

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.

*This document corresponds to `gnuplottex` v0.7.2, dated 2013/11/16.

[*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.

[*subfolder*] Put the generated graphs in a "gnuplottex" subfolder, which will be created automatically.

[*cleanup*] Delete the `.gnuplot` files after conversion.

In addition, you can set `\gnuplotexe` to the path to the `gnuplot` executable. Normally, you don't need to do this; use this option only if \LaTeX doesn't find `gnuplot`.

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

In addition to the people mentioned in the changelog, I would like to thank Roy Ratcliffe for the suggestion and basic code for the gnuplot terminal specification and handling. Additional thanks to Michel Voßuhle for the implementation of `\gnuplotloadfile`. I would also like to thank all the people who sent me bug reports, feature requests and patches. Gnuplottex wouldn't be what it is today without you.

5 Implementation

5.1 Initialization

```
1 \newif\ifShellEscape
2 \newif\ifmiktex \miktexfalse
3 \newif\ifusesiunitx
4 \newif\ifcleanup
5 \newif\ifusesubfolder
6
7 \newwrite\verbatim@out
8
9 \DeclareOption{shell}{\ShellEscapetrue}
10 \DeclareOption{noshell}{\ShellEscapefalse}
11 \DeclareOption{miktex}{\global\miktextrue}
12 \DeclareOption{siunitx}{\usesiunitxtrue}
13 \DeclareOption{cleanup}{\cleanuptrue}
14 \DeclareOption{subfolder}{\usesubfoldertrue}
15
16 \@ifundefined{gnuplotexe}{\def\gnuplotexe{gnuplot}}{}
17
18 \ExecuteOptions{shell}
19 \ProcessOptions\relax
20 %% test if shell escape really works
21 \ifShellEscape
22 \def\tmpfile{w18-test-\the\year\the\month\the\day\the\time.tex}
23 \ifmiktex
24 \immediate\write18{echo t > "\tmpfile"}
25 \else
26 \immediate\write18{touch \tmpfile}
27 \fi
28 \ifmiktex
29 \IfFileExists{\tmpfile.}{\ShellEscapetrue}{\ShellEscapefalse}
30 \immediate\write18{del "\tmpfile"}
31 \else
32 \IfFileExists{\tmpfile}{\ShellEscapetrue}{\ShellEscapefalse}
33 \immediate\write18{rm -f \tmpfile}
34 \fi
35 \fi
```

```

36
37 \ifusesubfolder
38   \ifmiktex
39     \immediate\write18{mkdir gnuplottex}
40     \immediate\write18{echo test > "gnuplottex/\tmpfile"}
41   \else
42     \immediate\write18{mkdir -p "gnuplottex"}
43     \immediate\write18{touch "gnuplottex/\tmpfile"}
44   \fi
45   \IfFileExists{gnuplottex/\tmpfile}{
46     \ifmiktex
47       \immediate\write18{del "gnuplottex/\tmpfile"}
48     \else
49       \immediate\write18{rm -f "gnuplottex/\tmpfile"}
50     \fi
51   \def\subfolder{gnuplottex/}
52   }{
53     \PackageWarningNoLine{gnuplottex}
54       {Creation of subfolder failed.\MessageBreak
55       You'll need to create the folder yourself}
56   \def\subfolder{}
57   }
58 \else
59   \def\subfolder{}
60 \fi
61
62
63 \ifShellEscape
64   \PackageInfo{gnuplottex}
65   {Automatically converting gnuplot files.}
66 \else
67   \PackageWarningNoLine{gnuplottex}
68     {Shell escape not enabled.\MessageBreak
69     You'll need to convert the graphs yourself.}
70 \fi
71 \newcounter{fignum}

```

5.2 .gnuplot write out

```

72 \def\figname{\jobname-gnuplottex-fig\thefigum}
73
74 \def\usesiunitxingnuplot{\immediate\write\verbatim@out{set format '\@backslashchar num{\@per
75
76 \def\gnuplotverbatimwrite#1{%
77   \def\BeforeStream
78   {message{Opening gnuplot stream #1}%
79     \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminal
80 \immediate\write\verbatim@out{\string set output '\subfolder\figname.\gnuplottexextension{\g
81   \ifusesiunitx
82     \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningNo

```

```

83     \else
84         \relax
85     \fi
86 }
87 \@bsphack
88 \immediate\openout \verbatim@out #1
89 \BeforeStream%
90 \let\do\@makeother\dospecials
91 \catcode'\^^M\active
92 \def\verbatim@processline{%
93     \immediate\write\verbatim@out
94     {\the\verbatim@line}}%
95 \verbatim@start}
96 \def\endgnuplotverbatimwrite{%
97     \immediate\closeout\verbatim@out
98     \@esphack
99 \catcode'\0
100 \catcode'\{1
101 \catcode'\}2
102 \catcode'\$3
103 \catcode'\&4
104 \catcode'\^^M5
105 \catcode'\#6
106 \catcode'\^7
107 \catcode'\_8
108 \catcode'\ 10
109 \catcode'\%14}

