

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,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:

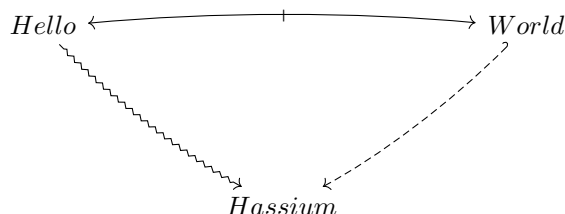
```
% chktex-file 15 % the three lines enables useless warnings
% chktex-file 17
% chktex-file 18
\begin{center}
  \begin{tikzcd}
    Hello & & & World \\
    & \searrow & & \\
    & & \searrow & 
  \end{tikzcd}
\end{center}
```

```

&& 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 de | δ |
| \backslash N | \mathbb{N} | \backslash ep | ϵ |
| \backslash Z | \mathbb{Z} | \backslash si | σ |
| \backslash Q | \mathbb{Q} | \backslash la | λ |
| \backslash R | \mathbb{R} | \backslash ka | κ |
| \backslash C | \mathbb{C} | \backslash om | ω |
| \backslash bb{H} | \mathbb{H} | \backslash Ga | Γ |
| \backslash ca{H} | \mathcal{H} | \backslash De | Δ |
| \backslash fr{H} | \mathfrak{H} | \backslash Si | Σ |
| \backslash T | \mathcal{T} | \backslash LA | Λ |
| \backslash Ps{n} | \mathbb{P}^n | \backslash Om | Ω |
| \backslash CP{n} | \mathbb{CP}^n | \backslash vp | φ |
| \backslash RP{n} | \mathbb{RP}^n | \backslash vt | ϑ |
| \backslash Sym | Sym | \backslash ve | ε |
| \backslash GL | GL | \backslash ua | \uparrow |
| \backslash SL | SL | \backslash da | \downarrow |
| \backslash Mod | Mod | \backslash Ra | \Rightarrow |
| \backslash Sg | \mathfrak{S} | \backslash La | \Leftarrow |
| \backslash Ag | \mathfrak{A} | \backslash Ua | \Uparrow |
| \backslash Cay | Cay | \backslash Da | \Downarrow |
| \backslash uni | $\exists !$ | \backslash nRa | \nRightarrow |
| \backslash al | α | \backslash nLa | \nLeftarrow |
| \backslash be | β | \backslash hra | \hookrightarrow |
| \backslash ga | γ | \backslash hla | \hookleftarrow |

| | | | |
|-----------------------|----------------------|------------------------|---------------------|
| $\backslash lt$ | \rightsquigarrow | $x \bmod y$ | $x \bmod y$ |
| $\backslash mt$ | \mapsto | $\backslash Cl$ | Cl |
| $\backslash rat$ | \rightharpoonup | $\backslash Hol$ | Hol |
| $\backslash lat$ | \leftarrow | $\backslash comp$ | \circ |
| $\backslash thra$ | \rightarrow | $\backslash Gal$ | Gal |
| $\backslash thla$ | \leftarrow | $\backslash card\{S\}$ | $ S $ |
| $\backslash bij$ | $\xrightarrow{\sim}$ | $\backslash im$ | im |
| $\backslash wb\{A\}$ | \bar{A} | $\backslash norm\{M\}$ | $\ M\ $ |
| $\backslash id$ | id | $\backslash po$ | \prec |
| $\backslash sub$ | \subset | $\backslash poe$ | \preceq |
| $\backslash sube$ | \subseteq | $\backslash cyc\{g\}$ | $\langle g \rangle$ |
| $\backslash supe$ | \supseteq | $\backslash Spec$ | $Spec$ |
| $\backslash nsub$ | $\not\subset$ | $\backslash Syl$ | Syl |
| $\backslash nsup$ | $\not\supset$ | $\backslash iso$ | \approx |
| $\backslash nsube$ | $\not\subseteq$ | $\backslash niso$ | $\not\approx$ |
| $\backslash nsupe$ | $\not\supseteq$ | $\backslash Mor$ | Mor |
| $\backslash subn$ | \subsetneq | $\backslash Aut$ | Aut |
| $\backslash supn$ | \supsetneq | $\backslash End$ | End |
| $\backslash es$ | \emptyset | $\backslash Hom$ | Hom |
| $\backslash sm$ | \backslash | $\backslash Inn$ | Inn |
| $\backslash ps$ | \mathcal{P} | $\backslash Out$ | Out |
| $\backslash Un$ | \bigcup | $\backslash Iso$ | Iso |
| $\backslash In$ | \bigcap | $\backslash Ob$ | Ob |
| $\backslash Du$ | \bigsqcup | $\backslash cop\{C\}$ | $C^{\mathcal{P}}$ |
| $\backslash cp$ | \amalg | $\backslash tri$ | \triangle |
| $\backslash Cp$ | \coprod | $\backslash pa$ | ∂ |
| $\backslash ot$ | \otimes | $\backslash Ann$ | Ann |
| $\backslash op$ | \oplus | $\backslash dom$ | dom |
| $\backslash acts$ | \curvearrowright | $\backslash ran$ | ran |
| $\backslash sgn$ | sgn | $\backslash cod$ | cod |
| $\backslash nsg$ | \trianglelefteq | $\backslash A\{n\}$ | \mathbb{A}^n |
| $\backslash defa$ | $:=$ | $\backslash sq$ | \square |
| $\backslash sdp$ | \times | $\backslash CAT$ | CAT |
| $\backslash inv\{f\}$ | f^{-1} | $\backslash fl\{A\}$ | $[A]$ |

12 Acknowledgement

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