

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,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:

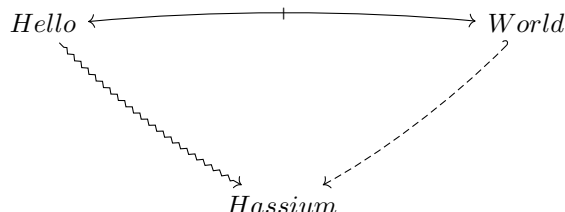
```
% chktex-file 15 % the three lines enables useless warnings
% chktex-file 17
% chktex-file 18
\begin{center}
  \begin{tikzcd}
    Hello & \&\&\& World \\
    & \backslash \\
    & \backslash
  \end{tikzcd}
\end{center}
```

```

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

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

12 Acknowledgement

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