

SOME JUST INTONATION GUITAR FRETTINGS

by Praveen S. Venkataramana

These guitar frettings are obtained from a reverse Brun algorithm applied to various Just Intonation Constant Structures. The principle behind these frettings is that the fretboard is divided into several regions, each of which is set to a successively smaller Constant Structure. This way the fretboard is neither too sparse near the nut nor too dense beyond the 2/1 fret.

These are meant to work with open tunings on guitar which supply additional notes in between the frets as well as chordal possibilities.

EXTENDED CENTAURA I

VI	V	IV	III	II	I
1/1	3/2	1/1	6/5	3/2	1/1
33/32	99/64	33/32	99/80	99/64	33/32
21/20	63/40	21/20	63/50	63/40	21/20
35/32	105/64	35/32	21/16	105/64	35/32
9/8	27/16	9/8	27/20	27/16	9/8
7/6	7/4	7/6	7/5	7/4	7/6
6/5	9/5	6/5	36/25	9/5	6/5
5/4	15/8	5/4	3/2	15/8	5/4
77/60	77/40	77/60	77/50	77/40	77/60
4/3	1/1	4/3	8/5	1/1	4/3
11/8	33/32	11/8	33/20	33/32	11/8
7/5	21/20	7/5	42/25	21/20	7/5
22/15	11/10	22/15	44/25	11/10	22/15
3/2	9/8	3/2	9/5	9/8	3/2
14/9	7/6	14/9	28/15	7/6	14/9
5/3	5/4	5/3	1/1	5/4	5/3
55/32	165/128	55/32	33/32	165/128	55/32
7/4	21/16	7/4	21/20	21/16	7/4
15/8	45/32	15/8	9/8	45/32	15/8
1/1	3/2	1/1	6/5	3/2	1/1
33/32	99/64	33/32	99/80	99/64	33/32
9/8	27/16	9/8	27/20	27/16	9/8
7/6	7/4	7/6	7/5	7/4	7/6
5/4	15/8	5/4	3/2	15/8	5/4
4/3	1/1	4/3	8/5	1/1	4/3
11/8	33/32	11/8	33/20	33/32	11/8
3/2	9/8	3/2	9/5	9/8	3/2

From a 22-tone CS

1/1 33/32 21/20 35/32 9/8 7/6 6/5
 5/4 77/60 4/3 11/8 7/5 22/15 3/2
 14/9 8/5 5/3 55/32 7/4 9/5 15/8
 77/40 2/1

From a 15-tone CS

1/1 33/32 21/20 9/8 7/6 5/4 4/3 11/8
 7/5 3/2 14/9 5/3 55/32 7/4 15/8 2/1

From a 12-tone CS

1/1 33/32 9/8 7/6 5/4 4/3 11/8 3/2
 14/9 5/3 7/4 15/8 2/1

EXTENDED CENTAUR I

VI	V	IV	III	II	I		
1/1	3/2	1/1	5/4	3/2	1/1	From a 24-tone CS	
21/20	63/40	21/20	21/16	63/40	21/20		
27/25	81/50	27/25	27/20	81/50	27/25		
11/10	33/20	11/10	11/8	33/20	11/10		
9/8	27/16	9/8	45/32	27/16	9/8		
7/6	7/4	7/6	35/24	7/4	7/6		
6/5	9/5	6/5	3/2	9/5	6/5		
11/9	11/6	11/9	55/36	11/6	11/9		
5/4	15/8	5/4	25/16	15/8	5/4		
21/16	63/32	21/16	105/64	63/32	21/16		
4/3	1/1	4/3	5/3	1/1	4/3		
7/5	21/20	7/5	7/4	21/20	7/5		
36/25	27/25	36/25	9/5	27/25	36/25		
22/15	11/10	22/15	11/6	11/10	22/15		
3/2	9/8	3/2	15/8	9/8	3/2		From a 19-tone CS
14/9	7/6	14/9	35/18	7/6	14/9		
8/5	6/5	8/5	1/1	6/5	8/5		
5/3	5/4	5/3	25/24	5/4	5/3		
7/4	21/16	7/4	35/32	21/16	7/4		
9/5	27/20	9/5	9/8	27/20	9/5		
15/8	45/32	15/8	75/64	45/32	15/8		
63/32	189/128	63/32	315/256	189/128	63/32		
1/1	3/2	1/1	5/4	3/2	1/1	From a 12-tone CS	
21/20	63/40	21/20	21/16	63/40	21/20		
9/8	27/16	9/8	45/32	27/16	9/8		
7/6	7/4	7/6	35/24	7/4	7/6		
5/4	15/8	5/4	25/16	15/8	5/4		
4/3	1/1	4/3	5/3	1/1	4/3		
7/5	21/20	7/5	7/4	21/20	7/5		
3/2	9/8	3/2	15/8	9/8	3/2		

