

RINGS OF SATURN

FOR THREE RETUNED, COMPUTER-DRIVEN PIANOS

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2016-17

Technical Specifications

The 33-pitch tuning of the three pianos (the same in every octave) is as follows, given first in the number of cents above E-flat, and then as ratios to the E-flat 1/1:

Piano	1		2		3	
D	1088	15/8	977	225/128	1044	117/64
Db	969	7/4	938	55/32	906	27/16
C	857	105/64	773	25/16	840	13/8
B	738	49/32	755	99/64	729	195/128
Bb	702	3/2	590	45/32	609	91/64
A	551	11/8	551	11/8	481	169/128
Ab	471	21/16	440	165/128	408	81/64
G	386	5/4	320	77/64	342	39/32
Gb	204	9/8	275	75/64	275	75/64
F	155	35/32	192	143/128	192	143/128
E	92	135/128	53	33/32	27	65/64
Eb	0	1/1	1103	121/64	1173	63/32

Note that no string needs to be raised higher than its natural tuning except for the B-flat on piano 1, which is 2¢ sharp (or if one prefers, 2¢ could be subtracted from all quantities).

For electronic realization of the piece, it can prove helpful to reconfigure the tuning as a reference pitch in cycles per second for each piano, and ratios derived from that standard:

Tuning pitch:	38.891 cps	36.7641 cps	38.2833 cps
D	15/8	225/121	13/7
Db	7/4	20/11	12/7
C	105/64	200/121	104/63
B	49/32	18/11	65/42
Bb	3/2	180/121	13/9
A	11/8	16/11	169/126
Ab	21/16	15/11	9/7
G	5/4	14/11	26/21
F#	9/8	150/121	25/21
F	35/32	13/11	143/126
E	135/128	12/11	65/63
Eb	1/1	1/1	1/1

In the configuration of certain tuning softwares, the following sequences might facilitate getting the required tuning:

Piano 1:

38.891 = Eb0

1/1, 135/128, 35/32, 9/8, 5/4, 21/16, 11/8, 3/2, 49/32, 105/64, 7/4, 15/8

Piano 2:

36.7641485 = Eb0

1/1, 12/11, 13/11, 150/121, 14/11, 15/11, 16/11, 180/121, 18/11, 200/121, 20/11, 225/121

Piano 3:

38.283333 = Eb0

1/1, 65/63, 143/126, 25/21, 26/21, 9/7, 169/126, 13/9, 65/42, 104/63, 12/7, 13/7

For purposes of analysis, the entire scale (which I refer to as my 8x8 scale) is given below, grouping its pitches into eight harmonic series' on the 1st, 3rd, 5th, 7th, 9th, 11th, 13th, and 15th harmonics of E-flat, and naming each pitch in a typographical equivalent of Ben Johnston's just-intonation notation:

Pitch name	Ratio	Cents	1/1	3/2	5/4	7/4	9/8	11/8	13/8	15/8
Db^^-	121/64	1103						11		
D	15/8	1088	15	5	3					1
Db13	117/64	1044					13		9	
C#+	225/128	977								15
Db7	7/4	969	7			1				
C^	55/32	938			11			5		
C+	27/16	906		9			3			
C7+	105/64	857				15				7
Cb13	13/8	840	13						1	
B	25/16	773			5					
Bb^	99/64	755					11	9		
Cb77+	49/32	738				7				
Bb13	195/128	729							15	13
Bb	3/2	702	3	1						
Bbb713	91/64	609				13			7	
A+	45/32	590		15	9		5			3
Ab^	11/8	551	11					1		
Abb1313	169/128	481							13	
Ab7+	21/16	471		7		3				
G^	165/128	440						15		11
G+	81/64	408					9			
G	5/4	386	5		1					
Gb13	39/32	342		13					3	
Gb7^	77/64	320				11		7		
F#+	75/64	275			15					5
F+	9/8	204	9	3			1			
Fb13^	143/128	192						13	11	
F7+	35/32	155			7	5				
E+	135/128	92					15			9
Eb^	33/32	53		11				3		
Eb13	65/64	27			13				5	
Eb	1/1	0	1							
Eb7+	63/32	1173				9	7			

In Johnston's notation, + raises a pitch by 81/80, # raises it by 25/24, b lowers it by 24/25, 7 lowers it by 35/36, ^ raises it by 33/32, 13 raises it by 65/64, and F-A-C, C-E-G, and G-B-D are all perfectly tuned 4:5:6 major triads.

