

Harmony of the spheres

Universal musical key

(The golden ratio and the Science of harmonics)



1st 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	Tone		Fourth	Tone		Fifth	Tone		Sixth	Tone		Seventh	Semitone	Octave	
	1	2		3	4		5	6	7		8	9		10	11		12	13				
1	C [#]	D ^b	2	D [#]	E ^b	3	E	F	F [#]	G ^b	4	G	G [#]	A ^b	5	A	A [#]	B ^b	6	B	7	C
C			D			E		F			G		G [#]		A		A [#]		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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2nd 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 1st degree (“Tonic”) on C, you’ll get the “C-D-E-F-G-A-B” sequence.

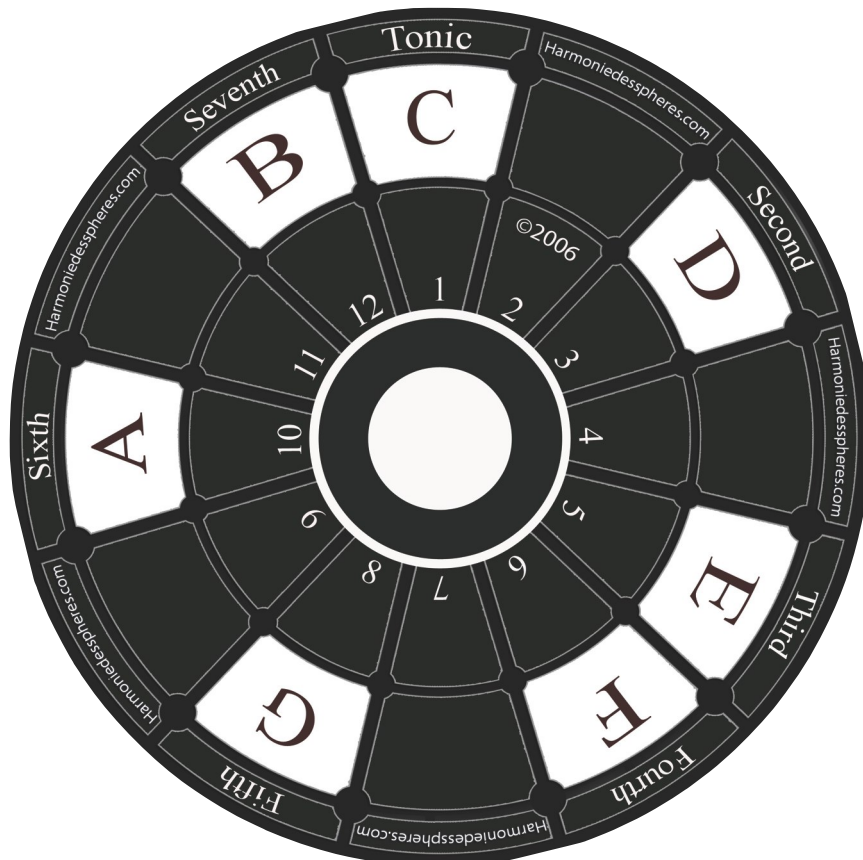
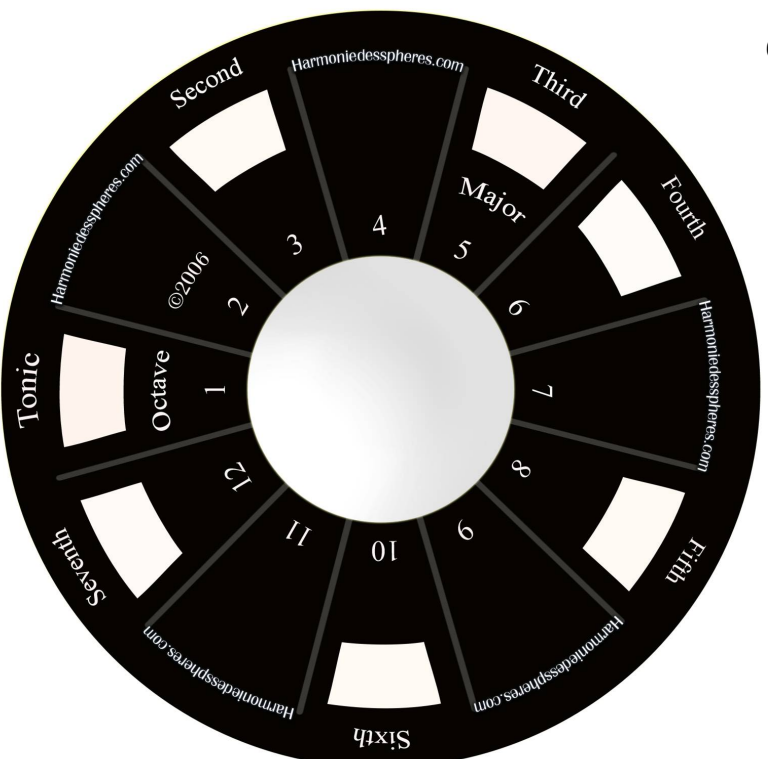


Fig.3



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Sylvain Lalonde founding president : Harmonie des sphères inc.

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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

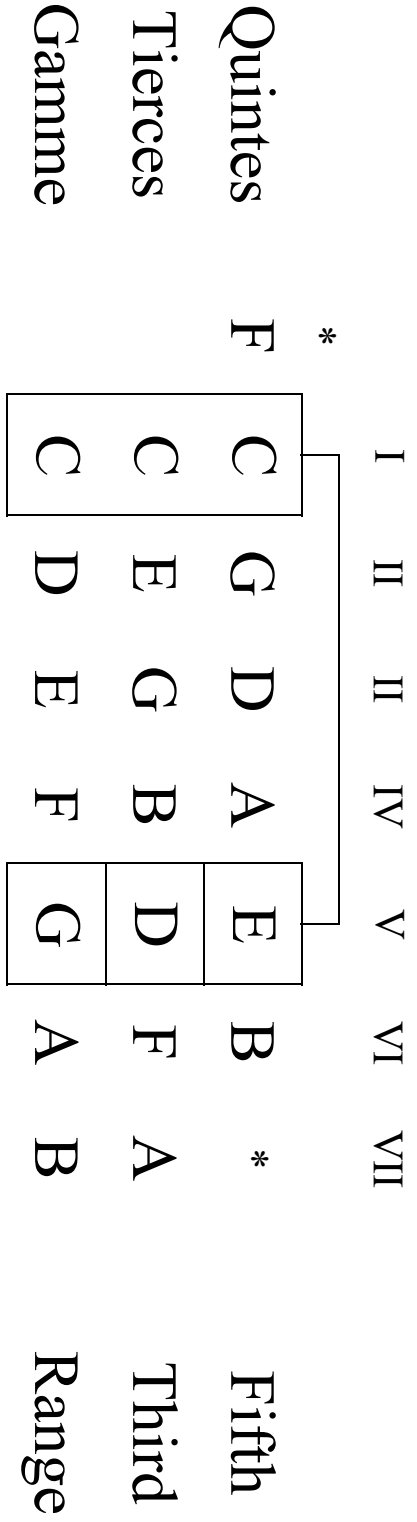
Note that the order of flats is the opposite of sharps

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	 Cycle of Fifths 
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



* Selon l'ordre des dièses / orders of sharps

3rd 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 »

