The **gnuplottex** package[*]

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1 Introduction

This package allows you to include gnuplot graphs in your LaTeX documents.

The gnuplot code is extracted from the document and written to `.gnuplot` files. Then, if shell escape is used, the graph files are automatically processed to graphics or LaTeX code files which will then be included in the document. If shell escape isn't used, the user will have to manually convert the files by running gnuplot on the extracted `.gnuplot` files.

Shell escape is available in the web2c TeX compiler, it allows the execution of shell code during the compilation of a TeX document. It's disabled by default, you'll have to edit your configuration files or give the `-shell-escape` option to `latex`.

The package also allows you to include gnuplot code in a file verbatim, generating and including the plot automatically.

2 Requirements

To use gnuplottex, you'll need the `graphicx`, `latexsym`, `keyval`, `ifthen`, and `moreverb` packages and, of course, gnuplot.

3 Usage

To load the package, simply `\usepackage{gnuplottex}` in your document preamble. Options that can be passed to the package are

[⟨*shell*⟩] Use shell escape to automatically generate the graphs from the gnuplot source files. This is the default. Normally, you don't need to specify this option.

[⟨*noshell*⟩] Don't use shell escape, graphs must be generated manually.

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[*]This document corresponds to **gnuplottex** v0.6, dated 2013/06/28.

[⟨***miktex***⟩] We're using mikTeX.

[⟨***siunitx***⟩] Use `siunitx` to typeset numbers in the graphs. You need to load the `siunitx` package before `gnuplottex` for this to work. If the gnuplot terminal does not support TeX, a warning will be given and the functionality not used.

The following environment can be used to include graphs:

`gnuplot`   Within this environment, you can specify arbitrary gnuplot code, for example `plot sin(x)`.

The code necessary to write the plot to a file will be inserted by this package. It adds 'set terminal ⟨*terminal*⟩' and the name of the output file. The terminal can be specified by the user and defaults to `latex`. It may be set to anything supported by gnuplot. If set to a terminal which produces TeX output, such as latex, tex, epslatex, or pstricks, the file processed by gnuplot will be included with the `\include` command, else the `\includegraphics` command is used. The file extension of the intermediate file is in some cases different from the terminal name, this is taken care of for most common terminals in the package code. If graphics inclusion fails for a specific terminal, the intermediate file extension may be the cause.

The terminal name can be specified as a value to the key `terminal` as an argument to the environment,

`\begin{gnuplot}`[terminal=⟨*terminal*⟩]
...
`\end{gnuplot}`

The graph can be scaled by providing an argument to the `scale` key, similar to the specification of the terminal name. It defaults to 1, i.e. no scaling will be done. Additional options to the terminal can be given as argument to the `terminaloptions` key, e.g.

`\begin{gnuplot}`[terminal=pdf,terminaloptions=font ",10" linewidth 3]
...
`\end{gnuplot}`

`\gnuplotloadfile`

In addition to the environment, you can use the command `\gnuplotloadfile` to directly include gnuplot source code. It accepts the same options as the environment, e.g.

`\gnuplotloadfile[terminal=pdf]{example.gnuplot}`

4   Acknowledgements

5 Implementation

5.1 Initialization

```
1 \newif\ifShellEscape
2 \newif\ifmiktex \miktexfalse
3 \newif\ifusesiunitx
4
5 \newwrite\verbatim@out
6
7 \DeclareOption{shell}{\ShellEscapetrue}
8 \DeclareOption{noshell}{\ShellEscapefalse}
9 \DeclareOption{miktex}{\global\miktextrue}
10 \DeclareOption{siunitx}{\usesiunitxtrue}
11
12 \ExecuteOptions{shell}
13 \ProcessOptions\relax
14 %% test if shell escape really works
15 \ifShellEscape
16 \def\tmpfile{/tmp/w18-test-\the\year\the\month\the\day\the\time.tex}
17 \ifmiktex
18 \def\tmpfile{w18-test-\the\year\the\month\the\day\the\time.tex}
19 \immediate\write18{echo t > "\tmpfile"}
20 \else
21 \immediate\write18{touch \tmpfile}
22 \fi
23 \ifmiktex
24 \IfFileExists{\tmpfile.}{\ShellEscapetrue}{\ShellEscapefalse}
25 \immediate\write18{del "\tmpfile"}
26 \else
27 \IfFileExists{\tmpfile}{\ShellEscapetrue}{\ShellEscapefalse}
28 \immediate\write18{rm -f \tmpfile}
29 \fi
30 \fi
31
32 \ifShellEscape
33     \PackageInfo{gnuplottex}
34     {Automatically converting gnuplot files.}
35 \else
36     \PackageWarningNoLine{gnuplottex}
37         {Shell escape not enabled.\MessageBreak
38         You'll need to convert the graphs yourself.}
39 \fi
40 \newcounter{fignum}
```

