

# Harmony of the spheres

Universal musical key

( The golden ratio and the Science of harmonics )



## 1<sup>st</sup> part: Introduction

If you love music, take a few minutes of your time and read attentively what is following and discover one of the greatest inventions based on a new musical perception. Everything started when the inventor associate together the diatonic scale and the chromatic scale by using numbers to indicate each degree (see Fig.1). By looking at the numbers that correspond to the intervals that constitute a Perfect Major Chord, you can see appear the legendary Fibonacci sequence (the golden section - PHI - or the divine proportion). With the discovery of a “Musical Universal Key”, M. Sylvain Lalonde, the inventor, demonstrates where this revolutionary easy approach method begin.

## With the research of the harmony



The golden section influences the Western vision of the harmony  
The sequence of Fibonacci... 1-1-2-3-5-8-13... applies to this rule

Ex: Perfect Majeur Chords: C,E,G,C

| Tonic    | Tone           |                | Second | Tone           |                | Third    | Semitone |          | Fourth         | Tone           |    | Fifth    | Tone           |                | Sixth | Tone     |                | Seventh        | Semitone |          | Octave |   |
|----------|----------------|----------------|--------|----------------|----------------|----------|----------|----------|----------------|----------------|----|----------|----------------|----------------|-------|----------|----------------|----------------|----------|----------|--------|---|
|          | 1              | 2              |        | 3              | 4              |          | 5        | 6        |                | 7              | 8  |          | 9              | 10             |       | 11       | 12             |                | 13       |          |        |   |
| 1        | C <sup>#</sup> | D <sup>b</sup> | 2      | D <sup>#</sup> | E <sup>b</sup> | 3        | E        | F        | F <sup>#</sup> | G <sup>b</sup> | 4  | G        | G <sup>#</sup> | A <sup>b</sup> | 5     | A        | A <sup>#</sup> | B <sup>b</sup> | 6        | B        | 7      | C |
| C        |                |                | D      |                |                | E        |          | F        |                |                | G  |          | G <sup>#</sup> |                | A     |          | A <sup>#</sup> |                | B        |          | C      |   |
| 1        | 2              | 3              | 4      | 5              | 6              | 7        | 8        | 9        | 10             | 11             | 12 | 13       |                |                |       |          |                |                |          |          |        |   |
| Semitone |                | Semitone       |        | Semitone       |                | Semitone |          | Semitone |                | Semitone       |    | Semitone |                | Semitone       |       | Semitone |                | Semitone       |          | Semitone |        |   |
| A        |                |                |        |                |                |          |          |          |                |                |    |          | B              |                |       |          |                |                |          |          |        |   |

When  $(A + B) / A = A / B$ . The A / B ratio is then equal to the golden ratio.

$$8 / 5 = 1.6$$

Uclide d'Alexandrie

\* For more details on natural harmonics see fig.6 & 7 section R&D  
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## 2<sup>nd</sup> part: Diatonic scale vs Chromatic scale

# 12 Sounds = 12 Tones = 12 Tonalties

Let's look at the same graphics on a 360-degree platform.. The use of black and white is used to represent the notes of a piano, to help understand this new perception.

Select and print Fig. 3 (picture) cut the two discs, then cut down the 7 windows that correspond to the intervals on disc 1 (Item 32). Overlap disc 1 over the second disc (Item 30) and then position the 1<sup>st</sup> degree (“Tonic”) on C, you’ll get the “C-D-E-F-G-A-B” sequence.