A couple of notes on listening to *Hyperchromatica*:

Some people think the piano sounds seem “funny” or “unreal.” It is essential to the timbre of a normal piano that the intervals are slightly out of tune, and surrounded by the fuzziness of the resulting beats. Remove that out-of-tuneness and the piano can sound different than you’re used to. It has always been common for me to play La Monte Young’s *The Well-Tuned Piano* for people and have them respond, “Isn’t that electronic?” “It sounds more like bells than a piano.” Often one’s unfamiliarity with pure tuning is misperceived as a deficiency in the piano sound. Relatedly, when I issued a disc of Disklavier music in 2005, people sometimes commented, “Too bad you couldn’t use a real piano, because the electronic sounds are off-putting.” In fact, the Disklavier *was* a real, acoustic piano, with pluckable strings. It was tuned to 18th-century well temperament, the notes went by *very* fast, and so the divergences from normalcy made people’s brains convince them that it was an electronic piano, which was a false perception. Give yourself some time to listen to the pieces over and over, and you’ll probably get used to them. I can guarantee, after hundreds of listenings myself, that the harmonies make their own purely-tuned sense, and that their logic sinks in once you can anticipate what’s going to happen. One of the purposes of these pieces is to expand your musical perception.

The Disklavier (computer-driven piano, the digital manifestation of the player piano) is a different medium than the human-played piano. One can, and must, write for it differently. With a couple of deliberate exceptions, these pieces are not playable by humans. The composer forbids performance by humans (which can’t happen anyway), and will not cooperate with any such attempt. The computer-driven version is the final manifestation, and the only one contemplated or permitted. These pieces were written, after years of profound thought and experimentation, specifically for the Disklavier medium, without any compromise in what the music was intended to achieve. If it bothers you that the music you are listening to isn’t being played by humans, there are millions of piano recordings made by humans; go listen to them. There is too much music in the world for anyone to waste time listening to any music wishing it were something other than what it is. This music is produced mechanically, for mechanical rhythmic capabilities that I savor. I make this music public on the chance that there might be a handful of other people on the planet for whom the possibilities opened up here in terms of rhythmic and harmonic language might more than compensate for the loss of a few habitual comforts. If you are not one of those rare people, you can do the composer a favor by moving on without comment. I guarantee you will not alter his mind on the matter.

- Kyle Gann

Rings of Saturn

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2016-17

♩ = 76

Piano 2

mp

p

p



Pno2

7

3

2

11



15

The image shows a musical score for two piano parts, Pno1 and Pno2, spanning measures 19 to 22. Pno1 consists of four staves (two treble and two bass clefs). Pno2 consists of five staves (two treble and three bass clefs). The score includes various musical notations such as rests, notes, and ornaments. Pno2 features a complex melodic line with a triplet of eighth notes in measure 20 and a quintuplet of eighth notes in measure 21. The bass line of Pno2 has several chords and a melodic line with a triplet in measure 22. The key signature has one sharp (F#) and the time signature is 3/4.

Pno1

Pno2

Pno3

Pno1

Pno2

Pno3

31

Pno1

Musical score for Pno1, measures 31-33. The score consists of four staves. The top two staves are treble clef, and the bottom two are bass clef. Measure 31 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 32 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 33 features a half note Bb in the top staff and a half note Bb in the bass staff. There are also some rests and accidentals throughout the measures.

Pno2

Musical score for Pno2, measures 31-33. The score consists of four staves. The top two staves are treble clef, and the bottom two are bass clef. Measure 31 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 32 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 33 features a half note Bb in the top staff and a half note Bb in the bass staff. There are also some rests and accidentals throughout the measures.

Pno3

Musical score for Pno3, measures 31-33. The score consists of three staves. The top staff is treble clef, and the bottom two are bass clef. Measure 31 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 32 features a half note Bb in the top staff and a half note Bb in the bass staff. Measure 33 features a half note Bb in the top staff and a half note Bb in the bass staff. There are also some rests and accidentals throughout the measures.

34

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 37-40. The score is written for a grand piano with three staves (treble, middle, and bass clefs). Measure 37 is mostly rests. Measure 38 features a melodic line in the middle staff with a fermata and a double bar line, and a bass line with chords. Measure 39 is mostly rests. Measure 40 features a melodic line in the middle staff with a fermata and a double bar line, and a bass line with chords. There are also some notes in the treble staff in measures 38 and 40.