Harmonie des sphères



Clé universelle musicale
Musique Instrument Digital Interface
Codes

I	II	III	IV	V	VI	VII	VIII
Major	Minor	Minor	Major	Major	Minor	Diminished	Major
Sol	La	Si	Do	Ré	Mi	H	Sol
						Fa	
Mi			La	Si			Mi
	Fa	Sol		Do	Ré		
Do	Ré	Mi	Fa	Sol	La	Si	Do
Just	Just	Just	Just	Just	Just	Just	Just

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Harmony of the spheres



Universal musical key
Music Instrument Digital Interface
Codes

I	II	III	IV	V	VI	VII	VIII
Major	Minor	Minor	Major	Major	Minor	Diminished	Major
G	A	B	C	D	E	H	G
						F	
E			A	B			E
	F	G		C	D		
C	D	E	F	G	A	B	C
Just	Just	Just	Just	Just	Just	Just	Just

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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)

P
A
R
T
I
E

A

Harmonie des sphères



Clé universelle musicale
Musique Instrument Digital Interface
Codex

I	II	III	IV	V	VI	VII	VIII
Majeur	mineur	mineur	Majeur	Majeur	mineur	Diminuer	Majeur
Sol	La	Si	Do	Ré	Mi	H Fa	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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P
A
R
T
I
E

B

Do	Ré	Mi	Fa	Sol	La	Si	Do
Si	Ré ^b	Mi ^b	Fa ^b	Sol ^b	La ^b	Si ^b	Do
La	Do	Ré	Mi	Fa	Sol	La	Si
Sol	Si	Do	Ré	Mi	Fa	Sol	La
Fa	La	Si	Do	Ré	Mi	Fa	Sol
Mi	Sol	La	Si	Do	Ré	Mi	Fa
Ré	Fa	Sol	La	Si	Do	Ré	Mi
Do	Ré	Mi	Fa	Sol	La	Si	Do
Si	Do	Ré	Mi	Fa	Sol	La	Si
La	Si	Ré	Mi	Fa	Sol	La	Si
Sol	La	Si	Do	Ré	Mi	Fa	Sol
Fa	Sol	La	Si	Do	Ré	Mi	Fa
Mi	Sol	La	Si	Do	Ré	Mi	Fa
Ré	Mi	Sol	La	Si	Do	Ré	Mi
Do	Ré	Mi	Fa	Sol	La	Si	Do

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P
A
R
T

A

Harmony of the spheres



Universal musical key
Music Instrument Digital Interface
Codex

I	II	III	IV	V	VI	VII	VIII
Majeur	mineur	mineur	Majeur	Majeur	mineur	Diminish	Majeur
G	A	B	C	D	E	H F	G
E	F	G	A	B	C	D	E
C	D	E	F	G	A	B	C
Tone Tone Semi-tone Tone Tone Tone Semi-tone							

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P
A
R
T

B

C	D	E	F	G	A	B	C
B	D ^b	E ^b	F ^b	G ^b	A ^b	B ^b	C
A	C	D	E	F	G	A	B
G	A	B	C	D	E	F	G
F	G	A	B	C	D	E	F
E	F	G	A	B	C	D	E
D	E	F	G	A	B	C	D
C	D	E	F	G	A	B	C
B	D ^b	E ^b	F ^b	G ^b	A ^b	B ^b	C
A	C	D	E	F	G	A	B
G	A	B	C	D	E	F	G
F	G	A	B	C	D	E	F
E	F	G	A	B	C	D	E
D	E	F	G	A	B	C	D
C	D	E	F	G	A	B	C

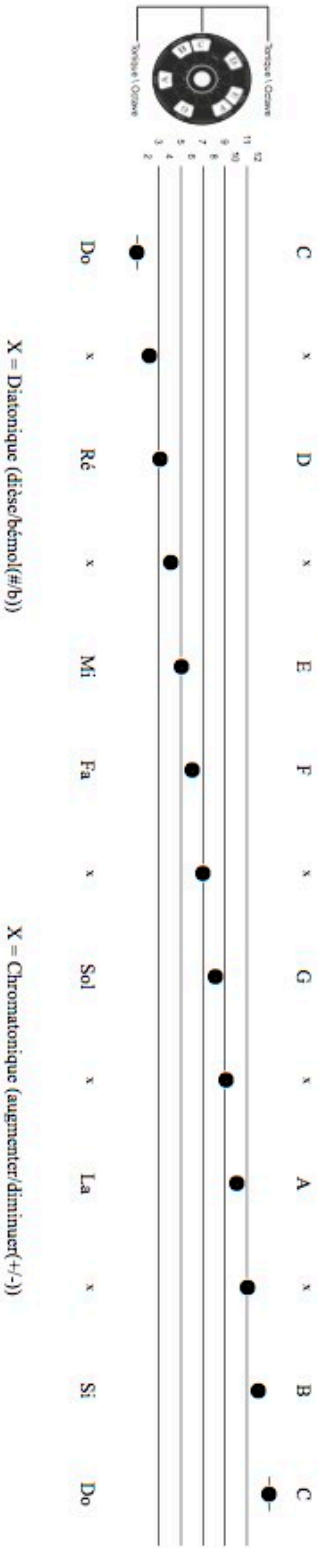
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Harmony of the spheres



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

B

B^b_{A[#]}

A

A^b_{G[#]}

G

G^b_{F[#]}

F

E

E^b_{D[#]}

D

D^b_{C[#]}

C

B

B^b_{A[#]}

A

A^b_{G[#]}

G

G^b_{F[#]}

F

E

E^b_{D[#]}

D

D^b_{C[#]}

C

↑

To fold

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

Cut

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Fig.4b

Couper

Clé universelle musicale

Octave

Couper

Couper

Septième

Couper

Sixième

Quinte

Couper

Couper

Quarte

Tierce

Couper

Seconde

Couper

Tonique

Couper

Solfège

Couper

Universal musical Key

Octave

Cut

Cut

Seventh

Cut

Sixth

Fifth

Cut

Cut

Fourth

Third

Cut

Second

Cut

Tonic

Cut

Solfège

Dessus de la règle

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Plier

Do

Si

Si^b_{La[#]}

La

La^b_{Sol[#]}

Sol

Sol^b_{Fa[#]}

Fa

Mi

Mi^b_{Ré[#]}

Ré

Ré^b_{Do[#]}

Do

Si

Si^b_{La[#]}

La

La^b_{Sol[#]}

Sol

Sol^b_{Fa[#]}

Fa

Mi

Mi^b_{Ré[#]}

Ré

Ré^b_{Do[#]}

Do

↑

Plier

Do

Si

Si^b_{La[#]}

La

La^b_{Sol[#]}

Sol

Sol^b_{Fa[#]}

Fa

Mi

Mi^b_{Ré[#]}

Ré

Ré^b_{Do[#]}

Do

↓

Couper

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

« HDS Tempered scale in Hz and guitar fretboard »