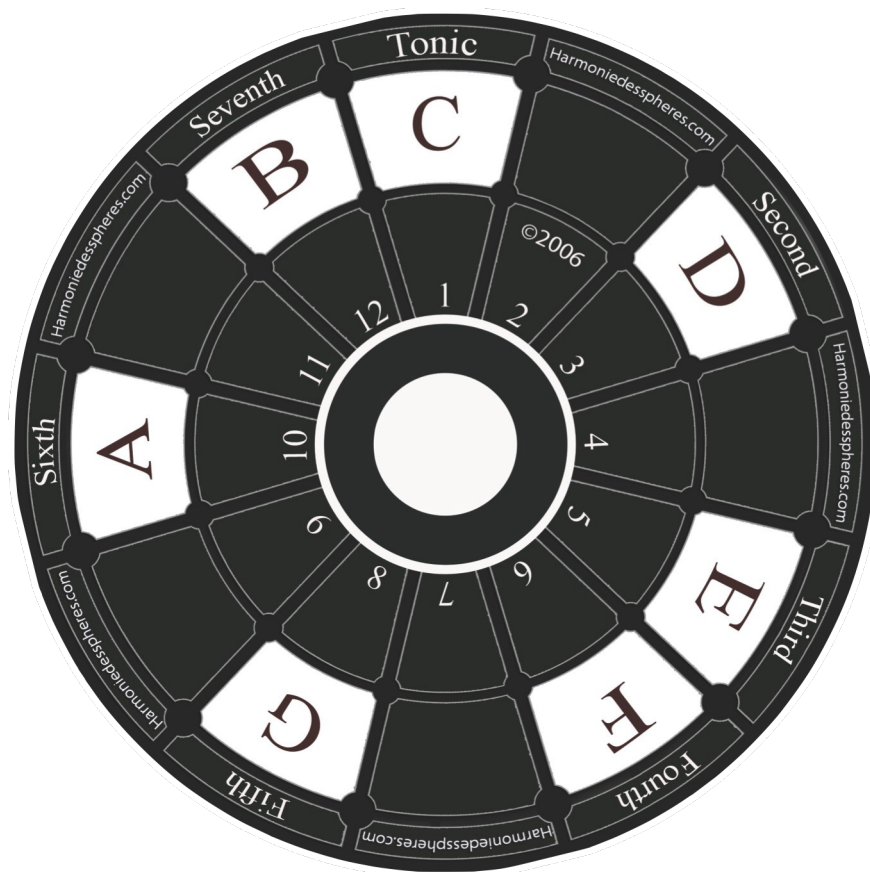
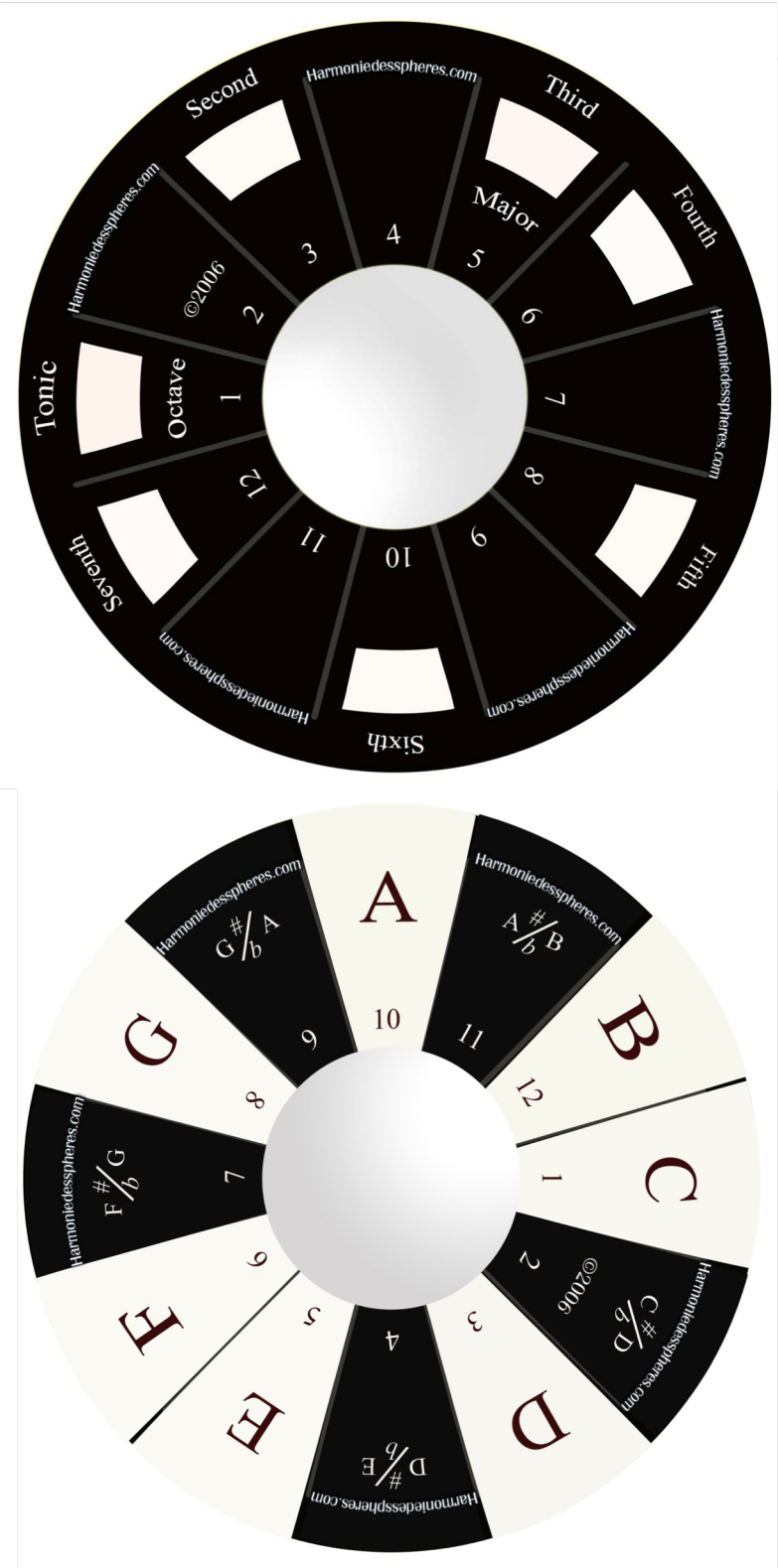


Fig.3



Disc 1  
Item32

Disc II  
Item30

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Now move the “Tonic” on the “Fifth”, the G, this way you obtain the alterations that constitutes the key frame of our tonal system and so on.  
We call this:

## « The Cycle of Fifths »

Ascending = Sharp order = F, C, G, D, A, E, B

Descending = Flat order = B, E, A, D, G, C, F

**Fig.3B**

Note that the order of flats is the opposite of sharps

|            |            |    |    |    |    |    |    |    |            |                                                                                                                                                                                                   |
|------------|------------|----|----|----|----|----|----|----|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| order of # |            | F  | C  | G  | D  | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| Tonality   |            |    |    |    |    |    |    |    |            | Major Range                                                                                                                                                                                       |
| C#         | order of # | F# | C# | G# | D# | A# | E# | B# | order of b | <br>Cycle of Fifths<br> |
| F#         | order of # | F# | C# | G# | D# | A# | E# | B  | order of b |                                                                                                                                                                                                   |
| B          | order of # | F# | C# | G# | D# | A# | E  | B  | order of b |                                                                                                                                                                                                   |
| E          | order of # | F# | C# | G# | D# | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| A          | order of # | F# | C# | G# | D  | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| D          | order of # | F# | C# | G  | D  | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| G          | order of # | F# | C  | G  | D  | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| C          | order of # | F  | C  | G  | D  | A  | E  | B  | order of b |                                                                                                                                                                                                   |
| F          | order of # | F  | C  | G  | D  | A  | E  | Bb | order of b |                                                                                                                                                                                                   |
| Bb         | order of # | F  | C  | G  | D  | A  | Eb | Bb | order of b |                                                                                                                                                                                                   |
| Eb         | order of # | F  | C  | G  | D  | Ab | Eb | Bb | order of b |                                                                                                                                                                                                   |
| Ab         | order of # | F  | C  | G  | Db | Ab | Eb | Bb | order of b |                                                                                                                                                                                                   |
| Db         | order of # | F  | C  | Gb | Db | Ab | Eb | Bb | order of b |                                                                                                                                                                                                   |
| Gb         | order of # | F  | Cb | Gb | Db | Ab | Eb | Bb | order of b |                                                                                                                                                                                                   |
| Cb         | order of # | Fb | Cb | Gb | Db | Ab | Eb | Bb | order of b |                                                                                                                                                                                                   |

Fig.3d

# Cycles des quintes

## Cycles of fifths

|         | I | II | II | IV | V | VI | VII |       |
|---------|---|----|----|----|---|----|-----|-------|
| Quintes | F |    |    |    |   |    |     | Fifth |
| Tierces |   |    |    |    |   |    |     | Third |
| Gamme   |   |    |    |    |   |    |     | Range |

