

Music typesetting in T_EX

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1 The Idea

1.1 The Problem: What do we need?

- notes, keys, clefs, accidentals...
- systems, staves, bars, repeats...
- senseful layout parameters
- special ornaments, symbols, graphics (for contemporary and modern pieces)

1.2 The Solution

Providing a $\text{T}_{\text{E}}\text{X}$ macro package and font set to allow the user to easily typeset musical scores.

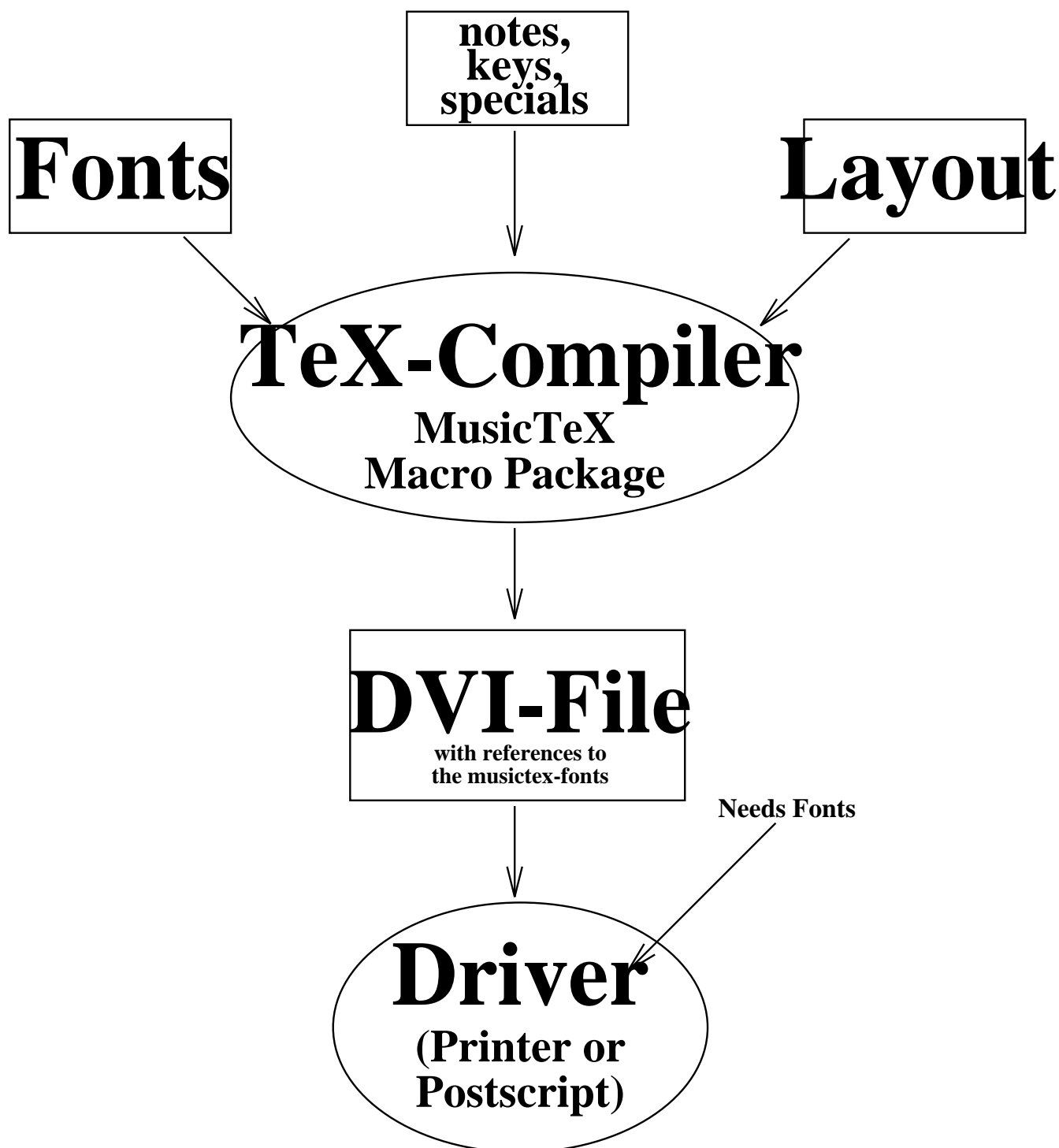
Music $\text{T}_{\text{E}}\text{X}$

Using $\text{T}_{\text{E}}\text{X}$ to write polyphonic or instrumental music

Version 5.02

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1.3 How does it work?