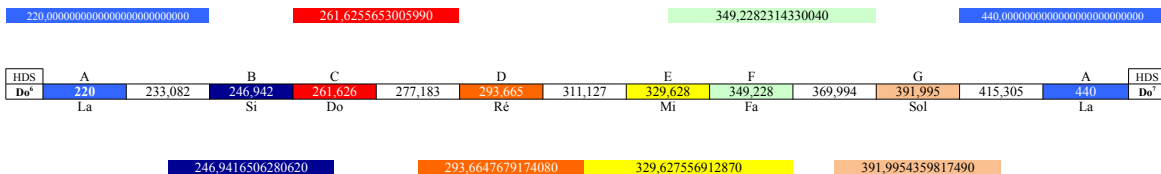
Fig.5

HARMONY OF THE SPHERES

Universal musical Key



HDS tempered scale Hz	440
Progression %	5,94630943592953

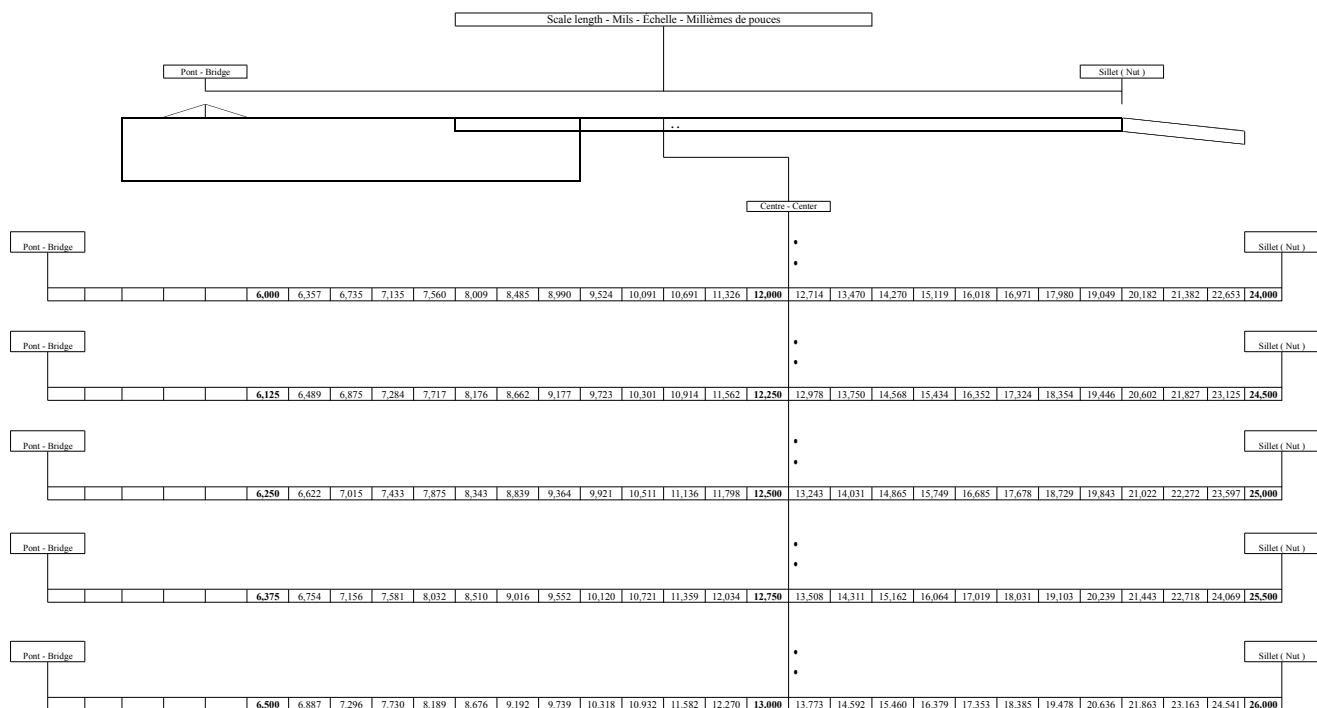


Guitar Fretboard



Two opposites in perfect harmony

Progression %	5,94630943592953
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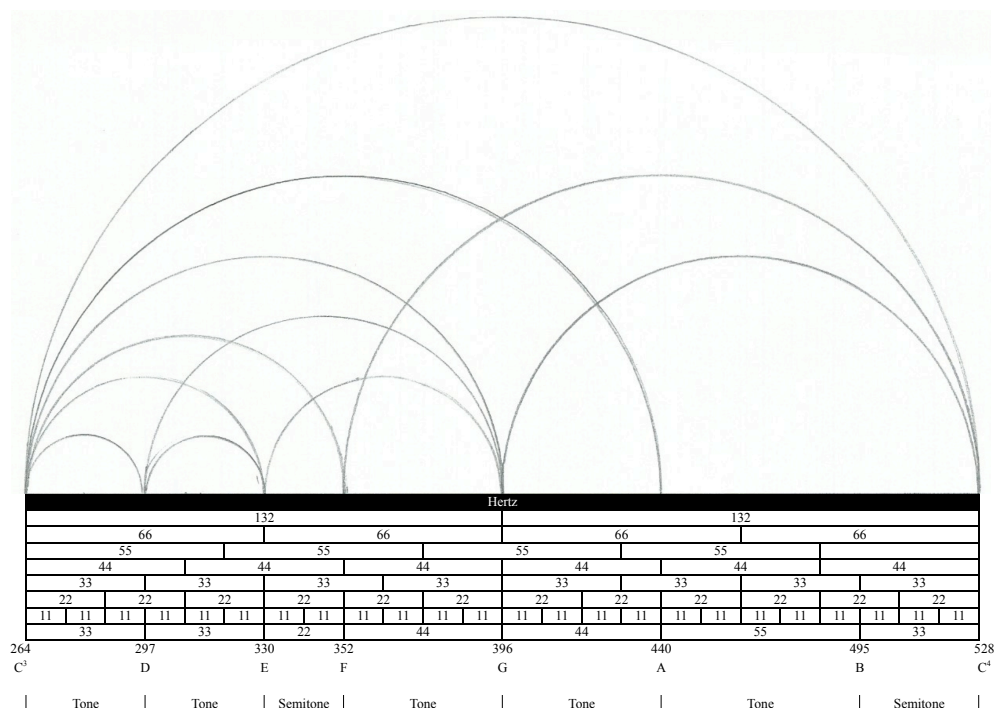


Pythagore and the harmony of the spheres

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	1,250	1,250	1,250	1,250
1,500	1,33333333	1,66666667	1,2	1,33333333	1,500	1,250
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

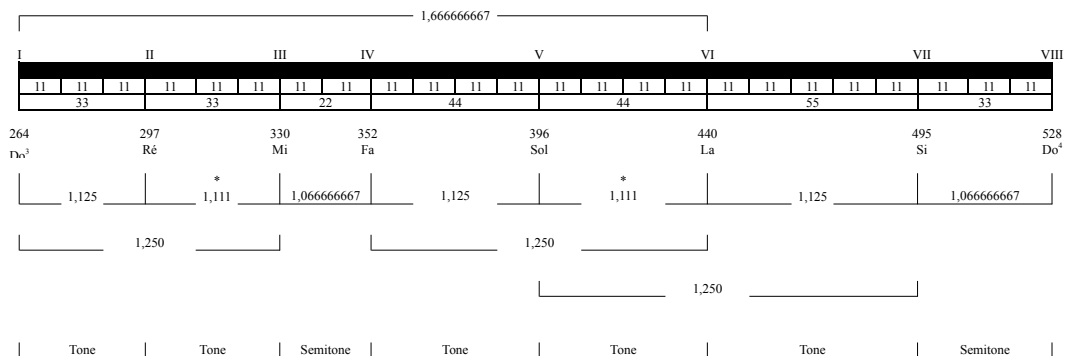
« Natural Harmonics »

