

# Demo of My L<sup>A</sup>T<sub>E</sub>X Style

Hassium

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## 1 Packages

This style contains the following packages:

```
\usepackage[T1]{fontenc}
\usepackage[explicit]{titlesec}
\usepackage[utf8]{inputenc}
\usepackage{amsmath,amsthm,amssymb,amsfonts,mathrsfs,mathtools,nicematrix,chngecntr,
centernot,ytableau,tikz-cd}
\usepackage{imakeidx,textcomp,tocloft,envron,setspace,geometry,enumerate,
enumitem,blindtext,multicol,xcolor,fancyhdr,calligra,graphicx,wrapfig,pgfplots,
mdframed,tabularx,lipsum,comment,csquotes,verbatim,transparent,scalerel,halloweenmath}
\usepackage[hidelinks]{hyperref}
\usepackage{chemfig}
```

How to insert it?

```
\documentclass{article}
\input{hassium.tex} % Download and input it using its path
```

## 2 Title Page Setup

After inserting the package, you should define the title and author name. Here is an example, which is the code of this demo:

```
\documentclass{article}
\input{hassium.tex}
\begin{document}
  \def\htitle{Demo of Hassium Style}
  \def\hauthor{Hassium}
  \def\hfauthor{Hassium}
  \hsetup
  \htoc
  \hmain
\end{document}
```

Here the “hfauthor” is the left part of the header. Also, feel free to use “hstart” command to include all three setup.

```
\documentclass{article}
\input{hassium.tex}
\begin{document}
  \def\htitle{Demo of Hassium Style}
  \def\hauthor{Hassium}
  \def\hfauthor{Hassium}
  \hstart
\end{document}
```

### 3 Page Geometry

There are some commands that adjust the geometry of the document:

```
\geometry{letterpaper, top=54pt,bottom=46.8pt,marginparsep=5.67pt,marginparwidth=56.69pt,
voffset=0pt,hoffset=0pt,left=54pt,right=54pt,headheight=24pt,headsep=10pt}
\setstretch{1.25} % spacing
```

### 4 More on Table of Contents

You can add descriptions to each section and the description will appear in the table of contents, directly below the section name:

```
\section{This is a Sample Section}
\descr{This is a description to the section}
```

The table of contents only shows the section names, but no subsections and numberless sections. If you want a numberless section in the table of contents, use the “newsection” command:

```
\newsection{This is a numberless section}
```

Note that the section names in the table of contents are hyperlinks; click on any section name to navigate directly to that section. You can do the converse to navigate to the first page as well.

### 5 Index Page

This style has a customized index page. Check the code:

```
This is a \hdef{defintiion}. This is another \hdef{vocabulary}.
\hindex
```

The command “hdef” mark the word and print it. The command “hindex” is a customized index page that print words in three columns. Each page number in the index page contains a hyperlink to that page.

### 6 Darkmode

Darkmode commands change the background color to black and the text to white.

```
\begin{document}
  \darkhsetup
  \darkhmain
\end{document}
```

## 7 Other Environments and Commands

The line-spacing in “enumerate” environment is changed:

```
\setlist[enumerate]{topsep=0pt,itemsep=-1ex,partopsep=1ex,parsep=1ex}
```

The “level” environment is used in “enumerate” environment, consider the following code:

```
\begin{enumerate}
  \item This is the first line.
  \begin{level}
    \item This is the second line.
    \begin{level}
      \item This is the third line.
    \end{level}
  \end{level}
  \item This is another line.
\end{enumerate}
```

This code gives:

1. This is the first line.
2. This is the second line.
3. This is the third line.
4. This is another line.

The command “circled” draws a small circle and you can add something inside the circle:

```
\circled{1}
```

The output is ①. You can write any Roman numerals by:

```
\rom108
```

There are two simple commands for hand-written fonts:

```
\cfd{font 1}
\cfc{font 2}
```

The outputs are *font 1* and *font 2*.

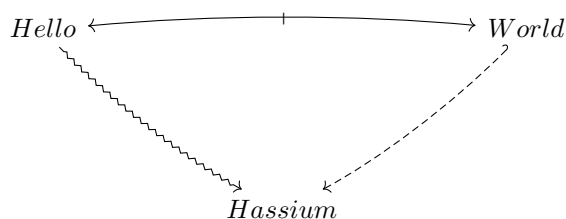
## 8 Quiver

Quiver is done by varkor and AndréC, check their github for more information. I include quiver to draw curve arrows in a commutative diagram. To draw a diagram with quiver, check this website. An example is given below:

```
% chktex-file 15 % the three lines enables useless warnings
% chktex-file 17
```

```
% chktex-file 18
\begin{center}
  \begin{tikzcd}
    Hello & & & World \\
    & \arrow["\shortmid"{marking}, curve={height=-6pt}, tail reversed, from=1-1, to=1-5] & & \\
    & \arrow[curve={height=6pt}, squiggly, from=1-1, to=4-3] & & \\
    & \arrow[curve={height=-6pt}, dashed, hook', from=1-5, to=4-3] & & \\
  \end{tikzcd}
\end{center}
```

