The 1, 2, many package*

Ulrich M. Schwarz†

April 9, 2005

Abstract

In the discrete branches of mathematics and the computer sciences, it will only take some seconds until you’re faced with a set like \{1, \ldots , m\}. Only some people write 1..m, or \{j : 1 \leq j \leq m\}, and that journal you’re submitting to might want something else entirely. 1, 2, many provides an interface that makes changing from one to another a one-line change.

Contents

1 Command overview 2
2 Pre-defined styles 2
  2.1 Style set 2
  2.2 Style dots 2
  2.3 Style nude 2
  2.4 Style laue 3
3 Creating new styles 3
  3.1 Configuration files 4

1 Command overview

To use 1, 2, many in your LATEX document, place 12many.sty into your local texmf tree and load it by \usepackage{12many}. Three in-document commands are provided: \nto{⟨from⟩}{⟨to⟩} takes two arguments and typesets the range from the first to the second, ends inclusive: \nto{3}{4} might yield something like \{3, \ldots , 4\}.

\ito\oto
\ito is an alias to \nto{1}, i.e. \ito{3} is \nto{1}{3} and yields \{1, \ldots , 3\}.
\oto is an alias to \nto{0}, i.e. \oto{3} is \nto{0}{3} and yields \{0, \ldots , 3\}.

\setOTMstyle
To select the style, use \setOTMstyle{⟨params⟩}{⟨style⟩}, where style is a style name, and params are style-specific options in a key=val fashion. For a list

*This documents 1, 2, many v0.3 of 2005/05/09
†ulmi@users.sarovar.org
of pre-defined styles and their options, see section 2. It’s as simple as that! If you
don’t need to change the default parameters of a style, you can also pass it as a
package option: \usepackage[laue]{12many}

2 Pre-defined styles

The following styles are predefined by 1, 2, many:

2.1 Style set

The “proper” way of specifying a range: \{i \in \mathbb{N}_0 | 2 \leq i \leq 233\}. Supported
parameters:

\texttt{var} The variable name to use. Default: the popular scratch integer \texttt{i}.

\texttt{naturals} The way you write the set of natural numbers, 0 included. Defaults to
the (rather ugly) \texttt{\mathbb{N}_0}, but depending on your style, you’ll use
blackboard, boldface or even fraktur here.

\texttt{where} This goes between the naturals set symbol and the lower bound. I’ve
seen both colons and bars used here, and you might want to do fancy extra
spacing. The default is |

2.2 Style dots

The somewhat less formal enumeration style: \{2, \ldots, 233\}. Supported parameters:

\texttt{dots} What goes between the bounds. The default, \texttt{,\ldots,}, is the most formal
one but takes up a lot of horizontal space, so you might use something like
\texttt{,\ldotp\ldotp} here.

2.3 Style nude

An even less formal enumeration style, popular with economics and CS people,
but certainly not mathematicians: 2 . 233. Supported parameters:

\texttt{dots} Works just like in the case of dots-style, but for nude, it defaults to
\texttt{\ldotp\ldotp}.

2.4 Style laue

A style championed by a local maths professor: 233. (Note that this is the one-to
variant. The other variants are derived from this: 0 \cup 233 \text{ and } \{233 \setminus 1\}. Also
note that the outer parens are added by 1, 2, many to make sure the semantics do
not change.) Supported parameters:

\texttt{setminus} Used for the variants that do not start at 0 or 1. Defaults to \texttt{\setminus}.
setplus Used to add in the \{0\}. Defaults to \textbackslash cup.

ybelow How far below the baseline the rule is. I don’t think you’d need to change this—the default of 0.3 ex looks good to me in Computer Modern, Palatino and Utopia/Fourier.

strokewidth The width of the rule, with a default of 0.08 ex.

innersidegap The rule protrudes beyond the number above it, by default by 0.05 em.

outersidegap There is an additional space after the hook, by default 0.05 em.