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

$$1.66666666666667$$

$$\text{either: } 440/264 = 1.66666666666667$$

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

$$\text{either : } 426.666666666667 / 256 = 1.66666666666667.$$

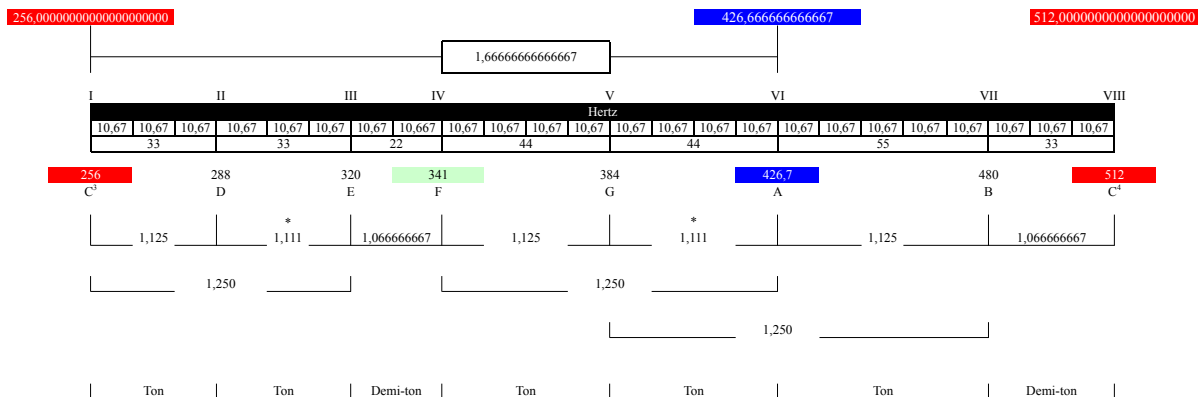
Fig.7f



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



10,6666666666667

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
	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
	10,67	39	416		16
Sixième	10,67	40	426,7	A	17
	10,67	41	437,3		18
	10,67	42	448		19
	10,67	43	458,7		20
	10,67	44	469,3		21
Septième	10,67	45	480	B	22
	10,67	46	490,7		23
	10,67	47	501,3		24
Octave	10,67	48	512	C	25