MusicTeX provides macros to put the most common types of notes in a senseful arrangement. There are also semi-automatic layout generators and transposition features included. (Not too much, because it consumes **great** amounts of T_EX's memory anyway...). The user can easily create his own macros to make life easier (so for chord setting or often-used procedures).

2 The Fonts

2.1 The musikn16 font

	'0	'1	'2	'3	'4	'5	'6	'7	
'00x	◆	■	■	■	▣	▤	▥	⋯	"0x
'01x		∞	∞	∞	∞	∞	∞	∞	
'02x	∞	∞	∞	∞	∞	∞	∞	∞	"1x
'03x	.	.	-	-	.	.	∞	∞	
'04x	▣	●	○	○	▣	●	○	○	"2x
'05x	∞	∞	∞	∞	∞	∞	∞	∞	
'06x	∞	∞	♭	♭	♯	×	♯	♯	"3x
'07x	♭	●	■	▣	▣	▣	∞	◆	
'10x	∞	∞	∞	∞	∞	∞	∞	∞	"4x
'11x	∞	∞	∞	∞	∞	∞	∞	∞	
'12x	∞	∞	∞	∞	∞	∞	∞	∞	"5x
'13x	∞	∞	∞	∞	∞	∞	∞	∞	
'14x	∞	∞	∞	∞	∞	∞	∞	∞	"6x
'15x	∞	∞	∞	∞	∞	∞	∞	∞	
'16x	∞	∞	∞	∞	∞	∞	∞	∞	"7x
'17x	♭	♭	♯	×	♯	♯	∞	∞	
	"8	"9	"A	"B	"C	"D	"E	"F	

2.2 The beamn16 font

	'0	'1	'2	'3	'4	'5	'6	'7	
'00x	.	-	-	-	-	-	.	-	"0x
'01x	-	-	-	-	.	-	-	-	
'02x	-	-	.	-	-	-	-	-	"1x
'03x	.	-	-	-	-	-	.	-	
'04x	-	-	-	-	.	-	-	-	"2x
'05x	-	-	.	-	-	-	-	-	
'06x	.	-	-	-	-	-	.	-	"3x
'07x	-	-	-	-					
'10x	.	-	-	-	-	-	.	-	"4x
'11x	-	-	-	-	.	-	-	-	
'12x	-	-	.	-	-	-	-	-	"5x
'13x	.	-	-	-	-	-	.	-	
'14x	-	-	-	-	.	-	-	-	"6x
'15x	-	-	.	-	-	-	-	-	
'16x	.	-	-	-	-	-	.	-	"7x
'17x	-	-	-	-	-	-	-	-	
	"8	"9	"A	"B	"C	"D	"E	"F	

2.3 The slurn16 font

	'0	'1	'2	'3	'4	'5	'6	'7	
'00x	"0x
'01x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"1x
'02x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"2x
'03x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"3x
'04x	"4x
'05x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"5x
'06x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"6x
'07x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"7x
'10x	"8
'11x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"9
'12x	"A
'13x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"B
'14x	"C
'15x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"D
'16x	"E
'17x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"F

2.4 The sluruu16 font

	'0	'1	'2	'3	'4	'5	'6	'7	
'00x	-	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"0x
'01x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'02x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"1x
'03x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'04x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"2x
'05x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'06x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"3x
'07x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'10x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"4x
'11x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'12x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	"5x
'13x	⌒	⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'14x		⌒	⌒	⌒	⌒	⌒	⌒	⌒	"6x
'15x		⌒	⌒	⌒	⌒	⌒	⌒	⌒	
'16x		⌒	⌒	⌒	⌒	⌒	⌒	⌒	"7x
'17x		⌒	⌒	⌒	⌒	⌒	⌒	⌒	
	"8	"9	"A	"B	"C	"D	"E	"F	

3 Putting notes on paper...

Complicated way: Use Plain \TeX and the music-Fonts in $\backslash\text{box}'\text{es}$ (like $\text{pic}\text{\TeX}$)

Easy way: Use the fonts and macros describing the positions and sequences of the notes \rightarrow **Music \TeX** by *Daniel Taupin*

3.1 Coding a single note



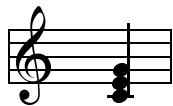
$\backslash\text{qu g}$

3.2 Collective coding of notes



$\backslash\text{qu}\{\text{cdefg'abc}\}$

3.3 Non-spacing (chorded) notes



$\backslash\text{zq}\{\text{ce}\} \backslash\text{qu g} \rightarrow$ Put it in a macro