3 Creating new styles

If none of the styles above float your boat, you can still define your own. To this end, 1, 2, many provides three commands:

\newOTMstyle \newOTMstyle\{⟨params⟩\}\{⟨name⟩\}\{⟨definition⟩\} takes three arguments: optional parameters, the style name and its definition. The definition has access to the bounds that are passed in the parameters \#1 (lower) and \#2 (upper). For example, the dots style is defined like this:

\newOTMstyle\{dots\\{,\ldots,\\}\}\{dots\}\{\{#1\textbackslash getOTMparameter\{dots\}\#2\}\}\%

Please be careful when declaring parameters with the optional arguments: spaces are not stripped. If you declare \texttt{foo=bar, baz=bam, \textbackslash getOTMparameter\{baz\} won’t find anything.}

\renewOTMstyle This macro is just the same as \newOTMstyle, only a newcommand in a crucial place is changed to a renewcommand, i.e. this can be used to change an existing style.

\newOTMparameter This macro declares parameters and their defaults to a style. For example, we have already seen that the dots style accesses its dots with \textbackslash getOTMparameter\{dots\}. This parameter was declared with

\newOTMparameter\{dots\}\{dots\\{,\ldots,\\}\}

i.e., “(style) dots has a parameter dots that defaults to \ldots.”

3.1 Configuration files

1, 2, many will also look for your new style declarations in a file called \texttt{12many.cfg}. This file is read in before the package parameter is evaluated, so it’s legal to name a style that will only be defined in \texttt{12many.cfg}. 3
Change History

0.3
General: Changed to dtx/ins . . . . 1

Index

Numbers written in italic refer to the page where the corresponding entry is des-
cribed; numbers underlined refer to the code line of the definition; numbers in rom-
an refer to the code lines where the entry is used.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>\newOTMstyle</th>
<th>\otm@laue@setminus</th>
<th>\otm@laue@setplus</th>
<th>\otm@laue@strokewidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>{</td>
<td>49, 57, 85</td>
<td>3, 5, 48, 55, 84, 89</td>
<td>\otm@laue@setminus</td>
<td>64</td>
</tr>
<tr>
<td>}</td>
<td>50, 57, 85</td>
<td>2, 38, 40, 43, 45, 46</td>
<td>\otm@laue@setplus</td>
<td>57</td>
</tr>
<tr>
<td>G</td>
<td>\getOTMparameter</td>
<td>31, 49, 50, 85, 90</td>
<td>\otm@@currentstyle</td>
<td>75, 77</td>
</tr>
<tr>
<td>\ito</td>
<td>2, 46, 46</td>
<td>\otm@fooOTMstyle</td>
<td>\otm@@currentstyle</td>
<td>76, 79, 81</td>
</tr>
<tr>
<td>\laue@mathstyle</td>
<td>74, 75, 77</td>
<td>\renewOTMstyle</td>
<td>\otm@setOTMparameter</td>
<td>3, 9</td>
</tr>
<tr>
<td>\newOTMparameter</td>
<td>3, 22, 24, 24, 67-72</td>
<td>\renewOTMstyle</td>
<td>\otm@laue@innersidegap</td>
<td>2, 34, 34, 42, 104</td>
</tr>
<tr>
<td>\otm@laue@laue</td>
<td>57, 59, 63, 64, 73</td>
<td>\otm@newcmd</td>
<td>\setOTMparameter</td>
<td>28, 28</td>
</tr>
<tr>
<td>L</td>
<td>\otm@laue@laue</td>
<td>\otm@newkvOTMparameter</td>
<td>\setOTMstyle</td>
<td></td>
</tr>
<tr>
<td>\setOTMparameter</td>
<td>16, 21, 21</td>
<td>\otm@laue@innersidegap</td>
<td>\setOTMstyle</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>\otm@laue@laue</td>
<td>\otm@newcmd</td>
<td>\setOTMparameter</td>
<td>28, 28</td>
</tr>
</tbody>
</table>