EXTENDED CENTAUR I, WITH A DIFFERENT OPEN TUNING

VI	V	IV	III	II	I
4/3	1/1	4/3	5/3	7/6	3/2
7/5	21/20	7/5	7/4	49/40	63/40
36/25	27/25	36/25	9/5	63/50	81/50
22/15	11/10	22/15	11/6	77/60	33/20
3/2	9/8	3/2	15/8	21/16	27/16
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
44/27	11/9	44/27	55/54	77/54	11/6
5/3	5/4	5/3	25/24	35/24	15/8
7/4	21/16	7/4	35/32	49/32	63/32
16/9	4/3	16/9	10/9	14/9	1/1
28/15	7/5	28/15	7/6	49/30	21/20
48/25	36/25	48/25	6/5	42/25	27/25
88/45	22/15	88/45	11/9	77/45	11/10
1/1	3/2	1/1	5/4	7/4	9/8
28/27	14/9	28/27	35/27	49/27	7/6
16/15	8/5	16/15	4/3	28/15	6/5
10/9	5/3	10/9	25/18	35/18	5/4
7/6	7/4	7/6	35/24	49/48	21/16
6/5	9/5	6/5	3/2	21/20	27/20
5/4	15/8	5/4	25/16	35/32	45/32
21/16	63/32	21/16	105/64	147/128	189/128
4/3	1/1	4/3	5/3	7/6	3/2
7/5	21/20	7/5	7/4	49/40	63/40
3/2	9/8	3/2	15/8	21/16	27/16
14/9	7/6	14/9	35/18	49/36	7/4
5/3	5/4	5/3	25/24	35/24	15/8
16/9	4/3	16/9	10/9	14/9	1/1
28/15	7/5	28/15	7/6	49/30	21/20
1/1	3/2	1/1	5/4	7/4	9/8

From a 24-tone CS

From a 19-tone CS

From a 12-tone CS

EXTENDED CENTAUR II

VI	V	IV	III	II	I	
1/1	3/2	1/1	5/4	3/2	1/1	From a 31-tone CS
33/32	99/64	33/32	165/128	99/64	33/32	
21/20	63/40	21/20	21/16	63/40	21/20	
15/14	45/28	15/14	75/56	45/28	15/14	
35/32	105/64	35/32	175/128	105/64	35/32	
9/8	27/16	9/8	45/32	27/16	9/8	
8/7	12/7	8/7	10/7	12/7	8/7	
7/6	7/4	7/6	35/24	7/4	7/6	
6/5	9/5	6/5	3/2	9/5	6/5	
11/9	11/6	11/9	55/36	11/6	11/9	
5/4	15/8	5/4	25/16	15/8	5/4	From a 22-tone CS
35/27	35/18	35/27	175/108	35/18	35/27	
4/3	1/1	4/3	5/3	1/1	4/3	
11/8	33/32	11/8	55/32	33/32	11/8	
7/5	21/20	7/5	7/4	21/20	7/5	
35/24	35/32	35/24	175/96	35/32	35/24	From a 19-tone CS
3/2	9/8	3/2	15/8	9/8	3/2	
14/9	7/6	14/9	35/18	7/6	14/9	
8/5	6/5	8/5	1/1	6/5	8/5	
5/3	5/4	5/3	25/24	5/4	5/3	
7/4	21/16	7/4	35/32	21/16	7/4	
9/5	27/20	9/5	9/8	27/20	9/5	
15/8	45/32	15/8	75/64	45/32	15/8	
35/18	35/24	35/18	175/144	35/24	35/18	
1/1	3/2	1/1	5/4	3/2	1/1	
21/20	63/40	21/20	21/16	63/40	21/20	
9/8	27/16	9/8	45/32	27/16	9/8	
7/6	7/4	7/6	35/24	7/4	7/6	
5/4	15/8	5/4	25/16	15/8	5/4	
4/3	1/1	4/3	5/3	1/1	4/3	
7/5	21/20	7/5	7/4	21/20	7/5	
3/2	9/8	3/2	15/8	9/8	3/2	

