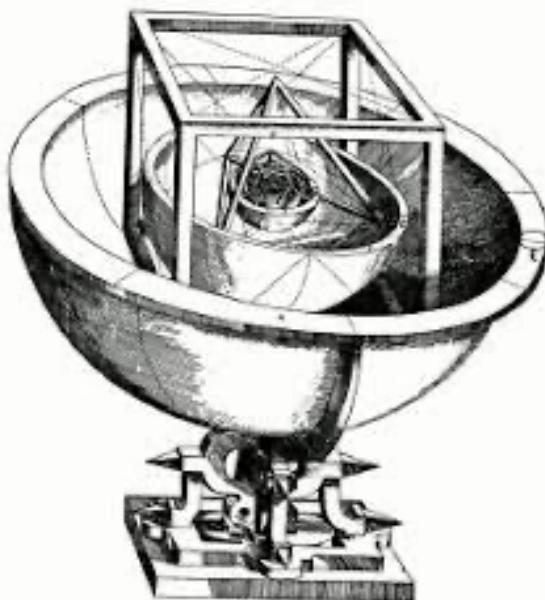


# MOTET: HARMONIES OF THE WORLD

MUSIC BY JOHANNES KEPLER (1619) / DAVE SOLDIER (2021)  
LYRICS FROM PROCLUS “HYMN TO THE SUN” (C. 480 A.D.)



SOPRANO, 2 ALTOS, TENOR, BARITONE, BASS

THIS VERSION WITH CONTINUO

DURATION ABOUT 17 MINUTES

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**VERSION 12.25.21**

**FOR EKMELES**

This version includes continuo parts and can be played in conventional equal tempered or well-tempered tuning on conventional instruments. In contrast, the vocal-only version specifies just intonation in six keys (although it can also be performed in conventional tuning). The two approaches can be combined as per the resources available to the musicians.

There is a keyboard part that can be played on any keyboard and a bass part for any bass instrument(s). I do not use a figured bass as so many of the chords are unusual and would be difficult to read: rather, the keyboard player can arpeggiate, add octaves, and embellish at will as if it were a figured bass part. In addition, any of the vocal parts can be doubled by instrumentalists.

This four part motet is composed according to Johannes Kepler's text, *Harmonies of the World* (1619) in which he reports the discovery of the elliptical shape of the planets orbits around the sun, and also derives a basis for the polyphonic music of the renaissance.

In *Book V*, Kepler describes the music of the planets, and while realizing that there is no air or sound in the cosmos, he conjectured that someone at the sun would perceive such music. He demonstrates that if the planets moved in circles around the sun as suggested by Copernicus, the sounds they produce would be dissonant. He felt that the "master artisan" would not design a system in which the planets did not revolve in consonance, and this was the stimulus for determining how the planets genuinely orbit.

Kepler eventually realized that the planets move in ellipses and so they would change in musical pitch according to their distance from the sun at that time, like a lute's string dampened at different lengths on the neck. If this occurred, the planets would occasionally be in tune.

His calculations of the shapes and speeds of the rotations and the planet's relative distances from the sun remain almost perfectly correct even now and inspired Isaac Newton's efforts to describe force, acceleration and gravity, and so are the foundation for contemporary mathematics and physics and provide the basis of virtually all contemporary technology.

In *Chapter 7* of *Book V*, Kepler asked that a composer write a motet based on the planetary motions he deduced.

*"Shall I have committed a crime if I ask the single composers of this generation for some artistic motet instead of this epigraph? The Royal Psalter and the other Holy Books can supply a text suited for this. But alas for you! No more than six are in concord in the heavens. For the moon sings here monody separately, like a dog sitting on the Earth. Compose the melody; I, in order*

*that the book may progress, promise that I will watch carefully over the six parts. To him who more properly expresses the celestial music described in this work, Clio will give a garland, and Urania will betroth Venus his bride."*

He writes many pages on what the motet ought to be, including the harmonies that ought to be used, and throughout the book, outlines the intonation to be used and the allowable intervals and scales.

To my knowledge, while there have been musical interpretations of a diagram of planetary intervals (as I also do in Part IV), the motet that Kepler requests has not been written. I therefore credit Kepler as a collaborator on this motet in four parts, the second of which is closest to his intent.

## GENERAL GUIDE

In *Book V, Chapter 10*, the *Conjectural Epilogue on the Sun*, Kepler indicates that the music should be heard as if the listener is present on the Sun with singing from the planets orbiting the listener in ellipses. The six planets change pitches like plucked strings that change in length between two bridges, with the highest in the position closest to the sun, the *parahelion*, and the lowest when most distant from the sun, the *aphelion*.

In performance, if possible, the voices should rotate around the listeners.

For lyrics in Parts I II, and III, I chose the *Eis Hēlion, Hymn to the Sun* by Proclus, who Kepler strongly admired and quotes throughout his book. I thank Maria Combatti for transliteration from the Greek and recording the spoken text for singers to hear the pronunciation and the rhythm in dactylic hexameter in which it was composed.

**Part 1** is based on the harmonies of the aphelions and parahelions. We proudly show how these chords are not at all consonant, but in my opinion, have their own sort of beauty.

*Hearken, dispenser of light, you, o lord, who hold yourself  
the key to the life-supporting source and channel off from above  
a rich stream of harmony into the material worlds.*

Kluthi, faous tamia, zōarkeos, ō ana, pēgēs  
autos echōn klēida kai hulaiois eni kosmois  
hypsothen harmoniēs ruma plouision exocheteuōn.

**Part 2** is intended to evoke the choral motets by Orlando Lassus, who Kepler mentions in the book to be exemplary composer of modern music rationally derived from the laws of the universe: I think this part is closest to what Kepler desired.