Pno2

Musical score for Pno2, measures 37-40. The score is written for a grand piano with three staves (treble, middle, and bass clefs). Measure 37 features a complex melodic line in the treble staff with many notes and a fermata. Measure 38 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. Measure 39 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. Measure 40 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. There are also some notes in the middle and bass staves.

Pno3

Musical score for Pno3, measures 37-40. The score is written for a grand piano with three staves (treble, middle, and bass clefs). Measure 37 is mostly rests. Measure 38 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. Measure 39 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. Measure 40 features a melodic line in the treble staff with a fermata and a double bar line, and a bass line with chords. There are also some notes in the middle and bass staves.

41

Pno1

Pno2

Pno3

44

Pno1

Pno2

Pno3

48

Pno2

Pno1

Pno2

The image shows two systems of musical notation for piano. The first system, labeled 'Pno1', consists of four staves. The top two staves are in treble clef, and the bottom two are in bass clef. The first two measures of Pno1 are mostly rests. In the third measure, there are some notes in the bass clef. In the fourth measure, there are notes in both the treble and bass clefs. The second system, labeled 'Pno2', also consists of four staves. The top two staves are in treble clef, and the bottom two are in bass clef. Pno2 has more active musical notation throughout. The first measure features a complex chord structure in the treble clef. The second measure continues with similar chordal textures. The third and fourth measures show more melodic movement in the treble clef, with some notes tied across measures. The bass clef in Pno2 provides a harmonic foundation with chords and some melodic fragments.

The image shows a musical score for two pianos, labeled Pno1 and Pno2. The score is divided into two systems, each containing four measures. The first system (measures 55-58) features Pno1 with a treble and bass clef. The treble staff has a whole rest in measure 55, followed by a triplet of eighth notes in measure 56, a whole rest in measure 57, and a triplet of eighth notes in measure 58. The bass staff has a whole rest in measure 55, followed by a quarter note in measure 56, a quarter note in measure 57, and a quarter note in measure 58. The second system (measures 59-62) features Pno2 with a treble and bass clef. The treble staff has a whole rest in measure 59, followed by a triplet of eighth notes in measure 60, a whole rest in measure 61, and a triplet of eighth notes in measure 62. The bass staff has a whole rest in measure 59, followed by a quarter note in measure 60, a quarter note in measure 61, and a quarter note in measure 62. The key signature is one sharp (F#), and the time signature is 4/4.

Piano score for two pianos (Pno1 and Pno2), measures 59-71. The score is divided into two systems, each containing three staves (treble and bass clefs) for each piano. The music features complex rhythmic patterns, including triplets and sixteenth-note runs, and includes dynamic markings such as *mf* and *f*. The key signature is one sharp (F#).

The score consists of two systems. Each system has three staves for each piano. The first system (measures 59-71) shows Pno1 and Pno2. Pno1's upper staves have a treble clef, and the lower staves have a bass clef. Pno2's upper staves have a treble clef with a sharp sign, and the lower staves have a bass clef with a sharp sign. The music includes various rhythmic figures, such as triplets and sixteenth-note runs, and dynamic markings like *mf* and *f*. The key signature is one sharp (F#).

62

Pno1

Pno2

Pno1

Pno2

Pno3

16

69

Pno1

Pno2

Pno3

13

13

13

13

13

13

13

13

The musical score is divided into three systems, each for a different piano part:

- Pno1:** Features a complex texture with sixteenth-note patterns and triplets. A triplet of sixteenth notes is marked with a bracket and the number '13' in the first measure of the system.
- Pno2:** Features a complex texture with sixteenth-note patterns and triplets. Three triplets of sixteenth notes are marked with brackets and the number '13' in the first, second, and third measures of the system.
- Pno3:** Features a more sparse accompaniment with a triplet of sixteenth notes marked with a bracket and the number '13' in the first measure of the system.

77

Pno1

13

pp

Pno2

13

13

Pno3

Pno1

Pno2

Pno3

Pno1

pp

p

p

p

Pno2

pp

p

p

p

Pno3

pp

p

p

p

p

Pno1

Pno2

Pno3

Pno1

Pno2

Pno3

Pno1

Pno2

Pno3

Pno1

Pno2

Pno3

101

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3).
- **Pno1:** Features a complex melodic line in the right hand with a 5:3 ratio and fingerings (5, 5, 5) in the second measure. The left hand provides harmonic support with chords and single notes.
- **Pno2:** Remains mostly silent, with a few notes appearing in the final measure of the system.
- **Pno3:** Provides a rhythmic accompaniment with eighth and sixteenth notes in the right hand and chords in the left hand.

