

# The gnuplottex package\*

Lars Kotthoff  
lars@larsko.org

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## 1 Introduction

This package allows you to include gnuplot graphs in your L<sup>A</sup>T<sub>E</sub>X 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 L<sup>A</sup>T<sub>E</sub>X 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 T<sub>E</sub>X compiler, it allows the execution of shell code during the compilation of a T<sub>E</sub>X document. It's disabled by default, you'll have to edit your configuration files or give the `-shell-escape` option to `latex`.

## 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.

[`<miktex>`] We're using mikt<sub>E</sub>X.

The following environments 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.

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\*This document corresponds to gnuplottex v0.4.2, dated 2007/10/13.

It adds 'set terminal  $\langle terminal \rangle$ ' 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= $\langle terminal \rangle$ ]
...
\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=fsize 12 linewidth 2]
...
\end{gnuplot}
```

## 4 Acknowledgements

Thanks to Roy Ratcliffe for the suggestion and basic code for the gnuplot terminal specification and handling. I would also like to thank all the people who sent me bug reports and feature requests. Gnuplottex wouldn't be what it is today without you.

## 5 Implementation

### 5.1 Initialization

```
1 \newif\ifShellEscape
2 \newif\ifmiktex \miktexfalse
3
4 \DeclareOption{shell}{\ShellEscape>true}
5 \DeclareOption{noshell}{\ShellEscape>false}
6 \DeclareOption{miktex}{\global\miktex>true}
7
8 \ExecuteOptions{shell}
9 \ProcessOptions\relax
10 %% test if shell escape really works
11 \ifShellEscape
12 \def\tmpfile{/tmp/w18-test-\the\year\the\month\the\day\the\time}
13 \ifmiktex
14 \def\tmpfile{w18-test-\the\year\the\month\the\day\the\time}
15 \immediate\write18{echo t > "\tmpfile"}
16 \else
17 \immediate\write18{touch \tmpfile}
```

```

18 \fi
19 \ifmiktex
20 \IfFileExists{\tmpfile.}{\ShellEscapetrue}{\ShellEscapefalse}
21 \immediate\write18{del "\tmpfile"}
22 \else
23 \IfFileExists{\tmpfile}{\ShellEscapetrue}{\ShellEscapefalse}
24 \immediate\write18{rm -f \tmpfile}
25 \fi
26 \fi
27
28 \ifShellEscape
29   \PackageInfo{gnuplottex}
30   {Automatically converting gnuplot files.}
31 \else
32   \PackageWarningNoLine{gnuplottex}
33   {Shell escape not enabled.\MessageBreak
34   You'll need to convert the graphs yourself.}
35 \fi
36 \newcounter{fignum}

```

## 5.2 .gnuplot write out

```

37 \def\figname{\jobname-gnuplottex-fig\thefignum}
38
39 \def\gnuplotverbatimwrite#1{%
40   \def\BeforeStream
41   {\message{Opening gnuplot stream #1}%
42   \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminalop
43 \immediate\write\verbatim@out{\string set output '\figname.\gnuplottextension{\gnuplottermi
44   }
45   \@sphack
46   \immediate\openout \verbatim@out #1
47   \BeforeStream%
48   \let\do\@makeother\dospecials
49   \catcode'\^M\active
50   \def\verbatim@processline{%
51     \immediate\write\verbatim@out
52     {\the\verbatim@line}}%
53   \verbatim@start}
54 \def\endgnuplotverbatimwrite{%
55   \immediate\closeout\verbatim@out
56   \@esphack
57 \catcode'\0
58 \catcode'\1
59 \catcode'\2
60 \catcode'\3
61 \catcode'\&4
62 \catcode'\^M5
63 \catcode'\#6
64 \catcode'\^7
65 \catcode'\_8
66 \catcode'\ 10
67 \catcode'\%14}

```

## 5.3 Environment definition

```

68 \def\gnuplottexextension@latex{\string tex}
69 \def\gnuplottexextension@epslatex{\string tex}
70 \def\gnuplottexextension@eepic{\string tex}
71 \def\gnuplottexextension@pstricks{\string tex}
72 \def\gnuplottexextension@pslatex{\string tex}
73 \def\gnuplottexextension@pstex{\string tex}
74 \def\gnuplottexextension@emtex{\string tex}
75 \def\gnuplottexextension@jpeg{\string jpg}
76 \def\gnuplottexextension#1{\@ifundefined{gnuplottexextension@#1}{#1}{\csname gnuplottexextension@#1\endcsname}}
77 \define@key{pic}{scale}[1]{\def\gnuplotscale{#1}}
78 \define@key{pic}{terminal}[latex]{\def\gnuplotterminal{#1}}
79 \define@key{pic}{terminaloptions}{\def\gnuplotterminaloptions{ #1}}
80 \newenvironment{gnuplot}[1][\stepcounter{fignum}]%
81 \def\gnuplotterminal{latex}
82 \def\gnuplotterminaloptions{}
83 \def\gnuplotscale{1}
84 \setkeys{pic}{#1}
85 \xdef\gnuplotCutFile{\figname.gnuplot}
86 \gnuplotverbatimwrite{\gnuplotCutFile}
87 {\endgnuplotverbatimwrite%
88 \gnuplotgraphicsprocess%
89 \gnuplotgraphicsinclude}

```

## 5.4 .gnuplot file processing

```

90 \def\extension{\gnuplottexextension{\gnuplotterminal}}
91 \long\gdef\gnuplotgraphicsprocess{%
92 \ifShellEscape
93 \IfFileExists{\figname.gnuplot}{%
94 \immediate\write18{gnuplot \figname.gnuplot}
95 \IfFileExists{\figname.\extension}{%
96 \PackageInfo{gnuplottex}{\figname.gnuplot converted}}
97 {\PackageWarningNoLine{gnuplottex}
98 {Conversion of \figname.gnuplot failed}}}{%
99 \fi}

```

## 5.5 Graph inclusion

```

100 \long\gdef\gnuplotgraphicsinclude{%
101 \IfFileExists{\figname.\extension}{%
102 \ifthenelse{equal{\extension}{\string tex}}
103 {\scalebox{\gnuplotscale}{\input{\figname.\extension}}}
104 {\includegraphics[scale=\gnuplotscale]{\figname.\extension}}
105 }
106 {\PackageWarningNoLine{gnuplottex}
107 {Please convert \figname.gnuplot manually}}
108 }

```