*The planets, girded with your ever-blooming torches,  
through unceasing and untiring dances,*

*always send life-producing drops down for earthlings.*

Zōsamenoi de planētes aeithaleas seo pursous  
aien hop' allēktoisi kai akamatoisi choreiais  
zō(i)ogonous pempousin epichthoniois rathamiggas

**Part 3** has a novel phrasing based on hexameter, which lends itself well to a 7 beat cycle.

*From your chain the king of the song that obeys the divine,  
Phoibos, sprung forth. Singing inspired songs to the accompaniment of the kithara,  
he calms the great wave of deep-roaring becoming.*

Seirēs d' humeterēs basileus theopeitheos oimēs  
exethoren Phoibos; kitharē(i) d' hypo theskela melpōn  
eunazei mega kuma barufloisboio genethlēs

#### **Part 4**

In Book V, Chapter 6, Kepler's diagram indicates the musical ranges of the six planets and the Earth's moon, as shown below in a version prepared by Elliott Carter who rewrote the diagram into clefs familiar now. This diagram has been realized several times including excellent computer music versions by Willie Ruff and Laurie Spiegel.

Kepler does not ask for words for the planets to sing in this diagram except that he states "the Earth sings *mi* and *fa* as on our planet *misery* and *famine* obtain".

[In Modern notation:

Saturn      Jupiter      Mars approx.      Earth

Venus      Mercury      Moon

Saturn      Jupiter      Mars approx.      Earth

Venus      Mercury      Moon

—E. C. JR.]

In this Figure, Kepler cheats on the range of Jupiter, which as shown above ought to sing from B to a note between D and Eb. Instead, he transposes it down to Saturn's low note, G gamma, to make it more consonant with the others. I use that transposition and range for Part 4 only since it is based on Kepler's *Chapter 6*, but in Parts I, II and III, use Jupiter's correct range according to Tycho Brahe's measurements, as Kepler does in *Chapter 7*.

The asterisks above each planet's staff in the score mark the start of a rotation. The voices should rotate around the listener at the Sun, and the asterisks above the part show a repeated point in the rotation.

In Part 4, Kepler asks for glissandos between pitches. While Earth has a specific two syllables, the others are open, and soloists should develop their own different character or accent for each planet.

### **OPTIONAL INSTRUMENTS & ADDITIONAL VOICES**

The octaves of the planet's vocal extend above that reached by human singers (see below). I use the voices Kepler specifies in *Book V, Chapter 8*: Mercury as a soprano, Earth and Venus as altos, Mars as a tenor, and Jupiter and Saturn as basses (I call Jupiter a baritone, and Venus can be a countertenor or a mezzo soprano).

While Kepler says that there can only be six parts for the planets, there is no reason that individual parts can't be sung by multiple singers, and so it is fine for a chorus to sing this music.

In this continuo version, I provide a bass instrument part and a keyboard part. I don't use figures over the bass, as most of the chords are too unusual to be read easily. Instead, the keyboard player can play the chords and add octaves and figuration as well, particularly arpeggiating, as if it were a figured bass part.

In all cases, the vocal parts can be doubled where desired with higher strings or winds.

Part 4 can use a drone instrument like a tambura or sruti box on the notes C and G, or drones by string instruments, and those players should be attentive to the music around them and adjust timbre and volume according to the overall sound.

Part 4 can further use improvising instrumentalists to represent occasional celestial phenomena including comets, moons (Kepler, who corresponded with Galileo, knew there were moons of Saturn and Jupiter), meteors, stars and galaxies that transiently enter the listener's awareness.

### **MORE ON THE MATH (not required, for those interested...)**

To determine the frequencies / pitches that the planets sing, Kepler considered each orbit to be like a fretted guitar string, with a vibrating string length between a fret and the bridge that is twice as long sounding an octave lower.

Since Venus's orbit is nearly circular, the orbit is always nearly the same distance from the Sun and so the perihelion and the aphelion are about the same. The "string" is therefore at nearly the same length throughout, and so Venus always sings nearly the same note.

For the most elliptical orbit, Mercury's, Tycho Brahe, Kepler's mentor, made observations with his telescope that indicated that the planet moves at an angle of 384 "minutes" = 23040 "seconds" per day, at the perihelion and 147 "minutes" = 8821 "seconds" at the aphelion. This

means that Mercury travels much faster relative to the Sun when the length of the “string” is shorter and plays a lower tone when it the string is longer.

A string which is stopped at 8821 seconds /23040 seconds = 0.38 of its full length, close to the ratio 5/12 (= 0.42), will sound a frequency that is 12/5 higher than the open note. For example, with contemporary tuning,  $12/5 * 260 \text{ Hz (C4)} = 624 \text{ Hz}$  (about Eb6), which means that Mercury has a range of about an octave and minor third: Kepler gives it an octave and major third, and also uses slightly different numbers for aphelions and parhelions within the book.

This process, derived from Kepler’s interpretations of Tycho Brahe’s recordings to deduce the aphelions and parahelions, provides the vocal ranges for each planet, approximately:

Mercury’s range is 12/5, an octave and minor third

Venus is 25/24, far under a half-step and Kepler rounds down to a unison in Chapter 6 and rounds up to a half-step in Chapter 7. This small interval is known as a *diesis*.

Earth is 16/15, close to a half-step

Mars is 3/2, a fifth

Jupiter is 6/5, a minor third

Saturn is 5/4, a major third

The next question is how to decide that pitch the aphelion / low note should be for each planet. Kepler reasonably chose the lowest note he had available in his era for the aphelion of Saturn, the longest distance of any planet from the Sun. This note, now called G2, was called “gamma”. Since the highest note available was C6, which was called UT, the “gamut” means the whole range of available notes. Therefore, Saturn’s range is from G2 to B2 (as in Kepler’s diagram above).

If we set Saturn’s low note G2 at a quasi-contemporary value of 98 Hz, Jupiter, the B2 high note is 125 Hz.

To derive the fundamentals of the next planet, Jupiter, Kepler took its aphelion (270 seconds) and compared it to Jupiter’s aphelion (106 seconds): since  $270/106 = \sim 0.38$ , close to an octave and major third, and so Saturn should start at B3. Doing this for each planet

Saturn range G2 to B2

Jupiter B3 to D/Eb4

Mars F#6 to C7

Earth G7 to Ab7

Venus E8

Mercury B8 to E 10

This assignment of voices for each planet presents issues for singing. The top note of a conventional soprano is about C6, and the top note of Mercury extends beyond the range of human hearing. To solve this, Kepler moved the planets by octaves into a singable range.

Another issue is how to realize the timing for Part IV. If we used the untransformed durations of the planets around the sun, each rotation of Mercury would be 88 Earth days, and a rotation of

Saturn would take 10,789 days (122-times longer than the duration of Earth's). Kepler thinks that this is so slow that it is possible that a full consonance of a triad, may show up only once, possibly at creation.