3.4 Durations



$\backslash\text{wh g} \backslash\text{hu g} \backslash\text{qu g} \backslash\text{cu g} \backslash\text{ccu g} \backslash\text{cccu g} \backslash\text{ccccu g}$

3.5 Rests

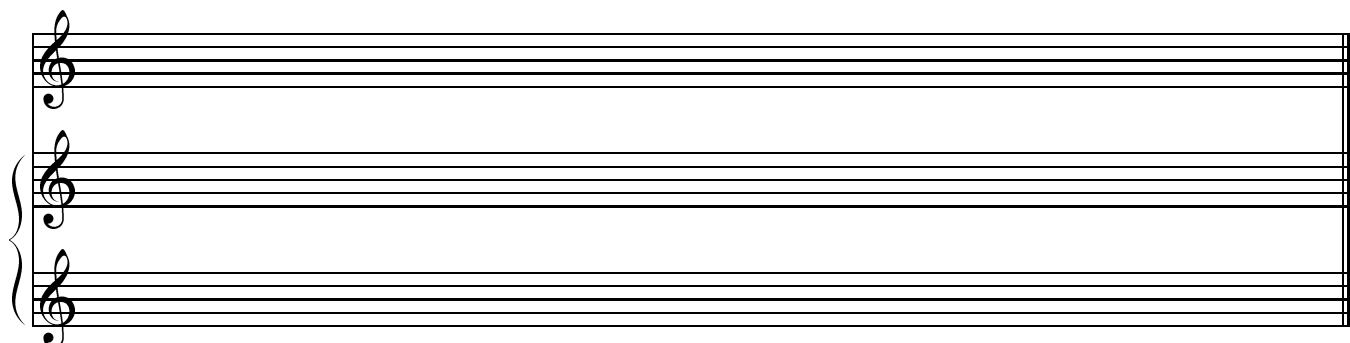


$\backslash\text{pause} \backslash\text{hpause} \backslash\text{soupir} \backslash\text{demisoupir} \backslash\text{quartsoupir}$

4 Some more global variables...

4.1 More than one instrument or system

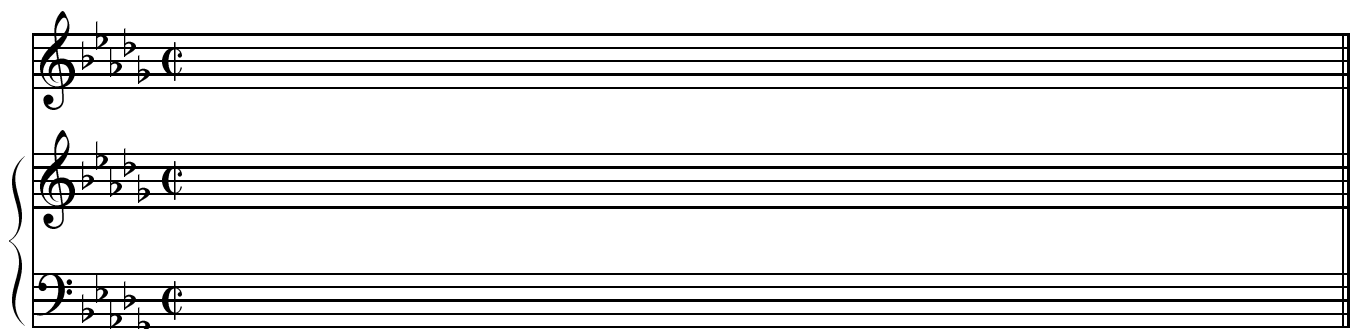
`\nbinstruments` Number of instruments
`\nbporteesi` Number of staves (portees) for instrument **I**



```
\def\nbinstruments{2}  
\def\nbporteesi{2}  
\def\nbporteesii{1}  
\debutmorceau...\finmorceau
```

4.2 Changing clefs, meter and signature

`\cleftoksi` set clef for instrument **I**
`\metertoksi` set meter for instrument **I**
`\generalmeter` set meter for all instruments
`\generalsignature` set signature for all instruments



```
... \cleftoksi{{6}{0}}{}{}  
\generalmeter{\allabreve}  
\generalsignature{-5}  
\debutmorceau ... \finmorceau
```