Pno1

Pno2

Pno3

109 27

Pno1

Musical score for Pno1, measures 109-112. The score is written for a grand piano with a treble and bass clef. Measure 109 features a complex melodic line in the treble clef with a fermata and a 7-measure rest, and a bass clef accompaniment. Measure 110 has a similar structure. Measure 111 includes a dynamic marking of *f* and a fermata. Measure 112 concludes with a melodic phrase in the treble clef and a bass clef accompaniment.

Pno2

Musical score for Pno2, measures 109-112. The score is written for a grand piano with a treble and bass clef. Measure 109 has a 7-measure rest in the treble clef and a bass clef accompaniment. Measure 110 features a melodic line in the treble clef and a bass clef accompaniment. Measure 111 and 112 are mostly rests in both staves.

Pno3

Musical score for Pno3, measures 109-112. The score is written for a grand piano with a treble and bass clef. Measure 109 has a 7-measure rest in the treble clef and a bass clef accompaniment. Measure 110 features a melodic line in the treble clef and a bass clef accompaniment. Measure 111 and 112 continue the melodic and accompaniment lines.

113

Pno1

Pno2

Pno3

117

Pno1

Musical score for Pno1, measures 117-119. The score is written in a grand staff with treble and bass clefs. Measure 117 features a complex melodic line in the treble clef with a five-fingered scale-like passage. Measure 118 has a rest in the treble clef and a melodic line in the bass clef. Measure 119 features a melodic line in the treble clef and a sustained chord in the bass clef.

Pno2

Musical score for Pno2, measures 117-119. Measure 117 has a rest in both staves. Measure 118 features a melodic line in the treble clef starting with a *mp* dynamic marking and a chord in the bass clef. Measure 119 features a melodic line in the treble clef and a chord in the bass clef.

Pno3

Musical score for Pno3, measures 117-119. Measure 117 features a melodic line in the treble clef and a chord in the bass clef. Measure 118 features a melodic line in the treble clef and a chord in the bass clef. Measure 119 features a melodic line in the treble clef and a chord in the bass clef.

Pno1

pp p p p

Pno2

pp pp pp pp

Pno3

pp p p p

124

Pno1

Musical score for Pno1, measures 124-127. The score is written for two staves (treble and bass clef). Measure 124 starts with a treble clef and a 7-measure rest. Measure 125 has a treble clef with a melodic line and a bass clef with a chordal accompaniment. Measure 126 continues the melodic line in the treble and the accompaniment in the bass. Measure 127 concludes with a treble clef and a melodic line, and a bass clef with a chordal accompaniment. Dynamics include *pp* in measures 125 and 127.

Pno2

Musical score for Pno2, measures 124-127. The score is written for two staves (treble and bass clef). Measure 124 has a treble clef with a melodic line and a bass clef with a chordal accompaniment. Measure 125 continues the melodic line in the treble and the accompaniment in the bass. Measure 126 has a treble clef with a melodic line and a bass clef with a chordal accompaniment. Measure 127 concludes with a treble clef and a melodic line, and a bass clef with a chordal accompaniment. Dynamics include *p* in measure 124 and *pp* in measures 126 and 127.

Pno3

Musical score for Pno3, measures 124-127. The score is written for two staves (treble and bass clef). Measure 124 has a treble clef with a melodic line and a bass clef with a chordal accompaniment. Measure 125 continues the melodic line in the treble and the accompaniment in the bass. Measure 126 has a treble clef with a melodic line and a bass clef with a chordal accompaniment. Measure 127 concludes with a treble clef and a melodic line, and a bass clef with a chordal accompaniment. Dynamics include *pp* in measures 125 and 127.

Rings of Saturn

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, consisting of five staves. The first staff is a treble clef with a whole rest. The second staff is a treble clef with a whole rest and a *pp* dynamic marking. The third staff is a treble clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fourth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fifth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking.

Pno2

Musical score for Pno2, consisting of five staves. The first staff is a treble clef with a whole rest. The second staff is a treble clef with a whole rest and a *pp* dynamic marking. The third staff is a treble clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fourth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fifth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking.