For one way to bring the timing as well as frequencies to a human scale, consider that musical octaves are  $\log_2$  logarithms of note frequencies, in which each higher octave is double the frequency of the lower. For example, if middle C (called C4) is 260 Hz, the C an octave below (C3) is 130 Hz and the high C two octaves above (C6) is 1040 Hz. We can determine how distant these notes are from each other in octaves by calculating the  $\log_2$  of a number, which means how many times the number 2 must be multiplied by itself to equal that number: for example,  $\log_2(16) = 4$  because  $2 \cdot 2 \cdot 2 \cdot 2 = 16$ . For C6 and C3, their distance in octaves is calculated as  $1040 \text{ Hz} / 130 \text{ Hz} = 8$ , and since  $\log_2(8) = 3$ , they are 3 octaves distant.

I use a similar approach to transform the frequencies of the planet's rotations in Part IV. These are a lot slower than the frequencies of the notes used in music – the frequency of the Earth's rotation around the Sun is  $1 / \text{year} = \sim 1/31$  million seconds  $= \sim 30$  millionth of a Hz - but frequencies nonetheless. The difference in octaves between Saturn and Mars is about 7 octaves, since  $\log_2(10,789 \text{ days}/88 \text{ days}) = \sim 7$ .

For Part IV, I set the rotation from the numbers of Earth days that each planet takes to rotate around the Sun. For Mercury,  $\log_2(88 \text{ days}) = 6.46$ , and for Saturn  $\log_2(10,789 \text{ days}) = 13.39$ . I then set one year of Mercury's  $\log_2$  rotation as 20 quarter notes. In this way, the planet's durations for a rotation around the Sun are: Mercury 20, Venus 24, Earth 26, Mars 29, Jupiter 37 and Saturn 41 quarter notes. I mark an asterisk for each planet at the start of their yearly intervals, when rotation should return to the same angle around the audience listening from the Sun.

More math on just intonation intervals is included in the vocal only version of the motet.

## PRONUCTION GUIDE

Dr. Maria (Marina) Combatti, a specialist in Greek poetry, kindly recorded recitations of the lyrics, one with the words stressed as spoken Greek, and the other in dactylic hexameter, the rhythms of Proclus's hymn. This was also the rhythm used by Hesiod, Homer and in most of the epics.

- th (θ) pronounced with aspiration, as in English *think*, *Theodore*
- i (ι) pronounced like Italian -i, as in English *gin*, *sin*
- a (α) pronounced like Italian -a, as in English *alpha* (indeed)
- e (ε) pronounced like Italian -e, as in English *elegant*
- u (υ) pronounced like French -u (iu) or English *utility*, *ufo*
- ou (ου) pronounced like Italian -u, as in English *blooming*, *booming*
- ch (χ) hard, aspirate sound like in English *chiasm*, *chimera*
- ē (η), ḍ̄ (ω) long vowels
- g (γ) hard sound as in English *god*
- hu (ὑ); ha (ἁ) pronounced with aspiration, as in English *hard*, *hi*, *hear*
- gg (γγ) to read like -ng- as in engagement
- (ι), subscribed i (ι, ι) pronounced like Italian -i but very slightly almost silently
- Ph (Φ) pronounced as an aspirate -p more than -f
- (ι) as above, subscribed i (ιι) pronounced like Italian -i but very slightly almost silently

# Part I Motet: Harmonies of the Worlds

Johannes Kepler / Dave Soldier  
text Proclus "Hymn to the Sun"

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for aphelion and parhelion chords, use the tunings in the notes

