Humdrum Tools II

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Melodic Searching

tindex – themax – theloc

Download data files for J.S. Bach chorales:

```
humcat –s h://371chorales | humsplit
```

Create *thema* search index:

```
tindex *.krn > index.dat
```

Search for the pitch sequence “c d e f g a b”:

```
themax –p “c d e f g a b” index.dat
        chor190.krn::1     48 58
        chor325.krn::1     17
```

Convert matched note numbers into measure/beat locations:

```
themax –p “c d e f g a b” index.dat  --loc | theloc
        chor190.krn::1   48=9B1-54=9B4 58=10B2-64=11B2.5
        chor325.krn::1   17=5B1-23=6B3
```

http://extras.humdrum.org/man/tindex (themax, theloc)

Marking search in data

chor190.krn::1
48=9B1-54=9B4

58=10B2-64=11B2.5

Chorale 190, first **kern spine (bass part)
First match on notes 48-54 which is in measure 9 starting on beat one and ending at beat 4.
Second match on notes 58-64 starting at m10 beat 2 and ending at m11 beat 2.5

Marking match in original data:

themax –p “c d e f g a b” index.dat --loc | theloc –m

(only first entry in themax results will be processed)

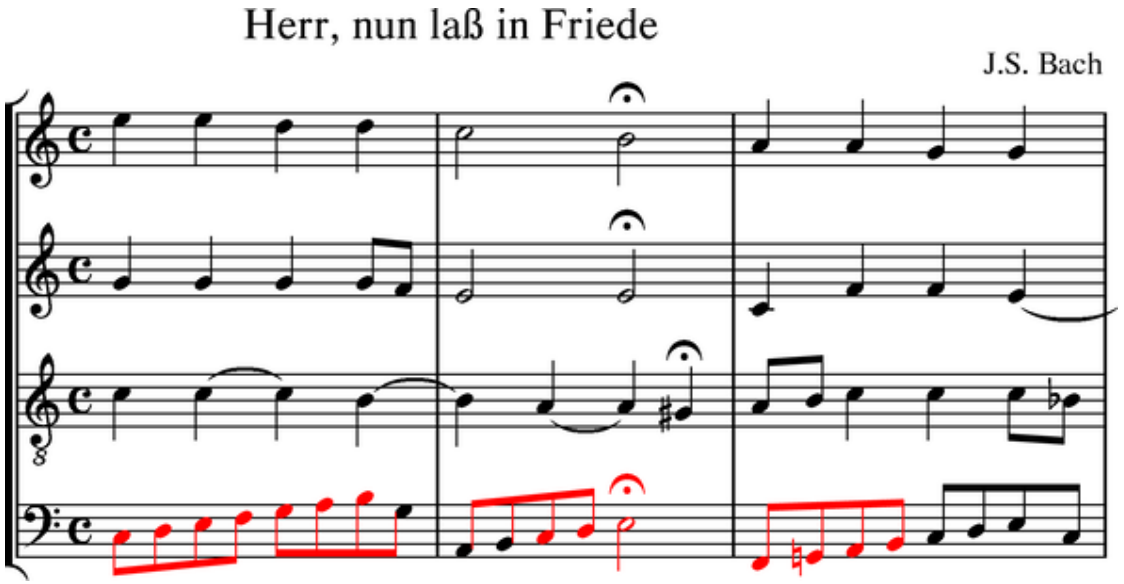
@ sign is a user-definable signifier
!!!RDF**kern: @= matched note

=9	=9	=9	=9
8CL@	4c	4g	4ee
8D@	.	.	.
8E@	[4c	4g	4ee
8FJ@	.	.	.
8GL@	4c]	4g	4dd
8A@	.	.	.
8B@	[4B	8gL	4dd
8GJ	.	8fJ	.
=10	=10	=10	=10
8AAL	4B]	2e	2cc
8BB	.	.	.
8C@	[4A	.	.
8DJ@	.	.	.
2E;@	4A]	2e;	2b;
.	4G#;	.	.
=11	=11	=11	=11
8FFL@	8AL	4c	4a
8GGn@	8BJ	.	.
8AA@	4c	4f	4a
8BBJ@	.	.	.
8CL	4c	4f	4g
8D	.	.	.
8E	8cL	[4e	4g
8CJ	8B-J	.	.
=12	=12	=12	=12

Displaying matches in graphical notation

themax –p “c d e f g a b” index.dat --loc | head –n1 | theloc –m | myank –m 9-11 > match.krn

cat match.krn| autostem | hum2muse | muse2ps =z21j | pstopnm -dpi=300 \
| convert - -trim -resize '33%’ match.png



