

# 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,chgcntr,
centernot,ytableau,tikz-cd}
\usepackage{imakeidx,textcomp,tocloft,environ,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}
```

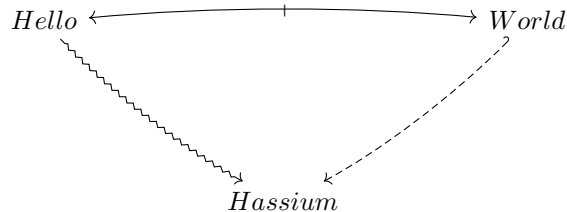
The outputs are *font 1* and *font 2*.

## 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 & \\\
    & \\\
    & \\\
    & \& Hassium & \\
    \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	$\backslash$	$\backslash$ Sym	Sym
$\backslash$ N	$\mathbb{N}$	$\backslash$ GL	GL
$\backslash$ Z	$\mathbb{Z}$	$\backslash$ SL	SL
$\backslash$ Q	$\mathbb{Q}$	$\backslash$ Mod	Mod
$\backslash$ R	$\mathbb{R}$	$\backslash$ Sg	$\mathfrak{S}$
$\backslash$ C	$\mathbb{C}$	$\backslash$ Ag	$\mathfrak{A}$
$\backslash$ bb{H}	$\mathbb{H}$	$\backslash$ Cay	Cay
$\backslash$ ca{H}	$\mathcal{H}$	$\backslash$ uni	$\exists !$
$\backslash$ fr{H}	$\mathfrak{H}$	$\backslash$ al	$\alpha$
$\backslash$ T	$\mathcal{T}$	$\backslash$ be	$\beta$
$\backslash$ Ps{n}	$\mathbb{P}^n$	$\backslash$ ga	$\gamma$
$\backslash$ CP{n}	$\mathbb{CP}^n$	$\backslash$ de	$\delta$
$\backslash$ RP{n}	$\mathbb{RP}^n$	$\backslash$ ep	$\epsilon$

<code>\si</code>	$\sigma$	<code>\cp</code>	$\Pi$
<code>\la</code>	$\lambda$	<code>\Cp</code>	$\Pi$
<code>\ka</code>	$\kappa$	<code>\ot</code>	$\otimes$
<code>\om</code>	$\omega$	<code>\op</code>	$\oplus$
<code>\Ga</code>	$\Gamma$	<code>\acts</code>	$\curvearrowright$
<code>\De</code>	$\Delta$	<code>\sgn</code>	$\operatorname{sgn}$
<code>\Si</code>	$\Sigma$	<code>\nsg</code>	$\trianglelefteq$
<code>\LA</code>	$\Lambda$	<code>\defa</code>	$\coloneqq$
<code>\Om</code>	$\Omega$	<code>\sdp</code>	$\times$
<code>\vp</code>	$\varphi$	<code>\inv{f}</code>	$f^{-1}$
<code>\vt</code>	$\vartheta$	<code>x\mod y</code>	$x \bmod y$
<code>\ve</code>	$\varepsilon$	<code>\Cl</code>	$\operatorname{Cl}$
<code>\ua</code>	$\uparrow$	<code>\Hol</code>	$\operatorname{Hol}$
<code>\da</code>	$\downarrow$	<code>\comp</code>	$\circ$
<code>\Ra</code>	$\Rightarrow$	<code>\Gal</code>	$\operatorname{Gal}$
<code>\La</code>	$\Leftarrow$	<code>\card{S}</code>	$ S $
<code>\Ua</code>	$\Uparrow$	<code>\im</code>	$\operatorname{im}$
<code>\Da</code>	$\Downarrow$	<code>\norm{M}</code>	$\ M\ $
<code>\nRa</code>	$\nRightarrow$	<code>\po</code>	$\prec$
<code>\nLa</code>	$\nLeftarrow$	<code>\poe</code>	$\preceq$
<code>\hra</code>	$\hookrightarrow$	<code>\cyc{g}</code>	$\langle g \rangle$
<code>\hla</code>	$\hookleftarrow$	<code>\Spec</code>	$\operatorname{Spec}$
<code>\lt</code>	$\rightsquigarrow$	<code>\Syl</code>	$\operatorname{Syl}$
<code>\mt</code>	$\mapsto$	<code>\iso</code>	$\approx$
<code>\rat</code>	$\mapsto$	<code>\niso</code>	$\not\approx$
<code>\lat</code>	$\mapsto$	<code>\Mor</code>	$\operatorname{Mor}$
<code>\thra</code>	$\twoheadrightarrow$	<code>\Aut</code>	$\operatorname{Aut}$
<code>\thla</code>	$\twoheadleftarrow$	<code>\End</code>	$\operatorname{End}$
<code>\bij</code>	$\xrightarrow{\sim}$	<code>\Hom</code>	$\operatorname{Hom}$
<code>\wb{A}</code>	$\overline{A}$	<code>\Inn</code>	$\operatorname{Inn}$
<code>\id</code>	$\operatorname{id}$	<code>\Out</code>	$\operatorname{Out}$
<code>\sub</code>	$\subset$	<code>\Iso</code>	$\operatorname{Iso}$
<code>\sube</code>	$\subseteq$	<code>\Ob</code>	$\operatorname{Ob}$
<code>\supe</code>	$\supseteq$	<code>\tri</code>	$\triangle$
<code>\nsub</code>	$\not\subset$	<code>\pa</code>	$\partial$
<code>\nsup</code>	$\not\supset$	<code>\Ann</code>	$\operatorname{Ann}$
<code>\nsube</code>	$\not\subseteq$	<code>\dom</code>	$\operatorname{dom}$
<code>\nsupe</code>	$\not\supseteq$	<code>\ran</code>	$\operatorname{ran}$
<code>\subn</code>	$\subsetneq$	<code>\cod</code>	$\operatorname{cod}$
<code>\supn</code>	$\supsetneq$	<code>\A{n}</code>	$\mathbb{A}^n$
<code>\es</code>	$\emptyset$	<code>\sq</code>	$\square$
<code>\sm</code>	$\setminus$	<code>\CAT</code>	$\operatorname{CAT}$
<code>\ps</code>	$\mathscr{P}$	<code>\fl{A}</code>	$[A]$
<code>\Un</code>	$\bigcup$	<code>\can</code>	$\operatorname{can}$
<code>\In</code>	$\bigcap$	<code>\Can</code>	$\operatorname{Can}$
<code>\Du</code>	$\sqcup$	<code>\cat{A}</code>	$\mathbf{A}$

## 12 Acknowledgement

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