**A**

$\text{♩} = 72$

*Kluthi*  
*harken* **parahelions**

**B**

*faous tamia*  
*dispenser of light*

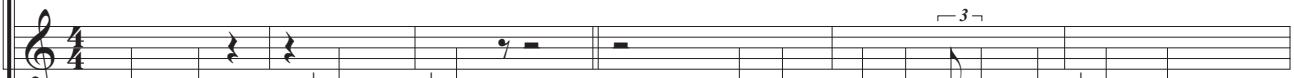
Mercury Soprano



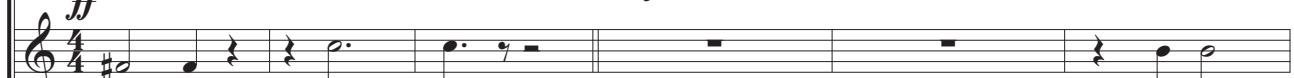
Venus Alto



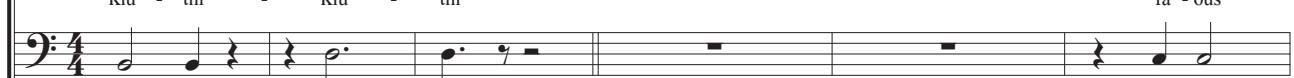
Earth Alto



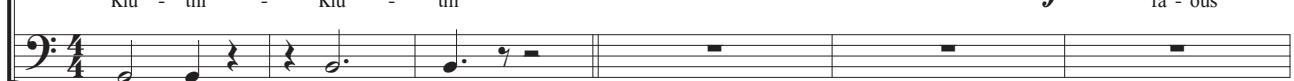
Mars Tenor



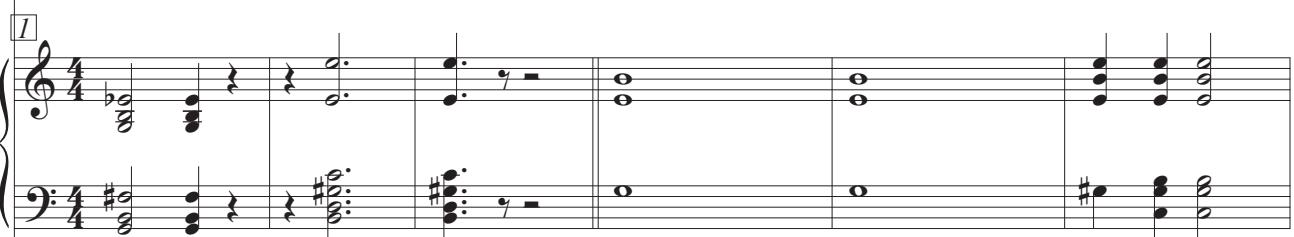
Jupiter Baritone



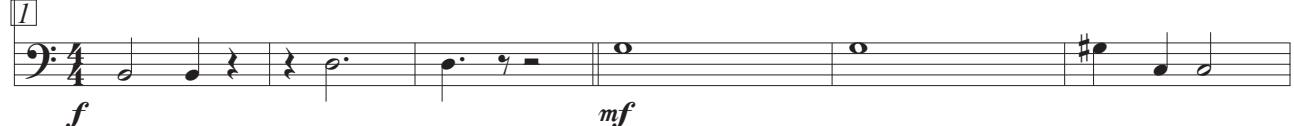
Saturn Bass



keyboard



Bass



the keyboard continuo part can be arpeggiated and octaves played at will

## Part I Motet: Harmonies of the Worlds

2

**C** parahelions **D**

Merc      ta - mi - a      *ff* Klu - thi - **p** ta - mi - a fa - ous

V      ous - ta - mi - a      *ff* Klu - thi - **p** fa - ous ta - mi - a - fa - ous **p**

E      ta - mi - a      *ff* Klu - thi - **p** fa - ous fa - ous fa - ous

Mars      ta - mi - a      *ff* Klu - thi - **p** fa - ous ta - mi - a ta - mi - a fa - ous

J      ta - mi - a      *ff* Klu - thi - - - - **mf** ta - mi - a fa - ous

S      - - - - *ff* Klu - thi - - - - **mf** ta - mi - a fa - ous

Bs.      - - - - *f* - - - - **mf** - - - -

*zoarkeos, o ana, peges  
you, o lord, who hold yourself  
espressivo  
ala northern Greece, Bulgaria*

[E] **aphelions** [F]  $\text{♩} = 82$

Merc      ta - mi - a      **p**      **pp**      Klu - thi      **p**      **mf**      zo - ar - ke

V      ta - mi - a      **pp**      Klu - thi      **p**      zo

E      fa - ous ta - mi - a      **p**      **pp**      Klu - thi      **p**      zo

Mars      fa - ous ta - mi - a      **p**      **pp**      Klu - thi

J      ta - mi - a      **p**      **pp**      Klu - thi

S      ta - mi - a      **p**      **pp**      Klu - thi

Bs.      **p**      **pp**      **p**

## Part I Motet: Harmonies of the Worlds

4

**G**

Merc      V      E      Mars      J      S

*p*      *f*      *mp*      *p*      *f*      *mp*

*p*      *f*      *mp*

*f*      *mp*

Part I Motet: Harmonies of the Worlds

5

*autos echōn klēida kai hulaiois eni kosmois  
the key to the life-supporting source and channel from above*

H

24

Merc

V

E

Mars

J

S

na

pe ges

o a-na pe - ges

o a-na pe - ges

os

f

mp au - tos - ech-on - kle-i - da kai hu - la - o -

mp au - tos ech - on kle -

mp au - tos ech - on kle -

mp au - tos ech - on

mp au - -

24

Bs.

f

mp

Part I Motet: Harmonies of the Worlds

6

*like flower buds opening*

I

Merc

V

E

Mars

J

S

**30**

**31**

**32**

**33**

**34**

**35**

**36**

**37**

**38**

**39**

**40**

**41**

**42**

**43**

**44**

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**88**

**89**

**90**

**91**

**92**

**93**

**94**

**95**

**96**

**97**

**98**

**99**

**100**

*hupothen harmoniēs ruma plouſion exocheteuōn  
a rich stream of harmony into the material worlds*

**J**                                   **K**

crescendo

Merc

V

E

Mars

J

S

35

*hupothen harmoniēs ruma plouſion exocheteuōn  
a rich stream of harmony into the material worlds*

*kos - mo - is*      *hup - so - then har - mo - ni es ru - ma plou - si - on*

*is*      *crescendo*      *hup - so*      *then*

*kos-mo*      *is*      *crescendo*      *hup - so - then*      *har - mo*

*e - ni kos-mo - is*      *crescendo*      *hup - so*      *then har - mo -*

*mo - is*      *crescendo*      *hup - so*      *then har - mo -*

*hu - la - o - is e - ni kos-mo - is*      *hup - so - then*      *har - mo - ni -*

35

*crescendo*

Bs.

*f*

*f*

# Part I Motet: Harmonies of the Worlds

8

**L**

Merc

V

E

Mars

J

S

Bs.

**42**

**42**

M                    N

Merc      si on ex - o che teu on **f** hup - so - then har mo

V              ru - - - - ma **mf** plu - - - -

E              teu - on hup - so **mf** then har -

Mars     es ru - ma plou - si on ex - o che teu - on har - mo - ni - es har mo

J              es ru - ma plou - si on ex - o - che - teu on har har har har har har mo mo mo mo mo mo

S              har mo - ni - es har - mo ni - es **mf** har - mo ni - es

**49**

Bs.              **49**

## Part I Motet: Harmonies of the Worlds

10

O                    P

Merc

V

E

Mars

J

S

Bs.

55

55

55

*mp*

*mp*

*mp*

*mp*

**Q aphelions** *cresc.*  
glissando for 4 beats

**parahelions** *dim.*  
gliss from 3 to 4+

Merc      V      E      Mars      J      S

64

64

Bs.

# Pars II Motet: Harmonies of the Worlds

Johannes Kepler / Dave Soldier  
text Proclus "Hymn to the Sun"

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## Pars II

A

$\text{♩} = 60$

*zosamenoi de planetes*  
*The plantets, girded*

Mercury Soprano

Mercury Soprano: *Zo - sa me - noi de pla - ne tes de pla -*

Venus Alto: *Zo - sa me - noi de pla - ne tes*

Earth Alto: *Zo - sa me - noi de pla - ne tes*

Mars Tenor: *Zo - sa - me - noi de pla-ne - tes Zo - sa - me - noi de pla-ne - tes*

Jupiter Baritone: *Zo - sa me - noi de pla - ne tes*

Saturn Bass: *Zo - sa - me - noi de pla - ne - tes*

Keyboard Continuo: *Zo - sa - me - noi de pla - ne - tes*

Bass: *Zo - sa - me - noi de pla - ne - tes*

## Pars II Motet: Harmonies of the Worlds

2

*aeithaleus seo pursous  
with your ever-blooming torches*

Merc      V      E      Mars      J      S

ne - tes      ae - ith a le - us      se - o      pur - sous      ai-en

ae - ith - a - le - us se - o per - sous

ae - ith      a le      us      se - o      pur - sous ai-en

ae - ith      a - le      us      seo      pur - sous ai-en

ae - ith - a      le ous      se - o      pur -      sous

Bs.