EXTENDED CENTAUR II, WITH A DIFFERENT OPEN TUNING

VI	V	IV	III	II	I	
1/1	4/3	5/3	1/1	4/3	5/3	From a 31-tone CS
33/32	11/8	55/32	33/32	11/8	55/32	
21/20	7/5	7/4	21/20	7/5	7/4	
15/14	10/7	25/14	15/14	10/7	25/14	
35/32	35/24	175/96	35/32	35/24	175/96	
9/8	3/2	15/8	9/8	3/2	15/8	
8/7	32/21	40/21	8/7	32/21	40/21	
7/6	14/9	35/18	7/6	14/9	35/18	
6/5	8/5	1/1	6/5	8/5	1/1	
11/9	44/27	55/54	11/9	44/27	55/54	
5/4	5/3	25/24	5/4	5/3	25/24	From a 22-tone CS
35/27	140/81	175/162	35/27	140/81	175/162	
4/3	16/9	10/9	4/3	16/9	10/9	
11/8	11/6	55/48	11/8	11/6	55/48	
7/5	28/15	7/6	7/5	28/15	7/6	
35/24	35/18	175/144	35/24	35/18	175/144	From a 19-tone CS
3/2	1/1	5/4	3/2	1/1	5/4	
14/9	28/27	35/27	14/9	28/27	35/27	
8/5	16/15	4/3	8/5	16/15	4/3	
5/3	10/9	25/18	5/3	10/9	25/18	
7/4	7/6	35/24	7/4	7/6	35/24	
9/5	6/5	3/2	9/5	6/5	3/2	
15/8	5/4	25/16	15/8	5/4	25/16	
35/18	35/27	175/108	35/18	35/27	175/108	From a 12-tone CS
1/1	4/3	5/3	1/1	4/3	5/3	
21/20	7/5	7/4	21/20	7/5	7/4	
9/8	3/2	15/8	9/8	3/2	15/8	
7/6	14/9	35/18	7/6	14/9	35/18	
5/4	5/3	25/24	5/4	5/3	25/24	
4/3	16/9	10/9	4/3	16/9	10/9	
7/5	28/15	7/6	7/5	28/15	7/6	
3/2	1/1	5/4	3/2	1/1	5/4	

FAREY SERIES GUITAR FRETTINGS

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10 LIMIT FAREY SERIES

VI	V	IV	III	II	I
4/3	1/1	4/3	5/3	7/6	3/2
40/27	10/9	40/27	50/27	35/27	5/3
3/2	9/8	3/2	15/8	21/16	27/16
32/21	8/7	32/21	40/21	4/3	12/7
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
5/3	5/4	5/3	25/24	35/24	15/8
12/7	9/7	12/7	15/14	3/2	27/14
16/9	4/3	16/9	10/9	14/9	1/1
28/15	7/5	28/15	7/6	49/30	21/20
40/21	10/7	40/21	25/21	5/3	15/14
1/1	3/2	1/1	5/4	7/4	9/8
16/15	8/5	16/15	4/3	28/15	6/5
10/9	5/3	10/9	25/18	35/18	5/4
8/7	12/7	8/7	10/7	1/1	9/7
7/6	7/4	7/6	35/24	49/48	21/16
6/5	9/5	6/5	3/2	21/20	27/20
4/3	1/1	4/3	5/3	7/6	3/2
3/2	9/8	3/2	15/8	21/16	27/16
14/9	7/6	14/9	35/18	49/36	7/4
5/3	5/4	5/3	25/24	35/24	15/8
16/9	4/3	16/9	10/9	14/9	1/1
1/1	3/2	1/1	5/4	7/4	9/8

