The **musicography** Package: Symbols for Music Writing

with **pdflatex**

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Most \LaTeX font packages and freely available fonts only provided a limited range of musical symbols. The lilyglyphs package uses Lilypond’s fonts, but requires lualatex. This package makes available the most commonly used symbols in writing about music in a way that looks consistent and attractive. It is especially useful for pdflatex but also works alongside Unicode fonts with xelatex. It includes accidentals, meters, notes of different rhythmic values, and automatic formatting of figured bass.

This package builds on the approach used in the harmony package, where the symbols are taken from the MusiXTeX fonts. But it provides a larger range of symbols and a more flexible, user-friendly interface written using xparse. The package is meant to work hand-in-hand with my semantic-markup package, and overrides some of its music-symbol commands with better alternatives.

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1 Package Options

To use the package, write `\usepackage{musicography}` in your preamble. If you are also using this author’s semantic-markup package, musicography will automatically redefine the commands for accidentals in the other package.

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The bigger option provides larger font sizes that match better with certain fonts. The package now (2019) provides full support for figured-bass notation using the \musFig command.

The \musNumFont command allows you to change the font of the numerals used. For example, if using the ebgaramon font package, it looks better if you do this:

\renewcommand{\musNumFont}[1]{\liningnums{#1}}.

# 2 Symbols and Commands

## 2.1 Accidentals

| Flat       | \musFlat or \fl |♭ |
| Sharp      | \musSharp or \sh |♯ |
| Natural    | \musNatural or \na |♮ |
| Double Flat| \musDoubleFlat |♮♭ |
| Double Sharp| \musDoubleSharp |♮♯ |

## 2.2 Notes of Different Rhythmic Values

Commands are available using modern (United States) note names; in several cases there are also aliases for older note names.

- Whole note (semibreve) \musWhole or \musSemibreve ○
- Half note (minim) \musHalf or \musMinim †
- Quarter note (semiminim) \musQuarter or \musSeminimin ‡
- Eighth note (corchea) \musEighth or \musCorchea ◢
- Sixteenth note \musSixteenth ◢
- Thirty-second note \musThirtySecond ◢*
- Sixty-fourth note \musSixtyFourth ◢+

A dot may be added to any of the above by adding Dotted to the end of the command. For example:

- Dotted whole note \musWholeDotted ○
- Dotted quarter note \musQuarterDotted †
- Dotted thirty-second note \musThirtySecondDotted ◢*

## 2.3 Meter Signatures

- Common duple \meterC C
- Alla breve \meterCutC Ċ
- Ternary (16th–18th cent.) \meterCThree C3
- Ternary with 3:2 proportion \meterCThreeTwo C3²
- Spanish 17th-cent. ternary \meterCZ ČŽ
- Medieval tempus perfectum \meterO Ď

For other time signatures, use \musMeter{}{}; the two arguments are the numerator and denominator of the fraction, respectively.
2.4 Figured Bass

For figured-bass notation, use \texttt{\musFig{}}. The command, as of May 2019 now re-implemented using the \texttt{stackengine} package, takes a single argument which may contain as many space-separated elements as you like. (The \texttt{\musFig} command is implemented with \texttt{\musStack{}}, which is also used to for \texttt{\musMeter}.)

The elements in the argument will be stacked vertically and left-aligned. Multiple figures in a row should be enclosed in brackets if there are spaces between them.

To align figures when there are empty slots, as in 6–5, use \texttt{\noFig{}}. It will insert horizontal space the same width as its optional argument when typeset; the default value is the width of the numeral 5. It does this using \texttt{\hphantom}, so you should supply the same text in the argument as the figure with which you want to align. The code for the example at the beginning of this paragraph was \texttt{\musFig{6--5 \noFig[5--]\musSharp}}.

The font may be controlled by redefining \texttt{\musFigFont{}}. Its default value is as follows:

\begin{verbatim}
\NewDocumentCommand{\musFigFont}{}{\scriptsize}\let\musFontLarge\musFontBig
\end{verbatim}

This reduces the size of numbers and the music font so that they fit better with surrounding text and so that numerals and accidentals in the figures match.

Two figures \texttt{\musFig{7 5\musSharp}} \hfill 7^\flat

Three figures \texttt{\musFig{7\musFlat{} 5 3}} \hfill 7^\natural

Four figures \texttt{\musFig{7 5 4 2}} \hfill 9/3

Voice leading \texttt{\musFig{7--6 5--4 3}} \hfill 7/6

Voice leading \texttt{\musFig{6--7 4--5 \noFig[2--]3}} \hfill 7/6

Multiple figures per row \texttt{\musFig{{6\musFlat{} 5} \noFig[6\musFlat] \musSharp}} \hfill 6^\natural

2.5 Customization

It would be a simple matter of using \texttt{\newcommand} or \texttt{\let} to create aliases for these commands, say, for British usage (such as \texttt{\quaver}).