*aien hup' allektoisi ka  
through unceasing and*

Merc      

J. C. Bach's basso continuo realization:



## Pars II Motet: Harmonies of the Worlds

4

**B** akamatoisi choreiasis  
untiring dances

Merc  
V  
E  
Mars  
J  
S

ka - ma - to - i - si - cho - rei - as  
ka - ma - to - i - si - cho - rei - as  
ka - ma - to - i - si - cho - rei - as  
ka - ma - to - i - si - cho - rei - as  
ka - ma - to - i - si - cho - rei - as  
ka - ma - to - i - si - cho - rei - as

18  
18  
18

Bs.

21

Merc      ka - ma - to - i - si - cho - rei      ka - ma - to - i - si - cho - rei -

V      ka - ma - to - i - si - cho - rei -      ka - ma - to - i -

E      ka - ma - to - i - si - cho - rei -      ka - ma - to - i -

Mars      ka - ma - to - i - si - cho - rei -      ka - ma - to - i -

J      ka - ma - to - i - si - cho - rei -      ka - ma - to - i -

S      ka - ma - to - i - si - cho - rei -      ka - ma - to - i - si - cho - rei -

21

21

21

Bs.      ka - ma - to - i - si - cho - rei -      ka - ma - to - i -

Pars II Motet: Harmonies of the Worlds

6

C

*zō(i)gōnous pēmpousin epichthoniois rāthamigas  
always send life-producing drops down for earthlings*

Merc

V

E

Mars

J

S

Bs.

23

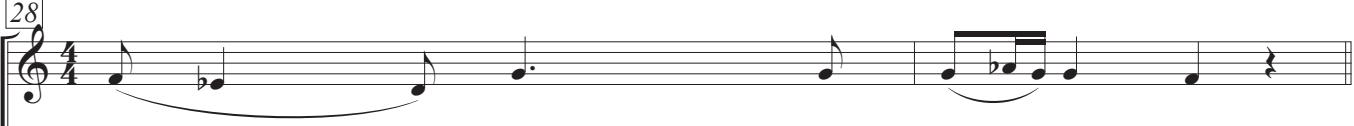
24

25

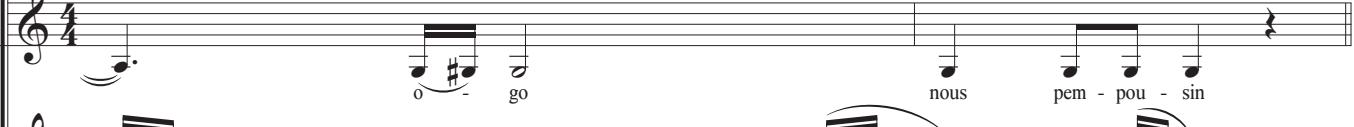
## Pars II Motet: Harmonies of the Worlds

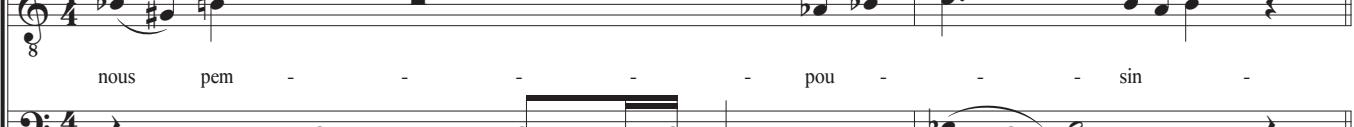
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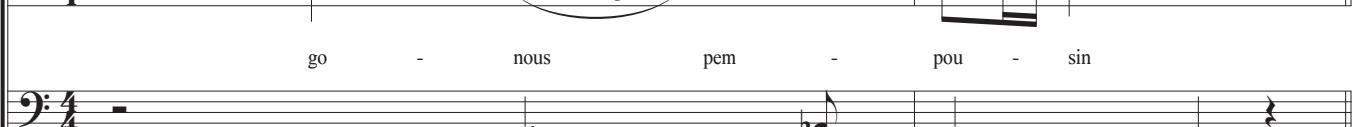
28

Merc 

V 

E 

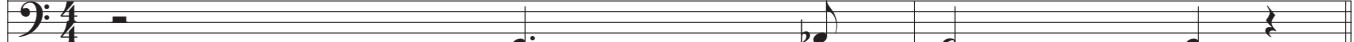
Mars 

J 

S 

28



Bs. 

## Pars II Motet: Harmonies of the Worlds

8

Merc

V

E

Mars

J

S

Bs.

*f* e - - - - pich - - - - tho - ni -

*f* e - - - - pich - - - - tho - ni

*b* e - - - - *p*ich - - - - *tho* - ni -

*f* e - - - - e - - - - pich - - - - tho - ni -

*f* e - - - - pich - - - - tho - ni - o -

*f* e - - - - tho - - - - ni - o -

*f*

*crescendo*

Merc

V

E

Mars

J

S

Bs.

33

33

33

**p**

**p**

**p**

**p**

## Pars II Motet: Harmonies of the Worlds

10

D      *rathamiggas  
(earthlings)*

Merc

V

E

Mars

J

S

Bs.

39

39

39

45

Merc      V      E      Mars      J      S      Bs.

45

45

45

29

# Pars III Motet: Harmonies of the Worlds

Johannes Kepler / Dave Soldier  
text Proclus "Hymn to the Sun"

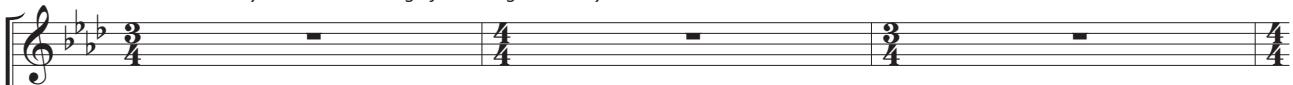
©1619 / 2021 A.D.