Pno3

Musical score for Pno3, consisting of five staves. The first staff is a treble clef with a whole rest. The second staff is a treble clef with a whole rest and a *pp* dynamic marking. The third staff is a treble clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fourth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking. The fifth staff is a bass clef with a melodic line starting in the second measure, including a triplet in the third measure, and a *pp* dynamic marking.

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system contains multiple staves (treble and bass clefs). Pno1 features complex rhythmic patterns with many sixteenth notes and rests, and includes a triplet of eighth notes in the right hand. Pno2 has a more sparse texture with fewer notes and rests. Pno3 includes a triplet of eighth notes in the right hand and a quintuplet of eighth notes in the right hand. The score is written in a key with one flat (B-flat) and a common time signature.

138 35

Pno1

Pno2

Pno3

The image shows a musical score for three pianos (Pno1, Pno2, Pno3) across three measures. Measure 138 starts with Pno1 playing a melodic line with triplets and a bass line. Pno2 and Pno3 have sparse accompaniment. Measure 139 continues the melodic line in Pno1. Measure 140 concludes the section with a final chord in Pno1 and some accompaniment in Pno2 and Pno3. The score includes various musical notations such as treble and bass clefs, notes, rests, and dynamic markings.

Rings of Saturn

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system contains three staves (treble, alto, and bass clefs). Pno1 features complex rhythmic patterns with triplets and quintuplets, and dynamic markings of *p*. Pno2 has a more melodic line with some rests. Pno3 also includes rhythmic patterns and dynamic markings of *p*. The score includes various musical notations such as notes, rests, slurs, and dynamic markings.

Pno1

Pno2

Pno3

Rings of Saturn

Pno1

5

7

p

Pno2

p

Pno3

p

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Pno1 has dynamic markings *p* and *pp*. Pno2 and Pno3 have a *p* marking. The music consists of three measures across three systems. Pno1 plays a melodic line in the first measure, followed by a rest in the second, and a melodic line in the third. Pno2 and Pno3 play accompaniment, with Pno3 having a melodic line in the second and third measures.

Piano 1 (Pno1) score, measures 155-157. The score includes five staves: two grand staves (treble and bass clef) and three individual staves. The first grand staff contains a complex melodic line with trills and slurs, marked with a piano (*p*) dynamic and a fingering of 19. The second grand staff contains a bass line with slurs and a piano (*p*) dynamic. The three individual staves provide harmonic support with chords and single notes.

Piano 2 (Pno2) score, measures 155-157. The score includes five staves: two grand staves (treble and bass clef) and three individual staves. The first grand staff contains a melodic line with trills and slurs, marked with a piano (*p*) dynamic and a fingering of 19. The second grand staff contains a bass line with slurs and a piano (*p*) dynamic. The three individual staves provide harmonic support with chords and single notes.

Piano 3 (Pno3) score, measures 155-157. The score includes five staves: two grand staves (treble and bass clef) and three individual staves. The first grand staff contains a melodic line with trills and slurs, marked with a piano (*p*) dynamic and a fingering of 19. The second grand staff contains a bass line with slurs and a piano (*p*) dynamic. The three individual staves provide harmonic support with chords and single notes.

Pno1

Pno2

Pno3

161

Pno1

Pno2

Pno3

165

Pno1

19

19

p

43

Pno2

19

19

mf

Pno3

Piano 1 (Pno1) system. The first staff contains a melodic line with a 19-measure rest. The second staff has a whole note chord with a sharp sign. The third staff is mostly empty with a few notes. The fourth staff has a bass line with a sharp sign and a flat sign. The fifth staff has a bass line with a sharp sign.

Piano 2 (Pno2) system. The first staff has a 19-measure rest. The second staff has a whole note chord with a sharp sign. The third staff has a bass line with a sharp sign.

Piano 3 (Pno3) system. The first staff has a melodic line with a 19-measure rest. The second staff has a bass line with a flat sign and a sharp sign. The third staff has a bass line with a sharp sign.

168

Pno1

19

19

45

Pno2

19

19

mf

Pno3

19

46

170

Pno1

Pno3

19

19

Detailed description: This musical score page shows measures 170 through 188. The system is divided into two parts: Pno1 and Pno3. Pno1 consists of five staves: a treble clef staff, a bass clef staff, and a grand staff (treble and bass clefs). Pno3 consists of a single treble clef staff. Both parts feature a 19-measure phrase starting at measure 170. The Pno1 part includes a melodic line in the treble clef, a bass line in the bass clef, and chordal accompaniment in the grand staff. The Pno3 part features a rhythmic pattern of eighth notes and rests. A large bracket above the Pno1 staves and a bracket below the Pno3 staff indicate the 19-measure phrase. The page number 46 is in the top left, and the measure number 170 is at the start of the first staff.