\* Selon l'ordre des dièses / orders of sharps

### 3<sup>rd</sup> part: the natural harmonics vs temperate

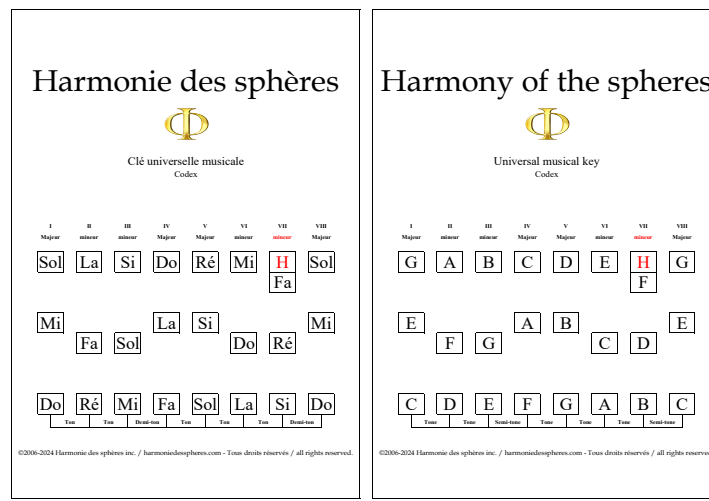
Each note is made of natural multiples called harmonics

At each degree of the scale, there is a three fundamental sound chord

The chords of three sounds consists of a fundamental  
a third party (major or minor) and a fifth just.

« THE THIRD CYCLE »

« C, E, G, B, D, F, A »



The notes of a chord can be duplicated at the octave or arpeggiated without  
altering the identity of the chord.

You can select and print Fig.3c (Codex) in legal format.

Cut the two parts (A and B) according to the language you want.

Also cut the twenty-four (24) windows (Part A) that correspond to the

« Music intervals »

|             |         |
|-------------|---------|
| I degree    | C, E, G |
| II degree   | D, F, A |
| III degree  | E, G, B |
| IV degree   | F, A, C |
| V degree    | G, B, D |
| VI degree   | A, C, E |
| VII degree  | B, D, F |
| VIII degree | C, E, G |

Then superimpose part A on part B and position the 1st degree on the C, you will obtain at each degree the notes of all the chords.

You can change the tone as you wish,

The results will be the same.

P.S. You can also use an ABS tube with a diameter of  
1.5 inch or 3.81 cm to make it circular shape.

Fig.3c ( Codex )

PARTIE A

# Harmonie des sphères



Clé universelle musicale  
Codex

I  
Majeur

II  
mineur

III  
mineur

IV  
Majeur

V  
Majeur

VI  
mineur

VII  
mineur

VIII  
Majeur

Sol

La

Si

Do

Ré

Mi

H

Sol

Mi

Fa

Sol

La

Si

Do

Ré

Mi

Do

Ré

Mi

Fa

Sol

La

Si

Do

Ton

Ton

Demi-ton

Ton

Ton

Ton

Ton

Demi-ton

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# Harmony of the spheres



Universal musical key  
Codex

I  
Majeur

II  
mineur

III  
mineur

IV  
Majeur

V  
Majeur

VI  
mineur

VII  
mineur

VIII  
Majeur

G

A

B

C

D

E

H

G

E

F

G

A

B

C

D

E

C

D

E

F

G

A

B

C

Tone

Tone

Semi-tone

Tone

Tone

Tone

Tone

Semi-tone

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PART A

PARTIE B

|                 |                 |                 |                 |                  |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|
| Do              | Ré              | Mi              | Fa              | Sol              | La              | Si              | Do              |
| Si              | Ré <sup>b</sup> | Mi <sup>b</sup> | Fa <sup>b</sup> | Sol <sup>b</sup> | La <sup>b</sup> | Si <sup>b</sup> | Do <sup>b</sup> |
| S <sup>b</sup>  | D <sup>b</sup>  | R <sup>b</sup>  | F <sup>b</sup>  | S <sup>b</sup>   | L <sup>b</sup>  | S <sup>b</sup>  | D <sup>b</sup>  |
| L <sup>a</sup>  | D <sup>a</sup>  | R <sup>a</sup>  | F <sup>a</sup>  | S <sup>a</sup>   | L <sup>a</sup>  | S <sup>a</sup>  | D <sup>a</sup>  |
| La              | Si              | Do              | Ré              | Mi               | Sol             | La              | Si              |
| S <sup>b</sup>  | R <sup>b</sup>  | Mi <sup>b</sup> | F <sup>b</sup>  | S <sup>b</sup>   | L <sup>b</sup>  | S <sup>b</sup>  | Do <sup>b</sup> |
| Sol             | La              | Si              | Do              | Ré               | Mi              | Sol             | La              |
| S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>  | D <sup>a</sup>  | R <sup>a</sup>   | Mi <sup>a</sup> | S <sup>a</sup>  | F <sup>a</sup>  |
| Fa              | Sol             | La              | Si              | Do               | Ré              | Mi              | Fa              |
| S <sup>b</sup>  | L <sup>b</sup>  | S <sup>b</sup>  | D <sup>b</sup>  | R <sup>b</sup>   | Mi <sup>b</sup> | S <sup>b</sup>  | F <sup>b</sup>  |
| Mi              | Fa              | Sol             | La              | Si               | Do              | Ré              | Mi              |
| Mi <sup>a</sup> | F <sup>a</sup>  | S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>   | D <sup>a</sup>  | R <sup>a</sup>  | Mi <sup>a</sup> |
| Ré              | Mi              | Sol             | La              | Si               | Do              | Ré              | Mi              |
| R <sup>a</sup>  | Mi <sup>a</sup> | S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>   | D <sup>a</sup>  | R <sup>a</sup>  | Mi <sup>a</sup> |
| Do              | Ré              | Mi              | Fa              | Sol              | La              | Si              | Do              |
| S <sup>b</sup>  | R <sup>b</sup>  | Mi <sup>b</sup> | F <sup>b</sup>  | S <sup>b</sup>   | L <sup>b</sup>  | S <sup>b</sup>  | Do <sup>b</sup> |
| Si              | Do              | Ré              | Mi              | Sol              | La              | Si              | Do              |
| S <sup>a</sup>  | D <sup>a</sup>  | Mi <sup>a</sup> | F <sup>a</sup>  | S <sup>a</sup>   | L <sup>a</sup>  | S <sup>a</sup>  | Do <sup>a</sup> |
| La              | Si              | Do              | Ré              | Mi               | Sol             | La              | Si              |
| L <sup>a</sup>  | S <sup>a</sup>  | D <sup>a</sup>  | R <sup>a</sup>  | Mi <sup>a</sup>  | S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>  |
| Sol             | La              | Si              | Do              | Ré               | Mi              | Sol             | La              |
| S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>  | D <sup>a</sup>  | R <sup>a</sup>   | Mi <sup>a</sup> | S <sup>a</sup>  | F <sup>a</sup>  |
| Fa              | Sol             | La              | Si              | Do               | Ré              | Mi              | Fa              |
| S <sup>b</sup>  | L <sup>b</sup>  | S <sup>b</sup>  | D <sup>b</sup>  | R <sup>b</sup>   | Mi <sup>b</sup> | S <sup>b</sup>  | F <sup>b</sup>  |
| Mi              | Fa              | Sol             | La              | Si               | Do              | Ré              | Mi              |
| Mi <sup>a</sup> | F <sup>a</sup>  | S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>   | D <sup>a</sup>  | R <sup>a</sup>  | Mi <sup>a</sup> |
| Ré              | Mi              | Sol             | La              | Si               | Do              | Ré              | Mi              |
| R <sup>a</sup>  | Mi <sup>a</sup> | S <sup>a</sup>  | L <sup>a</sup>  | S <sup>a</sup>   | D <sup>a</sup>  | R <sup>a</sup>  | Mi <sup>a</sup> |
| Do              | Ré              | Mi              | Fa              | Sol              | La              | Si              | Do              |
| S <sup>b</sup>  | R <sup>b</sup>  | Mi <sup>b</sup> | F <sup>b</sup>  | S <sup>b</sup>   | L <sup>b</sup>  | S <sup>b</sup>  | Do <sup>b</sup> |