## Pars III

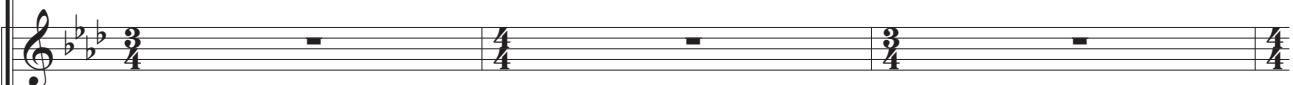
A

*Seirēs d' humeterēs basileus theopeitheos oimēs*  
From your chain the king of the song that obeys the divine

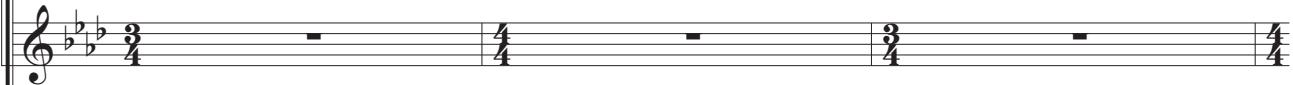
Mercury Soprano



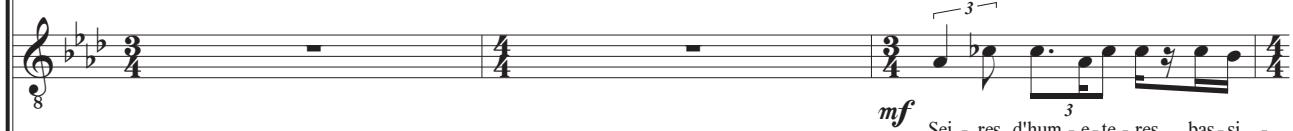
Venus Alto



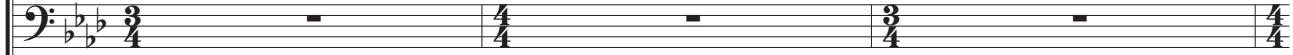
Earth Alto



Mars Tenor



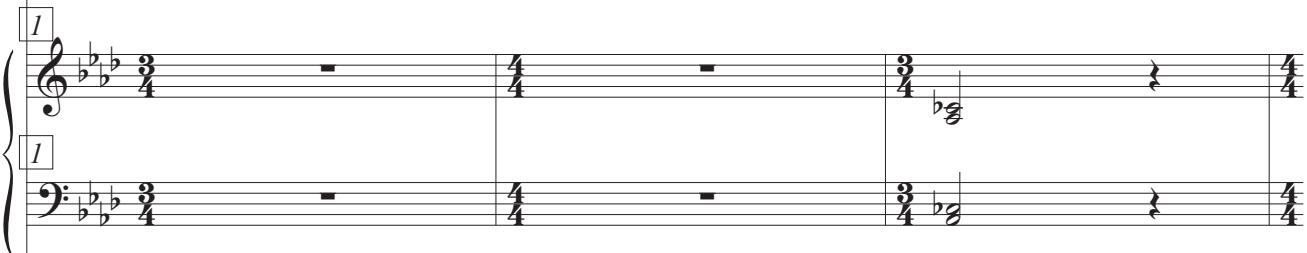
Jupiter Baritone



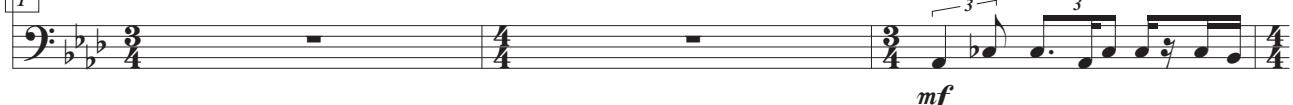
Saturn Bass



Keyboard



Bass



Pars III Motet: Harmonies of the Worlds

2

Merc

V      *f* Sei - res d'hum - e - te res ba - si - le - us theo - pei - theos oi - mes

E

Mars      *f* 8 le - us theo - pei theos oi - mes Sei - res d'hum - e - te - res bas - si - le - us theo - pei - theos oi - mes

J

S      *f* le - us theo - pei theos oi - mes Sei - res d'hum - e - te - res bas - si - le - us theo - pei - theos oi - mes

Bs.

Merc

V

E

Mars

J

S

Bs.

32

Pars III Motet: Harmonies of the Worlds

4

*[10]*

Merc      le - us theo - pei theos oi - mes      *mp* Sei - res d'hum - e - te - res bas - si -

V      res ba - si - le - us theo - pei - theos oi - mes      *mp* Sei - res d'hum - e - te

E      res ba - si - le - us theo - pei - theos oi - mes      *mp* Sei - res d'hum - e - te - res bas - si -

Mars      res ba - si - le - us theo - pei - theos oi - mes      *mp* Sei - res d'hum - e - te

J      le - us theo - pei theos oi - mes      *mp* Sei - res d'hum - e - te - res bas - si -

S      le - us theo - pei theos oi - mes      *mp* Sei - res d'hum - e - te - res bas - si -

*[10]*

*[10]*

*[10]*

Bs.

12

Merc      le-us theo-pei theos oi-mes      Sei-res d'hum-e-te-res bas-si      le-us theo-pei theos oi-mes

V      res ba-si le-us theo-pei oi-mes      Sei-res d'hum-e-te      res ba-si le-us theo-pei oi-mes

E      le-us theo-pei theos oi-mes      Sei-res d'hum-e-te-res bas-si      le-us theo-pei theos oi-mes

Mars      res ba-si le-us theo-pei oi-mes      Sei-res d'hum-e-te      res ba-si le-us theo-pei oi-mes

J      le-us theo-pei theos oi-mes      Sei-res d'hum-e-te-res bas-si      le-us theo-pei theos oi-mes

S      le-us theo-pei theos oi-mes      Sei-res d'hum-e-te-res bas-si      le-us theo-pei theos oi-mes

12

12

12

Bs.

