Paper Title

and

Abstract. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Keywords: First keyword · Second keyword · Third keyword

1 Introduction

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac

quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.[TODO 1: Refine me]



The remainder of the paper starts with a presentation of related work (Sect. 2). It is followed by a presentation of hints on LaTeX (Sect. 4). The paper closes with a conclusion and an outlook on future work (Sect. 5).

2 Related Work



Winery [2] is a graphical modeling [TODO 2: modeling with one "l", because of American English] tool. The whole idea of TOSCA is explained by Binz et al. [1].



TOSCA is used in industry [SOURCE 1: Use of TOSCA in industry].

In an anonymous submission (see `paper-anon.tex`), cite your own work in the third person, as any other work: "Binz et al. [1] showed", not "in our previous work [1]". Everything else that identifies the authors goes into `\anon`: this work was carried out at an anonymous university.

Tools for the literature search are, among others, ScienceOS, dblp, Google Scholar, IEEE Xplore, and the ACM Digital Library; JabRef manages the found papers, fetches the bibliographic data by DOI, and keeps the PDFs. If the search is systematic (as in a literature review), the keywords, the time span, and the inclusion criteria belong into the thesis so that a reader can repeat the search. Writing hints for student theses are given in the open-access book *Student Thesis Projects*[1]. More hints are given in *Writing for Computer Science*[2].

3 Writing in Markdown

This section uses plain Markdown, not LaTeX. Its source is the file `content-markdown.md`, which the main file includes with the `markdownInput` command of the `markdown` package[3]. This needs LuaLaTeX. Text can be *emphasized* or **bold**, and a citation looks like this [3]. Sect. 4.17 shows more Markdown.

4 LaTeX Hints

This section contains hints on writing LaTeX. It focuses on minimal examples, which can be directly adapted to the content

[1] `https://vdf.ch/product/student-thesis-projects-en.html`
[2] `https://doi.org/10.1007/978-1-4471-6639-9`
[3] `https://ctan.org/pkg/markdown`

4.1 Handling of paragraphs

One sentence per line. This rule is important for the usage of version control systems. A new line is generated with a blank line. As you would do in Word: New paragraphs are generated by pressing enter. In LaTeX, this does not lead to a new paragraph as LaTeX joins subsequent lines. To start a new paragraph, press enter twice. This leads to an empty line. In word, there is the functionality to press shift and enter. This leads to a hard line break. The text starts at the beginning of a new line. In LaTeX, you can do that by using two backslashes (\\).
Running text seldom needs a hard line break.

Please do *not* use two backslashes for new paragraphs. For instance, this sentence belongs to the same paragraph, whereas the last one started a new one. Andrew Stacey gives a long motivation for that in the section "Line Wrapping" of his *Document Revision System*[4].

Corresponding LaTeX code of `paper.tex`

```
One sentence per line.
This rule is important for the usage of version control systems.
A new line is generated with a blank line.
As you would do in Word:
New paragraphs are generated by pressing enter.
In LaTeX, this does not lead to a new paragraph as LaTeX joins subsequent lines.
To start a new paragraph, press enter twice.
This leads to an empty line.
In word, there is the functionality to press shift and enter.
This leads to a hard line break.
The text starts at the beginning of a new line.
In LaTeX, you can do that by using two backslashes (\textbackslash\textbackslash).
\\
Running text seldom needs a hard line break.

Please do \textit{not} use two backslashes for new paragraphs.
For instance, this sentence belongs to the same paragraph, whereas the last one started a new one.
Andrew Stacey gives a long motivation for that in the section \enquote{Line Wrapping} of his \href{https://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/#section.3}{\emph{Document Revision System}}\footnote{\url{https://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/}}.
```

[4] https://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/

Once the text is final, single paragraphs can be polished. If the last line of a paragraph holds only a word or two, or is nearly full, let TeX set the paragraph one line shorter or longer: write `\looseness=-1` (or `=1`) as the first thing in that paragraph. TeX resets `\looseness` at the end of every paragraph, so only that one paragraph is affected. With LuaLaTeX, a lone short word as the last line is avoided automatically (package impnattypo).

4.2 Notes separated from the text

The package mindflow enables writing down notes and annotations in a way so that they are separated from the main text.

This is a small note.

Corresponding LaTeX code of `paper.tex`

```
904 \begin{mindflow}
905 This is a small note.
906 \end{mindflow}
```

4.3 Handling TODOs

Marked text.

Corresponding LaTeX code of `paper.tex`

```
912 \textmarker{Marked text.}
```

With `\textmarker`, only the text color is changed, since this also works well for individual words.



