The **nccdashrule** package[*]

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This package implements two commands, \dashrule and \dashrulefill which simplify composing of dashed lines and dashed multilines.

1 User Interface

\dashrule The command

$$\texttt{\textbackslash dashrule[}\langle\textit{raise}\rangle\texttt{]\{}\langle\textit{h-pattern}\rangle\texttt{\}\{}\langle\textit{v-pattern}\rangle\texttt{\}}$$

prepares a dash rule. Its syntax is quite similar to the \rule command except that $\langle\textit{h-pattern}\rangle$ and $\langle\textit{v-pattern}\rangle$ can contain a list of sizes delimited with spaces. List sizes are interpreted as follows: size, space, size, space, etc. In other words, every odd size is a size of rule part and every even size is a space between neighbour parts. If the last size in the list is even (means a space), its space value is divided by two and is added before the first rule part and after the last rule part. Units in sizes can be omitted. In this case, pt-units are supposed. Examples:

x————x	`x\dashrule[.5ex]{10mm}{1pt}x`
x___ _ ___x	`x\dashrule{5mm 3 3 3 5mm}{.4}x`
xｘx	`x\dashrule{1}{3 2 3}x`
x▪x	`x\dashrule{2 2}{2 2}x`
x ≡:≡ x	`x\dashrule{5 3 1 3 5 10}{1 1 0.4 1 1}x`

\dashrulefill The command

$$\texttt{\textbackslash dashrulefill[}\langle\textit{raise}\rangle\texttt{][}\langle\textit{leader-type}\rangle\texttt{]\{}\langle\textit{h-pattern}\rangle\texttt{\}\{}\langle\textit{v-pattern}\rangle\texttt{\}}$$

fills a free space with a dash rule. The rule is composed from the 1st, 3rd, and 4th arguments of the command and is repeated as more times as necessary to fill a free horizontal space. The rest of space after filling is stored depending on $\langle\textit{leader-type}\rangle$ used. Default leader type is "aligned leaders": every rule is aligned to the multiple of its width counted from the left boundary of filled box. Other cases are: c means centered leaders (all extra spaces are collected at both ends
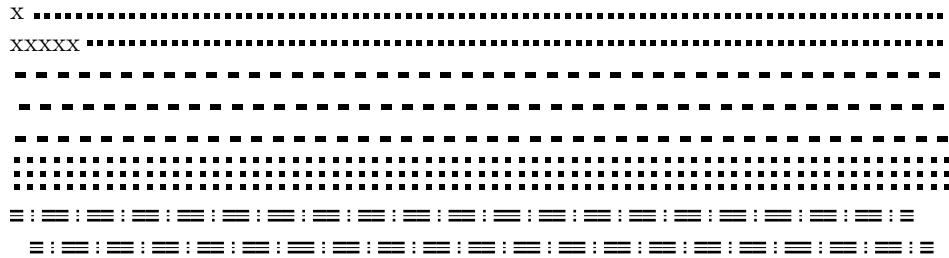
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of filled material) and x means distributed leaders (extra spaces are uniformly distributed between every dash rule).

Example:

```
\noindent x\dashrulefill{2 2}{2}\mbox{}\\
xxxxx\dashrulefill[.4ex]{2 2}{2}\mbox{}\\
\mbox{}\dashrulefill[.4ex]{4 4}{2}\mbox{}\\
\mbox{}\dashrulefill[.4ex][c]{4 4}{2}\mbox{}\\
\mbox{}\dashrulefill[.4ex][x]{4 4}{2}\mbox{}\\[1ex]
\mbox{}\dashrulefill[0mm][c]{2 3}{2 3 2 3 2}\mbox{}\\
\mbox{}\dashrulefill{5 3 1 3 5}{1 1 0.4 1 1}\mbox{}\\
\mbox{}\dashrulefill[0mm][c]{5 3 1 3 5}{1 1 0.4 1 1}\mbox{}\\[-2ex]
\mbox{}\hrulefill
```

It produces the following:

2 The Implementation

The `mboxfill` package is required here:

```
1 ⟨*package⟩
2 \RequirePackage{mboxfill}
```

\dashrulefill This command is a simple composition of the `\mboxfill` and `\dashrule` commands:

```
3 \newcommand*\dashrulefill[1][\z@]{%
4    \@ifnextchar[{\NCC@dashfill{#1}}{\NCC@dashfill{#1}[]}%
5 }
6 \def\NCC@dashfill#1[#2]#3#4{%
7    \mboxfill[\width][#2]{\dashrule[#1]{#3}{#4}}%
8 }
```

\dashrule   \dashrule[⟨raise⟩]{⟨h-pattern⟩}{⟨v-pattern⟩}

```
9 \newcommand*\dashrule[3][\z@]{%
10    \setbox\@tempboxa\vbox{}%
11    \NCC@composedash{\NCC@vdash{#2}}{#3}%
12    \setlength\@tempdima{#1}\leavevmode
13    \raise\@tempdima\hbox{%
14       \vbox to\@tempdimc{\vss\unvbox\@tempboxa\vss}}%
15 }
```

\NCC@composedash \NCC@composedash{⟨*action*⟩}{⟨*pattern*⟩} parses the pattern and calls the action when a rule size is parsed. At this point, the `\@tempdima` contains a size parsed and `\@tempdimb` contains the previous space. In `\@tempdimc`, the whole rule size is calculated.

```
16 \def\NCC@composedash#1#2{%
17   \@tempdimb\z@ % Last space
18   \@tempdimc\z@ % Accumulator
19   \@tempswatrue % True value means producing an entry
20   \NCC@parsedash#2 ! !\@nil{%
21     \advance\@tempdimc\@tempdima
22     \if@tempswa #1\@tempswafalse \else
23       \@tempdimb\@tempdima \@tempswatrue
24     \fi
25   }%
26 }
```

\NCC@parsedash Pattern parser:

```
27 \def\NCC@parsedash#1 #2\@nil#3{%
28   \if/#1/\else % Empty arg. ignored
29     \ifx#1!\else % Exclamation mark ends the list
30       \@defaultunits\@tempdima#1pt\relax\@nnil
31       #3\NCC@parsedash#2\@nil{#3}%
32     \fi
33   \fi
34 }
```

\NCC@vdash \NCC@vdash{⟨*h-pattern*⟩} is applied when a vertical dash is composed. `\@tempdimb` contains the required skip, `\@tempdima` contains the rule height.

```
35 \def\NCC@vdash#1{%
36   \setbox\@tempboxa\vbox{%
37     \unvbox\@tempboxa \vskip\@tempdimb
38     \setbox\@tempboxa\hbox{}%
39     \@tempskipa\@tempdima % Save rule height in \@tempskipa
40     \NCC@composedash{\NCC@hdash}{#1}%
41     \hb@xt@\@tempdimc{\hss\unhbox\@tempboxa\hss}%
42   }%
43 }
```

\NCC@hdash This action is applied when a horizontal dash is composed. `\@tempdimb` contains the required skip, `\@tempdima` contains the rule width, `\@tempskipa` contains the rule height.

```
44 \def\NCC@hdash{%
45   \setbox\@tempboxa\hbox{%
46     \unhbox\@tempboxa \kern\@tempdimb
47     \vrule \@width\@tempdima \@height\@tempskipa
48   }%
49 }
50 ⟨/package⟩
```