341,333333333334

426,666666666667

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

Fig.7H



LES HARMONIQUES NATURELLES - NATURAL HARMONICS

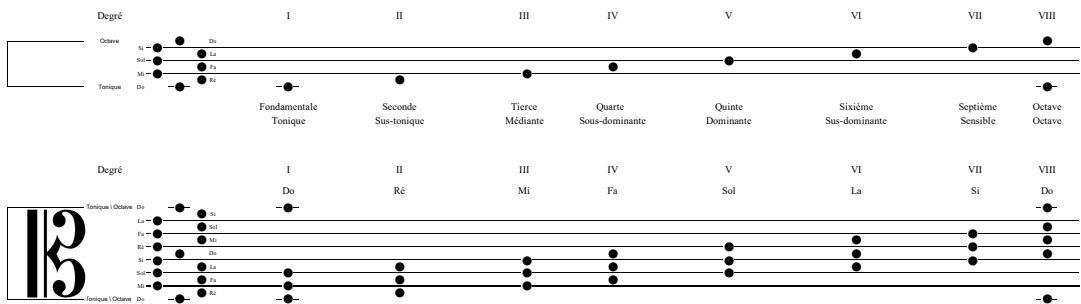
F 302	C 264	G 391,111	D 293,333																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table> <tr><td>1</td><td>14,6666667</td><td>1</td><td>16,2962963</td><td>1</td><td>18,2222222</td><td>1</td><td>19,5555556</td></tr> <tr><td>2</td><td>29,3333333</td><td>2</td><td>32,5925926</td><td>2</td><td>36,4444444</td><td>2</td><td>39,1111111</td></tr> <tr><td>3</td><td>44</td><td>3</td><td>48,8888889</td><td>3</td><td>54,6666667</td><td>3</td><td>58,6666667</td></tr> <tr><td>4</td><td>58,6666667</td><td>4</td><td>64,5151515</td><td>4</td><td>72,2222222</td><td>4</td><td>79,2222222</td></tr> <tr><td>5</td><td>72,5333333</td><td>5</td><td>79,4040404</td><td>5</td><td>87,1111111</td><td>5</td><td>94,4444444</td></tr> <tr><td>6</td><td>86,3333333</td><td>6</td><td>93,7777778</td><td>6</td><td>101,3333333</td><td>6</td><td>109,1111111</td></tr> <tr><td>7</td><td>100,6666667</td><td>7</td><td>108,5454545</td><td>7</td><td>117,5555556</td><td>7</td><td>126,2222222</td></tr> <tr><td>8</td><td>114,5333333</td><td>8</td><td>123,7070707</td><td>8</td><td>133,3333333</td><td>8</td><td>143,1111111</td></tr> <tr><td>9</td><td>128</td><td>9</td><td>138,8888889</td><td>9</td><td>144</td><td>9</td><td>154,4444444</td></tr> <tr><td>10</td><td>142,6666667</td><td>10</td><td>153,2626263</td><td>10</td><td>155,5555556</td><td>10</td><td>166,6666667</td></tr> <tr><td>11</td><td>156,3333333</td><td>11</td><td>167,2525253</td><td>11</td><td>168,8888889</td><td>11</td><td>180,0000000</td></tr> <tr><td>12</td><td>170</td><td>12</td><td>181,5151515</td><td>12</td><td>182,2222222</td><td>12</td><td>193,3333333</td></tr> <tr><td>13</td><td>184,6666667</td><td>13</td><td>195,5555556</td><td>13</td><td>196,6666667</td><td>13</td><td>207,7777778</td></tr> <tr><td>14</td><td>198</td><td>14</td><td>206,2626263</td><td>14</td><td>207,7777778</td><td>14</td><td>218,8888889</td></tr> <tr><td>15</td><td>212</td><td>15</td><td>217,3737374</td><td>15</td><td>218,8888889</td><td>15</td><td>229,9999999</td></tr> <tr><td>16</td><td>226,3333333</td><td>16</td><td>228,4848485</td><td>16</td><td>229,9999999</td><td>16</td><td>240,0000000</td></tr> <tr><td>17</td><td>240,6666667</td><td>17</td><td>239,5959596</td><td>17</td><td>240,0000000</td><td>17</td><td>251,1111111</td></tr> <tr><td>18</td><td>254</td><td>18</td><td>240,6666667</td><td>18</td><td>241,1111111</td><td>18</td><td>262,2222222</td></tr> <tr><td>19</td><td>268,3333333</td><td>19</td><td>251,7777778</td><td>19</td><td>252,2222222</td><td>19</td><td>273,3333333</td></tr> <tr><td>20</td><td>282</td><td>20</td><td>262,8888889</td><td>20</td><td>263,3333333</td><td>20</td><td>284,4444444</td></tr> <tr><td>21</td><td>296,6666667</td><td>21</td><td>273,9999999</td><td>21</td><td>274,4444444</td><td>21</td><td>295,5555556</td></tr> <tr><td>22</td><td>310,3333333</td><td>22</td><td>284,0000000</td><td>22</td><td>285,5555556</td><td>22</td><td>306,6666667</td></tr> <tr><td>23</td><td>324,6666667</td><td>23</td><td>295,1111111</td><td>23</td><td>296,6666667</td><td>23</td><td>317,7777778</td></tr> <tr><td>24</td><td>338</td><td>24</td><td>306,2222222</td><td>24</td><td>307,7777778</td><td>24</td><td>328,8888889</td></tr> <tr><td>25</td><td>352</td><td>25</td><td>317,3333333</td><td>25</td><td>318,8888889</td><td>25</td><td>339,9999999</td></tr> <tr><td>26</td><td>366,3333333</td><td>26</td><td>328,4444444</td><td>26</td><td>330,0000000</td><td>26</td><td>350,0000000</td></tr> <tr><td>27</td><td>380,6666667</td><td>27</td><td>339,5555556</td><td>27</td><td>341,1111111</td><td>27</td><td>361,1111111</td></tr> <tr><td>28</td><td>394,6666667</td><td>28</td><td>350,6666667</td><td>28</td><td>352,2222222</td><td>28</td><td>372,2222222</td></tr> <tr><td>29</td><td>408,6666667</td><td>29</td><td>361,7777778</td><td>29</td><td>363,3333333</td><td>29</td><td>383,3333333</td></tr> <tr><td>30</td><td>422,6666667</td><td>30</td><td>372,8888889</td><td>30</td><td>374,4444444</td><td>30</td><td>394,4444444</td></tr> <tr><td>31</td><td>436,6666667</td><td>31</td><td>384,0000000</td><td>31</td><td>385,5555556</td><td>31</td><td>405,5555556</td></tr> <tr><td>32</td><td>450,6666667</td><td>32</td><td>395,1111111</td><td>32</td><td>396,6666667</td><td>32</td><td>416,6666667</td></tr> <tr><td>33</td><td>464,6666667</td><td>33</td><td>406,2222222</td><td>33</td><td>407,7777778</td><td>33</td><td>427,7777778</td></tr> <tr><td>34</td><td>478,6666667</td><td>34</td><td>417,3333333</td><td>34</td><td>418,8888889</td><td>34</td><td>438,8888889</td></tr> <tr><td>35</td><td>492,6666667</td><td>35</td><td>428,4444444</td><td>35</td><td>429,9999999</td><td>35</td><td>449,9999999</td></tr> <tr><td>36</td><td>506,6666667</td><td>36</td><td>439,5555556</td><td>36</td><td>440,0000000</td><td>36</td><td>460,0000000</td></tr> <tr><td>37</td><td>520,6666667</td><td>37</td><td>450,6666667</td><td>37</td><td>451,1111111</td><td>37</td><td>471,1111111</td></tr> <tr><td>38</td><td>534,6666667</td><td>38</td><td>461,7777778</td><td>38</td><td>462,2222222</td><td>38</td><td>482,2222222</td></tr> <tr><td>39</td><td>548,6666667</td><td>39</td><td>472,8888889</td><td>39</td><td>473,3333333</td><td>39</td><td>493,3333333</td></tr> <tr><td>40</td><td>562,6666667</td><td>40</td><td>484,0000000</td><td>40</td><td>484,0000000</td><td>40</td><td>504,4444444</td></tr> <tr><td>41</td><td>576,6666667</td><td>41</td><td>495,1111111</td><td>41</td><td>495,1111111</td><td>41</td><td>515,5555556</td></tr> <tr><td>42</td><td>590,6666667</td><td>42</td><td>506,2222222</td><td>42</td><td>506,2222222</td><td>42</td><td>526,6666667</td></tr> <tr><td>43</td><td>604,6666667</td><td>43</td><td>517,3333333</td><td>43</td><td>517,3333333</td><td>43</td><td>537,7777778</td></tr> <tr><td>44</td><td>618,6666667</td><td>44</td><td>528,4444444</td><td>44</td><td>528,4444444</td><td>44</td><td>548,8888889</td></tr> <tr><td>45</td><td>632,6666667</td><td>45</td><td>539,5555556</td><td>45</td><td>539,5555556</td><td>45</td><td>559,9999999</td></tr> <tr><td>46</td><td>646,6666667</td><td>46</td><td>550,6666667</td><td>46</td><td>550,6666667</td><td>46</td><td>570,0000000</td></tr> <tr><td>47</td><td>660,6666667</td><td>47</td><td>561,7777778</td><td>47</td><td>561,7777778</td><td>47</td><td>581,1111111</td></tr> <tr><td>48</td><td>674,6666667</td><td>48</td><td>572,8888889</td><td>48</td><td>572,8888889</td><td>48</td><td>592,2222222</td></tr> <tr><td>49</td><td>688,6666667</td><td>49</td><td>584,0000000</td><td>49</td><td>584,0000000</td><td>49</td><td>603,3333333</td></tr> <tr><td>50</td><td>702,6666667</td><td>50</td><td>595,1111111</td><td>50</td><td>595,1111111</td><td>