

# Guitar and Music Theory Classnotes

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# Part I

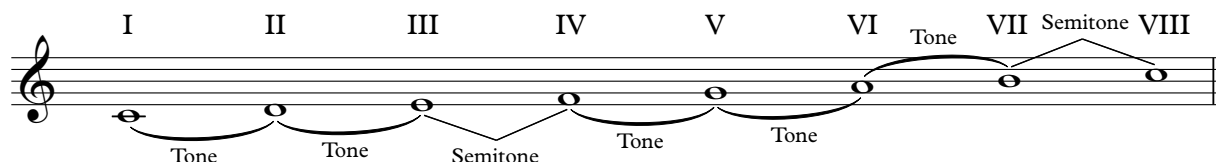
## Music Theory

# 1. Intervals and Scales

We begin with the treatment of intervals, as done in Walter Piston, *Harmony*. Check the tome for a deeper treatment. We also assume the notion of semitone (and tone) as a starting point, also working in the twelve-tone equal temperament system.

The basic unity of harmony is the *interval*, which describes the distance between two tones (notes). When the tones are sounded simultaneously the distance is a *harmonic* interval; if the tones are heard consecutively, the distance is a *melodic* interval.

Tones that form an interval are drawn from *scales*. We present here the major scale, other scales will be presented later throughout the notes. As an example consider the C-major scale.



Above each note, there is a roman numeral which numerates each *degree* of the scale, another notation which comes handy when the keynote of the scale is not important. All major scales, have the same distribution of whole tones and semitones, regardless of the keynote. Below presented all possible major scale key signatures, this arrangement is called the *circle of fifths*, since each keynote is the fifth note of the scale to the left of it.

Intervals are named with a number and quality, for example in the Major Third interval, the former refers to the quality, and the latter to its number. The number is found by counting the number of lines and spaces enclosed between the notes of the interval. The quality of the interval is found by referring to the major scale starting on the lower note. If the note coincides with a note of the scale the interval is *major*, except in case of octaves, fifths, fourth and unisons, for which the term *perfect* is used. If the note does not coincide with a note of the scale, the following guidelines apply:

- i) A *minor* interval is obtained by lowering a major interval a half step (a semitone).
- ii) An *augmented* interval is obtained by augmenting a major or perfect interval a half step.
- iii) An *augmented* interval is obtained by augmenting a minor or perfect interval a half step.

It is also useful to know the specific distance (in terms of tones or semitones) of some (if not all!) intervals.

Interval	Distance
Major 2 <sup>nd</sup>	1 T
Minor 3 <sup>rd</sup>	1 + 1/2 T
Major 3 <sup>rd</sup>	2 T
Perfect 4 <sup>th</sup>	2 + 1/2 T
<i>Tritone</i>	3 T
Perfect 5 <sup>th</sup>	3 + 1/2 T
Perfect 8 <sup>th</sup>	6 T

The special name *tritone* is given to the Augmented 4<sup>th</sup> (or Diminished 5<sup>th</sup>) interval, a special interval which will be covered in depth in future sections.

*Compound* intervals are those greater than an octave. Their naming rules are the same as for “normal” intervals before mentioned.