\LaTeX{} programmers may wish to use the package’s internal commands directly to access more symbols from the fonts or fine-tune their appearance. See \texttt{\musSymbol} and \texttt{\musAccidental} in the code listing below.
3 Changes

2020-01-29 Reduced stack gap for \musFig

2019/11/24 Fix \MeterCThreeTwo so that numbers are stacked and aligned correctly

2019/05/28 Bux fixes and new features, especially figured bass

- Fix issue 1 on Bitbucket, thanks to Christian Mondrup
  * Correct mistaken notehead symbol for values less than quarter note (was hollow, now filled)
  * Add 32nd and 64th notes, regular and dotted varieties
  * \musSymbol is now typeset inside an \mbox to fix alignment problems when used in tables
- New features (some requested in issue no. 1):
  * Add medieval perfect meter
  * Add aliases for fusa (= corchea = eighth note)
  * Replace musStack implementation with stackengine
  * Add full figured-bass support

2018/05/21 Override semantic-markup’s \fl, \sh, \na commands if it is loaded

2017/10/31 Corrected glyph used for \musHalf and documented \musMeter and \musFigures

2017/08/29 First version on CTAN

2017/04/12 Created

4 Code

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{musicography}[2020/01/29
  Symbols for music writing with pdflatex]

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% of LaTeX version 2005/12/01 or later.
% This work has the LPPL maintenance status ‘maintained’.
% The Current Maintainer of this work is Andrew A. Cashner.
This work consists of the package file musicography.sty
and the documentation file musicography.tex.

% CHANGE LOG
% 2020-01-29 - Reduced stack gap for \musFig
% 2019-11-24 - Fix problem with \MeterCThreeTwo where numerals were being
%    printed next to each other instead of stacked.
% 2019-05-28 - Fix issue #1:
%    + Correct notehead symbol for values < quarter note
%    (was hollow, should be filled)
%    + Add 32nd and 64th notes regular and dotted
%    + \musSymbol now inside an \mbox to fix alignment problems
%    - New features (some requested in issue #1)
%    + Add medieval perfect meter
%    + Add aliases for fusa (= corchea = eighth note)
%    + Replace musStack implementation with stackengine:
%      Now takes any number of space-separated arguments to stack
%      numerals, allowing for full figured-bass notation
% 2018-05-21 Override semantic-markup's \fl, \sh, \na commands if it is loaded
% 2017-10-31 Corrected glyph for \musHalf and documented
% \musMeter and \musFigures
% 2017-08-29 First version on CTAN
% 2017-04-12 Created

\newif\ifLargeFont
\LargeFontfalse
\DeclareOption{bigger}{\LargeFonttrue}
\ProcessOptions\relax
\RequirePackage{xparse}
\ifLargeFont
  \newfont{\musFont}{musix13}
  \newfont{\musFontBig}{musix16}
  \newfont{\musFontLarge}{musix20}
\else
  \newfont{\musFont}{musix11}
  \newfont{\musFontBig}{musix13}
  \newfont{\musFontLarge}{musix16}
\fi

% Font for numbers in \musStack
% Could redefine to use lining figures, math mode, sans-serif, etc.
% Example for ebgaramond: \renewcommand{\musNumFont}[1]{\liningnums{#1}}
\NewDocumentCommand{\musNumFont}{\O{}}{}
% Print a music symbol from the \musFont, specifying space before, after, and
% baseline adjustment
% #1 optional font command (default: \musFont)
% #2 kern before
% #3 raisebox value
% #4 kern after
% #5 symbol code (e.g., \symbol{4})
\NewDocumentCommand{\musSymbol}{ O{\musFont} m m m m }{\mbox{#1\kern#2\raisebox{#3}{#5}\kern#4}}%
\NewDocumentCommand{\musAccidental}{ m }{\musSymbol[\musFontLarge]{0.1em}{0.5ex}{-0.1pt}{#1}}%
\NewDocumentCommand{\musFlat} {}{\musAccidental{\symbol{90}}}%
\NewDocumentCommand{\musDoubleFlat} {}{\musAccidental{\symbol{91}}}%
\NewDocumentCommand{\musSharp} {}{\musAccidental{\symbol{92}}}%
\NewDocumentCommand{\musDoubleSharp} {}{\musAccidental{\symbol{93}}}%
\NewDocumentCommand{\musNatural} {}{\musAccidental{\symbol{94}}}%
\@ifpackageloaded{semantic-markup}{% 
  \RenewDocumentCommand{\fl}{\musFlat}
  \RenewDocumentCommand{\sh}{\musSharp}
  \RenewDocumentCommand{\na}{\musNatural}
}{% 
  \NewDocumentCommand{\fl}{\musFlat}
  \NewDocumentCommand{\sh}{\musSharp}
  \NewDocumentCommand{\na}{\musNatural}
}
% Print a composite music symbol of a notehead plus stem
% #1 Symbol musSymbol command for notehead
\NewDocumentCommand{\musStemmedNote}{ m }{% 
  \musSymbol{0.05em}{0.5ex}{0.2em}{#1\musStem}}%
% Stemmed note plus flag
% #1 symbol command for base note
% #2 symbol command for flag
\NewDocumentCommand{\musFlaggedNote}{ m m }{% 
  \musSymbol{0.05em}{0.5ex}{0.2em}{#1\musStem} \musSymbol{Opt}{Opt}{0.9em}{#2}%
% Note plus dot
% #1 \musSymbol command for note to be dotted
\NewDocumentCommand{\musDottedNote}{ m }{#1\musDot}