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|                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| C              | D              | E              | F              | G              | A              | B              | C              |
| B <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> |
| A <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | C <sup>b</sup> |
| G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> |
| F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> |
| E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> |
| D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> |
| C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> |
| B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> |
| A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> |
| G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> |
| F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> |
| E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> |
| D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> |
| C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> |
| B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> |
| A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> |
| G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> |
| F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> |
| E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> |
| D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> | D <sup>b</sup> |
| C <sup>b</sup> | D <sup>b</sup> | E <sup>b</sup> | F <sup>b</sup> | G <sup>b</sup> | A <sup>b</sup> | B <sup>b</sup> | C <sup>b</sup> |

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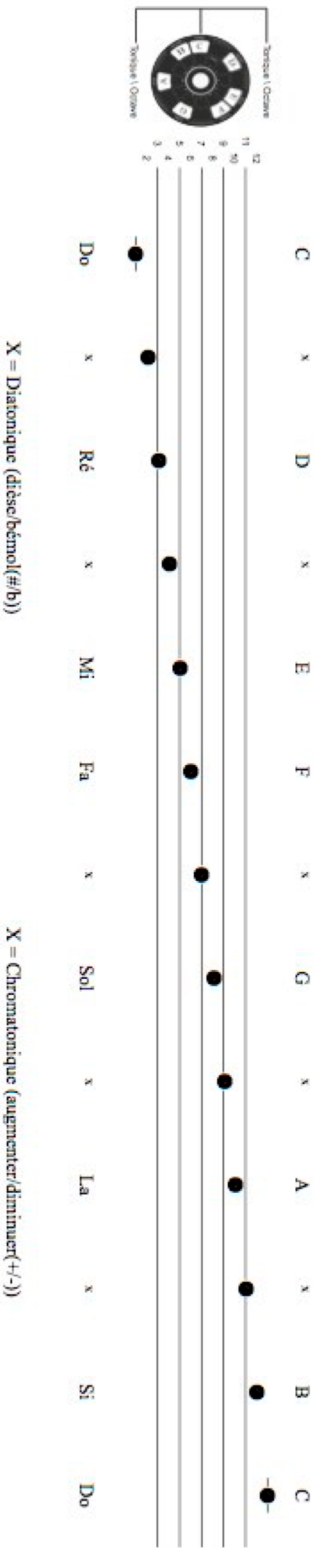
PART B

# Harmony of the spheres



Fig.4

Musical universal key  
Musical Instrument Digital Interface



Select and print at legal format the Fig.4b (image) then cut the two rulers along the lines shown and also cut the eight (8) windows that correspond to the intervals of music.

Then superimpose the part of the center on the top of the rule that suits you and position the 1st degree (Tonic) on the C, you will obtain the sequence

“ C-D-E-F-G-A-B-C ”

You can repeat the exercise in fig.3  
or simply move the ruler by tone or semitone.

What is important here is that no matter the tone (tonal height) in which you play, the intervals will always be the same :

Major (which constitute the key frame of our tonal system) or minor.



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Cut

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To fold

|                |                |
|----------------|----------------|
| C              | C              |
| B              | B              |
| B <sup>b</sup> | A <sup>#</sup> |
| A              | A              |
| A <sup>b</sup> | G <sup>#</sup> |
| G              | G              |
| G <sup>b</sup> | F <sup>#</sup> |
| F              | F              |
| E              | E              |
| E <sup>b</sup> | D <sup>#</sup> |
| D              | D              |
| D <sup>b</sup> | C <sup>#</sup> |
| C              | C              |
| B              | B              |
| B <sup>b</sup> | A <sup>#</sup> |
| A              | A              |
| A <sup>b</sup> | G <sup>#</sup> |
| G              | G              |
| G <sup>b</sup> | F <sup>#</sup> |
| F              | F              |
| E              | E              |
| E <sup>b</sup> | D <sup>#</sup> |
| D              | D              |
| D <sup>b</sup> | C <sup>#</sup> |
| C              | C              |

Use a plastic ruler as a support print the sheet in legal size

Cut

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Fig.4b

|                          |          |
|--------------------------|----------|
| Clé universelle musicale |          |
| Octave                   | Couper   |
| Couper                   | Septième |
| Couper                   | Sixième  |
| Quinte                   | Couper   |
| Couper                   | Quarte   |
| Tierce                   | Couper   |
| Seconde                  | Couper   |
| Tonique                  | Couper   |

Dessus de la règle

Solfège  
Universal musical Key

|        |         |
|--------|---------|
| Octave | Cut     |
| Cut    | Seventh |
| Cut    | Sixth   |
| Fifth  | Cut     |
| Cut    | Fourth  |
| Third  | Cut     |
| Second | Cut     |
| Tonic  | Cut     |