Marked text. [Todo 3: A comment on it.]

Corresponding LaTeX code of `paper.tex`

```
918 \textcomment{Marked text.}{A comment on it.}
```

Manual marking for text that has been changed since the last version.

Corresponding LaTeX code of `paper.tex`

```
922 \modified{Manual marking for text that has been changed since
    ↪ the last version.}
```

This is some text. FL1: text adjusted → Changed text.

Corresponding LaTeX code of `paper.tex`

```
926 This is some text.
927 \change{FL1: text adjusted}{Changed text}.
```

Here is a comment[Comment 1: Comment].



Corresponding LaTeX code of `paper.tex`

```
931 Here is a comment\sidecomment{Comment}.
```

[Todo 4: A lot of text still needs to be produced here]



Corresponding LaTeX code of `paper.tex`

```
935 \todo{A lot of text still needs to be produced here}
```

`\TODO`, `\FIXME`, and `\CITE` work with every package for notes the template offers: `\TODO` marks an open task, `\FIXME` an important one, and `\CITE` a claim that still needs a citation.

[Todo 5: Add the evaluation]

[Fixme 1: The numbers are outdated]



Most scientific texts in computer science are written with LaTeX [Source 2: Survey on the tools used for writing].



Corresponding LaTeX code of `paper.tex`

```
941 \TODO{Add the evaluation}
942
943 \FIXME{The numbers are outdated}
944
945 Most scientific texts in computer science are written with
    ↪ \LaTeX{}~\CITE{Survey on the tools used for writing}.
```

With zebra, `\todo` takes the responsible person as optional argument; further note types are `\zebranote`, `\comment`, `\fixed`, `\placeholder`, `\fixme`, and `\source` (defined by the template, used by `\FIXME` and `\CITE`). All notes are listed at the end of the document.

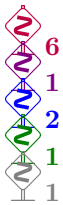
[Todo 6@FA: Add a citation]

[Note 1: Shorten this paragraph?]

[Comment 2@FA: Is this claim backed by the evaluation?]

[Fixed 1: Typo corrected]

[Placeholder 1: Table with the results]



Corresponding LaTeX code of `paper.tex`

```
\todo[FA]{Add a citation}

\zebranote{Shorten this paragraph?}

\comment[FA]{Is this claim backed by the evaluation?}

\fixed{Typo corrected}

\placeholder{Table with the results}
```

Co-authors can mark their edits and comments with the phfcc package; the initials of the author appear once per page in the margin. Define one command per author in the preamble (`\phfMakeCommentingCommand`); `\phfDisableCommentingCommands` hides everything for the final version.

Quantum mechanics developed within one decade thanks to the works of Schrödinger, Heisenberg, and Dirac, who drew inspiration from earlier ideas by FA Planck and Einstein [Einstein must not be missing here.] ~~This sentence is to be removed.~~ **!!! This is important. !!!**

Corresponding LaTeX code of `paper.tex`

```
Quantum mechanics developed within one decade thanks to the
  ↪ works of Schrödinger, Heisenberg, and Dirac,
who drew inspiration from earlier ideas by Planck \FA{and
  ↪ Einstein} \FA[Einstein must not be missing here.]
\FA*{This sentence is to be removed.} \FA!{This is important.}
```

4.4 Hyphenation

LaTeX automatically hyphenates words. When using microtype, there should be fewer hyphenations than in other settings. You might still need to tweak the hyphenation. Here are some hints:

In case you write “application-specific”, then the word will only be hyphenated at the dash. You can also insert `\allowbreak{}` into the word, as in applica tion-specific, but this is much more effort.

You can now write words containing hyphens which are hyphenated at other places in the word. For that, write `"=` instead of `-`, as in application”=specific. This is enabled by an additional configuration of the babel package.

Corresponding LaTeX code of `paper.tex`

```
In case you write \enquote{application-specific}, then the
  ↪ word will only be hyphenated at the dash.
You can also insert \verb1\allowbreak{}1 into the word, as in
  ↪ applica\allowbreak{}tion-specific, but this is much more
  ↪ effort.

You can now write words containing hyphens which are
  ↪ hyphenated at other places in the word.
For that, write \verb1"=1 instead of \verb1-1, as in
  ↪ application"=specific. % chktex 18
This is enabled by an additional configuration of the babel
  ↪ package.
```

4.5 Typesetting Units

Numbers can be written plain text (such as 100), by using the siunitx package as follows: 100 $\frac{\mathrm{km}}{\mathrm{h}}$, or by using plain LaTeX (and math mode): $100 \frac{km}{h}$.

