The externals packages

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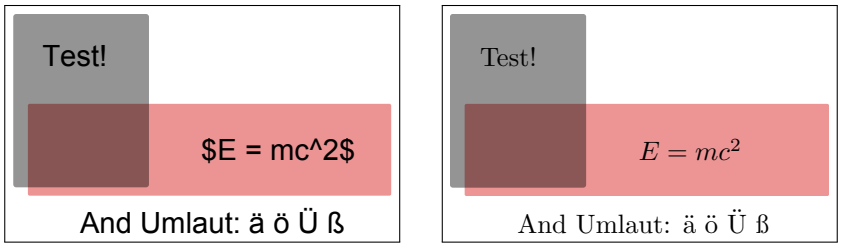
1 Introduction

The packages `external-inkscape` and `external-matlab` can be used to seamlessly import SVG and FIG images into latex documents. Figure 1 shows an example of a figure, which has been created with Inkscape. The left figure is exported from Inkscape. The right figure is imported with this package. You can see the compiled formula and the correct fonts.



(a) As seen in Inkscape (b) Import via external-inkscape

Figure 1: Example figure created in inkscape

2 The `external-base` package

This package is used by the other packages in this collection. It checks for the correct options being set and provides some commands. The package only works inside the *pdflatex compiler with the "-shell-escape" option enabled*!

2.1 Command: `\execute`

The command `\execute{command}` executes a shell command in the current working directory. It makes sure, the directory is used, even if it is UNC path name. This is done using th pushd command. If you use UNC paths, it appears normal, that the package `ifplatform` issues a warning. You should be fine to ignore it.

2.2 Command: \executeiffilenewer

The command \executeiffilenewer{source}{destination}{command} executes a shell command only if the source file is newer than the destination file.

3 The external-config package

This package allows external configuration for arbitrary other packages.

3.1 Package loading

The package should typically be used by package authors. It can be loaded using \RequirePackage{external-config}. This defines two user commands described below.

3.2 Command: \get@config

The command \get@config[<some file>]{<some tag>} is meant to be used inside the custom package. It requests the <some file> to be read and executed. The <some file> can be edited by the end user to hold all installation-specific configuration, such as paths. If the <some file> is not set, it defaults to external-config.conf. The file may be located anywhere in the path. If the file does not exist, no additional configuration is set. Make sure, you have proper defaults set before calling \get@config.

Different classes of configuration can reside in the same <some file>. They can be marked with <some tag>. Any content in the <some file>, which is marked with the wrong <some tag> is ignored during the call to \get@config. The markings are set by the user with \set@config as described below. A typical <some tag> would be the package name.

3.3 Command: \set@config

The command \set@config{<some tag>}{<config commands>} executes the <config commands>, if the configuration for <some tag> was requested by \get@config. This command goes into the external configuration file <some file>.

4 The external-inkscape package

This procedure has been proposed by Johan B. C. Engelen in July 2010. You can see the original documentation here: http://www.ctan.org/tex-archive/info/svg-inkscape. Please keep in mind, that this package *requires Inkscape version 0.48 or higher*!

4.1 Package loading

Use the \usepackage{external-inkscape} command to load the package.

4.2 Package option: path

You can set the path to your inkscape executable by specifying the path option to the package. This is not necessary, if inkscape is already on your search path.

4.3 Package option: process

By default, the included SVG images are only reprocessed when necessary, i.e. when the intermediate PDF is missing or older than the original SVG file. This can be deactivated by specifying the option process=none. If you want external-inkscape to pass over all images in the document, specify the option process=all.

4.4 Package option: changecatcodes

By default, all text in the SVG image is interpreted by LaTeX. This includes special characters, such as _ and $. If you want to import these characters literally, you need to specify the package option changecatcodes=true. If you forget this, the imported .pdf_tex file will throw LaTeX errors, such as "missing $".

4.5 User command: \PathToInkscape{{pathto/inkscape}}

Apart from the package option you can use the \PathToInkscape command to set your inkscape path.

4.6 User command: \includesvg[options]{filename}

You can include an SVG image by issuing \includesvg[options]{filename}. This will automatically convert and input the file filename.svg. If you want to define the size of the figure, you can do so by using the key-value syntax with the options width, height and scale.

4.7 User command: \includesvg* and \includesvg!

The starred variant of the \includesvg command forces the conversion of the SVG file to the PDF file, even if the file has not been altered. The exclamation mark variant suppresses the conversion, even if the file has been altered. The use of these suffixes is overridden by the process option! This behavior is consistent with the one of the pstool package.

4.8 Configuration file: `external-config.conf`

This packages uses the `external-config` package to define inter-document settings for an installation. If you place a file named `external-config.conf` in your search path, this file will be read after loading the `external-inkscape` package, but before executing any options. The search path especially includes your RM_LaTeX installation folder and the current working directory. Use `\set@config{external-inkscape}{<config commands>}` to define your `external-inkscape` settings. It is suggested to put one `external-config.conf` file in your RM_LaTeX installation directory, with your `\PathToInkscape`:

```
\set@config{external-inkscape}{
\PathToInkscape{path/to/inkscape.exe}}
```

4.9 Example

The following example illustrates the usage of the package:

```
\usepackage[path=path/to/inkscape]{external-inkscape}
...
\begin{figure}
  \includesvg[width=5cm]{external-inkscape-example}
\end{figure}
```

5 The `external-matlab` package

The `external-matlab` package has interfaces similar to the `external-inkscape` package. The commands are named `\includefig`. There also are the variants `\includefig*` and `\includefig!`, which behave exactly as expected from the `external-inkscape` package.