Solfège

Above the ruler

Couper

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Plier

|                  |                  |
|------------------|------------------|
| Do               | Do               |
| Si               | Si               |
| Si <sup>b</sup>  | La <sup>#</sup>  |
| La               | La               |
| La <sup>b</sup>  | Sol <sup>#</sup> |
| Sol              | Sol              |
| Sol <sup>b</sup> | Fa <sup>#</sup>  |
| Fa               | Fa               |
| Mi               | Mi               |
| Mi <sup>b</sup>  | Ré <sup>#</sup>  |
| Ré               | Ré               |
| Ré <sup>b</sup>  | Do <sup>#</sup>  |
| Do               | Do               |
| Si               | Si               |
| Si <sup>b</sup>  | La <sup>#</sup>  |
| La               | La               |
| La <sup>b</sup>  | Sol <sup>#</sup> |
| Sol              | Sol              |
| Sol <sup>b</sup> | Fa <sup>#</sup>  |
| Fa               | Fa               |
| Mi               | Mi               |
| Mi <sup>b</sup>  | Ré <sup>#</sup>  |
| Ré               | Ré               |
| Ré <sup>b</sup>  | Do <sup>#</sup>  |
| Do               | Do               |

Utiliser une règle en plastique comme support imprimer la feuille en format légal

Couper



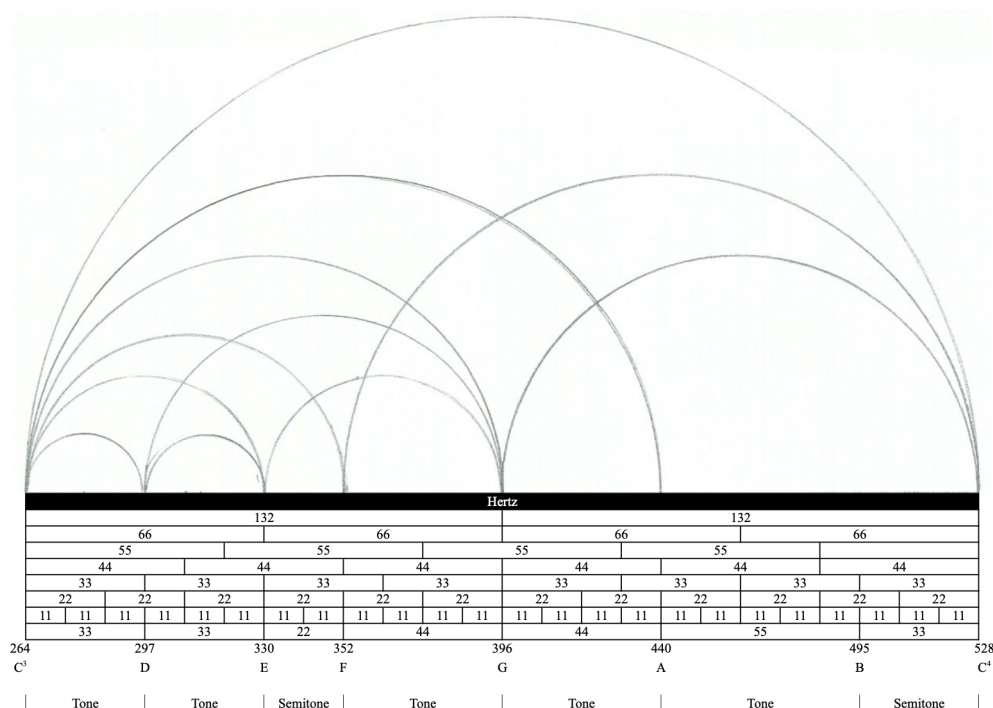


# Pythagore and the harmony of the spheres

Fig.7

## HARMONY OF THE SPHERES

MUSICAL UNIVERSAL KEY



HDS Universal Proportion

|            |   |       |            |            |   |       |       |            |
|------------|---|-------|------------|------------|---|-------|-------|------------|
| 1,125      | * | 1,111 | 1,06666667 | 1,125      | * | 1,111 | 1,125 | 1,06666667 |
| 1,250      |   |       |            | 1,250      |   |       | 1,250 |            |
| 1,500      |   |       |            | 1,33333333 |   |       |       |            |
| 1,66666667 |   |       |            | 1,2        |   |       |       |            |
| 1,33333333 |   |       |            | 1,500      |   |       |       |            |
| 1,250      |   |       |            | 1,6        |   |       |       |            |
| 1,875      |   |       |            | 1,06666667 |   |       |       |            |

HDS Fraction Pythagorean

|       |  |  |  |  |  |  |  |  |
|-------|--|--|--|--|--|--|--|--|
| 1 1/8 |  |  |  |  |  |  |  |  |
| 1 1/4 |  |  |  |  |  |  |  |  |
| 1 1/3 |  |  |  |  |  |  |  |  |
| 1 1/2 |  |  |  |  |  |  |  |  |
| 1 2/3 |  |  |  |  |  |  |  |  |
| 1 7/8 |  |  |  |  |  |  |  |  |
| 2     |  |  |  |  |  |  |  |  |

For more details on natural harmonics see the section R/D

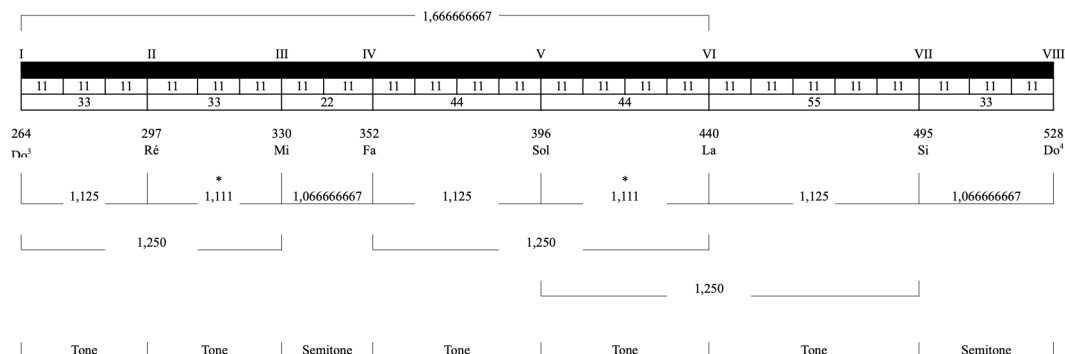
# « Natural Harmonics »