EXTENDED 10 LIMIT FAREY SERIES

VI	V	IV	III	II	I
4/3	1/1	4/3	5/3	7/6	3/2
10/7	15/14	10/7	25/14	5/4	45/28
40/27	10/9	40/27	50/27	35/27	5/3
3/2	9/8	3/2	15/8	21/16	27/16
32/21	8/7	32/21	40/21	4/3	12/7
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
5/3	5/4	5/3	25/24	35/24	15/8
12/7	9/7	12/7	15/14	3/2	27/14
16/9	4/3	16/9	10/9	14/9	1/1
28/15	7/5	28/15	7/6	49/30	21/20
40/21	10/7	40/21	25/21	5/3	15/14
1/1	3/2	1/1	5/4	7/4	9/8
28/27	14/9	28/27	35/27	49/27	7/6
16/15	8/5	16/15	4/3	28/15	6/5
10/9	5/3	10/9	25/18	35/18	5/4
8/7	12/7	8/7	10/7	1/1	9/7
7/6	7/4	7/6	35/24	49/48	21/16
6/5	9/5	6/5	3/2	21/20	27/20
5/4	15/8	5/4	25/16	35/32	45/32
4/3	1/1	4/3	5/3	7/6	3/2
10/7	15/14	10/7	25/14	5/4	45/28
3/2	9/8	3/2	15/8	21/16	27/16
14/9	7/6	14/9	35/18	49/36	7/4
5/3	5/4	5/3	25/24	35/24	15/8
16/9	4/3	16/9	10/9	14/9	1/1
28/15	7/5	28/15	7/6	49/30	21/20
1/1	3/2	1/1	5/4	7/4	9/8

SAMMAMISH, AN EXTENDED 12 LIMIT FAREY SERIES

VI	V	IV	III	II	I
4/3	1/1	4/3	5/3	7/6	3/2
16/11	12/11	16/11	20/11	14/11	18/11
22/15	11/10	22/15	11/6	77/60	33/20
40/27	10/9	40/27	50/27	35/27	5/3
3/2	9/8	3/2	15/8	21/16	27/16
32/21	8/7	32/21	40/21	4/3	12/7
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
44/27	11/9	44/27	55/54	77/54	11/6
5/3	5/4	5/3	25/24	35/24	15/8
12/7	9/7	12/7	15/14	3/2	27/14
16/9	4/3	16/9	10/9	14/9	1/1
11/6	11/8	11/6	55/48	77/48	33/32
28/15	7/5	28/15	7/6	49/30	21/20
40/21	10/7	40/21	25/21	5/3	15/14
1/1	3/2	1/1	5/4	7/4	9/8
28/27	14/9	28/27	35/27	49/27	7/6
22/21	11/7	22/21	55/42	11/6	33/28
16/15	8/5	16/15	4/3	28/15	6/5
10/9	5/3	10/9	25/18	35/18	5/4
8/7	12/7	8/7	10/7	1/1	9/7
7/6	7/4	7/6	35/24	49/48	21/16
6/5	9/5	6/5	3/2	21/20	27/20
11/9	11/6	11/9	55/36	77/72	11/8
5/4	15/8	5/4	25/16	35/32	45/32