50</td><td>614,4444444</td></tr> <tr><td>51</td><td>716,6666667</td><td>51</td><td>606,2222222</td><td>51</td><td>606,2222222</td><td>51</td><td>625,5555556</td></tr> <tr><td>52</td><td>730,6666667</td><td>52</td><td>617,3333333</td><td>52</td><td>617,3333333</td><td>52</td><td>636,6666667</td></tr> <tr><td>53</td><td>744,6666667</td><td>53</td><td>628,4444444</td><td>53</td><td>628,4444444</td><td>53</td><td>647,7777778</td></tr> <tr><td>54</td><td>758,6666667</td><td>54</td><td>639,5555556</td><td>54</td><td>639,5555556</td><td>54</td><td>658,8888889</td></tr> <tr><td>55</td><td>772,6666667</td><td>55</td><td>650,6666667</td><td>55</td><td>650,6666667</td><td>55</td><td>669,9999999</td></tr> <tr><td>56</td><td>786,6666667</td><td>56</td><td>661,7777778</td><td>56</td><td>661,7777778</td><td>56</td><td>680,0000000</td></tr> <tr><td>57</td><td>800,6666667</td><td>57</td><td>672,8888889</td><td>57</td><td>672,8888889</td><td>57</td><td>691,1111111</td></tr> <tr><td>58</td><td>814,6666667</td><td>58</td><td>684,0000000</td><td>58</td><td>684,0000000</td><td>58</td><td>702,2222222</td></tr> <tr><td>59</td><td>828,6666667</td><td>59</td><td>695,1111111</td><td>59</td><td>695,1111111</td><td>59</td><td>713,3333333</td></tr> <tr><td>60</td><td>842,6666667</td><td>60</td><td>706,2222222</td><td>60</td><td>706,2222222</td><td>60</td><td>724,4444444</td></tr> <tr><td>61</td><td>856,6666667</td><td>61</td><td>717,3333333</td><td>61</td><td>717,3333333</td><td>61</td><td>735,5555556</td></tr> <tr><td>62</td><td>870,6666667</td><td>62</td><td>728,4444444</td><td>62</td><td>728,4444444</td><td>62</td><td>746,6666667</td></tr> <tr><td>63</td><td>884,6666667</td><td>63</td><td>739,5555556</td><td>63</td><td>739,5555556</td><td>63</td><td>757,7777778</td></tr> <tr><td>64</td><td>898,6666667</td><td>64</td><td>750,6666667</td><td>64</td><td>750,6666667</td><td>64</td><td>768,8888889</td></tr> <tr><td>65</td><td>912,6666667</td><td>65</td><td>761,7777778</td><td>65</td><td>761,7777778</td><td>65</td><td>779,9999999</td></tr> <tr><td>66</td><td>926,6666667</td><td>66</td><td>772,8888889</td><td>66</td><td>772,8888889</td><td>66</td><td>790,0000000</td></tr> <tr><td>67</td><td>940,6666667</td><td>67</td><td>784,0000000</td><td>67</td><td>784,0000000</td><td>67</td><td>801,1111111</td></tr> <tr><td>68</td><td>954,6666667</td><td>68</td><td>795,1111111</td><td>68</td><td>795,1111111</td><td>68</td><td>812,2222222</td></tr> <tr><td>69</td><td>968,6666667</td><td>69</td><td>806,2222222</td><td>69</td><td>806,2222222</td><td>69</td><td>823,3333333</td></tr> <tr><td>70</td><td>982,6666667</td><td>70</td><td>817,3333333</td><td>70</td><td>817,3333333</td><td>70</td><td>834,4444444</td></tr> <tr><td>71</td><td>996,6666667</td><td>71</td><td>828,4444444</td><td>71</td><td>828,4444444</td><td>71</td><td>845,5555556</td></tr> <tr><td>72</td><td>1010,6666667</td><td>72</td><td>839,5555556</td><td>72</td><td>839,5555556</td><td>72</td><td>856,6666667</td></tr> <tr><td>73</td><td>1024,6666667</td><td>73</td><td>850,6666667</td><td>73</td><td>850,6666667</td><td>73</td><td>867,7777778</td></tr> <tr><td>74</td><td>1038,6666667</td><td>74</td><td>861,7777778</td><td>74</td><td>861,7777778</td><td>74</td><td>878,8888889</td></tr> <tr><td>75</td><td>1052,6666667</td><td>75</td><td>872,8888889</td><td>75</td><td>872,8888889</td><td>75</td><td>889,9999999</td></tr> <tr><td>76</td><td>1066,6666667</td><td>76</td><td>884,0000000</td><td>76</td><td>884,0000000</td><td>76</td><td>900,0000000</td></tr> <tr><td>77</td><td>1080,6666667</td><td>77</td><td>895,1111111</td><td>77</td><td>895,1111111</td><td>77</td><td>911,1111111</td></tr> <tr><td>78</td><td>1094,6666667</td><td>78</td><td>906,2222222</td><td>78</td><td>906,2222222</td><td>78</td><td>922,2222222</td></tr> <tr><td>79</td><td>1108,6666667</td><td>79</td><td>917,3333333</td><td>79</td><td>917,3333333</td><td>79</td><td>933,3333333</td></tr> <tr><td>80</td><td>1122,6666667</td><td>80</td><td>928,4444444</td><td>80</td><td>928,4444444</td><td>80</td><td>944,4444444</td></tr> <tr><td>81</td><td>1136,6666667</td><td>81</td><td>939,5555556</td><td>81</td><td>939,5555556</td><td>81</td><td>955,5555556</td></tr> <tr><td>82</td><td>1150,6666667</td><td>82</td><td>950,6666667</td><td>82</td><td>950,6666667</td><td>82</td><td>966,6666667</td></tr> <tr><td>83</td><td>1164,6666667</td><td>83</td><td>961,7777778</td><td>83</td><td>961,7777778</td><td>83</td><td>977,7777778</td></tr> <tr><td>84</td><td>1178,6666667</td><td>84</td><td>972,8888889</td><td>84</td><td>972,8888889</td><td>84</td><td>988,8888889</td></tr> <tr><td>85</td><td>1192,6666667</td><td>85</td><td>984,0000000</td><td>85</td><td>984,0000000</td><td>85</td><td>999,9999999</td></tr> <tr><td>86</td><td>1206,6666667</td><td>86</td><td>995,1111111</td><td>86</td><td>995,1111111</td><td>86</td><td>1010,0000000</td></tr> <tr><td>87</td><td>1220,6666667</td><td>87</td><td>1006,2222222</td><td>87</td><td>1006,2222222</td><td>87</td><td>1021,1111111</td></tr> <tr><td>88</td><td>1234,6666667</td><td>88</td><td>1017,3333333</td><td>88</td><td>1017,3333333</td><td>88</td><td>1032,2222222</td></tr> <tr><td>89</td><td>1248,6666667</td><td>89</td><td>1028,4444444</td><td>89</td><td>1028,4444444</td><td>89</td><td>1043,3333333</td></tr> <tr><td>90</td><td>1262,6666667</td><td>90</td><td>1039,5555556</td><td>90</td><td>1039,5555556</td><td>90</td><td>1054,4444444</td></tr> <tr><td>91</td><td>1276,6666667</td><td>91</td><td>1050,6666667</td><td>91</td><td>1050,6666667</td><td>91</td><td>1065,5555556</td></tr> <tr><td>92</td><td>1290,6666667</td><td>92</td><td>1061,7777778</td><td>92</td><td>1061,7777778</td><td>92</td><td>1076,6666667</td></tr> <tr><td>93</td><td>1304,6666667</td><td>93</td><td>1072,8888889</td><td>93</td><td>1072,8888889</td><td>93</td><td>1087,7777778</td></tr> <tr><td>94</td><td>1318,6666667</td><td>94</td><td>1084,0000000</td><td>94</td><td>1084,0000000</td><td>94</td><td>1098,8888889</td></tr> <tr><td>95</td><td>1332,6666667</td><td>95</td><td>1095,1111111</td><td>95</td><td>1095,1111111</td><td>95</td><td>1109,9999999</td></tr> <tr><td>96</td><td>1346,6666667</td><td>96</td><td>1106,2222222</td><td>96</td><td>1106,2222222</td><td>96</td><td>1120,0000000</td></tr> <tr><td>97</td><td>1360,6666667</td><td>97</td><td>1117,3333333</td><td>97</td><td>1117,3333333</td><td>97</td><td>1131,1111111</td></tr> <tr><td>98</td><td>1374,6666667</td><td>98</td><td>1128,4444444</td><td>98</td><td>1128,4444444</td><td>98</td><td>1142,2222222</td></tr> <tr><td>99</td><td>1388,6666667</td><td>99</td><td>1139,5555556</td><td>99</td><td>1139,5555556</td><td>99</td><td>1153,3333333</td></tr> <tr><td>100</td><td>1402,6666667</td><td>100</td><td>1150,6666667</td><td>100</td><td>1150,6666667</td><td>100</td><td>1164,4444444</td></tr> </table>	1	14,6666667	