

Getting good quality graphics inside a \LaTeX document

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1 Introduction

For publications and scientific articles, reports and thesis the most important thing is to make well looking graphics. For that there are several guidelines, which help one to get his figures look professionally, but at the same time not to overdo things as there is a limit of how good the quality has to be.

1. Use vector graphics as much as possible. Especially where there is a lot of text in the figure. But remember, if you 'convert' a jpg to eps or svg or any other vector graphics format, you will **not** gain any quality. More on this, please use Google
2. If you have to use raster graphics, please select png format as a better alternative where possible
3. If you use raster graphics, do not exceed the final resolution of the picture to more than 600dpi as most of the printers are printing at 300dpi or 600dpi, so anything more than that might just be wasted time while waiting the figure to be rendered. Of course if you have a good reason why you need more than 600dpi, then go ahead.
4. Have a high quality copy of your figure somewhere in your computer. This is because while converting from one format to another one can **not** improve the quality.

If you feel that you have not found enough information on the graphics usage in \LaTeX , please refer to these websites:

- Floats, Figures and Captions
- Importing Graphics
- Creating Graphics

2 Inserting a simple figure

Inserting a simple figure can be as easy as:

```
\begin{figure}[H]
  \begin{center}
    \includegraphics{plot1.eps}
```

```

\end{center}
\caption{First plot}
\label{fig:figure1}
\end{figure}

```

which will produce the following:

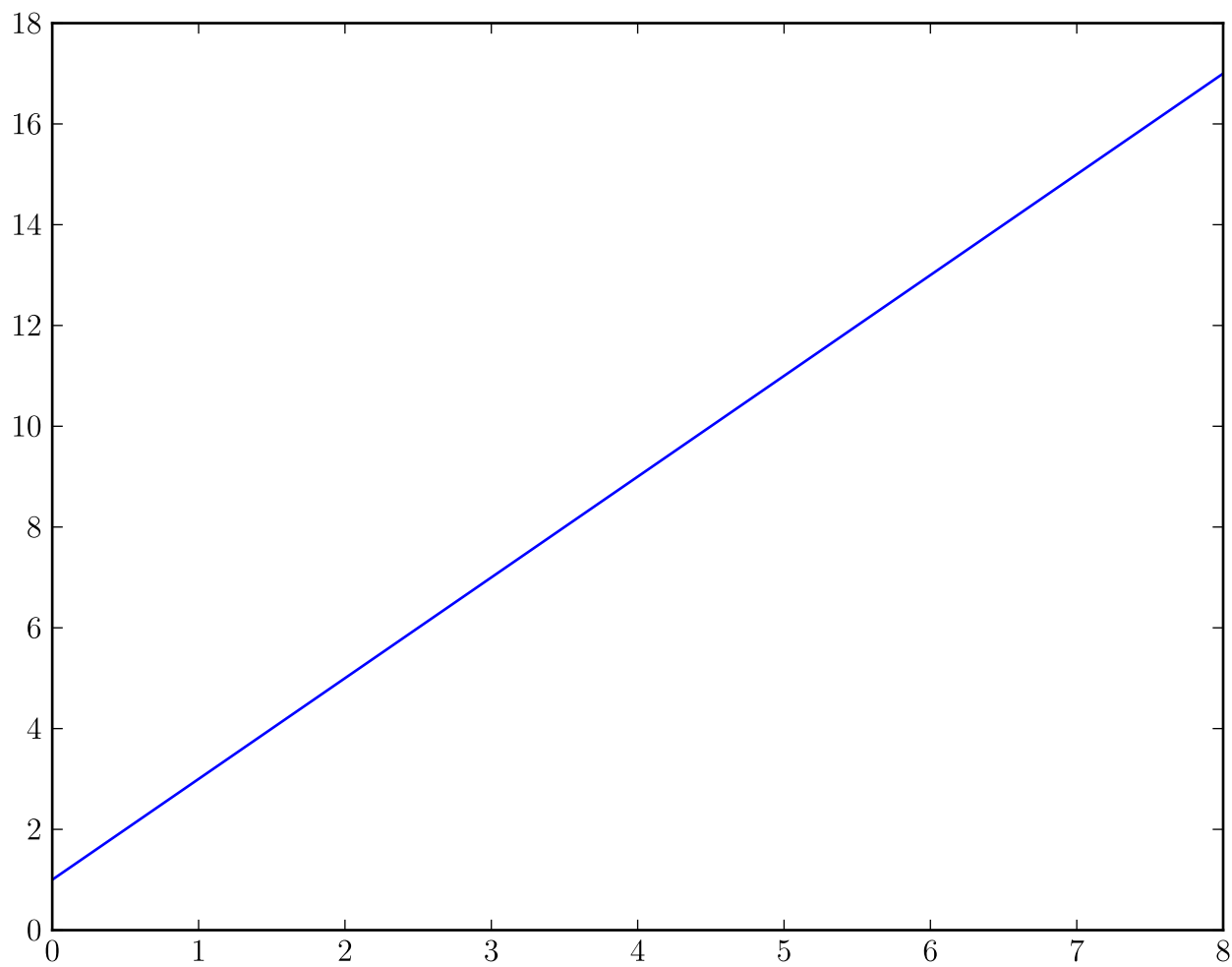


Figure 1: First plot

However one can immediately notice, that the figure is not scaled and the caption text is slightly too far from the actual figure, so these small changes will fix these nuances:

```

\begin{figure}[H]
\vspace{-5mm}
\begin{center}
\includegraphics[width=\textwidth]{plot4.eps}

```

```

\end{center}
\vspace{-15mm}
\caption{The same plot as in figure \ref{fig:figure1}, just
        aligned properly.}
\label{fig:figure2}
\end{figure}

```

And our figure will look as follows:

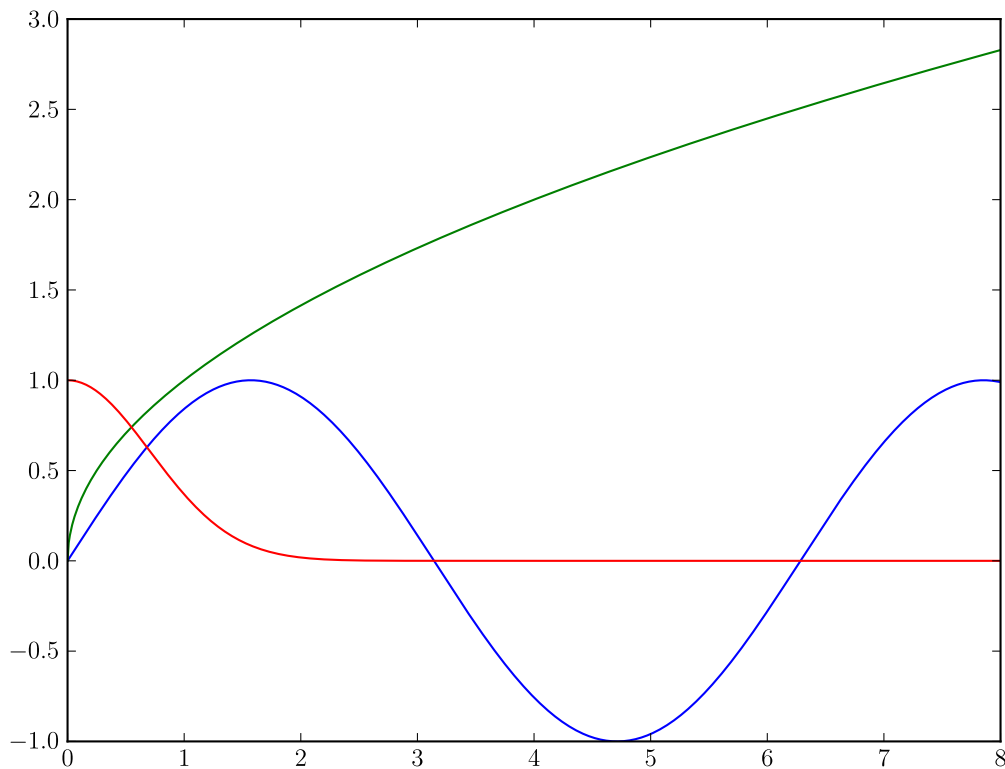


Figure 2: The same plot as in figure 1, just aligned properly.

3 Directory setting for graphics, their formats and \LaTeX compilers

The most convenient way nowadays to produce documents from \LaTeX source code is to use the `pdftex` or `pdflatex` compiler. It is very convenient as one does not need to convert the `.ps` file every time before viewing it with a viewer. Also there are other benefits to use this compiler.

Using `graphicx` package with this compiler lets you use `.jpg`, `.png` and `.pdf` graphics inside your document. You might ask: “What about my `.eps` figures?” The simple answer is to use `epstopdf` package, which would convert `.eps` figures to `.pdf` figures on-the-fly.

What is more, which `graphicx` package it is possible to give directory names where \LaTeX should search for figures. The best example would be the preamble of this file:

```

\usepackage[ pdftex ]{ graphicx }
\graphicspath{{ ./ figs / }}

```

```
\usepackage[update,verbose=false]{epstopdf}
```

This means, that the epstopdf package will convert the .eps graphics only when they are newer than the .pdf versions, which might speed up the compiling time significantly.

4 Overlaying a figure with L^AT_EX code

This is the most interesting capability of L^AT_EX although it might be considered as 'fiddly' by some users, as it requires some trial and error, but it can be very useful in some cases (eg. Having a lot of figures with chemical structures and getting them cross-referenced and numbered correctly).