Corresponding LaTeX code of `paper.tex`

```
Numbers can be written plain text (such as 100), by using the
  ↪ \href{https://ctan.org/pkg/siunitx}{siunitx} package as
  ↪ follows:
\SI{100}{\km\per\hour},
or by using plain \LaTeX{} (and math mode):
$100 \frac{\mathit{km}}{h}$.
```

5 % of 10 kg

Corresponding LaTeX code of `paper.tex`

```
\SI{5}{\percent} of \SI{10}{kg}
```

Numbers are automatically grouped: 123 456.

Corresponding LaTeX code of `paper.tex`

```
Numbers are automatically grouped: \num{123456}.
```

4.6 Surrounding Text by Quotes

Please use the “enquote command” to quote something. Quoting with “quote” or “quote” also works.

Corresponding LaTeX code of `paper.tex`

```
Please use the \enquote{enquote command} to quote something.
Quoting with "`quote"' or ``quote'' also works. % chktex 18

```

4.7 Zref-clever examples

Demonstration of zref-clever: Zcref (short for zcref[S]) at the beginning of a sentence, zcref in all other cases.

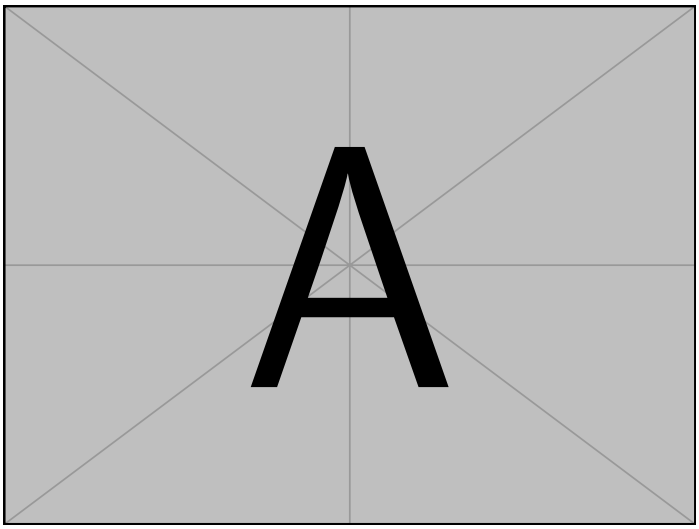


Fig. 1. Example figure for zcref demo

Table 1. Example table for zcref demo

Heading1	Heading2
One	Two
Three	Four

Figure 1 shows a simple fact, although Fig. 1 could also show something else.
Table 1 shows a simple fact, although Table 1 could also show something else.
Section 4.7 shows a simple fact, although Sect. 4.7 could also show something else.

Corresponding LaTeX code of `paper.tex`

```
\Zcref{fig:ex:cref} shows a simple fact, although
  ↪ \zcref{fig:ex:cref} could also show something else.

\Zcref{tab:ex:cref} shows a simple fact, although
  ↪ \zcref{tab:ex:cref} could also show something else.

\Zcref{sec:ex:cref} shows a simple fact, although
  ↪ \zcref{sec:ex:cref} could also show something else.
```

4.8 Theorem-like Environments and Mathematics

The `llncs` class already provides the theorem-like environments `theorem`, `proposition`, `lemma`, `corollary`, `definition`, `example`, `exercise`, `note`, `problem`, `question`, `remark`, and `solution` as well as the unnumbered `proof` environment – no additional package is required.

Definition 1 (Idempotence). *An operation f is* idempotent *if $f(f(x)) = f(x)$ holds for all inputs x.*

Proposition 1. *The identity operation is idempotent.*

Lemma 1. *An idempotent operation fixes every element of its image.*

Theorem 1. *If two idempotent operations f and g commute, their composition $f \circ g$ is idempotent.*

Proof. Since f and g commute and are idempotent,

$$(f \circ g)((f \circ g)(x)) = f(f(g(g(x)))) = f(g(x)) = (f \circ g)(x). \tag{1}$$

□

Corollary 1. *Applying $f \circ g$ a second time yields no further change, as Eq. (1) shows.*

Example 1. Trimming spaces in a string is idempotent: Lemma 1 applies to every already-trimmed string.