```

5.3 Environment definition

```

110 \def\gnuplottexextension@latex{\string tex}
111 \def\gnuplottexextension@epslatex{\string tex}
112 \def\gnuplottexextension@cairolatex{\string tex}
113 \def\gnuplottexextension@eepic{\string tex}
114 \def\gnuplottexextension@pstricks{\string tex}
115 \def\gnuplottexextension@pslatex{\string tex}
116 \def\gnuplottexextension@pstex{\string tex}
117 \def\gnuplottexextension@emtex{\string tex}
118 \def\gnuplottexextension@jpeg{\string jpg}
119 \def\gnuplottexextension@tikz{\string tex}
120 \def\gnuplottexextension#1{\@ifundefined{gnuplottexextension@#1}{#1}{\csname gnuplottexextension@#1\endcsname}}
121 \define@key{pic}{scale}[1]{\def\gnuplotscale{#1}}
122 \define@key{pic}{terminal}[latex]{\def\gnuplotterminal{#1}}
123 \define@key{pic}{terminaloptions}{\def\gnuplotterminaloptions{ #1}}
124 \newenvironment{gnuplot}[1][\stepcounter{fignum}%
125 \def\gnuplotterminal{latex}
126 \def\gnuplotterminaloptions{}
127 \def\gnuplotscale{1}
128 \setkeys{pic}{#1}
129     \xdef\gnuplotCutFile{\subfolder\figname.gnuplot}

```

```

130 \gnuplotverbatimwrite{\gnuplotCutFile}}
131 {\endgnuplotverbatimwrite%
132 \gnuplotgraphicsprocess%
133 \gnuplotgraphicsinclude}

```

5.4 .gnuplot file processing

```

134 \def\extension{\gnuplottexextension{\gnuplotterminal}}
135 \long\gdef\gnuplotgraphicsprocess{%
136 \ifShellEscape
137 \IfFileExists{\subfolder\figname.gnuplot}{%
138 \immediate\write18{\gnuplotexe\space \subfolder\figname.gnuplot}
139 \IfFileExists{\subfolder\figname.\extension}{%
140 \PackageInfo{gnuplottex}{\subfolder\figname.gnuplot converted}
141 \ifcleanup
142 \ifmiktex
143 \immediate\write18{del "\subfolder\figname.gnuplot"}
144 \else
145 \immediate\write18{rm -f "\subfolder\figname.gnuplot"}
146 \fi
147 \fi
148 }
149 {\PackageWarningNoLine{gnuplottex}
150 {Conversion of \subfolder\figname.gnuplot failed}}}{%}
151 \fi}

```

5.5 Graph inclusion

```

152 \long\gdef\gnuplotgraphicsinclude{%
153 \IfFileExists{\subfolder\figname.\extension}{%
154 \ifthenelse{\equal{\extension}{\string tex}}{
155 {\scalebox{\gnuplotscale}{\input{\subfolder\figname.\extension}}}
156 {\includegraphics[scale=\gnuplotscale]{\subfolder\figname.\extension}}
157 }
158 {\PackageWarningNoLine{gnuplottex}
159 {Please convert \subfolder\figname.gnuplot manually}}
160 }

```

5.6 .gnuplot file processing

```

161 \newcommand{\gnuplotloadfilewrite}[2]{%
162 \immediate\openout \verbatim@out #1%
163 \message{Opening gnuplot stream #1}%
164 \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminaloption}
165 \immediate\write\verbatim@out{\string set output '\subfolder\figname.\gnuplottexextension}
166 \ifusesiunitx
167 \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningNoLine{gnuplottex}
168 \else
169 \relax
170 \fi
171 \ifusesiunitx
172 {\escapechar=-1\edef\percentforgnuplot{\string\%}}

```

```

173         \escapechar=-1\edef\backslashforgnuplot{\string\\}
174         \immediate\write\verbatim@out{set format '\backslashforgnuplot num{\percentforgnuplot
175     \else
176         \relax
177     \fi
178     \immediate\write\verbatim@out{\string load '#2'}%
179     \immediate\closeout\verbatim@out%
180 }
181
182 \newcommand{\gnuplotloadfile}[2][]{
183     \stepcounter{fignum}%
184     \def\gnuplotterminal{latex}
185     \def\gnuplotterminaloptions{
186     \def\gnuplotscale{1}
187     \setkeys{pic}{#1}
188     \xdef\gnuplotCutFile{\subfolder\figname.gnuplot}
189     \gnuplotloadfilewrite{\gnuplotCutFile}{#2}
190     \gnuplotgraphicsprocess%
191     \gnuplotgraphicsinclude
192 }

```