1	16,2962963	1	18,2222222	1	19,5555556	2	29,3333333	2	32,5925926	2	36,4444444	2	39,1111111	3	44	3	48,8888889	3	54,6666667	3	58,6666667	4	58,6666667	4	64,5151515	4	72,2222222	4	79,2222222	5	72,5333333	5	79,4040404	5	87,1111111	5	94,4444444	6	86,3333333	6	93,7777778	6	101,3333333	6	109,1111111	7	100,6666667	7	108,5454545	7	117,5555556	7	126,2222222	8	114,5333333	8	123,7070707	8	133,3333333	8	143,1111111	9	128	9	138,8888889	9	144	9	154,4444444	10	142,6666667	10	153,2626263	10	155,5555556	10	166,6666667	11	156,3333333	11	167,2525253	11	168,8888889	11	180,0000000	12	170	12	181,5151515	12	182,2222222	12	193,3333333	13	184,6666667	13	195,5555556	13	196,6666667	13	207,7777778	14	198	14	206,2626263	14	207,7777778	14	218,8888889	15	212	15	217,3737374	15	218,8888889	15	229,9999999	16	226,3333333	16	228,4848485	16	229,9999999	16	240,0000000	17	240,6666667	17	239,5959596	17	240,0000000	17	251,1111111	18	254	18	240,6666667	18	241,1111111	18	262,2222222	19	268,3333333	19	251,7777778	19	252,2222222	19	273,3333333	20	282	20	262,8888889	20	263,3333333	20	284,4444444	21	296,6666667	21	273,9999999	21	274,4444444	21	295,5555556	22	310,3333333	22	284,0000000	22	285,5555556	22	306,6666667	23	324,6666667	23	295,1111111	23	296,6666667	23	317,7777778	24	338	24	306,2222222	24	307,7777778	24	328,8888889	25	352	25	317,3333333	25	318,8888889	25	339,9999999	26	366,3333333	26	328,4444444	26	330,0000000	26	350,0000000	27	380,6666667	27	339,5555556	27	341,1111111	27	361,1111111	28	394,6666667	28	350,6666667	28	352,2222222	28	372,2222222	29	408,6666667	29	361,7777778	29	363,3333333	29	383,3333333	30	422,6666667	30	372,8888889	30	374,4444444	30	394,4444444	31	436,6666667	31	384,0000000	31	385,5555556	31	405,5555556	32	450,6666667	32	395,1111111	32	396,6666667	32	416,6666667	33	464,6666667	33	406,2222222	33	407,7777778	33	427,7777778	34	478,6666667	34	417,3333333	34	418,8888889	34	438,8888889	35	492,6666667	35	428,4444444	35	429,9999999	35	449,9999999	36	506,6666667	36	439,5555556	36	440,0000000	36	460,0000000	37	520,6666667	37	450,6666667	37	451,1111111	37	471,1111111	38	534,6666667	38	461,7777778	38	462,2222222	38	482,2222222	39	548,6666667	39	472,8888889	39	473,3333333	39	493,3333333	40	562,6666667	40	484,0000000	40	484,0000000	40	504,4444444	41	576,6666667	41	495,1111111	41	495,1111111	41	515,5555556	42	590,6666667	42	506,2222222	42	506,2222222	42	526,6666667	43	604,6666667	43	517,3333333	43	517,3333333	43	537,7777778	44	618,6666667	44	528,4444444	44	528,4444444	44	548,8888889	45	632,6666667	45	539,5555556	45	539,5555556	45	559,9999999	46	646,6666667	46	550,6666667	46	550,6666667	46	570,0000000	47	660,6666667	47	561,7777778	47	561,7777778	47	581,1111111	48	674,6666667	48	572,8888889	48	572,8888889	48	592,2222222	49	688,6666667	49	584,0000000	49	584,0000000	49	603,3333333	50	702,6666667	50	595,1111111	50	595,1111111	50	614,4444444	51	716,6666667	51	606,2222222	51	606,2222222	51	625,5555556	52	730,6666667	52	617,3333333	52	617,3333333	52	636,6666667	53	744,6666667	53	628,4444444	53	628,4444444	53	647,7777778	54	758,6666667	54	639,5555556	54	639,5555556	54	658,8888889	55	772,6666667	55	650,6666667	55	650,6666667	55	669,9999999	56	786,6666667	56	661,7777778	56	661,7777778	56	680,0000000	57	800,6666667	57	672,8888889	57	672,8888889	57	691,1111111	58	814,6666667	58	684,0000000	58	684,0000000	58	702,2222222	59	828,6666667	59	695,1111111	59	695,1111111	59	713,3333333	60	842,6666667	60	706,2222222	60	706,2222222	60	724,4444444	61	856,6666667	61	717,3333333	61	717,3333333	61	735,5555556	62	870,6666667	62	728,4444444	62	728,4444444	62	746,6666667	63	884,6666667	63	739,5555556	63	739,5555556	63	757,7777778	64	898,6666667	64	750,6666667	64	750,6666667	64	768,8888889	65	912,6666667	65	761,7777778	65	761,7777778	65	779,9999999	66	926,6666667	66	772,8888889	66	772,8888889	66	790,0000000	67	940,6666667	67	784,0000000	67	784,0000000	67	801,1111111	68	954,6666667	68	795,1111111	68	795,1111111	68	812,2222222	69	968,6666667	69	806,2222222	69	806,2222222	69	823,3333333	70	982,6666667	70	817,3333333	70	817,3333333	70	834,4444444	71	996,6666667	71	828,4444444	71	828,4444444	71	845,5555556	72	1010,6666667	72	839,5555556	72	839,5555556	72	856,6666667	73	1024,6666667	73	850,6666667	73	850,6666667	73	867,7777778	74	1038,6666667	74	861,7777778	74	861,7777778	74	878,8888889	75	1052,6666667	75	872,8888889	75	872,8888889	75	889,9999999	76	1066,6666667	76	884,0000000	76	884,0000000	76	900,0000000	77	1080,6666667	77	895,1111111	77	895,1111111	77	911,1111111	78	1094,6666667	78	906,2222222	78	906,2222222	78	922,2222222	79	1108,6666667	79	917,3333333	79	917,3333333	79	933,3333333	80	1122,6666667	80	928,4444444	80	928,4444444	80	944,4444444	81	1136,6666667	81	939,5555556	81	939,5555556	81	955,5555556	82	1150,6666667	82	950,6666667	82	950,6666667	82	966,6666667	83	1164,6666667	83	961,7777778	83	961,7777778	83	977,7777778	84	1178,6666667	84	972,8888889	84	972,8888889	84	988,8888889	85	1192,6666667	85	984,0000000	85	984,0000000	85	999,9999999	86	1206,6666667	86	995,1111111	86	995,1111111	86	1010,0000000	87	1220,6666667	87	1006,2222222	87	1006,2222222	87	1021,1111111	88	1234,6666667	88	1017,3333333	88	1017,3333333	88	1032,2222222	89	1248,6666667	89	1028,4444444	89	1028,4444444	89	1043,3333333	90	1262,6666667	90	1039,5555556	90	1039,5555556	90	1054,4444444	91	1276,6666667	91	1050,6666667	91	1050,6666667	91	1065,5555556	92	1290,6666667	92	1061,7777778	92	1061,7777778	92	1076,6666667	93	1304,6666667	93	1072,8888889	93	1072,8888889	93	1087,7777778	94	1318,6666667	94	1084,0000000	94	1084,0000000	94	1098,8888889	95	1332,6666667	95	1095,1111111	95	1095,1111111	95	1109,9999999	96	1346,6666667	96	1106,2222222	96	1106,2222222	96	1120,0000000	97	1360,6666667	97	1117,3333333	97	1117,3333333	97	1131,1111111	98	1374,6666667	98	1128,4444444	98	1128,4444444	98	1142,2222222	99	1388,6666667	99	1139,5555556	99	1139,5555556	99	1153,3333333	100	1402,6666667	100	1150,6666667	100	1150,6666667	100	1164,4444444	