Corresponding LaTeX code of `paper.tex`

```latex
\begin{definition}[Idempotence]
  An operation $f$ is \emph{idempotent} if $f(f(x)) = f(x)$
   ↪ holds for all inputs $x$.
\end{definition}

\begin{proposition}
  The identity operation is idempotent.
\end{proposition}

\begin{lemma}\label{lem:fixed}
  An idempotent operation fixes every element of its image.
\end{lemma}

\begin{theorem}\label{thm:idempotent-composition}
  If two idempotent operations $f$ and $g$ commute, their
   ↪ composition $f \circ g$ is idempotent.
\end{theorem}

\begin{proof}
  Since $f$ and $g$ commute and are idempotent,
  \begin{equation}
    (f \circ g)\bigl((f \circ g)(x)\bigr)
     ↪ = f\bigl(f(g(g(x)))\bigr) = f(g(x)) = (f \circ g)(x).
    \label{eq:idempotent-composition}
  \end{equation}
  \qed
\end{proof}

\begin{corollary}
  Applying $f \circ g$ a second time yields no further change,
   ↪ as \zcref{eq:idempotent-composition} shows.
\end{corollary}

\begin{example}
  Trimming spaces in a string is idempotent: \zcref{lem:fixed}
   ↪ applies to every already-trimmed string.
\end{example}
```

4.9 Figures

Figure 2 shows something interesting.

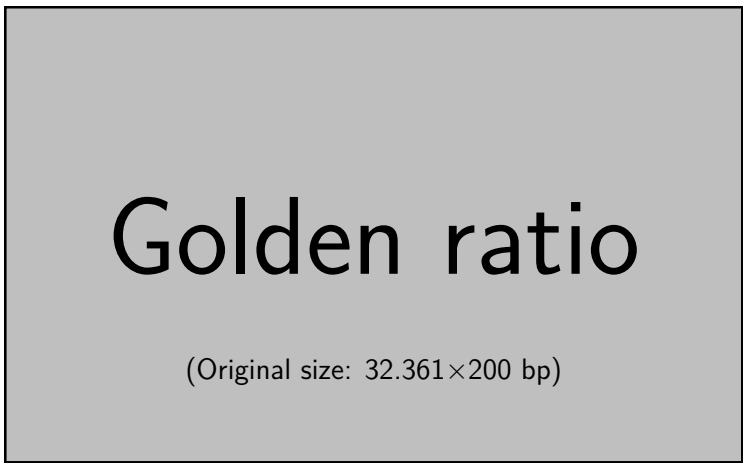


Fig. 2. Simple Figure. Based on Scharrer [3].

Corresponding LaTeX code of `paper.tex`

```
\Zcref{fig:label} shows something interesting.

\begin{figure}
  \centering
  \includegraphics[width=.8\linewidth]{example-image-golden}
  \caption[Simple Figure]{
    Simple Figure.
    Based on \citet{mwe}.
  }
  \label{fig:label}
\end{figure}
```

Photos in JPEG or PNG format are included the same way, as shown in Fig. 3.

Corresponding LaTeX code of `paper.tex`

```
\begin{figure}
  \centering
  \includegraphics[width=.5\linewidth]{figures/ulm-minster.jpg}
  \caption{Ulm Minster. Photo: wkrauth, CC0, via Wikimedia
    ↪ Commons.}
  \label{fig:jpg}
\end{figure}
```

One can also have pictures floating inside text:



Fig. 3. Ulm Minster. Photo: wkrauth, CC0, via Wikimedia Commons.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

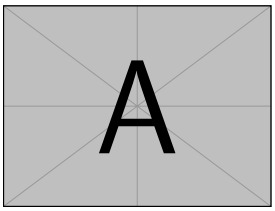


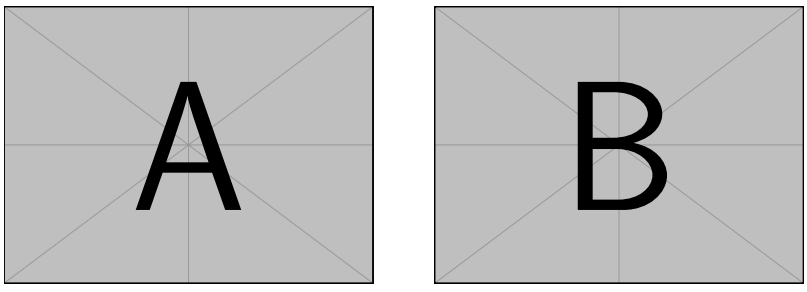
Fig. 4. A floating figure

Corresponding LaTeX code of `paper.tex`

```
\begin{floatingfigure}{.33\linewidth}
  \includegraphics[width=.29\linewidth]{example-image-a}
  \caption{A floating figure}
\end{floatingfigure}
\lipsum[2]
```

4.10 Sub Figures

An example of two sub figures is shown in Fig. 5.



(a) Case I (b) Case II

Fig. 5. Example figure with two sub figures.