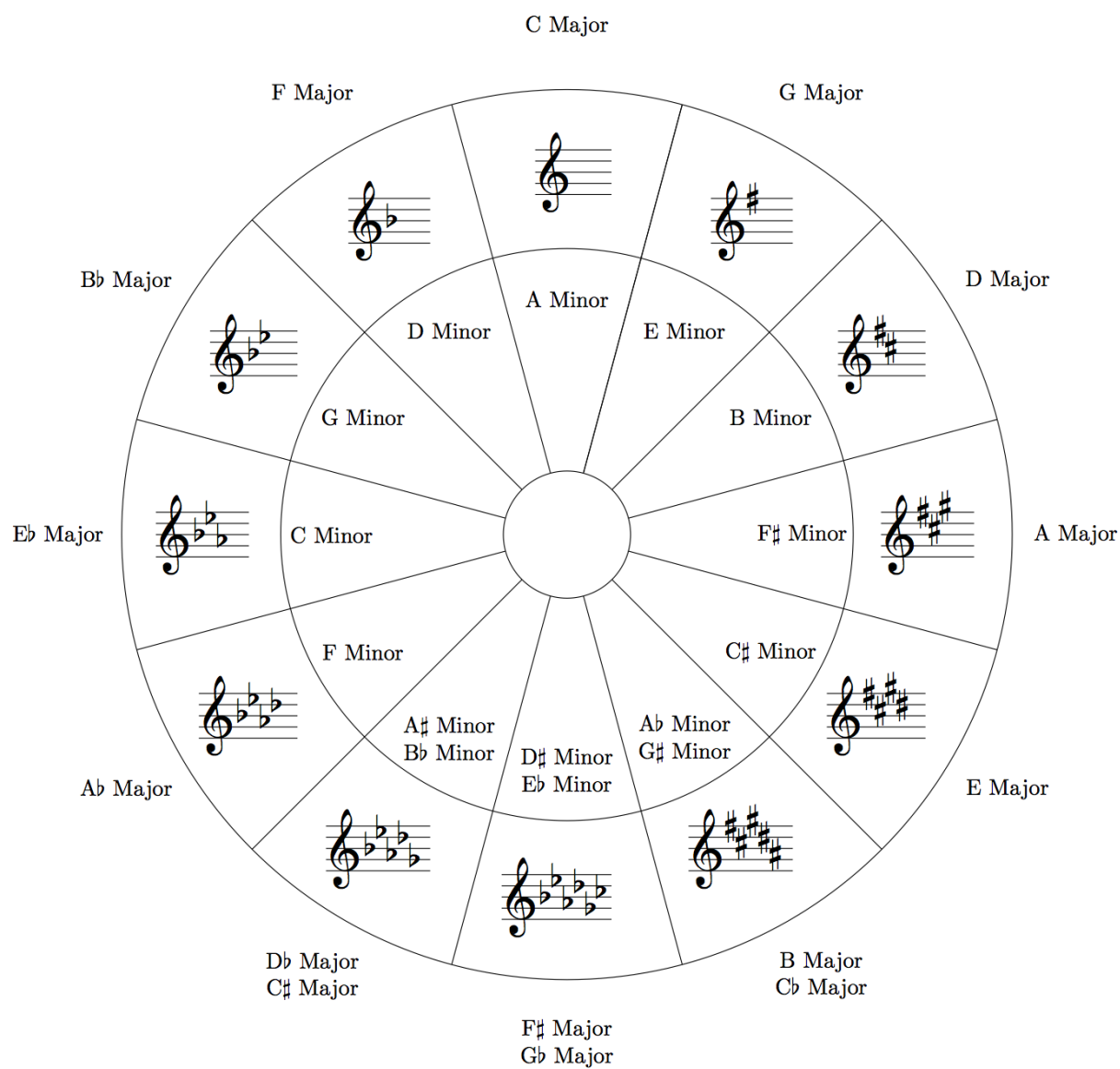


Figure 1.1: Circle of Fifths.

## 2. Chords: Triads and Seventh

We begin studying chords with triads, in the same way as done in Walter Piston's tome. We continue with seventh chords, extremely used in modern harmony.

### 2.1 Triads

The combination of two or more harmonic intervals makes up a *chord*. The basic chord of common-practice harmony is the *triad*, a group of three tones (called *chord tones*) obtained by placing one third on top of another.

The names *root* (R), *third* (3) and *fifth* (5) are given to the different tones of the triad, regardless of their arrangement. Any degree of the scale may serve as the root of a triad. For example, on the C major scale we obtain the following triads:

As depicted above, the triads are denoted by the same roman numeral as their respective roots, but some notation is used depending on the kind triad occurring, as follows. The quality of the thirds conforming the triad, generate four kinds of triads, each of these having a different quality in their sound.