Fig.7a



## NATURAL HARMONICS

Starting from the fact that the natural resonance (harmonics) of each note are relatively all multiples of each of them and the frequency (Hz) is given by the simple arithmetic operation of fundamental sound  $F^0$  multiplication by the rank number of it



| II      | X     | =        |
|---------|-------|----------|
| 11      | 1     | 11       |
| 11      | 2     | 22       |
| 11      | 3     | 33       |
| 11      | 4     | 44       |
| 11      | 5     | 55       |
| 11      | 6     | 66       |
| 11      | 7     | 77       |
| 11      | 8     | 88       |
| 11      | 9     | 99       |
| 11      | 10    | 110      |
| 11      | 11    | 121      |
| 11      | 12    | 132      |
| 11      | 13    | 143      |
| 11      | 14    | 154      |
| 11      | 15    | 165      |
| 11      | 16    | 176      |
| 11      | 17    | 187      |
| 11      | 18    | 198      |
| 11      | 19    | 209      |
| 11      | 20    | 220      |
| 11      | 21    | 231      |
| 11      | 22    | 242      |
| 11      | 23    | 253      |
| Octave  | 11 24 | 264 C 1  |
| 11      | 25    | 275 2    |
| 11      | 26    | 286 3    |
| Second  | 11 27 | 297 D 4  |
| 11      | 28    | 308 5    |
| 11      | 29    | 319 6    |
| Third   | 11 30 | 330 E 7  |
| 11      | 31    | 341 8    |
| Fourth  | 11 32 | 352 F 9  |
| 11      | 33    | 363 10   |
| 11      | 34    | 374 11   |
| 11      | 35    | 385 12   |
| Fifth   | 11 36 | 396 G 13 |
| 11      | 37    | 407 14   |
| 11      | 38    | 418 15   |
| 11      | 39    | 429 16   |
| Sixth   | 11 40 | 440 A 17 |
| 11      | 41    | 451 18   |
| 11      | 42    | 462 19   |
| 11      | 43    | 473 20   |
| 11      | 44    | 484 21   |
| Seventh | 11 45 | 495 B 22 |
| 11      | 46    | 506 23   |
| 11      | 47    | 517 24   |
| Octave  | 11 48 | 528 C 25 |

For more details on natural harmonics see figures 6 and 7 section R/D

Note that the ratio between A 440 Hz and C 264 Hz has a proportion of

$$1.666666666666667$$

$$\text{either: } 440/264 = 1.666666666666667$$

this proportion will never change ... whatever the frequency chosen:

$$\dots 328 - 426,7 - 432 - 440 - 442 - 444 \dots$$

it's a good way to find your C

then divide it by 24 to get what I call the unit of measure.

P: S. The tuning frequency of A at 426.7 Hz also called Scientific range  
or Range of physicists, with a Do at 256 Hz

$$\text{either : } 426.6666666666667 / 256 = 1.666666666666667.$$

Fig.7f

  
**NATURAL HARMONICS**  
426,7 Hz

Starting from the fact that the natural resonance (harmonics) of each note are relatively all multiples of each of them  
and the frequency (Hz) is given by the simple arithmetic operation of fundamental sound F0 multiplication by the rank number of it

256,000000000000000000000000426,666666666667512,0000000000000000000000

| I     | II    | III   | IV    | V     | VI    | VII   | VIII  |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 10,67 | 10,67 | 10,67 | 10,67 | 10,67 | 10,67 | 10,67 | 10,67 |
| 33    | 33    | 22    | 44    | 44    | 55    | 33    | 33    |

256  
C<sup>+</sup>

288  
D

320  
E

341  
F

384  
G

426,7  
A

480  
B

512  
C<sup>+</sup>

1,125

1,111

1,06666667

1,125

1,111

1,125

1,06666667

1,250

1,250

1,250

Ton

Ton

Demi-ton

Ton

Ton

Ton

Demi-ton

10,666666666667

10,67

X =

|       |    |       |
|-------|----|-------|
| 10,67 | 1  | 10,67 |
| 10,67 | 2  | 21,33 |
| 10,67 | 3  | 32    |
| 10,67 | 4  | 42,67 |
| 10,67 | 5  | 53,33 |
| 10,67 | 6  | 64    |
| 10,67 | 7  | 74,67 |
| 10,67 | 8  | 85,33 |
| 10,67 | 9  | 96    |
| 10,67 | 10 | 106,7 |
| 10,67 | 11 | 117,3 |
| 10,67 | 12 | 128   |
| 10,67 | 13 | 138,7 |
| 10,67 | 14 | 149,3 |
| 10,67 | 15 | 160   |
| 10,67 | 16 | 170,7 |
| 10,67 | 17 | 181,3 |
| 10,67 | 18 | 192   |
| 10,67 | 19 | 202,7 |
| 10,67 | 20 | 213,3 |
| 10,67 | 21 | 224   |
| 10,67 | 22 | 234,7 |
| 10,67 | 23 | 245,3 |

|          |       |    |       |   |    |
|----------|-------|----|-------|---|----|
| Octave   | 10,67 | 24 | 256   | C | 1  |
|          | 10,67 | 25 | 266,7 |   | 2  |
|          | 10,67 | 26 | 277,3 |   | 3  |
| Seconde  | 10,67 | 27 | 288   | D | 4  |
|          | 10,67 | 28 | 298,7 |   | 5  |
|          | 10,67 | 29 | 309,3 |   | 6  |
| Tierce   | 10,67 | 30 | 320   | E | 7  |
|          | 10,67 | 31 | 330,7 |   | 8  |
|          | 10,67 | 32 | 341,3 | F | 9  |
| Quarte   | 10,67 | 33 | 352   |   | 10 |
|          | 10,67 | 34 | 362,7 |   | 11 |
|          | 10,67 | 35 | 373,3 |   | 12 |
| Quinte   | 10,67 | 36 | 384   | G | 13 |
|          | 10,67 | 37 | 394,7 |   | 14 |
|          | 10,67 | 38 | 405,3 |   | 15 |
| Sixième  | 10,67 | 39 | 416   |   | 16 |
|          | 10,67 | 40 | 426,7 | A | 17 |
|          | 10,67 | 41 | 437,3 |   | 18 |
| Septième | 10,67 | 42 | 448   |   | 19 |
|          | 10,67 | 43 | 458,7 |   | 20 |
|          | 10,67 | 44 | 469,3 |   | 21 |
| Octave   | 10,67 | 45 | 480   | B | 22 |
|          | 10,67 | 46 | 490,7 |   | 23 |
|          | 10,67 | 47 | 501,3 |   | 24 |
|          | 10,67 | 48 | 512   | C | 25 |