Corresponding LaTeX code of `paper.tex`

```
\begin{figure}[!b]
  \centering
  \subfloat[Case I]{\includegraphics[width=.4\linewidth]{
   ↪ example-image-a}%
    \label{fig:first_case}}
  \hfil
  \subfloat[Case II]{\includegraphics[width=.4\linewidth]{
   ↪ example-image-b}%
    \label{fig:second_case}}
  \caption{Example figure with two sub figures.}
  \label{fig:two_sub_figures}
\end{figure}
```

4.11 Figures with tikz

The tikz package creates graphics programmatically. This package generates grids and other regular structures.

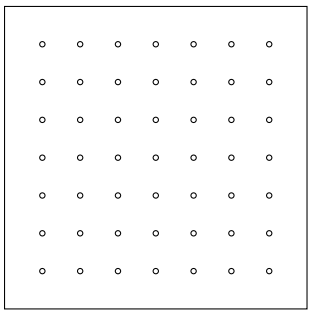


Fig. 6. A regular grid generated easily with two for loops.

Corresponding LaTeX code of `paper.tex`

```
\begin{figure}[ht]
  \centering
  \begin{tikzpicture}
    \draw(0,0) rectangle (4,4);
    \foreach \x in {0.5,1,1.5,2,2.5,3,3.5}
    \foreach \y in {0.5,1,1.5,2,2.5,3,3.5}
    \draw(\x,\y) circle (1pt);
  \end{tikzpicture}
  \caption{A regular grid generated easily with two for
   ↪  loops.}\label{fig:tikz_example}
\end{figure}
```

4.12 Plots with pgfplots

The pgfplots package plots functions directly in LaTeX, similar to MATLAB or gnuplot. Some visual examples are available in the package documentation[5].

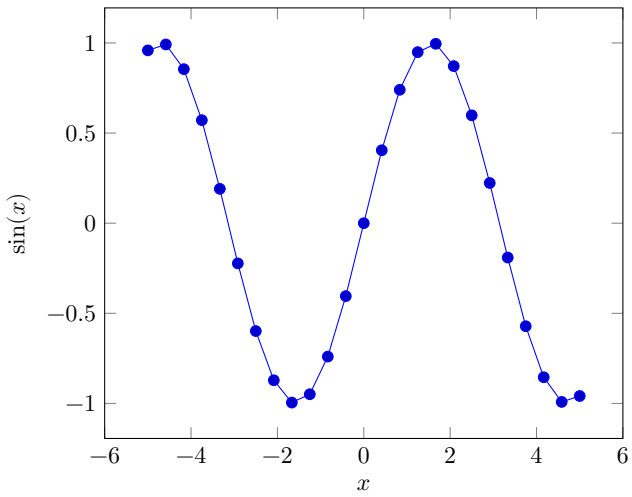


Fig. 7. Plot of $\sin(x)$ directly inside the figure environment with pgfplots.

[5] `http://texdoc.net/pkg/pgfplots`

Corresponding LaTeX code of `paper.tex`

```
\begin{figure}[ht]
  \centering
  \begin{tikzpicture}
    \begin{axis}[xlabel=$x$, ylabel=$\sin(x)$]
      \addplot {sin(deg(x))};  % Plot the sine function
    \end{axis}
  \end{tikzpicture}
  \caption{Plot of $\sin(x)$ directly inside the figure environment with pgfplots.}
  \label{fig:pgfplots_example}
\end{figure}
```

Coordinates can also be given explicitly instead of as a function:

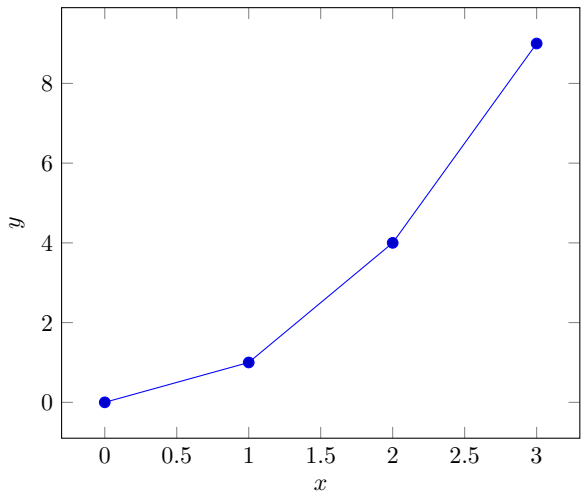


Fig. 8. Explicit coordinates plotted with pgfplots.