- i) A major third plus a minor third make a *major* triad -denoted in capital roman letters, I. Figure
- ii) A minor third plus a major third make a *minor* triad -denoted in lowercase roman letters, i. Figure
- iii) A minor third plus another minor third make a *diminished* triad -denoted in lowercase roman letters, i<sup>o</sup>. Figure
- iv) A major third plus another major third make an *augmented* triad -denoted in capital roman letters as I<sup>+</sup>. Figure

In major and minor triads, it is the third which gives the chord its main flavor (major or minor), the fifth gives more saturation to the chord, but defines no quality. This is not true with diminished and augmented triads, where the fifth generally adds tension to the chord: look for example the diminished triad, where we have a tritone between the root and the fifth.

It is worth studying the kinds of triads that generate from the major scale (i.e. figure 2.1). Note that in the major scale there is augmented triad, this one will appear once we study the minor mode in further chapters.

### 2.2 Seventh Chords

*Seventh chords* are obtained appending another third interval on top of a triad, this tone is called the *seventh* of the chord. As in triads, different combinations in the quality of the triads generate different chords, each with its own quality in their sound. We present the basic combinations of these, in a more schematic (to aid memorization), with all intervals referring to the root of the chord.

- Major Seventh* (I<sup>maj7</sup>): Root + Maj. 3<sup>rd</sup> + Perf. 5<sup>th</sup> + Maj. 7<sup>th</sup> Figure
- Dominant Seventh* (I<sup>7</sup>): Root + Maj. 3<sup>rd</sup> + Perf. 5<sup>th</sup> + min. 7<sup>th</sup> Figure
- Minor Seventh* (i<sup>min7</sup>): Root + min. 3<sup>rd</sup> + Perf. 5<sup>th</sup> + min. 7<sup>th</sup> Figure
- Half Diminished* (i<sup>ø</sup>): Root + min. 3<sup>rd</sup> + dim. 5<sup>th</sup> + min. 7<sup>th</sup> Figure
- Diminished Seventh* (i<sup>o</sup>): Root + min. 3<sup>rd</sup> + dim. 5<sup>th</sup> + dim. 7<sup>th</sup> Figure

First, the name is given, followed by the roman notation, then the intervals which form the chord and an example figure. There are much more seventh chords (such as minor major seventh, or augmented major seventh chords), just the common ones are shown in the above table.

In the same way as with triads, any degree of any (in our case diatonic) scale can serve as a root for a seventh chord. We give the resulting chords for the major scale, in particular the C major scale; the minor mode will be explained later.

It is worth learning the chords occurring in each degree of the scale. Note that the diminished seventh chord did not appear in the set of chords of the major scale, it will later appear in minor modes, and it is so special it deserves a chapter in its own.

## 2.3 Chord Inversions

Chords are defined just by the notes which conform them, whatever the arrangement. However, when we play a chord with its bass (the lower note) on a different note than the root, we refer to it as an *inversion* of the chord. Other than the form with the root on the bass, we have three more inversions: with the bass on the 3<sup>rd</sup>, bass on 5<sup>th</sup> and bass on 7<sup>th</sup>, called *first*, *second* and *third* inversions, respectively. Consider for example the different inversions of the C<sup>maj7</sup> chord.

Though all forms are inversions of the same chord, each one has a particular sound and quality which can be taken into account when playing them. Other than its quality, we may use them to write bass lines when concatenating several chords together. Chord inversions are better felt when playing them with the specific instrument.

### **3. Dominant Seventh**

We will introduce here the basic notions of the dominant seventh chord and progressions of chords resolving up by perfect fourths (or down by a perfect fifth).