<table> <tr><td>1</td><td>18,3333333</td><td>1</td><td>19,5555556</td><td>1</td><td>20,7777778</td><td>1</td><td>21,9999999</td></tr> <tr><td>2</td><td>36,6666667</td><td>2</td><td>39,1111111</td><td>2</td><td>41,3333333</td><td>2</td><td>43,7500000</td></tr> <tr><td>3</td><td>55</td><td>3</td><td>58,6666667</td><td>3</td><td>62</td><td>64,5833333</td><td>3</td><td>67,2916667</td></tr> <tr><td>4</td><td>73</td><td>4</td><td>79,2222222</td><td>4</td><td>82,5000000</td><td>4</td><td>87,5000000</td><td>4</td><td>90,8333333</td></tr> <tr><td>5</td><td>91,6666667</td><td>5</td><td>97,7777778</td><td>5</td><td>101,25</td><td>5</td><td>106,25</td><td>5</td><td>111,25</td></tr> <tr><td>6</td><td>109,3333333</td><td>6</td><td>116,6666667</td><td>6</td><td>123,75</td><td>6</td><td>129,75</td><td>6</td><td>135,75</td></tr> <tr><td>7</td><td>127,3333333</td><td>7</td><td>135,3333333</td><td>7</td><td>141,75</td><td>7</td><td>148,75</td><td>7</td><td>155,75</td></tr> <tr><td>8</td><td>145,3333333</td><td>8</td><td>153,3333333</td><td>8</td><td>159,75</td><td>8</td><td>167,75</td><td>8</td><td>175,75</td></tr> <tr><td>9</td><td>163,3333333</td><td>9</td><td>171,3333333</td><td>9</td><td>177,75</td><td>9</td><td>185,75</td><td>9</td><td>193,75</td></tr> <tr><td>10</td><td>181,3333333</td><td>10</td><td>189,3333333</td><td>10</td><td>195,75</td><td>10</td><td>203,75</td><td>10</td><td>211,75</td></tr> <tr><td>11</td><td>200,6666667</td><td>11</td><td>208,6666667</td><td>11</td><td>214,75</td><td>11</td><td>222,75</td><td>11</td><td>230,75</td></tr> <tr><td>12</td><td>219,3333333</td><td>12</td><td>227,3333333</td><td>12</td><td>233,75</td><td>12</td><td>241,75</td><td>12</td><td>249,75</td></tr> <tr><td>13</td><td>238,6666667</td><td>13</td><td>246,6666667</td><td>13</td><td>252,75</td><td>13</td><td>260,75</td><td>13</td><td>268,75</td></tr> <tr><td>14</td><td>257,3333333</td><td>14</td><td>266,3333333</td><td>14</td><td>269,75</td><td>14</td><td>277,75</td><td>14</td><td>285,75</td></tr> <tr><td>15</td><td>276,6666667</td><td>15</td><td>285,6666667</td><td>15</td><td>289,75</td><td>15</td><td>297,75</td><td>15</td><td>305,75</td></tr> <tr><td>16</td><td>295,3333333</td><td>16</td><td>304,6666667</td><td>16</td><td>309,75</td><td>16</td><td>317,75</td><td>16</td><td>325,75</td></tr> <tr><td>17</td><td>314,6666667</td><td>17</td><td>323,6666667</td><td>17</td><td>319,75</td><td>17</td><td>327,75</td><td>17</td><td>335,75</td></tr> <tr><td>18</td><td>333,3333333</td><td>18</td><td>342,6666667</td><td>18</td><td>329,75</td><td>18</td><td>337,75</td><td>18</td><td>345,75</td></tr> <tr><td>19</td><td>352,6666667</td><td>19</td><td>361,6666667</td><td>19</td><td>339,75</td><td>19</td><td>347,75</td><td>19</td><td>355,75</td></tr> <tr><td>20</td><td>371,3333333</td><td>20</td><td>380,6666667</td><td>20</td><td>349,75</td><td>20</td><td>357,75</td><td>20</td><td>365,75</td></tr> <tr><td>21</td><td>390,6666667</td><td>21</td><td>399,6666667</td><td>21</td><td>359,75</td><td>21</td><td>367,75</td><td>21</td><td>375,75</td></tr> <tr><td>22</td><td>409,3333333</td><td>22</td><td>418,6666667</td><td>22</td><td>369,75</td><td>22</td><td>377,75</td><td>22</td><td>385,75</td></tr> <tr><td>23</td><td>428,6666667</td><td>23</td><td>437,6666667</td><td>23</td><td>379,75</td><td>23</td><td>387,75</td><td>23</td><td>395,75</td></tr> <tr><td>24</td><td>447,3333333</td><td>24</td><td>456,6666667</td><td>24</td><td>389,75</td><td>24</td><td>397,75</td><td>24</td><td>405,75</td></tr> <tr><td>25</td><td>466,6666667</td><td>25</td><td>475,6666667</td><td>25</td><td>399,7</td></tr></table>	1	18,3333333	1	19,5555556	1	20,7777778	1	21,9999999	2	36,6666667	2	39,1111111	2	41,3333333	2	43,7500000	3	55	3	58,6666667	3	62	64,5833333	3	67,2916667	4	73	4	79,2222222	4	82,5000000	4	87,5000000	4	90,8333333	5	91,6666667	5	97,7777778	5	101,25	5	106,25	5	111,25	6	109,3333333	6	116,6666667	6	123,75	6	129,75	6	135,75	7	127,3333333	7	135,3333333	7	141,75	7	148,75	7	155,75	8	145,3333333	8	153,3333333	8	159,75	8	167,75	8	175,75	9	163,3333333	9	171,3333333	9	177,75	9	185,75	9	193,75	10	181,3333333	10	189,3333333	10	195,75	10	203,75	10	211,75	11	200,6666667	11	208,6666667	11	214,75	11	222,75	11	230,75	12	219,3333333	12	227,3333333	12	233,75	12	241,75	12	249,75	13	238,6666667	13	246,6666667	13	252,75	13	260,75	13	268,75	14	257,3333333	14	266,3333333	14	269,75	14	277,75	14	285,75	15	276,6666667	15	285,6666667	15	289,75	15	297,75	15	305,75	16	295,3333333	16	304,6666667	16	309,75	16	317,75	16	325,75	17	314,6666667	17	323,6666667	17	319,75	17	327,75	17	335,75	18	333,3333333	18	342,6666667	18	329,75	18	337,75	18	345,75	19	352,6666667	19	361,6666667	19	339,75	19	347,75	19	355,75	20	371,3333333	20	380,6666667	20	349,75	20	357,75	20	365,75	21	390,6666667	21	399,6666667	21	359,75	21	367,75	21	375,75	22	409,3333333	22	418,6666667	22	369,75	22	377,75	22	385,75	23	428,6666667	23	437,6666667	23	379,75	23	387,75	23	395,75	24	447,3333333	24	456,6666667	24	389,75	24	397,75	24	405,75	25	466,6666667	25	475,6666667	25	399,7
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6	109,3333333	6	116,6666667	6	123,75	6	129,75	6	135,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
7	127,3333333	7	135,3333333	7	141,75	7	148,75	7	155,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
8	145,3333333	8	153,3333333	8	159,75	8	167,75	8	175,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
9	163,3333333	9	171,3333333	9	177,75	9	185,75	9	193,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
10	181,3333333	10	189,3333333	10	195,75	10	203,75	10	211,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
11	200,6666667	11	208,6666667	11	214,75	11	222,75	11	230,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
12	219,3333333	12	227,3333333	12	233,75	12	241,75	12	249,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
13	238,6666667	13	246,6666667	13	252,75	13	260,75	13	268,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
14	257,3333333	14	266,3333333	14	269,75	14	277,75	14	285,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
15	276,6666667	15	285,6666667	15	289,75	15	297,75	15	305,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
16	295,3333333	16	304,6666667	16	309,75	16	317,75	16	325,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
17	314,6666667	17	323,6666667	17	319,75	17	327,75	17	335,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
18	333,3333333	18	342,6666667	18	329,75	18	337,75	18	345,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
19	352,6666667	19	361,6666667	19	339,75	19	347,75	19	355,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
20	371,3333333	20	380,6666667	20	349,75	20	357,75	20	365,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
21	390,6666667	21	399,6666667	21	359,75	21	367,75	21	375,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
22	409,3333333	22	418,6666667	22	369,75	22	377,75	22	385,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
23	428,6666667	23	437,6666667	23	379,75	23	387,75	23	395,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
24	447,3333333	24	456,6666667	24	389,75	24	397,75	24	405,75																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
25	466,6666667	25	475,6666667	25	399,7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Fig.8

Harmonie des sphères



Clé universelle musicale
Le Diatonisme



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 : Harmonie des sphères inc.

To contact us : sylvain.lalonde@me.com

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In memory of an exceptional mind

« Life is not a mystery but a science undisclosed »

« The Genesis of reality, Bernard de Montréal »

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