Parallel searches

Search for the pitch sequence “cdefgab” only going upwards:

```
themax -p "cdefgab" -C "uuuuuu" index.dat
    chor190.krn::1   48
    chor325.krn::1   17
```

pitch: cdefgab
contour: up up up up up up

Prevent matches across fermatas:

```
tindex –fermata *.krn > index2.dat
themax -p "cdefgab" -C "uuuuuu" index2.dat
    #FERMATA
    chor190.krn::1   48
    chor325.krn::1   17
```

Josquin Research Project website

- front-end for tindex/themax/theloc

http://jrp.ccarh.org

themax input fields

-D option
(diatonic search
ignoring accidentals)

Interval: -I

Rhythm: -u

JRP Search Results

search for diatonic pitch sequence “cdefgab”

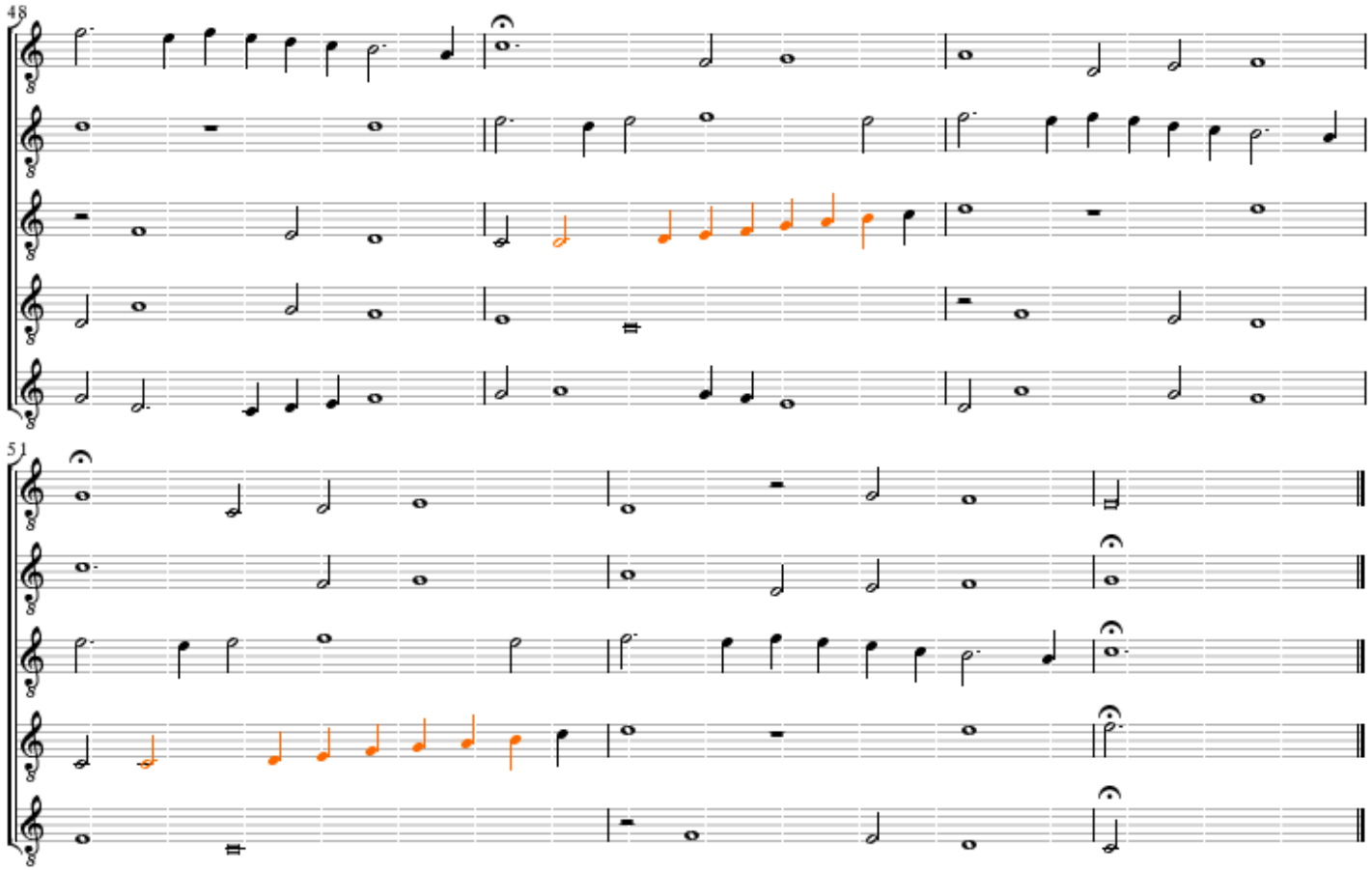
169 matches in 105 works/movements [New Search]