One of the cornerstones of the dominant seventh chord is the tritone appearing between the 3<sup>rd</sup> and 7<sup>th</sup> of the chord. This interval is



## 4. Types of Resolutions of Dominant Seventh Chords

As we know, the power of the dominant chord comes from the resolution of its tritone to the following chord. Depending on the chord that follows the dominant we have three kinds of transitions of the tritone, which receive their name from the relative movements of the voices in the tritone.

- i) *Contrary Movement*: Both notes of the tritone move in opposite directions.
- ii) *Oblique Movement*: One voice moves while the other keeps still.
- iii) *Parallel Movement*: Both notes move in the same direction.

Some of these resolutions may appear in different kinds of resolutions. We provide all examples with a  $G^7$  as the dominant chord, remind the tritone of such dominant is found in the  $3^{\text{rd}} - 7^{\text{th}} \equiv B - F$ .

- i) *Contrary Movement*: It is the strongest kind of resolution. We study four scenarios where this kind of resolution occurs.
  - Dominant resolves down a fifth to a I major chord. Such as  $G^7 \rightarrow C$ , with the resolution being  $B \nearrow C \mid F \searrow E$ .
  - Dominant resolves to the the minor relative (vi) of a I major chord (or also the 1<sup>st</sup> substitute). Such as  $G^7 \rightarrow A^{m7}$ , with the resolution being  $B \nearrow C$  (why not A?)  $\mid F \searrow E$ .
  - When the dominant V resolves to the second substitution of the minor i chord. For example, when the i chord is  $C^m$  then the 2<sup>nd</sup> substitution is  $A^{\flat maj7}$ . In this case the voice moves go as  $B \nearrow C \mid F \searrow E^{\flat}$ .
  - When we take the tritone substitution of the dominant (subV) and resolve to the I major chord. In this case the tritone is inverted, and we have the same resolution as a (V-I):  $B \nearrow C \mid F \searrow E$ ; but the third of the subV resolves to the 3<sup>rd</sup> of I and the seventh of subV resolves to root of I (the opposite of a V-I).
- ii) *Oblique Movement*: When the dominant V resolves to the second substitution of the I major chord. For example, when the I chord is C, then the 2<sup>nd</sup> substitution is  $E^{min7}$ . In this case the voice moves go as  $B = B \mid F \searrow E$ .
- iii) *Parallel Movement*: Dominant resolves to the the major relative (VI) of a i minor chord (or 1<sup>st</sup> substitute). Such as  $G^7 \rightarrow E^{\flat maj7}$ , with the resolution being  $B \searrow B^{\flat} \mid F \searrow E^{\flat}$ .

# Part II

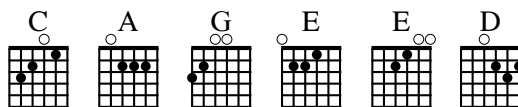
## Guitar Theory

## 5. Intervals in the Fretboard

It is essential to know how to play each of the intervals

## 6. CAGED System

The CAGED system is the study of the chord shapes for C, A, G, E and D to play any chord on any fret in these forms. We give the forms for each of the chords:



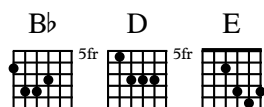
Note that we have two E chord forms, one in the bass and another in the trebles, happening an octave above of the first one. These chords happen be divided into two kinds depending on the arrangement of chord tones in the chord shape: we have the [R, 3<sup>rd</sup>, 5<sup>th</sup>, R] kind (also [1358] for short) and the [R, 5<sup>th</sup>, R, 3<sup>rd</sup>] kind (or [1583]).

[1358]	[1583]
G	E
C	A
E (trebles)	D

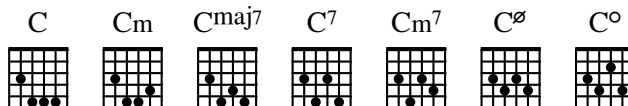
We will study these two kind of chords as well as introduce other chord forms outside the CAGED system.