Corresponding LaTeX code of `paper.tex`

```latex
\begin{figure}[ht]
  \centering
  \begin{tikzpicture}
    \begin{axis}[xlabel=$x$, ylabel=$y$]
      \addplot coordinates {(0,0) (1,1) (2,4) (3,9)};  % Plot explicit coordinates
    \end{axis}
  \end{tikzpicture}
  \caption{Explicit coordinates plotted with pgfplots.}
  \label{fig:pgfplots_coords}
\end{figure}
```

4.13 Tables

Table 2. Simple Table

Heading1	Heading2
One	Two
Three	Four

Corresponding LaTeX code of `paper.tex`

```latex
\begin{table}
  \caption{Simple Table}
  \label{tab:simple}
  \centering
  \begin{tabular}{ll}
    \toprule
    Heading1 & Heading2 \\
    \midrule
    One      & Two      \\
    Three    & Four     \\
    \bottomrule
  \end{tabular}
\end{table}
```

A table caption goes above the table (`\caption` before the `tabular`), a figure caption below the figure.

Rows and cells can be colored with `\rowcolor` and `\cellcolor` from the colortbl package, which xcolor loads with its option `table`.

Table 3. Table with colored cells

Test	Result
A	pass
B	fail

Corresponding LaTeX code of `paper.tex`

```
\begin{table}
  \caption{Table with colored cells}
  \label{tab:colored}
  \centering
  \begin{tabular}{ll}
    \toprule
    \rowcolor{gray!20}
    Test & Result                    \\
    \midrule
    A    & \cellcolor{green!20}pass \\
    B    & \cellcolor{red!20}fail   \\
    \bottomrule
  \end{tabular}
\end{table}
```

A `\footnote` inside a floating table is lost. Use `\tablefootnote` from the tablefootnote package instead: it is set as a normal footnote at the bottom of the page. If the notes should appear directly below the table instead (common in journals), use the threeparttable package.

Table 4. Table with a footnote

Heading1	Heading2[6]
One	Two

[6] A footnote inside a table.

Corresponding LaTeX code of `paper.tex`

```
\begin{table}
  \caption{Table with a footnote}
  \label{tab:footnote}
  \centering
  \begin{tabular}{ll}
    \toprule
    Heading1 & Heading2\tablefootnote{A footnote inside
     ↪ a table.} \\
    \midrule
    One      & Two
     ↪ \\
    \bottomrule
  \end{tabular}
\end{table}
```

A table wider than the text runs into the margin. `\begin{adjustbox}{max width=\linewidth}` from the adjustbox package scales it down to the line width (the column width in a two-column layout), and only if it is too wide. Scaling shrinks the font, so for a table with long text in its cells, prefer wrapping the text with the column type `X` of the tabularx package, and for a table wider than the page, a landscape page (see `pdflscape`).

Table 5. Wide table scaled to the line width

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.11	2.22	3.33	4.44	5.55	6.66	7.77	8.88	9.99	10.10	11.11	12.12
Rain	Snow	Wind	Sun	Fog	Hail	Heat	Storm	Mist	Frost	Sleet	Calm

Corresponding LaTeX code of `paper.tex`

```
\begin{table}
  \caption{Wide table scaled to the line width}
  \label{tab:wide}
  \centering
  \begin{adjustbox}{max width=\linewidth}
    \begin{tabular}{lllllllllll}
      \toprule
      Jan  & Feb  & Mar  & Apr  & May  & Jun  & Jul  & Aug
       ↪  & Sep  & Oct  & Nov  & Dec  \\
      \midrule
      1.11 & 2.22 & 3.33 & 4.44 & 5.55 & 6.66 & 7.77 & 8.88
       ↪  & 9.99 & 10.10 & 11.11 & 12.12 \\
      Rain & Snow & Wind & Sun  & Fog  & Hail & Heat & Storm
       ↪  & Mist & Frost & Sleet & Calm  \\
      \bottomrule
    \end{tabular}
  \end{adjustbox}
\end{table}
```

Table 6. Table with diagonal line

Row \ Column	A	B
1	x	y

Corresponding LaTeX code of `paper.tex`

```
% Adapted from https://tex.stackexchange.com/a/468994/9075
\begin{table}
  \caption{Table with diagonal line}
  \label{tab:diag}
  \centering
  \begin{tabular}{|l|c|c|} % chktex 44
    \hline % chktex 44
    \diagbox{Row}{Column} & A & B \\
    \hline % chktex 44
    1                     & x & y \\
    \hline % chktex 44
  \end{tabular}
\end{table}
```

4.14 Tables spanning multiple pages

The longtable package typesets tables that automatically break across page boundaries. The header (`\endhead`) and footer (`\endfoot`) rows are repeated on every page; once enough rows are added, the table spans more than one page on its own.