Matches	Locations (click for score with matches)	No.	Title (click titles for more analytical tools)	Voices	MIDI file
1		2802	Ach hulff mich leid	4	M
4		1501	Alleluia Laudate Dominum	5?	M
2		2308	Ave maris stella	4	M
1		**2102**	Ave verum corpus	2–3	M
3		2103	Ave verum corpus	5	M
4		2312	Ave virgo sanctissima	5	M
3		1502	Beati omnes qui timent Dominum	4	M
2		2720	La belle se siet	3	M
1		1402	Benedicite omnia opera	4	M
3		**2721**	La Bernardina	3	M
1		1505	Bonitatem fecisti cum servo tuo	4	M

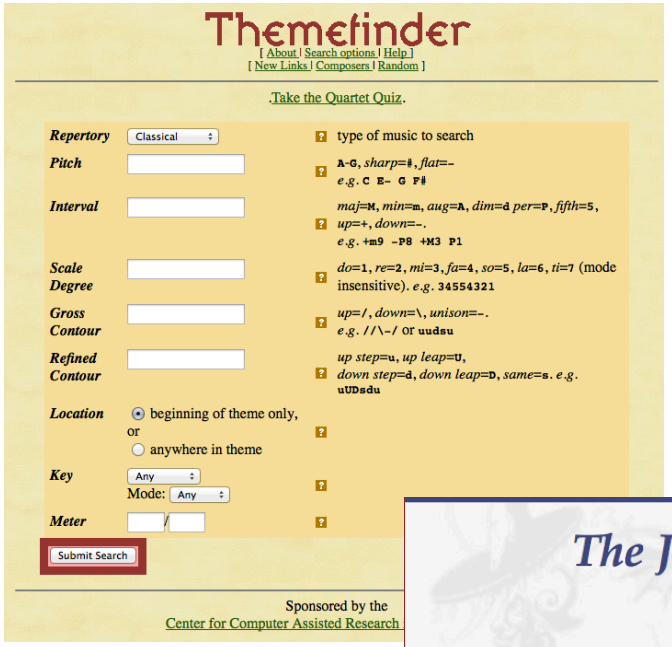
location of match within score (color indicates voice type which has match)

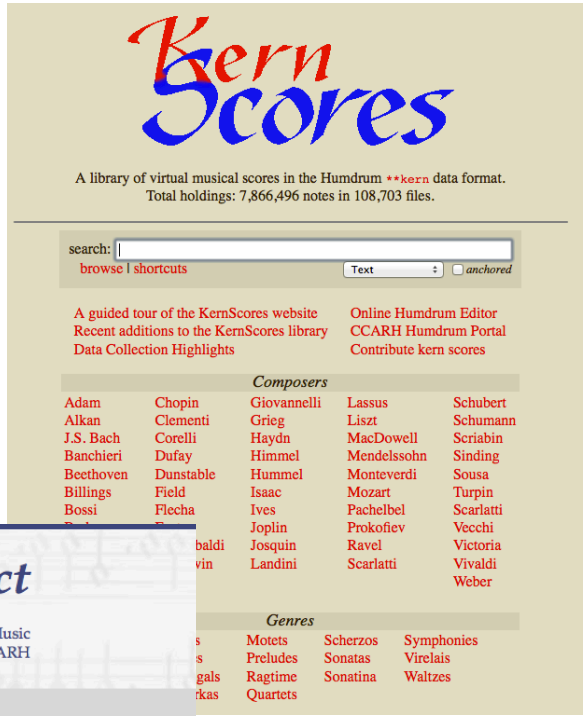
Graphical display of search results

- Click on location thumbnail to view score with matches highlighted:



Themefinder/Kernscores



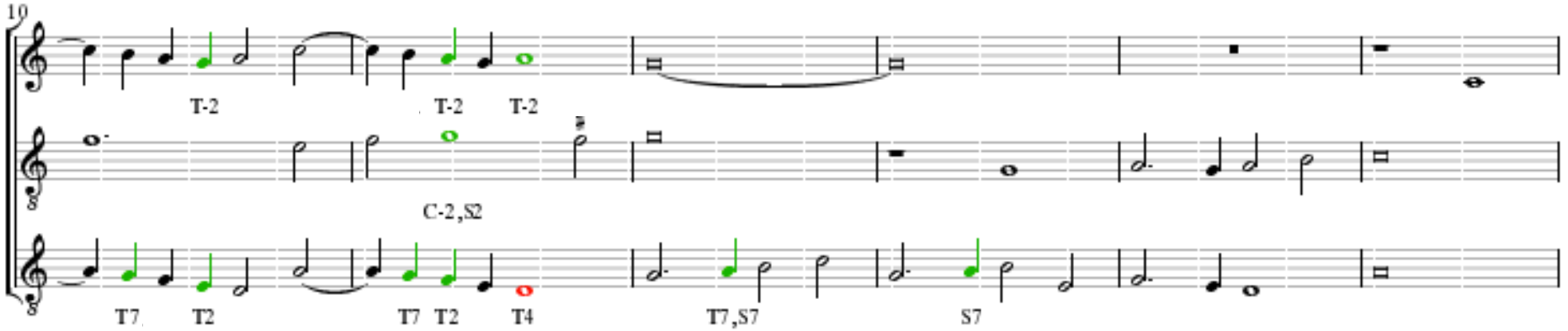


JRP Analysis Tool: dissonant

dissonant jrp://Jos2721 | myank –m 10-15

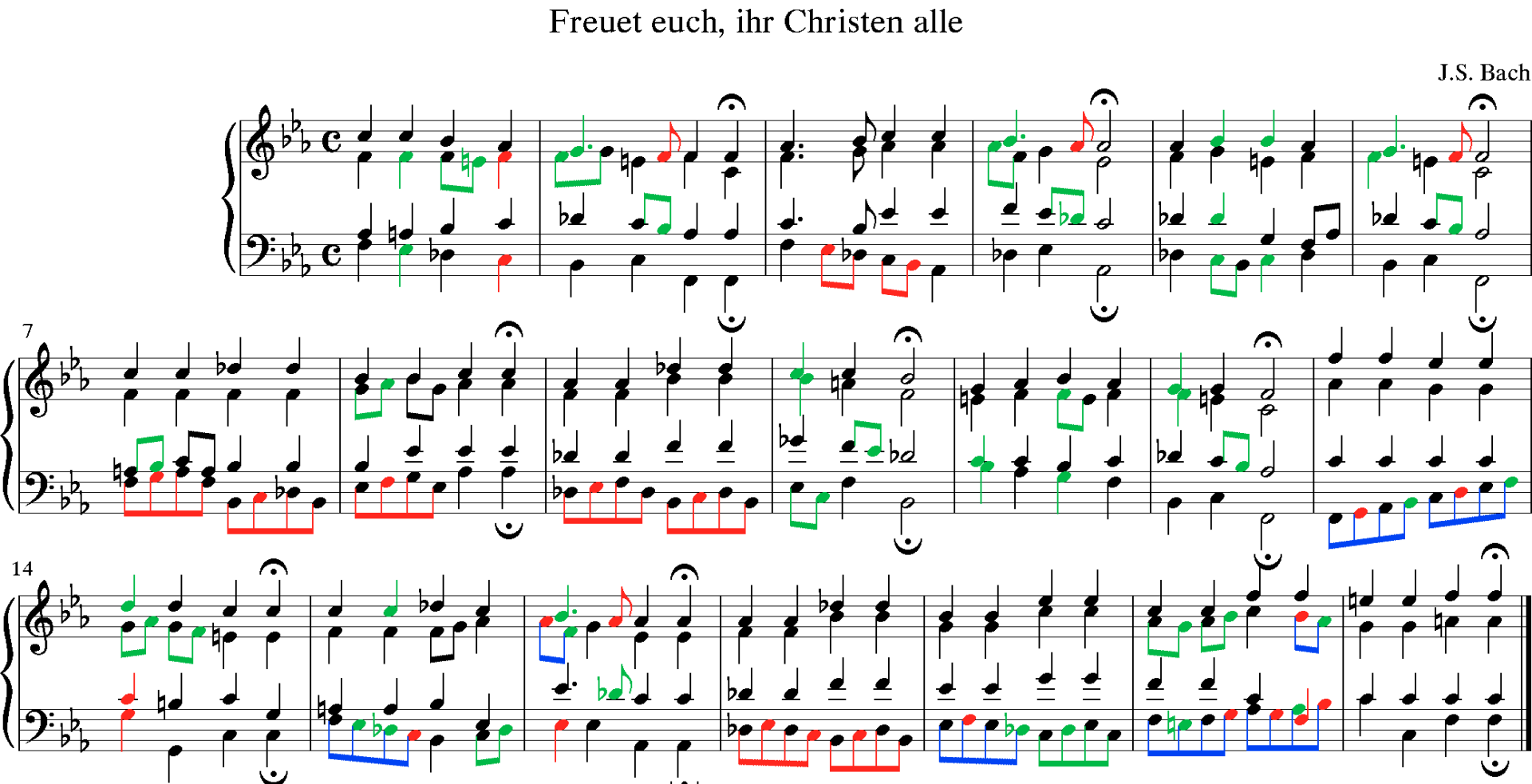
**kern	**text	**kern	**text	**kern	**text
=10	=10	=10	=10	=10	=10
4A]	.	1.f	.	4cc]	.
4G>	T7	.	.	4b	.
4F	.	.	.	4a	.
4E<	T2	.	.	4g<	T-2
2D	.	.	.	2a	.
[2A	.	2e	.	[2cc	.