### 6.1 Chords [1583]

As said before, we can move the forms of the CAGED system presented, to obtain other chords. Check the following examples obtained from the [1583] chord forms:

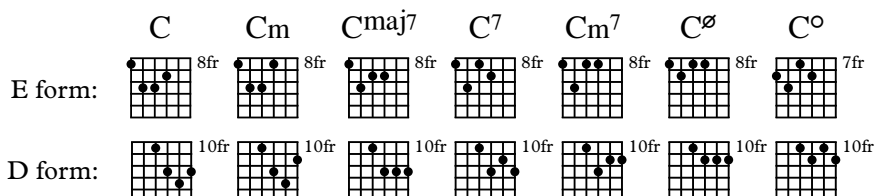


Most importantly, knowing where the chord degrees occur on the chord shape, we can obtain many other chords. Check for example the A form for many C seventh-type chords.



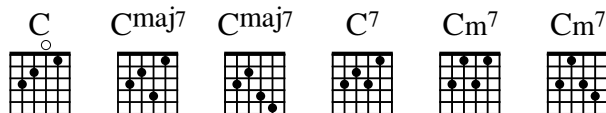
The C chord is just the well-known A form, a major triad with the repeated root note one octave higher in the 3<sup>rd</sup> string; now for example, the C<sup>maj7</sup> chord is just adding the 7 one half-step below of the root note, we can keep the root on the bass and move the second octave one half step down to obtain that major seventh note. The same goes for example with the C<sup>m7</sup> chord, this chord has a minor third (one half step below of the major third, occurring in the A form) and a minor seventh (one whole step below the octave root note of the A form). This procedure can be used to obtain any chord.

Below are presented the same “C seventh-type” chords for the other two [1583] forms: E form and D form.



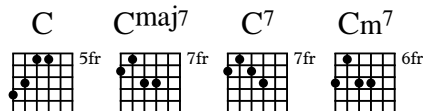
## 6.2 Chords [1358]

The formation of the different seventh type chords with these group isn't as simple as in the above ones. Using the aforementioned method leads to horrible and uncomfortable to play chords. In these type of chords we may end up moving some voices: move the 5<sup>th</sup> up to the 7<sup>th</sup>, or the root up to the 3<sup>rd</sup> of the chord. We present here the most typical forms for each kind of chord, beginning with the C form.

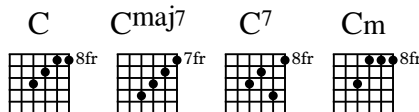


In all of them we drop the fifth of the chord to make up for the seventh. This can be usually done (omit the fifth of the chord) since this tone only gives the chord more bright and color but gives no flavor to the chord, unless the fifth is augmented or diminished. Indeed, when we have the root and a perfect fifth, we one of the simplest forms of harmony (called perfect chords).

See however, how with this form (and all forms of this kind) we have no sane way of playing half diminished nor diminished chords. For the G form, similar chords appear.



For the higher E form we have a few more:



## 6.3 Other Chord Forms

S

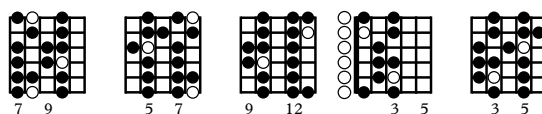
## 7. Major Scale Modes

Here are given some ways to play in the fret board the 7 major scale modes presented in previous chapters. We will give for each scale five different forms to play it: with the root bass on the 6<sup>th</sup>, 5<sup>th</sup> and 4<sup>th</sup> strings, going backward and forward.

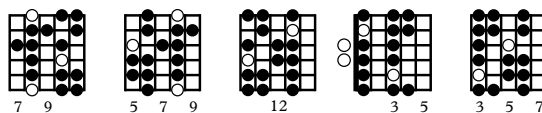
What is extremely essential while studying these is keeping in mind where the root note of each scale falls in. It is also important to think about each interval in the scale while learning them (at least in the beginning).