5.2 .gnuplot write out

```
41 \def\figname{\jobname-gnuplottex-fig\thefignum}
42
43 \def\usesiunitxingnuplot{{\escapechar=-1\edef\percentforgnuplot{\string\%}
44                         \escapechar=-1\edef\backslashforgnuplot{\string\\}
```

```
45                              \immediate\write\verbatim@out{set format '\backslashforgnuplot num{\
46
47 \def\gnuplotverbatimwrite#1{%
48     \def\BeforeStream
49     {\message{Opening gnuplot stream #1}%
50         \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminal
51 \immediate\write\verbatim@out{\string set output '\figname.\gnuplottexextension{\gnuplotterm
52     \ifusesiunitx
53         \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningN
54     \else
55         \relax
56     \fi
57     }
58     \@bsphack
59     \immediate\openout \verbatim@out #1
60     \BeforeStream%
61     \let\do\@makeother\dospecials
62     \catcode'\^^M\active
63     \def\verbatim@processline{%
64         \immediate\write\verbatim@out
65         {\the\verbatim@line}}%
66     \verbatim@start}
67 \def\endgnuplotverbatimwrite{%
68     \immediate\closeout\verbatim@out
69     \@esphack
70 \catcode'\\0
71 \catcode'\{1
72 \catcode'\}2
73 \catcode'\$3
74 \catcode'\&4
75 \catcode'\^^M5
76 \catcode'\#6
77 \catcode'\^7
78 \catcode'\_8
79 \catcode'\ 10
80 \catcode'\%14}
```

5.3 Environment definition

```
81 \def\gnuplottexextension@latex{\string tex}
82 \def\gnuplottexextension@epslatex{\string tex}
83 \def\gnuplottexextension@cairolatex{\string tex}
84 \def\gnuplottexextension@eepic{\string tex}
85 \def\gnuplottexextension@pstricks{\string tex}
86 \def\gnuplottexextension@pslatex{\string tex}
87 \def\gnuplottexextension@pstex{\string tex}
88 \def\gnuplottexextension@emtex{\string tex}
89 \def\gnuplottexextension@jpeg{\string jpg}
90 \def\gnuplottexextension@tikz{\string tex}
91 \def\gnuplottexextension#1{\@ifundefined{gnuplottexextension@#1}{#1}{\csname gnuplottexexten
```

4

```
92 \define@key{pic}{scale}[1]{\def\gnuplotscale{#1}}
93 \define@key{pic}{terminal}[latex]{\def\gnuplotterminal{#1}}
94 \define@key{pic}{terminaloptions}{\def\gnuplotterminaloptions{ #1}}
95 \newenvironment{gnuplot}[1][]{\stepcounter{fignum}%
96 \def\gnuplotterminal{latex}
97 \def\gnuplotterminaloptions{}
98 \def\gnuplotscale{1}
99 \setkeys{pic}{#1}
100     \xdef\gnuplotCutFile{\figname.gnuplot}
101     \gnuplotverbatimwrite{\gnuplotCutFile}}
102    {\endgnuplotverbatimwrite%
103     \gnuplotgraphicsprocess%
104     \gnuplotgraphicsinclude}
```

5.4   .gnuplot file processing

```
105 \def\extension{\gnuplottexextension{\gnuplotterminal}}
106 \long\gdef\gnuplotgraphicsprocess{%
107 \ifShellEscape
108 \IfFileExists{\figname.gnuplot}{%
109 \immediate\write18{gnuplot \figname.gnuplot}
110 \IfFileExists{\figname.\extension}{%
111 \PackageInfo{gnuplottex}{\figname.gnuplot converted}}
112 {\PackageWarningNoLine{gnuplottex}
113 {Conversion of \figname.gnuplot failed}}}{}
114 \fi}
```

5.5   Graph inclusion

```
115 \long\gdef\gnuplotgraphicsinclude{%
116 \IfFileExists{\figname.\extension}{%
117 \ifthenelse{\equal{\extension}{\string tex}}
118 {\scalebox{\gnuplotscale}{\input{\figname.\extension}}}
119 {\includegraphics[scale=\gnuplotscale]{\figname.\extension}}
120 }
121 {\PackageWarningNoLine{gnuplottex}
122 {Please convert \figname.gnuplot manually}}
123 }
```

5.6   .gnuplot file processing

```
124 \newcommand{\gnuplotloadfilewrite}[2]{%
125   \immediate\openout \verbatim@out #1%
126   \message{Opening gnuplot stream #1}%
127   \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminaloption
128   \immediate\write\verbatim@out{\string set output '\figname.\gnuplottexextension{\gnuplotte
129   \ifusesiunitx
130     \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningNoLine
131   \else
132     \relax
133   \fi
134   \ifusesiunitx
```

```latex
135      {\escapechar=-1\edef\percentforgnuplot{\string\%}
136          \escapechar=-1\edef\backslashforgnuplot{\string\\}
137      \immediate\write\verbatim@out{set format '\backslashforgnuplot num{\percentforgnuplot
138  \else
139      \relax
140  \fi
141  \immediate\write\verbatim@out{\string load '#2'}%
142  \immediate\closeout\verbatim@out%
143 }
144
145 \newcommand{\gnuplotloadfile}[2][]{
146  \stepcounter{fignum}%
147  \def\gnuplotterminal{latex}
148  \def\gnuplotterminaloptions{}
149  \def\gnuplotscale{1}
150  \setkeys{pic}{#1}
151  \xdef\gnuplotCutFile{\figname.gnuplot}
152  \gnuplotloadfilewrite{\gnuplotCutFile}{#2}
153  \gnuplotgraphicsprocess%
154  \gnuplotgraphicsinclude
155 }
```