http://jrp.ccarh.org/data?a=dissonantpdf&f=Jos2721-La_Bernardina



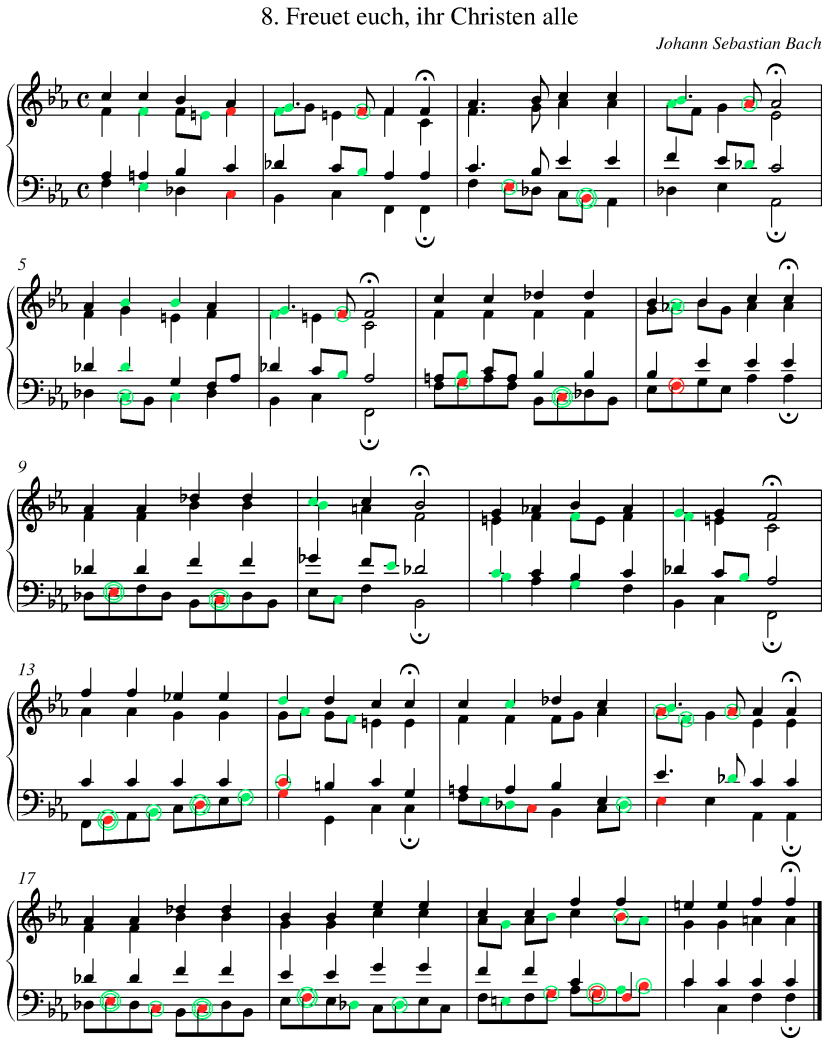
dissonant

```
dissonant h://371chorales/chor008.krn | extractx -i'**kern' | satb2gs | autostem | \
    hum2muse | muse2ps =z14jv120,100 | pstopnm -dpi=300 | convert - -trim output.png
```