We present here the Ionian mode, Aeolian mode, and Locrian mode. The remaining ones are easily obtained from the other ones: the Lydian mode is the Ionian with augmented fourth, the Mixolydian is the Ionian with minor seventh, the Dorian is the Aeolian with a major sixth, and the Phrygian is the Aeolian with a minor second.

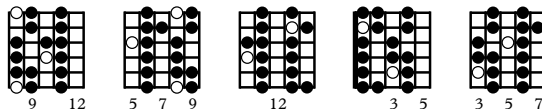
All the scales have their root note on C. We begin with the Ionian mode:



We then have the Aeolian mode:



And the Locrian mode:



## 8. Chord Melody

*Chord Melody* is playing chords and melody at the same time. It is customary to play the melody on the 1<sup>st</sup> and 2<sup>nd</sup> strings. Thus it is useful for playing chord melody studying which notes play on the voicing string on most used chords.

For each of the notes of the chord (root, third, fifth and seventh) we give different chord forms that have that note on the brightest string. All forms are given for a G<sup>maj7</sup>, other chords, flavors and alterations follow straightforward from these.

- With the melody note on the 1<sup>st</sup> string:

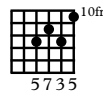
**Root:** - A {6432} form, moving the bass to the first string; which is equivalent to the third inversion of the D form (strings {4321}).



**Third:** - D form; which is equivalent to 1<sup>st</sup> inversion of the {6432} form (with the bass moved to the first string).



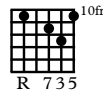
**Fifth:** - A form, (without root) and playing the first string.



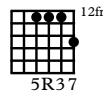
- 1<sup>st</sup> inversion of the D form; equivalent to 2<sup>nd</sup> inversion of {6432} form.



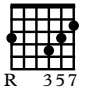
- {5321} form, which is just an A form lowering the fourth string to the first one.



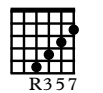
**Seventh:** - 2<sup>nd</sup> inversion of the D form, or 3<sup>rd</sup> inversion of {6432}.



- {6321} form, which is just the {6432} form lowering the fourth string to the first one.



- {4321} form.



- With the melody note on the 2<sup>nd</sup> string:

**Root:** - 1<sup>st</sup> inversion of the {6432} form, moving the 7<sup>th</sup> to root note.



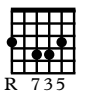
- 2<sup>nd</sup> inversion of the {6432} form; or the C form.



**Third:** - A form.



**Fifth:** - {6432} form.



**Seventh:** - 1<sup>st</sup> inversion {6432} form.



Many of these chords are obtained by taking a chord with the bass on the bass strings (6<sup>th</sup> or 5<sup>th</sup>) and moving them to the first string.

## 9. Common Reharmonizations

We will present here some reharmonizations and little phrases to play over typical functional cadences, then we apply it over a classical tango piece.

### 9.1 Basic Sequences

Check the following simple and tonal progression in which we will base our study on:

i	V	V	i
iv	i	V	i

To make it more interesting, we play with harmony and rephrase some of these bars. Assume we are in a  $\frac{4}{4}$  time signature.

#### Sequence i - V

A choice could be making an Andalusian cadence. We give three different versions of such, one deeper (with bass on the 6<sup>th</sup> string), one in the trebles and another “jazzier” version.

The image displays three musical staves, each representing a different reharmonization of the i-V cadence in 4/4 time. Each staff contains four measures. Above each measure is a chord diagram. The first staff shows: Cm7 (8fr), Bb (6fr), G#7 (3fr), and G7. The second staff shows: Cm7, Bb6/F, G#maj7/D#, and G7. The third staff shows: Cm7, Cm7/Bb (3fr), A° (3fr), G#7, and G7. Each chord diagram shows the fret positions on a guitar fretboard.