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 172-173. The score consists of four staves (treble and bass clefs). Measure 172 features a complex rhythmic pattern with a bracketed '19' indicating a 19-measure phrase. Measure 173 continues the pattern with a similar bracketed '19'.

Pno2

Musical score for Pno2, measures 172-173. The score consists of four staves. Measure 172 has a bracketed '19' and a dynamic marking of *mf*. Measure 173 also has a bracketed '19'.

Pno3

Musical score for Pno3, measures 172-173. The score consists of four staves. Measure 172 has a bracketed '19'. Measure 173 has a bracketed '19'.

174

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 176-177. The score consists of four staves: Treble, Treble, Treble, and Bass. Measure 176 features a complex rhythmic pattern in the top Treble staff with a bracketed '19' below it. The other staves have various notes and rests. Measure 177 continues the patterns, with a bracketed '19' in the top Treble staff.

Pno2

Musical score for Pno2, measures 176-177. The score consists of four staves: Treble, Treble, Treble, and Bass. Measure 176 has a bracketed '19' in the top Treble staff. Measure 177 has a bracketed '19' in the top Treble staff and a 'mf' dynamic marking in the Bass staff.

Pno3

Musical score for Pno3, measures 176-177. The score consists of four staves: Treble, Treble, Treble, and Bass. Measure 176 has a bracketed '19' in the top Treble staff. Measure 177 has a bracketed '19' in the top Treble staff.

Musical score for Pno1 and Pno3, measures 178-191. The score is written for two pianos, Pno1 and Pno3. Pno1 is in the upper system, and Pno3 is in the lower system. The score is in 2/4 time and features a key signature of one flat (B-flat major or D minor). Measure 178 is marked with a fermata. Pno1 has a melodic line with a fermata in measure 180, while Pno3 provides a rhythmic accompaniment. A bracket labeled '19' spans measures 178-191. Measure 191 is marked with a fermata and the number '51'.

179

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 182-184. The score consists of five staves. The top staff has a treble clef and contains a series of rests with a '19' marking below. The second staff has a treble clef and contains a melodic line with various notes and rests. The third staff has a treble clef and contains a melodic line with various notes and rests. The fourth staff has a bass clef and contains a melodic line with various notes and rests. The fifth staff has a bass clef and contains a bass line with various notes and rests. There are accidentals (flats and sharps) throughout the score.

Pno2

Musical score for Pno2, measures 182-184. The score consists of five staves. The top staff has a treble clef and contains a series of rests with a '19' marking below. The second staff has a treble clef and contains a melodic line with various notes and rests. The third staff has a treble clef and contains a melodic line with various notes and rests. The fourth staff has a bass clef and contains a melodic line with various notes and rests. The fifth staff has a bass clef and contains a bass line with various notes and rests. There are accidentals (flats and sharps) throughout the score.

Pno3

Musical score for Pno3, measures 182-184. The score consists of five staves. The top staff has a treble clef and contains a series of rests with a '19' marking below. The second staff has a treble clef and contains a melodic line with various notes and rests. The third staff has a treble clef and contains a melodic line with various notes and rests. The fourth staff has a bass clef and contains a melodic line with various notes and rests. The fifth staff has a bass clef and contains a bass line with various notes and rests. There are accidentals (flats and sharps) throughout the score.

Pno1

Musical score for Pno1, measures 185-186. The score consists of four staves (treble and bass clefs). Measure 185 features a complex melodic line in the upper treble staff with a slur and a fermata, and a bass line with chords and a fermata. Measure 186 continues the melodic line with a dense sixteenth-note passage in the upper treble staff and a bass line with chords. Both measures are marked with a '19' below the slur.

Pno2

Musical score for Pno2, measures 185-186. The score consists of four staves. Measure 185 has a melodic line in the upper treble staff with a slur and a fermata, and a bass line with chords. Measure 186 continues the melodic line with a slur and a fermata, and a bass line with chords. Both measures are marked with a '19' below the slur. A dynamic marking of *mf* is present in the bass line of measure 185.

Pno3

Musical score for Pno3, measures 185-186. The score consists of four staves. Measure 185 has a melodic line in the upper treble staff with a slur and a fermata, and a bass line with chords. Measure 186 has a melodic line in the upper treble staff with a slur and a fermata, and a bass line with chords. Both measures are marked with a '19' below the slur.