\NewDocumentCommand{\musStem}{ }{%
  \musSymbol{0.955em}{0.55ex}{0pt}{\symbol{16}}%
}
\NewDocumentCommand{\musSegno}{ }{%
  \musSymbol{0.55em}{-0.4ex}{1.5em}{\symbol{86}}%
}
\NewDocumentCommand{\musDot}{ }{%
  \musSymbol{-0.2em}{-0.5ex}{0.7em}{\symbol{24}}%
}
\NewDocumentCommand{\musWhole}{ }{%
  \musSymbol{0.05em}{0.5ex}{1.35em}{\symbol{9}}%
}
\NewDocumentCommand{\musHalf}{ }{%
  \musStemmedNote{\symbol{8}}%
}
\NewDocumentCommand{\musQuarter}{ }{%
  \musStemmedNote{\symbol{7}}%
}
\NewDocumentCommand{\musEighth}{ }{%
  \musFlaggedNote{\symbol{7}}{\symbol{40}}%
}
\NewDocumentCommand{\musSixteenth}{ }{%
  \musFlaggedNote{\symbol{7}}{\symbol{41}}%
}
\NewDocumentCommand{\musThirtySecond}{ }{%
  \musFlaggedNote{\symbol{7}}{\symbol{42}}%
}
\NewDocumentCommand{\musSixtyFourth}{ }{%
  \musFlaggedNote{\symbol{7}}{\symbol{43}}%
}

\NewDocumentCommand{\musWholeDotted}{ }{%
  \musDottedNote{\musWhole}%
}
\NewDocumentCommand{\musHalfDotted}{ }{%
  \musDottedNote{\musHalf}%
}
\NewDocumentCommand{\musQuarterDotted}{ }{%
  \musDottedNote{\musQuarter}%
\NewDocumentCommand{\musEighthDotted}{}{%
  \musDottedNote{\musEighth}\
}\NewDocumentCommand{\musSixteenthDotted}{}{%
  \musDottedNote{\musSixteenth}\
}\NewDocumentCommand{\musThirtySecondDotted}{}{%
  \musDottedNote{\musThirtySecond}\
}\NewDocumentCommand{\musSixtyFourthDotted}{}{%
  \musDottedNote{\musSixtyFourth}\
}\%
Command to stack numerals for metrical symbols or figured bass
\% Takes any number of space-separated arguments and stacks them vertically
\RequirePackage{stackengine}
\NewDocumentCommand{\musStack}{ O{\musNumFont} m }{%
  #1\Shortstack[l]{#2}}\%
\%
Meter symbols
\% #1 symbol code for meter sign
\NewDocumentCommand{\musSymbolMeter}{ m }{%
  \raisebox{0.58ex}[8pt][2pt]{%\kern-1pt\musFontBig\raisebox{0.3ex}{#1}\kern0.3em}%
}\%
\%
Meter that combines \meterC with numerals (e.g., C3 C3/2)
\NewDocumentCommand{\meterCplus}{ m }{\meterC{}\kern-0.7pt#1}\
\%
Numeric meter signatures (e.g., 3/4)
\% #1 number on top
\% #2 number on bottom
\NewDocumentCommand{\musMeter}{ m m }{%
  \musStack{#1 #2}\kern0.05em\%
}\%
\%
Same command used for figured bass
\NewDocumentCommand{\musFigFont}{}{%
  \scriptsize\let\musFontLarge\musFontBig\%
}\NewDocumentCommand{\musFig}{ m }{%
  \let\musFigFont{\musFigFont}\%
  \setstackgap{S}{1pt}\%
  \musStack{\musFigFont}{#1}\%
\%
Ternary meters used in 16th--18th c. music
\NewDocumentCommand{\meterCThree}{}{\meterCplus{\musNumFont{3}}}%
\NewDocumentCommand{\meterCThreeTwo}{}{\meterCplus{\footnotesize\stackanchor[1pt]{3}{2}}}%
Ternary meter used in 17th-century Spanish music
\NewDocumentCommand{\meterCZ}{}{\meterCplus{Z}}%
Perfect meter in medieval music
\NewDocumentCommand{\meterO}{}{$\bigcirc$}%

% Aliases for older note names
\NewDocumentCommand{\musSemibreve}{}{\musWhole}
\NewDocumentCommand{\musMinim}{}{\musHalf}
\NewDocumentCommand{\musSemiminim}{}{\musQuarter}
\NewDocumentCommand{\musCorchea}{}{\musEighth}
\NewDocumentCommand{\musFusa}{}{\musEighth}
\NewDocumentCommand{\musSemibreveDotted}{}{\musWholeDotted}
\NewDocumentCommand{\musMinimDotted}{}{\musHalfDotted}
\NewDocumentCommand{\musSemiminimDotted}{}{\musQuarterDotted}
\NewDocumentCommand{\musCorcheaDotted}{}{\musEighthDotted}
\NewDocumentCommand{\musFusaDotted}{}{\musEighthDotted}