ANOTHER EXTENDED 12 LIMIT FAREY SERIES

VI	V	IV	III	II	I
4/3	1/1	4/3	5/3	7/6	3/2
10/7	15/14	10/7	25/14	5/4	45/28
16/11	12/11	16/11	20/11	14/11	18/11
22/15	11/10	22/15	11/6	77/60	33/20
40/27	10/9	40/27	50/27	35/27	5/3
3/2	9/8	3/2	15/8	21/16	27/16
32/21	8/7	32/21	40/21	4/3	12/7
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
44/27	11/9	44/27	55/54	77/54	11/6
5/3	5/4	5/3	25/24	35/24	15/8
12/7	9/7	12/7	15/14	3/2	27/14
16/9	4/3	16/9	10/9	14/9	1/1
11/6	11/8	11/6	55/48	77/48	33/32
28/15	7/5	28/15	7/6	49/30	21/20
40/21	10/7	40/21	25/21	5/3	15/14
1/1	3/2	1/1	5/4	7/4	9/8
28/27	14/9	28/27	35/27	49/27	7/6
22/21	11/7	22/21	55/42	11/6	33/28
16/15	8/5	16/15	4/3	28/15	6/5
10/9	5/3	10/9	25/18	35/18	5/4
8/7	12/7	8/7	10/7	1/1	9/7
7/6	7/4	7/6	35/24	49/48	21/16
6/5	9/5	6/5	3/2	21/20	27/20
11/9	11/6	11/9	55/36	77/72	11/8
5/4	15/8	5/4	25/16	35/32	45/32
4/3	1/1	4/3	5/3	7/6	3/2
10/7	15/14	10/7	25/14	5/4	45/28
22/15	11/10	22/15	11/6	77/60	33/20
3/2	9/8	3/2	15/8	21/16	27/16
14/9	7/6	14/9	35/18	49/36	7/4
8/5	6/5	8/5	1/1	7/5	9/5
5/3	5/4	5/3	25/24	35/24	15/8
16/9	4/3	16/9	10/9	14/9	1/1
11/6	11/8	11/6	55/48	77/48	33/32

EXTENDED 12 LIMIT FAREY SERIES WITH A DIFFERENT OPEN TUNING

VI	V	IV	III	II	I
1/1	3/2	1/1	5/4	3/2	1/1
15/14	45/28	15/14	75/56	45/28	15/14
12/11	18/11	12/11	15/11	18/11	12/11
11/10	33/20	11/10	11/8	33/20	11/10
10/9	5/3	10/9	25/18	5/3	10/9
9/8	27/16	9/8	45/32	27/16	9/8
8/7	12/7	8/7	10/7	12/7	8/7
7/6	7/4	7/6	35/24	7/4	7/6
6/5	9/5	6/5	3/2	9/5	6/5
11/9	11/6	11/9	55/36	11/6	11/9
5/4	15/8	5/4	25/16	15/8	5/4
9/7	27/14	9/7	45/28	27/14	9/7
4/3	1/1	4/3	5/3	1/1	4/3
11/8	33/32	11/8	55/32	33/32	11/8
7/5	21/20	7/5	7/4	21/20	7/5
10/7	15/14	10/7	25/14	15/14	10/7
3/2	9/8	3/2	15/8	9/8	3/2
14/9	7/6	14/9	35/18	7/6	14/9
11/7	33/28	11/7	55/28	33/28	11/7
8/5	6/5	8/5	1/1	6/5	8/5
5/3	5/4	5/3	25/24	5/4	5/3
12/7	9/7	12/7	15/14	9/7	12/7
7/4	21/16	7/4	35/32	21/16	7/4
9/5	27/20	9/5	9/8	27/20	9/5
11/6	11/8	11/6	55/48	11/8	11/6
15/8	45/32	15/8	75/64	45/32	15/8
1/1	3/2	1/1	5/4	3/2	1/1
15/14	45/28	15/14	75/56	45/28	15/14
11/10	33/20	11/10	11/8	33/20	11/10
9/8	27/16	9/8	45/32	27/16	9/8
7/6	7/4	7/6	35/24	7/4	7/6
6/5	9/5	6/5	3/2	9/5	6/5
5/4	15/8	5/4	25/16	15/8	5/4
4/3	1/1	4/3	5/3	1/1	4/3
11/8	33/32	11/8	55/32	33/32	11/8