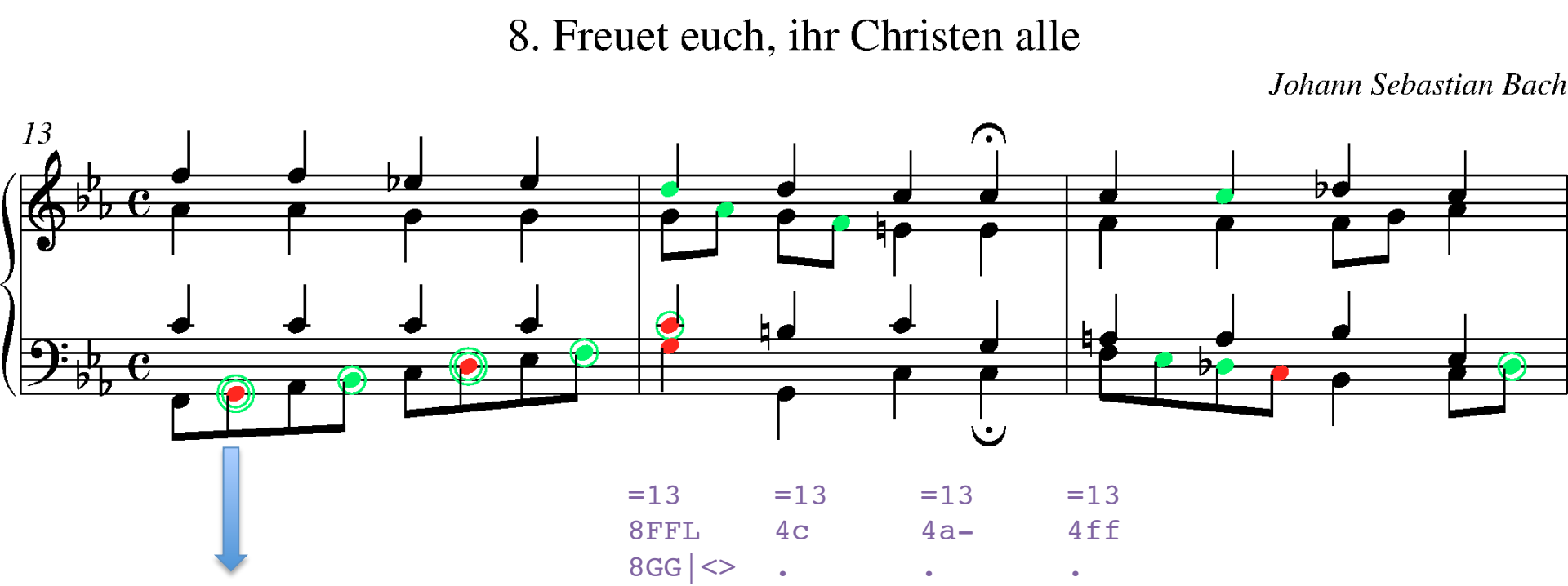
dissonant/abcm2ps

```
dissonant h://371chorales/chor008.krn | extractx -i'**kern' | satb2gs | autostem | hum2abc \
    | abcm2ps -s 0.8 - -O - | pstopnm -dpi=300 | convert - -trim output.png
```



dissonant/abcm2ps

```
dissonant h://371chorales/chor008.krn | extractx -i'**kern' | myank -m13-15 | satb2gs \
    | hum2abc | abcm2ps - -O - | pstopnm -dpi=300 | convert - -trim output.png
```