**B**

Merc      V      E      Mars      J      S

**15**

**16**

**p**

Sei - res d'hum - e - te - res bas - si - le - us theo - pei theos oi - mes - Sei - res d'hum - e - te - res bas - si -

Sei - res d'hum - e - te - res bas - si - le - us theo - pei theos oi - mes - Sei - res d'hum - e - te - res bas - si -

Sei - res d'hum - e - te - res bas - si - le - us theo - pei theos oi - mes - Sei - res d'hum - e - te - res bas - si -

*crescendo*

Merc 18

V res ba-si le - us theo-pei - oi-mes      oi - - - **f** mes

E ba - si - - le - us      (b) theo - - pei      **f** theos oi

Mars res ba-si le - us theo-pei - oi-mes      Sei - res d'hum-e - te **f** res ba-si - le - us theo-pei - oi - mes

J le - us theo - pei theos oi - mes      Sei-res d'hum-e - te - res bas-si **f** le - us theo - pei theos oi - mes -

S le - us theo - pei theos oi - mes      Sei-res d'hum-e - te - res bas-si - le - us theo - pei theos oi - mes -

Bs. 18

18

18

Bs.

*exethoren Phoibos; kitharē(i) d' hupo theskela melpōn  
Phoibos, sprung forth. Singing inspired songs to the accompaniment of the kithara*

C

Merc      V      E      Mars      J      S      Bs.

**21**

**21**

*exethoren Phoibos; kitharē(i) d' hupo theskela melpōn  
Phoibos, sprung forth. Singing inspired songs to the accompaniment of the kithara*

C

Merc      V      E      Mars      J      S      Bs.

**21**

**21**

**21**

**mf**

**D**

Merc

V

E

Mars

J

S

Bs.

*eunazei mega kuma barufloisboio genethles  
he calms the great wave of deep-roaring becoming*

E

Merc     

V

E

Mars

J

S

Bs.

33

Merc      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

V      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

E      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

Mars      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

J      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

S      *ku - ma ba - ru flo - is boi - o - ge-neth les e - u - na zei me - ga - ku - ma ba - ru flo - is*

33

Bs.      *- - - - -*

33

33

33

*J = 60*

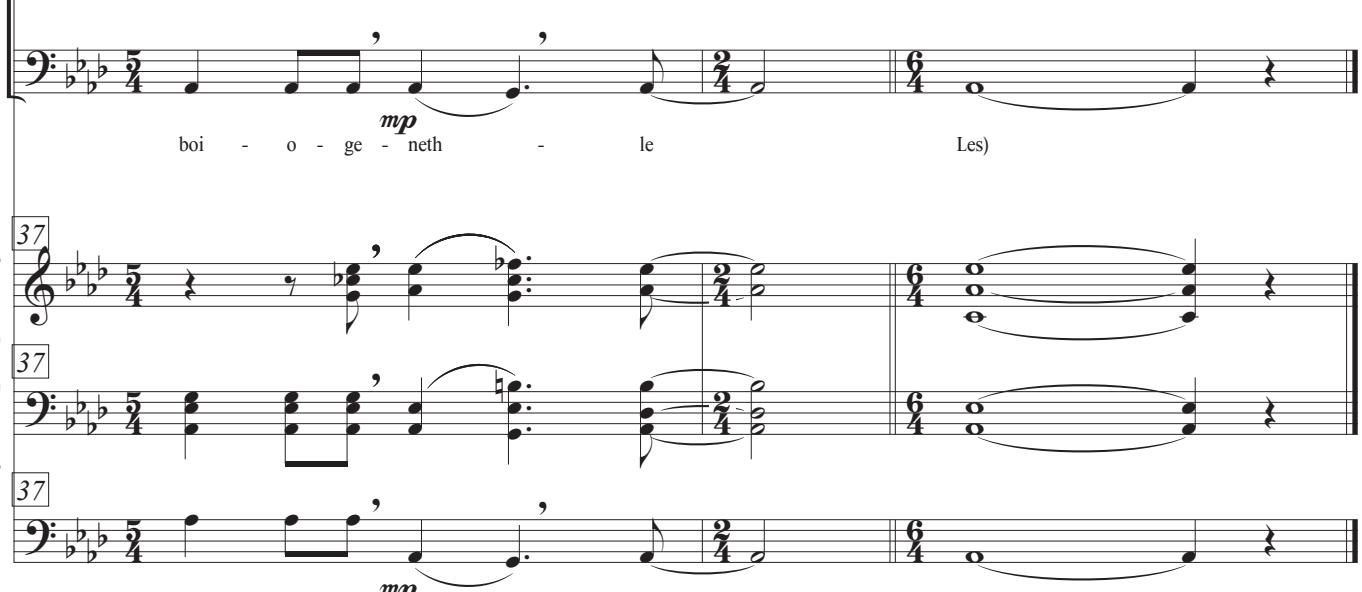
Merc 

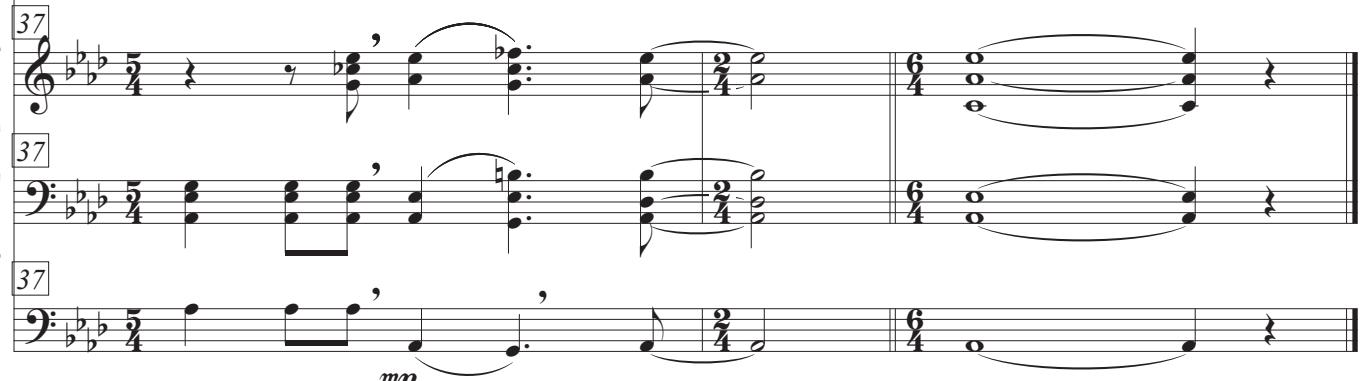
V 

E 

Mars 

J 

S 

Bs. 