The diagram looks like:



## 9 Theorem Styles

Several theorem styles are offered:

```
\theoremstyle{definition}
\newtheorem{definition}{Definition}[section]
\newtheorem{theorem}{Theorem}[section]
\newtheorem*{proposition}{Proposition}
\newtheorem*{lemma}{Lemma}
\newtheorem*{corollary}{Corollary}
\newtheorem*{example}{Example}
\newtheorem*{remark}{Remark}
\newtheorem*{notation}{Notation}
```

There is a “hdefinition” environment, which works exactly the same as “definition” if you write:

```
\begin{hdefinition}
  This is a definition of Hassium.
\end{hdefinition}
```

If you include a name variable, it gives an index to the name.

```
\begin{hdefinition}[Hassium]
  This is a definition of Hassium
\end{hdefinition}
\hindex % This will print Hassium
```

The environment name can be customized by using:

```
\customtheorem{This is a custom theorem}
\begin{This is a custom theorem}
    The proof is trivial.
\end{This is a custom theorem}
```

The output environment is:

**This is a custom theorem.** The proof is trivial.

You can put any number or label in “exercise” environment:

```
\begin{exercise}[8.6]
    The proof is trivial.
\end{exercise}
```

The environment looks like:

**Exercise 8.6.** The proof is trivial.

## 10 Invisible Proofs

The environment “reviewmode” is originally done by my friend ETwilight. It replaces your “proof” environment by three empty lines:

```
\begin{reviewmode}
    \begin{proof}
        The proof is trivial.
    \end{proof}
\end{reviewmode}
```

## 11 Simple Commands in Math Mode

I will give a table of all commands in math mode.

|                    |                 |                  |            |
|--------------------|-----------------|------------------|------------|
| $\backslash$ bs    | $\backslash$    | $\backslash$ SL  | SL         |
| $\backslash$ N     | N               | $\backslash$ Mod | Mod        |
| $\backslash$ Z     | Z               | $\backslash$ Sg  | ℳ          |
| $\backslash$ Q     | Q               | $\backslash$ Ag  | ℳ          |
| $\backslash$ R     | ℝ               | $\backslash$ Cay | Cay        |
| $\backslash$ C     | C               | $\backslash$ uni | ∃!         |
| $\backslash$ bb{H} | H               | $\backslash$ al  | $\alpha$   |
| $\backslash$ ca{H} | $\mathcal{H}$   | $\backslash$ be  | $\beta$    |
| $\backslash$ fr{H} | $\mathfrak{H}$  | $\backslash$ ga  | $\gamma$   |
| $\backslash$ T     | $\mathcal{T}$   | $\backslash$ de  | $\delta$   |
| $\backslash$ Pn{n} | $\mathbb{P}^n$  | $\backslash$ ep  | $\epsilon$ |
| $\backslash$ CP{n} | $\mathbb{CP}^n$ | $\backslash$ si  | $\sigma$   |
| $\backslash$ RP{n} | $\mathbb{RP}^n$ | $\backslash$ la  | $\lambda$  |
| $\backslash$ Sym   | Sym             | $\backslash$ ka  | $\kappa$   |
| $\backslash$ GL    | GL              | $\backslash$ om  | $\omega$   |