341,333333333334

426,666666666667

For more details on natural harmonics see figures 6 and 7 section R/D

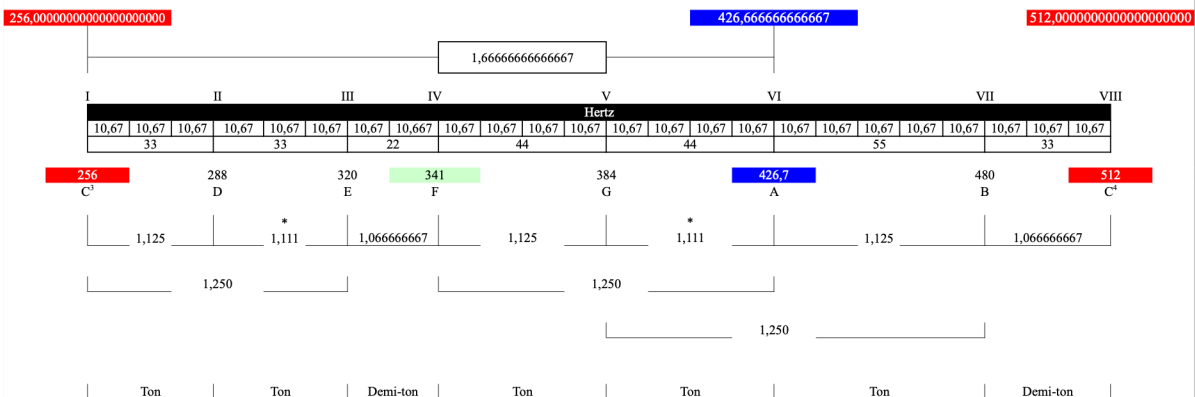
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## NATURAL HARMONICS

426.7 Hz

Starting from the fact that the natural resonance (harmonics) of each note are relatively all multiples of each of them and the frequency (Hz) is given by the simple arithmetic operation of fundamental sound F0 multiplication by the rank number of it



|                 |       |    |       |   |    |
|-----------------|-------|----|-------|---|----|
| 10,666666666667 |       |    |       |   |    |
|                 | 10,67 | X  | =     |   |    |
|                 | 10,67 | 1  | 10,67 |   |    |
|                 | 10,67 | 2  | 21,33 |   |    |
|                 | 10,67 | 3  | 32    |   |    |
|                 | 10,67 | 4  | 42,67 |   |    |
|                 | 10,67 | 5  | 53,33 |   |    |
|                 | 10,67 | 6  | 64    |   |    |
|                 | 10,67 | 7  | 74,67 |   |    |
|                 | 10,67 | 8  | 85,33 |   |    |
|                 | 10,67 | 9  | 96    |   |    |
|                 | 10,67 | 10 | 106,7 |   |    |
|                 | 10,67 | 11 | 117,3 |   |    |
|                 | 10,67 | 12 | 128   |   |    |
|                 | 10,67 | 13 | 138,7 |   |    |
|                 | 10,67 | 14 | 149,3 |   |    |
|                 | 10,67 | 15 | 160   |   |    |
|                 | 10,67 | 16 | 170,7 |   |    |
|                 | 10,67 | 17 | 181,3 |   |    |
|                 | 10,67 | 18 | 192   |   |    |
|                 | 10,67 | 19 | 202,7 |   |    |
|                 | 10,67 | 20 | 213,3 |   |    |
|                 | 10,67 | 21 | 224   |   |    |
|                 | 10,67 | 22 | 234,7 |   |    |
|                 | 10,67 | 23 | 245,3 |   |    |
| Octave          | 10,67 | 24 | 256   | C | 1  |
|                 | 10,67 | 25 | 266,7 |   | 2  |
|                 | 10,67 | 26 | 277,3 |   | 3  |
| Seconde         | 10,67 | 27 | 288   | D | 4  |
|                 | 10,67 | 28 | 298,7 |   | 5  |
|                 | 10,67 | 29 | 309,3 |   | 6  |
| Tierce          | 10,67 | 30 | 320   | E | 7  |
|                 | 10,67 | 31 | 330,7 |   | 8  |
| Quarte          | 10,67 | 32 | 341,3 | F | 9  |
|                 | 10,67 | 33 | 352   |   | 10 |
|                 | 10,67 | 34 | 362,7 |   | 11 |
| Quinte          | 10,67 | 35 | 373,3 |   | 12 |
|                 | 10,67 | 36 | 384   | G | 13 |
|                 | 10,67 | 37 | 394,7 |   | 14 |
| Sixième         | 10,67 | 38 | 405,3 |   | 15 |
|                 | 10,67 | 39 | 416   |   | 16 |
|                 | 10,67 | 40 | 426,7 | A | 17 |
| Septième        | 10,67 | 41 | 437,3 |   | 18 |
|                 | 10,67 | 42 | 448   |   | 19 |
|                 | 10,67 | 43 | 458,7 |   | 20 |
|                 | 10,67 | 44 | 469,3 |   | 21 |
| Octave          | 10,67 | 45 | 480   | B | 22 |
|                 | 10,67 | 46 | 490,7 |   | 23 |
|                 | 10,67 | 47 | 501,3 |   | 24 |
|                 | 10,67 | 48 | 512   | C | 25 |

341,333333333334

426.6666666666667

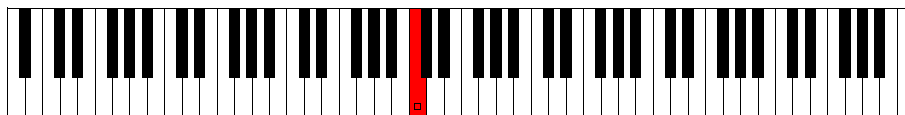
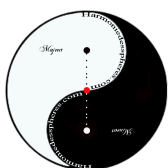
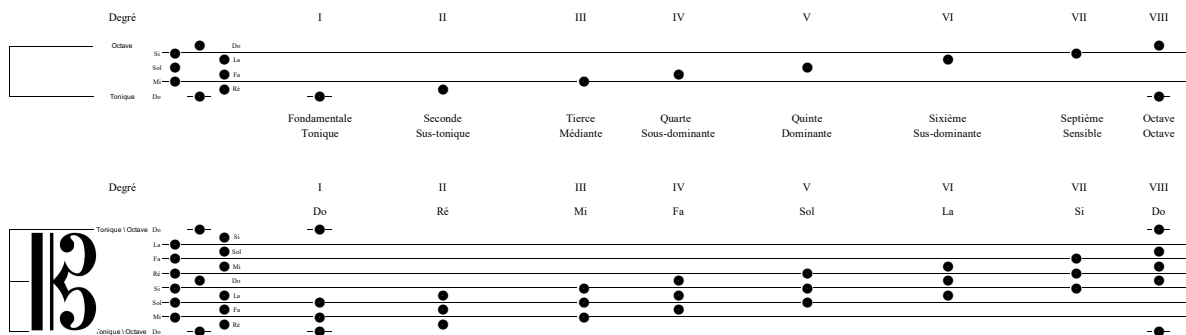
For more details on natural harmonics see figures 6 and 7 section R/D