*mp*

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

boi - o - ge - neth le - - - (les)

Les)

# Pars IV Motet: Harmonies of the Worlds

Johannes Kepler / Dave Soldier  
text Proclus "Hymn to the Sun"

©1619/2021AD

connect pitch changes by glissandos  
and bring out consonances when you hear them - Kepler would like that!

A

*J = 48*

Mercury Soprano

Venus Alto     *Venus year = 24 quarter notes*     *Venus chirps along without much empathy for Earth*  
*p*     *o a o a o a o a o a o a o a o a o a o a o a o o*     *ppp*

Earth Alto     *sadly*     *\* 1 earth year = 26 quarter notes*     *all G sing mi, all G3 / Ab sing fa*  
*mp*     *mi fa mi mi mi mi fa fa fa fa fa mi*     *ppp*

Mars Tenor

Jupiter Baritone

Saturn Bass

7

Merc

V     *\**     *p*

E     *\**     *p*     *change nasality*     *1 martian year = 29 quarter notes*     *pp*     *ppp*

Mars     *pp*     *na na na na na na na na*     *p*     *mp ppp*

J

S

Pars IV Motet: Harmonies of the Worlds

2

**B**

*I mercury year = 20 quarter notes*

Merc      V      E      Mars      S

16

Merc      V      E      Mars      S

change nasality

pulsed humming

20

Merc

V

E

Mars

J

S

*I saturn year = 41 quarter notes*

25

Merc

V

E

Mars

J

S

C

*like a pulsar*

*ooo uh ooo uh oo uh*

*pp urrr*

*p*

*pp*

*mp*

*pp ff vv*

*ff vv*

*vv ff vv*

*mp >*

*ff vv*

*ff vv*

*mp whoa whoa whoa*

Pars IV Motet: Harmonies of the Worlds

4

29

Merc

V

E

Mars

J

S

*ta ta ta ta ta ta*

*sim. \* 1 jupiter year = 37 quarter notes*

*ff vv*

*crescendo*

*mp*

*\**

*mp*

*\**

*mp*

*\**

D

Merc

V

E

Mars

J

S

*mf*

*mf*

*mf*

*mf*

*mf*

*mf*

*\**

*p*

*rrr rrrr rrr rrrr*

*Saturn and Jupiter try to bring out beating here ha mum mum*

*mf*

the music begins to be more pulse-like and rhythmic, stress the beats

**E**

Merc

V

E

Mars

J

S

la lo lay la lo lay

puh muh muh muh pulsed humming

pp

**F**

40

Merc

V

E

Mars

J

S

eyahh eyahh eyahh Venus and Earth in a sweet consonance for a while

kaw kaw kaw kaw kaw

na na na na

Pars IV Motet: Harmonies of the Worlds

6

*I mercury year = 20 quarter notes*

Merc: *pulsed humming* *uuurrrr*

V: *mp* *p*

E: *mp* *pp*

Mars: *pulsed humming*

S: *mp* *pp*

48

Merc: *mf* *urrrr*

V:

E:

Mars:

J: *p* *ng ng ng ng*

S:

51

Merc

V      *p wah*      *ff*

E      *p wah*      *ff mp*

Mars      *p wah ff mp*

J      *p ff*

S      \*

54

Merc      *mp aah*

V      \*

E      *mp*

Mars      *aah*

J      *mp aah*

S      *p aah*

Pars IV Motet: Harmonies of the Worlds

8

**G**

Merc: Treble clef, key signature changes between F# and G major. Measures 57-58 show eighth-note patterns with grace notes and slurs. Measure 59 starts with **pp**, followed by eighth-note pairs. Measure 60 starts with **p**. Measure 61 ends with a fermata.

V: Bass clef, no specific notes shown.

E: Treble clef, eighth-note patterns throughout.

Mars: Treble clef, key signature changes between F# and G major. Measures 57-58 show eighth-note patterns. Measure 59 starts with **pp**, followed by eighth-note pairs. Measures 60-61 show eighth-note patterns with lyrics "aah" and "o".

J: Bass clef, eighth-note patterns throughout. Measure 60 includes dynamics **mf**.

S: Bass clef, eighth-note patterns throughout. Measure 60 includes dynamics **mf**.

**60**

Merc: Treble clef, key signature changes between F# and G major. Measures 60-61 show eighth-note patterns with dynamics **mp** and **mf**. Measure 62 ends with a fermata.

V: Bass clef, no specific notes shown.

E: Treble clef, eighth-note patterns throughout. Measure 61 includes dynamics **mp** and **mf**.

Mars: Treble clef, key signature changes between F# and G major. Measures 60-61 show eighth-note patterns with dynamics **mp** and **mf**. Measures 62-63 show eighth-note patterns.

J: Bass clef, eighth-note patterns throughout. Measures 60-61 show eighth-note patterns with dynamics **mp** and **mf**. Measures 62-63 show eighth-note patterns.

S: Bass clef, eighth-note patterns throughout. Measures 60-61 show eighth-note patterns with dynamics **mp** and **mf**. Measures 62-63 show eighth-note patterns with the instruction "pulsed humming".

63

Merc

V

E

Mars

J

S

*f*

*mp*

*mf*

*f*

66

Merc

V

E

Mars

J

S

*mp*

*p*

*pp*

*mp*

*mf*

*mp*

Pars IV Motet: Harmonies of the Worlds

10

69

Merc: *mf* 3 *f* *ff*

V: -

E: *mf* *f* *ff*

Mars: -

S: *f* *ff*

**H**

Merc: *mf*

V: *mf* *ff*

E: *mf* *ff*

Mars: *mf* *ff*

J: *mf* *ff*

S: *mf* *ff*

76

Merc

V

E

Mars

J

S

*mf*

*fff*

*mf*

*f*

*pp*

*fff*

*mf*

*f*

*pp*

*fff*

*mf*

*f*

*pp*

*fff*

*mf*

*f*

*pp*