system (MikTeX distribution). Musical engraving was by `Lilypond` 2.14.2.

REFERENCES

- [1] Andreas, Jamie (1999). *The principles of correct practice for guitar*. Seven Eyes Publications. ISBN-10: 0967122325
- [2] Denyer, Ralph (1992). Special contributors Isaac Guillory and Alastair M. Crawford. “Playing the guitar”, pp. 65–160, and “The chord dictionary”, pp. 225–249”. *The guitar handbook*. (Fully revised and updated ed.). London and Sydney: Pan Books. ISBN 0-330-32750-X. Foreword by Robert Fripp.
- [3] Duckworth, William (2009). A creative approach to music fundamentals: Includes keyboard and guitar insert (tenth ed.). Schirmer. pp. 1–384. ISBN 978-0495796435
- [4] Fisher, Jody (2002). “Chapter Five: Expanding your 7 chord vocabulary”. *Jazz guitar harmony: Take the mystery out of jazz harmony*. Alfred Music Publishing. pp 26–33. ISBN 073902468X, ISBN 9780739024683.
- [5] Griewank, Andreas (1 January 2010), “Tuning guitars and reading music in major thirds”, Matheon preprints, 695, Rosestr. 3a, 12524 Berlin, Germany: DFG research center MATHEON, Mathematics for key technologies.
- [6] Kiefer, Wolfowitz, Hyacinth, and 79 other Wikipedia contributors. (15 October 2012) “Guitar chord”. *Wikipedia: The free encyclopedia*. 15 October 2012.
- [7] Kolb, Tom (2005). *Music theory*. Hal Leonard Guitar Method. Hal Leonard Corporation. pp. 1–104. ISBN 0-634-06651-X.
- [8] Kostka, Stefan; Payne, Dorothy; Almén, Byron (2012). “Chapter three: Introduction to triads and seventh chords”. *Tonal harmony with an introduction to twentieth-century music* (seventh ed.). New York: McGraw-Hill. pp. 38–53. ISBN 978-0-07-131828-0.
- [9] Marcus, Gary (2012). *Guitar zero: The science of learning to be musical*. Oneworld. ISBN 9781851689323.
- [10] Pierson, Jonathon (2002). ”Tuning in thirds: A new approach to playing leads to a new kind of guitar”. *American Lutherie: The Quarterly Journal of the Guild of American Luthiers* (8222 South Park Avenue, Tacoma WA 98408: USA.: The Guild of American Luthiers) Number 72 (Winter): 36–43. ISSN 1041-7176
- [11] Schmid, Will; Kolb, Tom (2002). “Chord chart”. *Guitar method: Book 1*. Hal Leonard Guitar Method (second ed.). Hal Leonard Corporation. p. 47. ISBN 0-7935-3392-9.
- [12] Sethares, William A. (2011). *Alternate tuning guide*. Madison, Wisconsin: University of Wisconsin; Department of Electrical Engineering. Retrieved 19 May 2012.
- [13] Smith, Johnny (1980). “XVII: Upper structure inversions of the dominant seventh chords”. *Mel Bay’s complete Johnny Smith approach to guitar*. Complete. Mel Bay Publications. pp. 1–256. ISBN 1-5622-2239-2, ISBN 978-15622-2239-0.