Table 7: A sample long table.

First column	Second column	Third column
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D
A	BC	D

Corresponding LaTeX code of `paper.tex`

```
\begin{longtable}{lll}
  \caption{A sample long table.}\label{tab:long} \\
  \toprule
  \textbf{First column} & \textbf{Second column}
   ↪  & \textbf{Third column} \\
  \midrule
  \endfirsthead

  \multicolumn{3}{c}{{\bfseries \tablename\ \thetable{} --
   ↪  continued from previous page}} \\
  \toprule
  \textbf{First column} & \textbf{Second column}
   ↪  & \textbf{Third column} \\
  \midrule
  \endhead

  \midrule
  \multicolumn{3}{r}{{Continued on next page}} \\
  \endfoot

  \bottomrule
  \endlastfoot

  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
  A & BC & D \\
\end{longtable}
```

4.15 Source Code

The minted package highlights listings properly. It uses the pygments library, which in turn requires Python.

Listing 1 shows source code written in XML. Line 2 contains a comment.

```xml
<listing name="example">
  <!-- comment -->
  <content>not interesting</content>
</listing>
```

List. 1. Example XML listing using minted

Corresponding LaTeX code of `paper.tex`

```latex
% After a period, LaTeX sets the wider sentence space by default. The exception: a period after a capital letter
% is taken for an abbreviation or initial ("T. Scientist", "NASA") and gets the narrow inter-word space.
% "XML." ends a sentence, so \@ before the period restores the sentence space.
% (The other way round, "e.g.\ details" forces the narrow space after a lowercase abbreviation; ~ is a
% non-breaking inter-word space, as in "Prof.~Dr.~Eike Kraft".)
% An abbreviation set with \gls{xml} needs no \@: glossaries ends it with a non-letter, so the period after it
% gets the sentence space. The plain "XML" here is for documents without the glossaries package.
\Zcref{lst:XML} shows source code written in XML\@.
\Zcref{line:comment} contains a comment.

\begin{listing}[htbp]
  \begin{minted}[linenos=true,escapeinside=||]{xml}
<listing name="example">
  <!-- comment --> |\label{line:comment}|
  <content>not interesting</content>
</listing>
\end{minted}
  \caption{Example XML listing using minted}
  \label{lst:XML}
\end{listing}
```

One can also typeset JSON as shown in List. 2.

```json
{
  key: "value"
}
```

List. 2. Example JSON listing using minted

Corresponding LaTeX code of `paper.tex`

```
\begin{listing}[htbp]
  \begin{minted}[linenos=true,escapeinside=||]{json}
{
  key: "value"
}
\end{minted}
  \caption{Example JSON listing using minted}
  \label{lst:flJSON}
\end{listing}
```

Java is also possible as shown in List. 3.

```
public class Hello {
    public static void main (String[] args) {
        System.out.println("Hello World!");
    }
}
```

List. 3. Java code rendered using minted

Corresponding LaTeX code of `paper.tex`

```
\begin{listing}[htbp]
  \begin{minted}[linenos=true,escapeinside=||]{java}
public class Hello {
    public static void main (String[] args) {
        System.out.println("Hello World!");
    }
}
\end{minted}
  \caption{Java code rendered using minted}
  \label{lst:flJava}
\end{listing}
```

4.16 Itemization

One can list items as follows:

- Item One
- Item Two

Corresponding LaTeX code of `paper.tex`

```
\begin{itemize}
  \item Item One
  \item Item Two
\end{itemize}
```

One can enumerate items as follows:

1. Item One
2. Item Two

Corresponding LaTeX code of `paper.tex`

```
\begin{enumerate}
  \item Item One
  \item Item Two
\end{enumerate}
```

With paralist, one can even have all items typeset after each other and have them clean in the TeX document:
1. The first item, 2. the second item, and 3. the third item appear in one line.

Corresponding LaTeX code of `paper.tex`

```
\begin{inparaenum}
  \item The first item,
  \item the second item, and
  \item the third item appear in one line.
\end{inparaenum}
```

4.17 Writing in Markdown

If you are new to LaTeX, you can start by writing your text in Markdown using the markdown package. LaTeX then takes care of the typesetting. Markdown and LaTeX can be mixed: Table 8 is written in Markdown and referenced from LaTeX. A whole section can be written in a separate Markdown file included by `\markdownInput`, as Sect. 3 shows. The markdown-latex-quickstart shows a complete document written in Markdown.

Text can be *emphasized* or **bold**, and `code` is set in a monospaced font. A citation looks like this [3], and here is a footnote.[7] Referenced footnotes work as well[8].