4th below tenor
2nd below alto
2nd above soprano

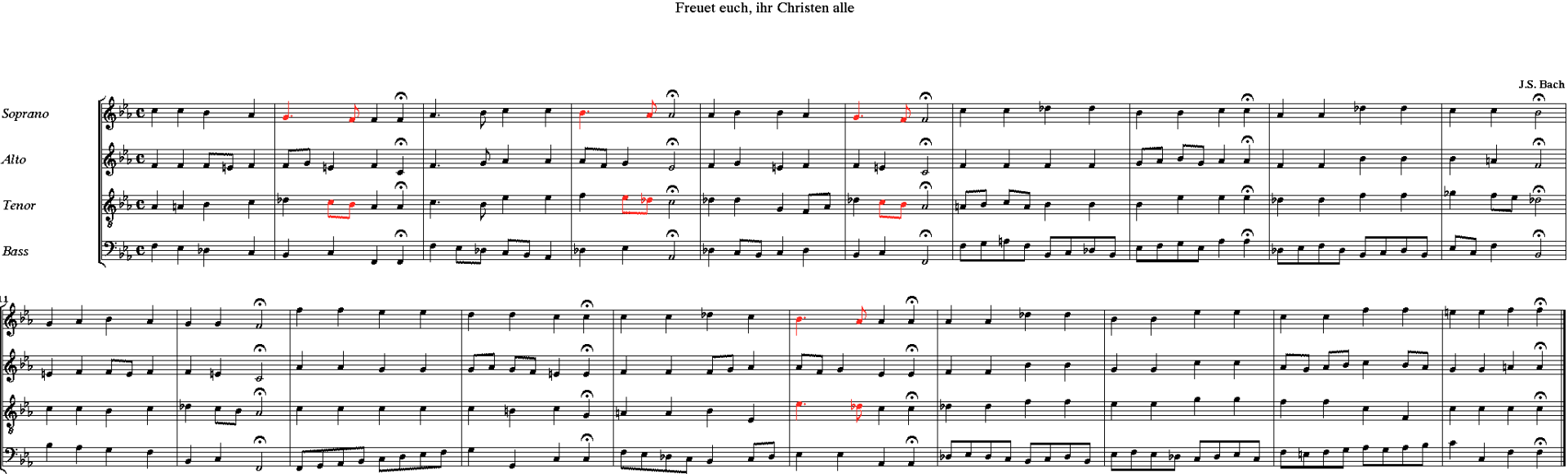
```
=13     =13     =13     =13
8FFL    4c      4a-     4ff
8GG|<>  .       .       .
8AA-    4c      4a-     4ff
8BB-J<> .       .       .
8CL     4c      4g      4ee-X
8D|><   .       .       .
8E-     4c      4g      4ee-
8FJ<>   .       .       .
```

JRP Analysis Tool: parallel

http://josquin.ccarh.org/data?composer=Joa&repertory=parallel

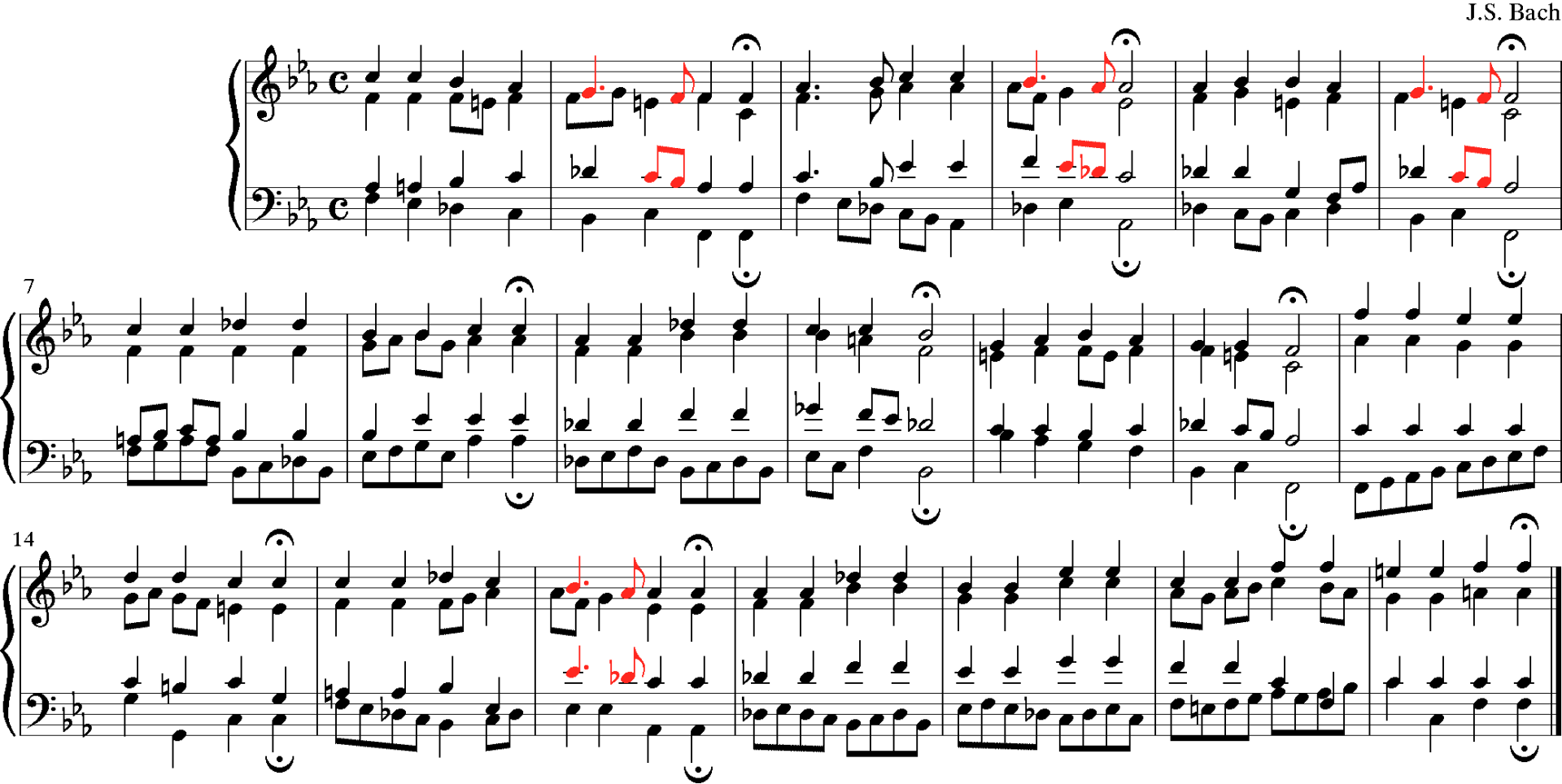
```
for i in `seq -w 371`
do
   echo \!\!chorale $i
   parallel -l h://371chorales/chor$i.krn
done | less
```

```
parallel h://371chorales/chor008.krn | autostem | hum2muse | muse2ps =z6j \
    | pstopnm -dpi=300 | convert - -trim output.png
```