187

Pno1

19

19

55

Pno2

19

Pno3

19

19

189 *b*

Pno1

Pno2

Pno3

191 57

Pno1

Pno2

Pno3

58

194

Pno1

Pno2

Pno3

Rings of Saturn

197

Pno1

Musical score for Pno1, measures 197-200. The score consists of four staves (treble and bass clefs). Measure 197 features a complex chordal texture with a slur over the first two staves and a '19' marking. Measure 198 has a similar texture. Measure 199 continues the texture. Measure 200 shows a change in the bass line with a flat sign and a slur over the last two staves.

Pno2

Musical score for Pno2, measures 197-200. The score consists of four staves. Measure 197 has a complex chordal texture with a slur over the first two staves and a '19' marking. Measure 198 has a similar texture. Measure 199 continues the texture. Measure 200 shows a change in the bass line with a flat sign and a slur over the last two staves.

Pno3

Musical score for Pno3, measures 197-200. The score consists of four staves. Measure 197 has a complex chordal texture with a slur over the first two staves and a '19' marking. Measure 198 has a similar texture. Measure 199 continues the texture. Measure 200 shows a change in the bass line with a flat sign and a slur over the last two staves.

201

Pno1

Musical score for Pno1, measures 201-204. The score is written in a grand staff with treble and bass clefs. Measure 201 starts with a treble clef and a key signature of one flat. The melody in the treble clef begins with a quarter note G4, followed by a quarter note F4, and a quarter note E4. The bass clef accompaniment consists of a half note chord of G2, B2, and D3. Measure 202 features a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 203 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 204 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3.

Pno2

Musical score for Pno2, measures 201-204. The score is written in a grand staff with treble and bass clefs. Measure 201 has a treble clef with a quarter rest, followed by a quarter note G4, and a quarter note F4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 202 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 203 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 204 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3.

Pno3

Musical score for Pno3, measures 201-204. The score is written in a grand staff with treble and bass clefs. Measure 201 has a treble clef with a quarter rest, followed by a quarter note G4, and a quarter note F4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 202 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 203 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3. Measure 204 has a treble clef with a quarter rest, followed by a quarter note G4, a quarter note F4, and a quarter note E4. The bass clef accompaniment is a half note chord of G2, B2, and D3.

205

Pno1

Musical score for Pno1, measures 205-209. The score is written for a grand piano with four staves (treble and bass clefs). Measure 205 features a treble clef with a flat key signature and a 7-measure rest. The bass clef has a whole note chord. Measure 206 has a treble clef with a 7-measure rest and a triplet of eighth notes. The bass clef has a triplet of eighth notes. Measures 207-209 are empty staves.

Pno2

Musical score for Pno2, measures 205-209. The score is written for a grand piano with four staves. Measure 205 has a treble clef with a 7-measure rest and a sharp key signature. The bass clef has a whole note chord. Measure 206 has a treble clef with a 7-measure rest and a sharp key signature. The bass clef has a triplet of eighth notes. Measures 207-209 are empty staves.

Pno3

Musical score for Pno3, measures 205-209. The score is written for a grand piano with four staves. Measure 205 has a treble clef with a sharp key signature and a whole note chord. The bass clef has a 7-measure rest. Measure 206 has a treble clef with a whole note chord and a sharp key signature. The bass clef has a whole note chord. Measures 207-209 have a treble clef with a 7-measure rest and a sharp key signature. The bass clef has a whole note chord.

Piano score for measures 210-213. The score is divided into two systems: Pno2 and Pno3.

Pno2: Treble clef. Measure 210: whole rest. Measure 211: quarter notes G4, A4, B4, C5 with a *pp* dynamic marking and a fingering of 5. Measure 212: whole rest. Measure 213: whole rest.

Pno3: Treble and Bass clefs. Measure 210: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 211: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 212: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 213: Treble has a half note chord (F4, C5), Bass has a half note (F3).



Piano score for measures 214-217. The score is divided into two systems: Pno2 and Pno3.

Pno2: Treble clef. Measure 214: whole rest. Measure 215: quarter notes G4, A4, B4, C5 with a fingering of 5. Measure 216: whole rest. Measure 217: quarter notes G4, A4, B4, C5 with a fingering of 5.

