

Demo of My L^AT_EX 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}
\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}
  \hsetup\
  \htoc\
  \hmain\
\end{document}
```

3 General 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 command changes the background color to black and the text to white. The normal mode is used to end the darkmode. Use the commands by:

```
\begin{document}
  \darkmode
  \normalmode
\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{level}
\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:

```
\rom2024 % replace 2024 by any number you want
```

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

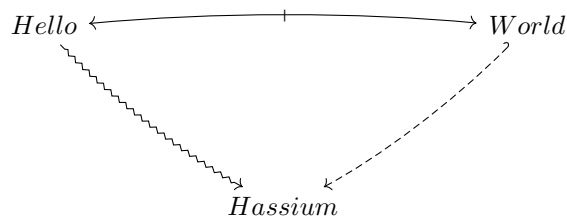
Quiver is done by varkor and AndréC, check their github for more information. I include quiver to draw curve arrows in a commutative diagram. To draw a diagram with quiver, check this website. An example is given below:

```

% 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}
\index % 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{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	$\backslash ve$	ε
$\backslash N$	\mathbb{N}	$\backslash ua$	\uparrow
$\backslash Z$	\mathbb{Z}	$\backslash da$	\downarrow
$\backslash Q$	\mathbb{Q}	$\backslash Ra$	\Rightarrow
$\backslash R$	\mathbb{R}	$\backslash La$	\Leftarrow
$\backslash C$	\mathbb{C}	$\backslash Ua$	\Uparrow
$\backslash bb\{H\}$	\mathbb{H}	$\backslash Da$	\Downarrow
$\backslash ca\{H\}$	\mathcal{H}	$\backslash nRa$	\nRightarrow
$\backslash fr\{H\}$	\mathfrak{H}	$\backslash nLa$	\nLeftarrow
$\backslash T$	\mathcal{T}	$\backslash hra$	\hookrightarrow
$\backslash Pn\{1\}$	\mathbb{P}^1	$\backslash hla$	\leftarrow
$\backslash CP\{1\}$	\mathbb{CP}^1	$\backslash lt$	\rightsquigarrow
$\backslash RP\{1\}$	\mathbb{RP}^1	$\backslash mt$	\mapsto
$\backslash Sym$	Sym	$\backslash rat$	\mapsto
$\backslash GL$	GL	$\backslash lat$	\leftarrow
$\backslash SL$	SL	$\backslash thra$	\rightarrow
$\backslash Mod$	Mod	$\backslash thla$	\leftarrow
$\backslash Sg$	\mathfrak{S}	$\backslash bij$	$\xrightarrow{\sim}$
$\backslash Ag$	\mathfrak{A}	$\backslash wb\{A\}$	\overline{A}
$\backslash Cay$	Cay	$\backslash id$	id
$\backslash uni$	$\exists !$	$\backslash sub$	\subset
$\backslash al$	α	$\backslash sube$	\subseteq
$\backslash be$	β	$\backslash supe$	\supseteq
$\backslash ga$	γ	$\backslash nsub$	$\not\subset$
$\backslash de$	δ	$\backslash nsup$	$\not\supset$
$\backslash ep$	ϵ	$\backslash nsube$	$\not\subseteq$
$\backslash si$	σ	$\backslash nsupe$	$\not\supseteq$
$\backslash la$	λ	$\backslash subn$	\subsetneq
$\backslash ka$	κ	$\backslash supn$	\supsetneq
$\backslash om$	ω	$\backslash es$	\emptyset
$\backslash vp$	φ	$\backslash sm$	\backslash
$\backslash vt$	ϑ	$\backslash ps$	\mathcal{P}

$\backslash Un$	\bigcup	$\backslash po$	\preceq
$\backslash In$	\bigcap	$\backslash cyc\{g\}$	$\langle g \rangle$
$\backslash Du$	\sqcup	$\backslash Spec$	Spec
$\backslash cp$	\amalg	$\backslash Syl$	Syl
$\backslash Cp$	\coprod	$\backslash iso$	\approx
$\backslash ot$	\otimes	$\backslash niso$	$\not\approx$
$\backslash op$	\oplus	$\backslash Mor$	Mor
$\backslash acts$	\curvearrowright	$\backslash Aut$	Aut
$\backslash Span$	span	$\backslash End$	End
$\backslash sgn$	sgn	$\backslash Hom$	Hom
$\backslash nsg$	\trianglelefteq	$\backslash Inn$	Inn
$\backslash defa$	$:=$	$\backslash Out$	Out
$\backslash sdp$	\times	$\backslash Iso$	Iso
$\backslash inv\{f\}$	f^{-1}	$\backslash Ob$	Ob
$1\backslash mod\ 2$	$1\ mod\ 2$	$\backslash cop\{C\}$	C^{op}
$\backslash Cl$	Cl	$\backslash tri$	\triangle
$\backslash Hol$	Hol	$\backslash pa$	∂
$\backslash comp$	\circ	$\backslash hb$	\hbar
$\backslash Gal$	Gal	$\backslash Ann$	Ann
$\backslash card\{S\}$	$ S $	$\backslash dom$	dom
$\backslash im$	im	$\backslash cod$	cod
$\backslash norm\{M\}$	$\ M\ $		

12 Acknowledgement

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