|                              |                      |                                |                             |
|------------------------------|----------------------|--------------------------------|-----------------------------|
| $\backslash\mathrm{Ga}$      | $\Gamma$             | $\backslash\mathrm{ot}$        | $\otimes$                   |
| $\backslash\mathrm{De}$      | $\Delta$             | $\backslash\mathrm{op}$        | $\oplus$                    |
| $\backslash\mathrm{Si}$      | $\Sigma$             | $\backslash\mathrm{acts}$      | $\curvearrowright$          |
| $\backslash\mathrm{LA}$      | $\Lambda$            | $\backslash\mathrm{sgn}$       | $\mathrm{sgn}$              |
| $\backslash\mathrm{Om}$      | $\Omega$             | $\backslash\mathrm{nsg}$       | $\trianglelefteq$           |
| $\backslash\mathrm{vp}$      | $\varphi$            | $\backslash\mathrm{defa}$      | $\coloneqq$                 |
| $\backslash\mathrm{vt}$      | $\vartheta$          | $\backslash\mathrm{sdp}$       | $\rtimes$                   |
| $\backslash\mathrm{ve}$      | $\varepsilon$        | $\backslash\mathrm{inv}\{f\}$  | $f^{-1}$                    |
| $\backslash\mathrm{ua}$      | $\uparrow$           | $x\backslash\mathrm{mod}\ y$   | $x \bmod y$                 |
| $\backslash\mathrm{da}$      | $\downarrow$         | $\backslash\mathrm{Cl}$        | $\mathrm{Cl}$               |
| $\backslash\mathrm{Ra}$      | $\Rightarrow$        | $\backslash\mathrm{Hol}$       | $\mathrm{Hol}$              |
| $\backslash\mathrm{La}$      | $\Leftarrow$         | $\backslash\mathrm{comp}$      | $\circ$                     |
| $\backslash\mathrm{Ua}$      | $\Uparrow$           | $\backslash\mathrm{Gal}$       | $\mathrm{Gal}$              |
| $\backslash\mathrm{Da}$      | $\Downarrow$         | $\backslash\mathrm{card}\{S\}$ | $ S $                       |
| $\backslash\mathrm{nRa}$     | $\nrightarrow$       | $\backslash\mathrm{im}$        | $\mathrm{im}$               |
| $\backslash\mathrm{nLa}$     | $\nleftarrow$        | $\backslash\mathrm{norm}\{M\}$ | $\ M\ $                     |
| $\backslash\mathrm{hra}$     | $\hookrightarrow$    | $\backslash\mathrm{po}$        | $\prec$                     |
| $\backslash\mathrm{hla}$     | $\hookleftarrow$     | $\backslash\mathrm{poe}$       | $\preceq$                   |
| $\backslash\mathrm{lt}$      | $\rightsquigarrow$   | $\backslash\mathrm{cyc}\{g\}$  | $\langle g \rangle$         |
| $\backslash\mathrm{mt}$      | $\mapsto$            | $\backslash\mathrm{Spec}$      | $\mathrm{Spec}$             |
| $\backslash\mathrm{rat}$     | $\rightharpoonup$    | $\backslash\mathrm{Syl}$       | $\mathrm{Syl}$              |
| $\backslash\mathrm{lat}$     | $\leftarrow$         | $\backslash\mathrm{iso}$       | $\approx$                   |
| $\backslash\mathrm{thra}$    | $\rightarrow$        | $\backslash\mathrm{niso}$      | $\not\approx$               |
| $\backslash\mathrm{thla}$    | $\leftarrow$         | $\backslash\mathrm{Mor}$       | $\mathrm{Mor}$              |
| $\backslash\mathrm{bij}$     | $\xrightarrow{\sim}$ | $\backslash\mathrm{Aut}$       | $\mathrm{Aut}$              |
| $\backslash\mathrm{wb}\{A\}$ | $\overline{A}$       | $\backslash\mathrm{End}$       | $\mathrm{End}$              |
| $\backslash\mathrm{id}$      | $\mathrm{id}$        | $\backslash\mathrm{Hom}$       | $\mathrm{Hom}$              |
| $\backslash\mathrm{sub}$     | $\subset$            | $\backslash\mathrm{Inn}$       | $\mathrm{Inn}$              |
| $\backslash\mathrm{sube}$    | $\subseteq$          | $\backslash\mathrm{Out}$       | $\mathrm{Out}$              |
| $\backslash\mathrm{supe}$    | $\supseteq$          | $\backslash\mathrm{Iso}$       | $\mathrm{Iso}$              |
| $\backslash\mathrm{nsup}$    | $\not\subset$        | $\backslash\mathrm{Ob}$        | $\mathrm{Ob}$               |
| $\backslash\mathrm{nsup}$    | $\not\supseteq$      | $\backslash\mathrm{cop}\{C\}$  | $\mathcal{C}^{\mathrm{op}}$ |
| $\backslash\mathrm{nsupe}$   | $\not\subseteq$      | $\backslash\mathrm{tri}$       | $\triangle$                 |
| $\backslash\mathrm{nsupe}$   | $\not\supseteq$      | $\backslash\mathrm{pa}$        | $\partial$                  |
| $\backslash\mathrm{subn}$    | $\subsetneq$         | $\backslash\mathrm{Ann}$       | $\mathrm{Ann}$              |
| $\backslash\mathrm{supn}$    | $\supsetneq$         | $\backslash\mathrm{dom}$       | $\mathrm{dom}$              |
| $\backslash\mathrm{es}$      | $\emptyset$          | $\backslash\mathrm{ran}$       | $\mathrm{ran}$              |
| $\backslash\mathrm{sm}$      | $\backslash$         | $\backslash\mathrm{cod}$       | $\mathrm{cod}$              |
| $\backslash\mathrm{ps}$      | $\mathcal{P}$        | $\backslash\mathrm{A}\{n\}$    | $\mathbb{A}^n$              |
| $\backslash\mathrm{Un}$      | $\cup$               | $\backslash\mathrm{sq}$        | $\square$                   |
| $\backslash\mathrm{In}$      | $\cap$               | $\backslash\mathrm{CAT}$       | $\mathrm{CAT}$              |
| $\backslash\mathrm{Du}$      | $\sqcup$             | $\backslash\mathrm{fl}\{A\}$   | $[A]$                       |
| $\backslash\mathrm{cp}$      | $\amalg$             | $\backslash'$                  | $'$                         |
| $\backslash\mathrm{Cp}$      | $\amalg$             |                                |                             |

## 12 Acknowledgement

Special thanks to  $\mathcal{FSG}$ ; his advice on style has been invaluable.