Pno3: Treble and Bass clefs. Measure 214: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 215: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 216: Treble has a half note chord (F4, C5), Bass has a half note (F3). Measure 217: Treble has a half note chord (F4, C5), Bass has a half note (F3).

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 222-225. The score consists of four staves. Measures 222, 223, and 224 are mostly rests. In measure 225, the top two staves (treble clef) play a chord with a sharp sign above the notes. The bottom two staves (bass clef) play a rhythmic pattern of eighth notes.

Pno3

Musical score for Pno3, measures 222-225. The score consists of four staves. Measure 222 features a complex melodic line in the top staff and a rhythmic accompaniment in the bottom two staves. Measures 223 and 224 continue this pattern with some changes in the top staff. Measure 225 shows a final chord in the top staff and a concluding rhythmic pattern in the bottom staves.

The image shows a musical score for two piano parts, Pno1 and Pno3, spanning measures 226 to 230. Pno1 is positioned at the top and Pno3 at the bottom. Each part consists of four staves (two treble and two bass clefs). Pno1 is mostly silent in measures 226-229, with a final chord in measure 230. Pno3 has a continuous melodic and harmonic line throughout. The score includes various musical notations such as notes, rests, and dynamic markings.

Pno1

Pno2

Pno3

Pno1

Musical score for Pno1, measures 234-237. The score consists of five staves. The first two staves are treble clef, and the last three are bass clef. Measures 234 and 235 are mostly rests. In measure 236, there is a melodic line in the top staff with a flat and sharp sign, and a bass line with a flat. Measure 237 continues the melodic line in the top staff and the bass line.

Pno2

Musical score for Pno2, measures 234-237. The score consists of a single treble clef staff. Measures 234 and 235 are mostly rests. In measure 236, there is a melodic line with a sharp sign and a bracket with the number 5 underneath. Measure 237 is mostly rests.

Pno3

Musical score for Pno3, measures 234-237. The score consists of five staves. The first two staves are treble clef, and the last three are bass clef. Measures 234-237 contain complex melodic and harmonic material across all staves.

Pno1

Musical score for Pno1, measures 238-241. The score consists of five staves. The top staff has a treble clef and contains a melodic line with a sharp sign and a slur. The second staff has a treble clef and contains a melodic line with a flat sign. The third staff has a treble clef and contains a bass line with a flat sign. The fourth and fifth staves have bass clefs and contain a bass line. The music is in 4/4 time and features a mix of eighth and quarter notes with rests.

Pno3

Musical score for Pno3, measures 238-241. The score consists of five staves. The top staff has a treble clef and contains a melodic line with a slur. The second staff has a treble clef and contains a bass line with a slur. The third staff has a treble clef and contains a melodic line. The fourth and fifth staves have bass clefs and contain a bass line. The music is in 4/4 time and features a mix of eighth and quarter notes with rests.

242 69

Pno1

Pno3

The image shows a musical score for two piano parts, Pno1 and Pno3, spanning measures 242 to 245. The score is written in a key signature of two flats (B-flat and E-flat) and a common time signature. Pno1 consists of five staves: two treble clefs and three bass clefs. Pno3 also consists of five staves: two treble clefs and three bass clefs. Measure 242 features a triplet of eighth notes in the first treble staff of Pno1 and a quarter note in the first bass staff of Pno3. Measure 243 has a quarter note in the first bass staff of Pno3. Measure 244 contains a complex melodic line in the first treble staff of Pno1 and a quarter note in the first bass staff of Pno3. Measure 245 concludes with a quarter note in the first bass staff of Pno3. The page number '242' is at the top left, and '69' is at the top right.

Piano 1 (Pno1) score, measures 70-74. The score is written for five staves: two treble clefs and three bass clefs. Measure 70 features a melodic line in the upper treble staff with a flat (b) and a dotted note. The lower staves contain accompaniment with various chords and rhythmic patterns. Measure 74 includes a fermata over a chord in the upper treble staff.

Piano 2 (Pno2) score, measures 70-74. This part is written on a single treble clef staff. It begins with a few notes in measure 70, followed by rests for the remainder of the measures.

Piano 3 (Pno3) score, measures 70-74. The score is written for five staves: two treble clefs and three bass clefs. Measure 70 features a melodic line in the upper treble staff with a sharp (#). The lower staves contain accompaniment with various chords and rhythmic patterns. Measure 74 includes a fermata over a chord in the upper treble staff.

251 (#)

Pno1

Pno3

Nov. 21, 2016 - Jan. 15, 2017
Germantown, NY