#### Sequence V - V

We have many options here: interchanging a V by a ii to have a ii - V - i cadence, we could insert a tritone interchange ... It may depend on the melody which one fits better.

#### Sequence i - iv

It is very common to have a i-iv cadence from tonic to subdominant chord, where we move from tonic zone (i) to subdominant zone (iv), in order to introduce a sound of novelty. In this framework we tend to make for interesting chord phrases to remark the subdominant. We will study three forms (which can be transposed to any chord) for our i chord: E form, A form and D form. The construction is given for the  $E^{m7} - A^{m7}$  cadence, but is completely similar for other forms. We begin with some basic inversions for a nice bass line.

$$E^{m7} \quad E^{m7}/G \quad | \quad A^{m7} \quad A^{m7}/C$$

Then we finally add secondary dominants to add some harmonic movement, also with the appropriate inversions to create a nice bass line.



$$E^{m7} \quad B^7/F\sharp \quad E^{m7}/G \quad E^7/G\sharp \quad | \quad A^{m7} \quad E^7/B \quad A^{m7}/C \quad \%$$

The chord diagrams are given here for all three forms.

The image displays three systems of guitar chord diagrams and notation for the sequence  $E^{m7} \quad B^7/F\sharp \quad E^{m7}/G \quad E^7/G\sharp \quad | \quad A^{m7} \quad E^7/B \quad A^{m7}/C \quad \%$ . Each system consists of a row of seven chord diagrams, a musical staff in 4/4 time, and another row of seven chord diagrams. The diagrams are as follows:

- $E^{m7}$ : Minor triad on E (4th fret), with a 7th on G (2nd fret).
- $B^7/F\sharp$ : Triad on B (2nd fret), with a 7th on F# (4th fret).
- $E^{m7}/G$ : Minor triad on E (4th fret), with a 7th on G (2nd fret).
- $E^7/G\sharp$ : Triad on E (4th fret), with a 7th on G# (5th fret).
- $A^{m7}$ : Minor triad on A (5th fret), with a 7th on C (5th fret).
- $E^7/B$ : Triad on E (4th fret), with a 7th on B (2nd fret).
- $A^{m7}/C$ : Minor triad on A (5th fret), with a 7th on C (5th fret).

The musical staff in each system shows the sequence of chords in 4/4 time, with each chord lasting for one measure. The notation includes a 4/4 time signature and a repeat sign at the end of each system.

Some little changes are introduced to aid playability which also introduce some nice sounds. For example, the  $B^\varnothing$  in the  $A^{m7}$  sequence, should be an  $E^7/B$  (according to the above explanation), however the diminished chord can be introduced (thought as the  $ii$  degree of the  $A^{m7}$  and sounds nice too. Another change happens in the  $C^\sharp_{dim}$  of the same sequence, where it was interchanged by an  $A^7/C\sharp$ .

## Sequence iv-i-V-i

A good phrase is obtained resolving up by fourths in each bar, we get a whole “circle of fifths” progression.

$$iv^{m7} \quad VIIb^7 \quad | \quad IIIb^{maj7} \quad VIb^{maj7} \quad | \quad ii^\varnothing \quad V^7 \quad | \quad i \quad \%$$

In the first bar we resolved up a fourth to the  $VIIb^7$ , then in the second bar we interchange the tonic  $i$  by its relative major and resolve up a fourth getting a the  $IIIb^{maj7} - VIb^{maj7}$ , then in the third bar we introduce the second degree before the dominant to complete the sequence.

It is worth noting that despite the changes made, all chords in each bar maintain the function of the bar, keeping a [subdominant - tonic - dominant - tonic] progression. Indeed, the  $VIIb^7$  works as a subdominant chord, the  $IIIb^{maj7}$  and  $VIb^{maj7}$  are substitutes of the  $i$  chord thus working as a tonic, and the  $ii - V^7$  makes for a dominant.