– first point

[7] This is an inline footnote.
[8] This is a footnote defined at a different place in the text.

- second point
  - sub-point

1. firstly
2. secondly

Table 8. A table written in Markdown

Right	Left	Centered
12	12	12
123	123	123

Table 8 shows a table with caption. Its identifier `{#tbl:markdown}` is referenced by `<#tbl:markdown>`.

Corresponding LaTeX code of `paper.tex`

```
  \begin{markdown}
Text can be *emphasized* or **bold**, and `code` is set in
↪  a monospaced font.
A citation looks like this [@mwe], and here is
↪  a footnote.^[This is an inline footnote.]
Referenced footnotes work as well[^detail].

[^detail]: This is a footnote defined at a different place in
↪  the text.

- first point
- second point
  - sub-point

1) firstly
2) secondly

| Right | Left | Centered |
|------:|:-----|:--------:|
|    12 | 12   |    12    |
|   123 | 123  |   123    |

: A table written in Markdown {#tbl:markdown}

<#tbl:markdown> shows a table with caption.
Its identifier `{#tbl:markdown}` is referenced by
↪  `<#tbl:markdown>`.
\end{markdown}
```

4.18 Other Features

The words “workflow” and “dwarflike” can be copied from the PDF and pasted to a text file.

Corresponding LaTeX code of `paper.tex`

```
1464 The words \enquote{workflow} and \enquote{dwarflike} can be
     ↪ copied from the PDF and pasted to a text file.
```

The symbol for powerset is now correct: $\powerset$ and not a Weierstrass p ($\wp$).
$\powerset(1,2,3)$

Corresponding LaTeX code of `paper.tex`

```
1468 The symbol for powerset is now correct: $\powerset$ and not
     ↪ a Weierstrass p ($\wp$).
1469
1470 $\powerset({1,2,3})$
```

Brackets work as designed: <test> One can also input backticks in verbatim text: `` `test` ``.

Corresponding LaTeX code of `paper.tex`

```
1474 Brackets work as designed:
1475 <test>
1476 One can also input backticks in verbatim text: \verb|`test`|.
```

Acronyms can be typeset in running text with `\initialism`, which sets them as small caps that blend into the surrounding lowercase text. It is the lightweight alternative to the full acronym and glossary management (`\gls`, with an automatic list of abbreviations) provided by the thesis variants: `\initialism` only typesets the acronym and does not add it to any list. The macro and the ready-made acronyms (`\OMG`, `\BPEL`, `\BPMN`, `\UML`) are defined in `commands.tex`, where you can add your own.

The UML is maintained by the OMG; related standards include BPEL and BPMN. Any acronym can be set inline with REST or HTTP.

Corresponding LaTeX code of `paper.tex`

```
1482 The \UML is maintained by the \OMG; related standards include
     ↪ \BPEL and \BPMN.
1483 Any acronym can be set inline with \initialism{REST} or
     ↪ \initialism{HTTP}.
```

5 Conclusion and Outlook

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Acknowledgments

References

1. Binz, T., Breiter, G., Leymann, F., Spatzier, T.: Portable Cloud Services Using TOSCA. IEEE Internet Computing **16**(03), 80–85 (May 2012), ISSN 1089-7801, `https://doi.org/10.1109/mic.2012.43`
2. Kopp, O., et al.: Winery – A Modeling Tool for TOSCA-based Cloud Applications. In: Proceedings of 11th International Conference on Service-Oriented Computing (ICSOC'13), LNCS, vol. 8274, pp. 700–704, Springer Berlin Heidelberg (2013), `https://doi.org/10.1007/978-3-642-45005-1_64`
3. Scharrer, M.: The `mwe` Package (2017), URL `http://texdoc.net/mwe`

All links were last followed on September 25, 2027.

Zebra Notes

Type	Count
todo	6
fixed	1
comment	2
note	1
placeholder	1
fixme	1
source	2
Total	**14**

List of notes

Todo 1 2
Refine me
Todo 2 2
modeling with one “l”, because of American English
Source 1 2
Use of TOSCA in industry
Todo 3 4
A comment on it.
Comment 1 5
Comment
Todo 4 5
A lot of text still needs to be produced here
Todo 5 5
Add the evaluation
Fixme 1 5
The numbers are outdated
Source 2 5
Survey on the tools used for writing
Todo 6 `@FA` 5
Add a citation
Note 1 5
Shorten this paragraph?
Comment 2 `@FA` 5
Is this claim backed by the evaluation?
Fixed 1 5
Typo corrected
Placeholder 1 5
Table with the results