The package also supports the options `path` and `process` as well the user command `\PathToMatlab`. You can also use the `external-config.conf` configuration file to globally define the `\PathToMatlab`. All configuration must be put in a `\set@config{external-matlab}{<config commands>}` section:

```
\set@config{external-matlab}{
\PathToMatlab{path/to/matlab.exe}}
```

5.1 Example

Figure 2 shows an example, which has been imported using this package. Take care, that the options passed to `\includefig` will only take effect, if the figure is reprocessed. Use `\includefig*` once to ensure this.

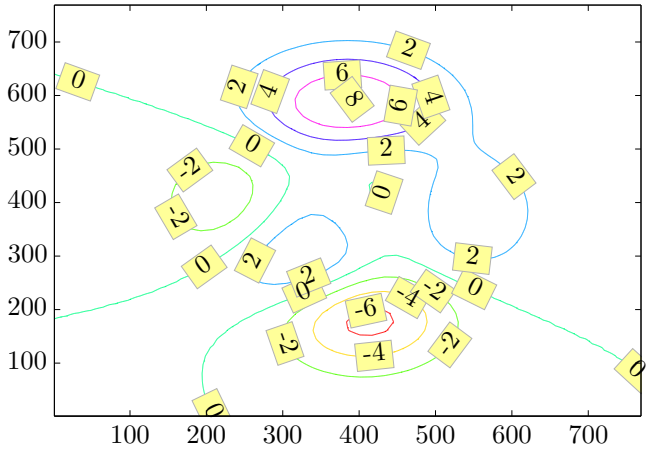


Figure 2: Example figure created in Matlab

5.2 Matlab over VPN connection

To use matlab over vpn-connection, e.g. from home, you have to change the `\PathToMatlab`. It is sufficient to insert the new path setting at the beginning of your document:

```
\PathToMatlab{matlab -c 27000@129.247.189.55}
```

If it does not work out of the box, it might be due to the fact that the vpn-client is not connected. If you are at the institute, you need to be connected with the vpn-client as well in order to get a license with the changed path settings.

6 The `external-tikz` package

(by Andreas Knoblach)

The `external-tikz` package provides the command `\includetikz`, which allows to create a pdf from a TikZ figure and to include this pdf file. This helps to improve the compilation time for documents including complex TikZ figures. The TikZ figure has to be defined in a separate tex file. Again, the two variants `\includetikz*` and `\includetikz!` are provided. Additionally, the command `\includetikz~` will cause that TikZ code is directly included. Finally, `\includetikz=` does the same like `\includetikz~` but it cannot be overridden by the package's process option.

Similar to the `pstool` package, `external-tikz` must detect the end of the preamble. Since this is not always possible, `\EndPreamble` can be used to mark the end of the preamble.

6.1 Package Options

The package also supports the options `process` like the `external-inkscape`. In addition to the values `auto`, `all`, and `none`, `process=tikz` can be used to include the TikZ code directly of all `\includtikz` figures. Creating complex figure might cause a "TeX capacity exceeded" error. In this cases, the package option `lua` can be used and the figure is created using LuaLaTeX. Because LuaLaTeX can use the complete RAM, a "TeX capacity exceeded" error is unlikely. Note that, although the most packages work well with LuaLaTeX, there are some incompatibilities.

The option `cleanup` can be used to specify which temporary files shall be deleted. The default ones are `.log`, `.tex` and `.aux`; this corresponds to the package options `cleanup={.log,.tex,.aux}`.

6.2 Example

Figure 3 shows an example, which has been imported using this package.

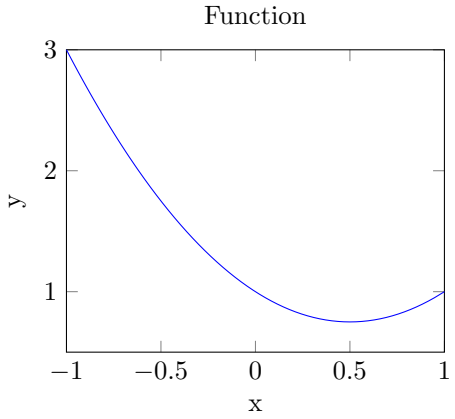


Figure 3: Example figure included using external-tikz

7 Installation

1. Make sure, you have Inkscape version 0.48 or higher.
2. Copy the package to any desired path. It is important that you do not change the directory structure.
3. Open the MikTeX Settings GUI and add the package path to the MikTeX root directory list.
4. You may need to refresh the filename database (FNDB).
5. Use the pdflatex compiler with the "-shell-escape" option.

8 Troubleshooting

1. Make sure, you have Inkscape version 0.48 or higher.
   Only like this can you take advantage of its new pdf_tex export function.

2. Use the pdflatex compiler with the "-shell-escape" option.
   This enables latex to automatically trigger the conversion.

3. This package also uses the `graphicx`, `color`, `import`, `xkeyval`, `calc` and `suffix` packages.

4. If you use UNC paths, it appears normal, that the package `ifplatform` issues a warning. You should be fine to ignore it.

5. If you receive warnings about missing $ characters, you should use the `changecatcode=true` option of the `external-inkscape` package.

6. If your configuration files are not processed, you might need to refresh the filename database of your MikTeX installation.