Fig.8

# Harmonie des sphères

Clé universelle musicale  
Le Diatonisme



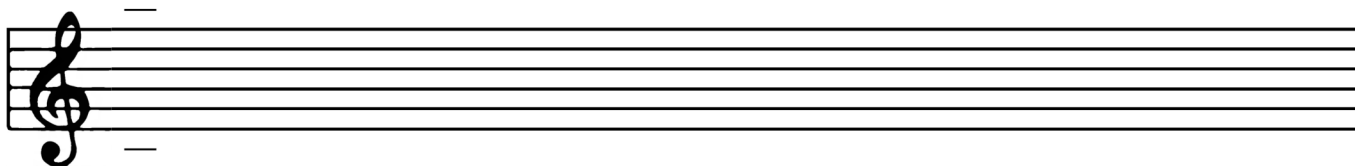
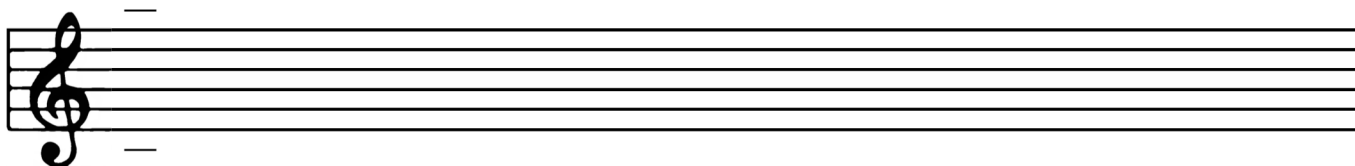
Le premier Solfège

Titre: \_\_\_\_\_ Auteur: \_\_\_\_\_

Handwriting practice lines for the letters C, B, A, G, F, E, D, and C. Each letter is followed by a set of three horizontal lines for tracing and writing.



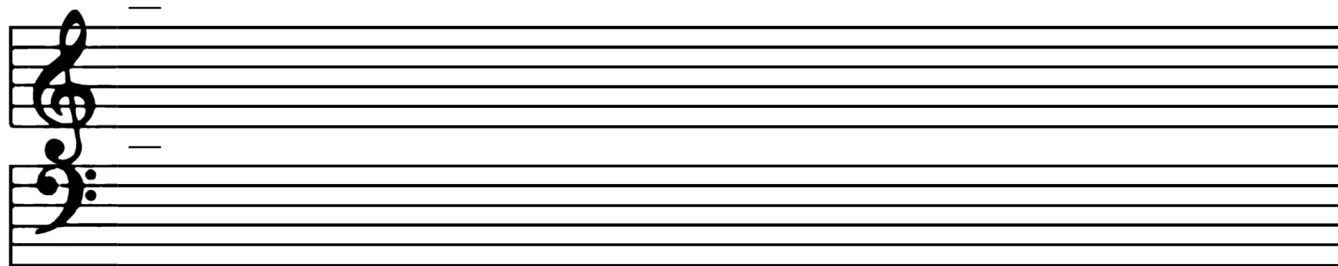
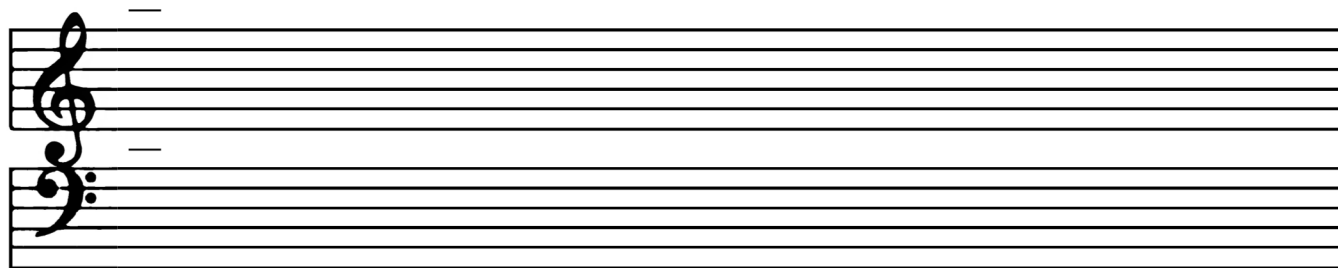
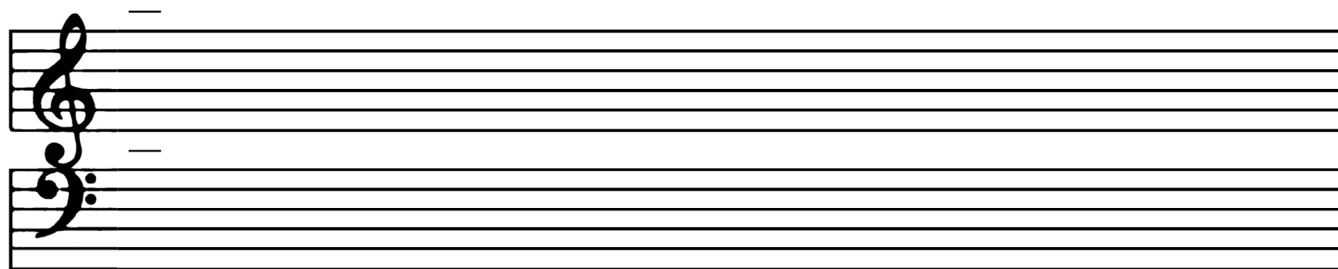
Titre: \_\_\_\_\_ Auteur: \_\_\_\_\_





Titre: \_\_\_\_\_

Auteur: \_\_\_\_\_



# Harmonie des sphères inc.

## Mission

Promote the universal musical key throughout the world,  
research and develop simple and accessible applications  
to all, in order to facilitate the understanding of musical notions.

« Music it's of space-time »

Sylvain Lalonde founding president :  
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« And if life was not a mystery but an unrevealed science »

« In memory of an exceptional mind »

<https://bdm.place>

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