5 Beams, slurs, ties, repeats and really tricky things...

5.1 Beams



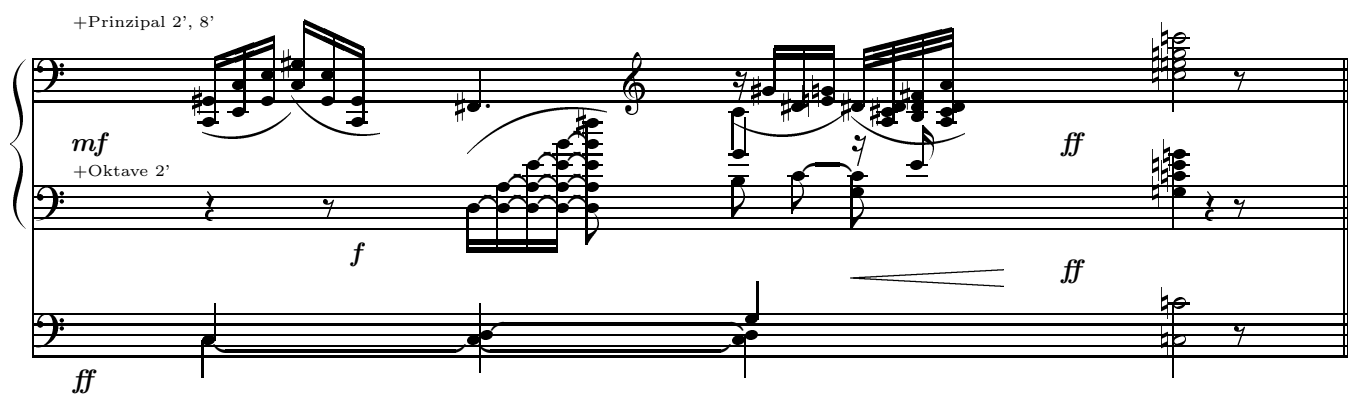
`\ibu0e5 \qh0{ceeg}\tbu0\qh0 'c`

5.2 Putting anything anywhere & dirty tricks...

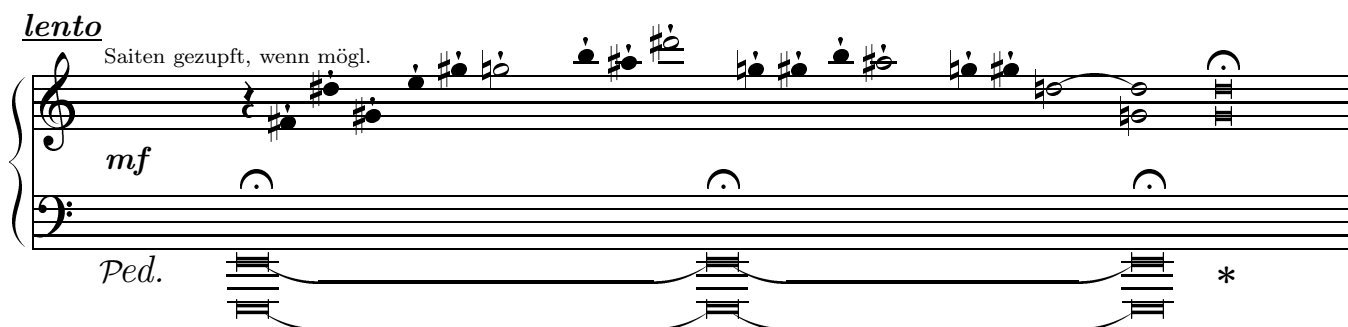
`\zcharnote p {text}` sets {text} at note pitch p



Excerpt from Organ piece 4



Excerpt from Skorpion



Excerpt from Lacrimosa

6 Automatic line and page breaking

As we know it from the text formatting system of the $\text{T}_{\text{E}}\text{X}$ Compiler, the systems are put on the worksheet in such a way, how $\text{T}_{\text{E}}\text{X}$ thinks it looks most beautiful... That's not always what *we* think looks nice. So the composer may break each line by hand by `\alalinge`, and each page by `\alapage`. This example is page 2 of Piano Piece 2 (Bagatelle).

The image displays a musical score for Piano Piece 2 (Bagatelle), page 2, covering measures 18 through 39. The score is written in 4/4 time and consists of two staves: a treble clef staff and a bass clef staff. The key signature is one flat (B-flat major or D minor). The score is divided into six systems, each containing two staves. Measure numbers 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, and 39 are indicated above the treble staff. Dynamic markings include *f* (forte), *sf* (sforzando), *ff* (fortissimo), *mf* (mezzo-forte), and *p* (piano). The score features various musical notations such as chords, arpeggios, and melodic lines. A *decresc.* (decrescendo) marking is present in measure 35. The score ends with a double bar line in measure 39.