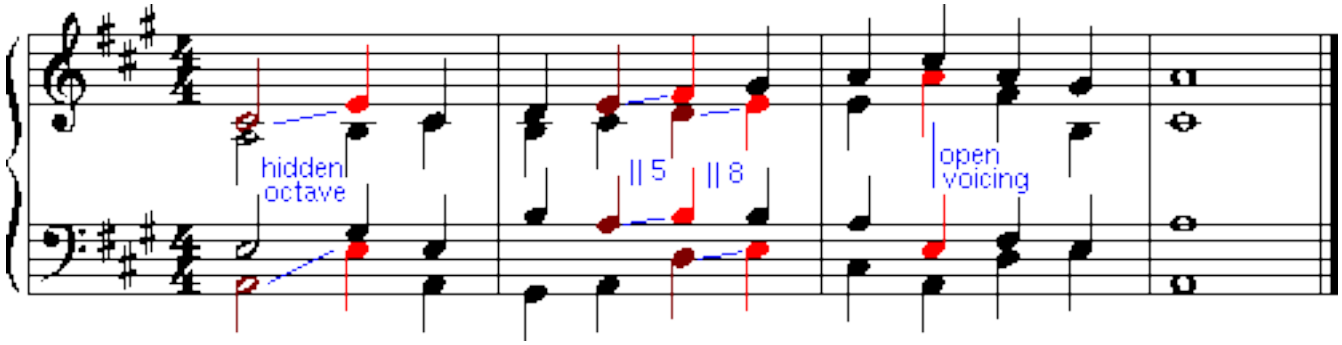
satb2gs

parallel h://371chorales/chor008.krn | satb2gs | autostem | hum2muse \
| muse2ps =z14v120,120j | pstopnm -dpi=300 | convert - -trim output.png



chorck

http://extras.humdrum.org/man/chorck



chorck h://371chorales/chor008.krn -w

3. Contrary parallel 5th between tenor and soprano on line 26
3. Contrary parallel 5th between tenor and soprano on line 40
3. Contrary parallel 5th between tenor and soprano on line 52
5. Hidden 5th between soprano and alto on line 54
5. Hidden 5th between soprano and bass on line 54
5. Hidden 5th between soprano and tenor on line 70
5. Hidden 5th between soprano and bass on line 70
5. Hidden 5th between soprano and tenor on line 85
8. Open spacing between alto and tenor on line 120
8. Open spacing between alto and tenor on line 121
3. Contrary parallel 5th between tenor and soprano on line 125
5. Hidden 5th between soprano and tenor on line 137
5. Hidden 5th between soprano and tenor on line 146
7. Voice crossing between tenor and bass on line 154
8. Open spacing between alto and tenor on line 154
7. Voice crossing between tenor and bass on line 155
8. Open spacing between alto and tenor on line 155