

An Introduction to \LaTeX

Make Documents Like A PROgrammer

Wesley T. Honeycutt

University of Oklahoma

October 11, 2018

What is L^AT_EX?

IDE's

Basics and Principles

Tools

Advanced Features

Learning More

History

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- ▶ In 1983, Leslie Lamport released \LaTeX (Layman's \TeX), a set of macros which made \TeX usable by mortals.
- ▶ There are many other variants such as :

\BIBTeX \ConTeXt \LuaTeX \LyX \pdf\LaTeX \Xe\LaTeX

\LaTeX is...

... a sophisticated document preparation system.

\LaTeX has...

- ▶ Stylistic uniformity
- ▶ Bibliography support
- ▶ Sophisticated structuring abilities
- ▶ Reference tracking
- ▶ Highly extendible capabilities

\LaTeX is not...

... a word processor.

\LaTeX does not...

- ▶ Spell-check your documents
- ▶ Give you complete control over formatting
- ▶ Provide a graphical interface for editing

"You take care of writing, and we'll take care of presentation."

You might be used to WYSIWYG

What

You

See

Is

What

You

Get

LATEXis WYSIWYM

What

You

See

Is

What

You

Mean

Presentation matching what you wrote, not how it was written

This text is spaced specially.

1 This text is
2 spaced specially.

Paragraphs are easy.

1 Paragraphs are easy.

Use double line breaks.

2
3 Use double line breaks.

Never break the unbreakable unless you want to.

1 Never break the unbreakable unless you want to.

You can force connections of words in a line or force spaces and linebreaks.

2
3 You~can~force~connections~of~words~in~a~line~or~\ force~\ spaces~and~\\linebreaks.

If you like to suffer

\LaTeX is coded as plaintext. If you really want to, you can do everything in a Notepad-like text editor.

The code is processed via command line:

```
pdflatex thefile.tex
```

There are add-ons for popular text editors

- ▶ *vim*: [\ATExsuite for vim](#)

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- ▶ *emacs*: [Latexmk](#)

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- ▶ *Notepad++*: [Requires multiple tweaks](#)

There are add-ons for popular text editors

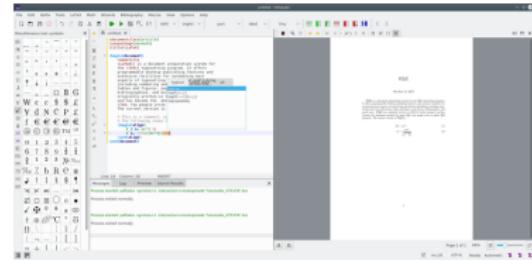
- ▶ *vim*: [\ATExsuite for vim](#)
- ▶ *emacs*: [Latexmk](#)
- ▶ *Notepad++*: [Requires multiple tweaks](#)
- ▶ *Sublime Text*: [\ATEXTools](#)

There are add-ons for popular text editors

- ▶ *vim*: `\LaTeXsuite` for vim
- ▶ *emacs*: `Latexmk`
- ▶ *Notepad++*: Requires multiple tweaks
- ▶ *Sublime Text*: `\LaTeXTools`
- ▶ *Atom*: `\LaTeXapm`

Lots of \LaTeX IDE's

►    TeXstudio



Lots of \LaTeX IDE's

- ▶    TeXstudio
- ▶    Texmaker



Lots of L^AT_EX IDE's

- ▶ TeXstudio
- ▶ Texmaker
- ▶ LyX

The screenshot shows the LyX application window with the title "LyX (der/UserGuide.lyx) (read only)". The menu bar includes File, Edit, View, Insert, Navigate, Document, Tools, Help. The toolbar has various icons for document operations. The main area displays a section titled "5.1.6 Operators with Limits". It discusses the sum (\sum) and integral (\int) operators, noting that limits can be placed over or under these symbols. It shows a comparison between $\sum_{n=0}^{\infty} \frac{1}{n!} = e$ (with limits placed over and under the symbol) and $\sum_{n=0}^{\infty} \frac{1}{n!} = e$ (with limits placed to the side). It also mentions integral signs placing limits to the side. The text then describes how operators with limits will automatically re-size when placed in display mode, and how this can be changed by placing the cursor directly behind the operator and using the menu "Edit > Math > ChangeLimits.Type" or entering `\hbox{-M}`. It notes that other mathematical expressions like limits also have a "moving limits" feature, shown as $\lim_{x \rightarrow \infty} f(x)$. Below this, it shows the "5.1.7 Math Symbols" section, which lists various mathematical symbols.

Lots of L^AT_EX IDE's

- ▶ TeXstudio
- ▶ Texmaker
- ▶ LyX
- ▶ MacTeX

Welcome to MacTeX

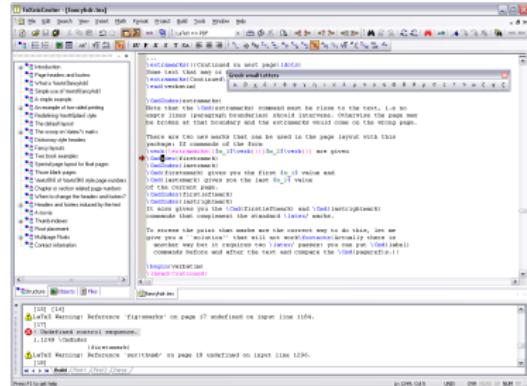
Welcome to MacTeX
Welcome to MacTeX
Welcome to MacTeX

fogadatás ようこそ bienvenido. ケアボ. сълнчо. 歓迎 доородное

Welcome to MacTeX
Welcome to MacTeX

Lots of \LaTeX IDE's

- ▶    TeXstudio
- ▶    Texmaker
- ▶    LyX
- ▶  MacTeX
- ▶  MiKTeX



Lots of L^AT_EX IDE's

- ▶ TeXstudio
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- ▶ MacTeX
- ▶ MiKTeX
- ▶ TeX Live

Online collaborative options

- ▶ Overleaf/ShareLaTeX



Online collaborative options

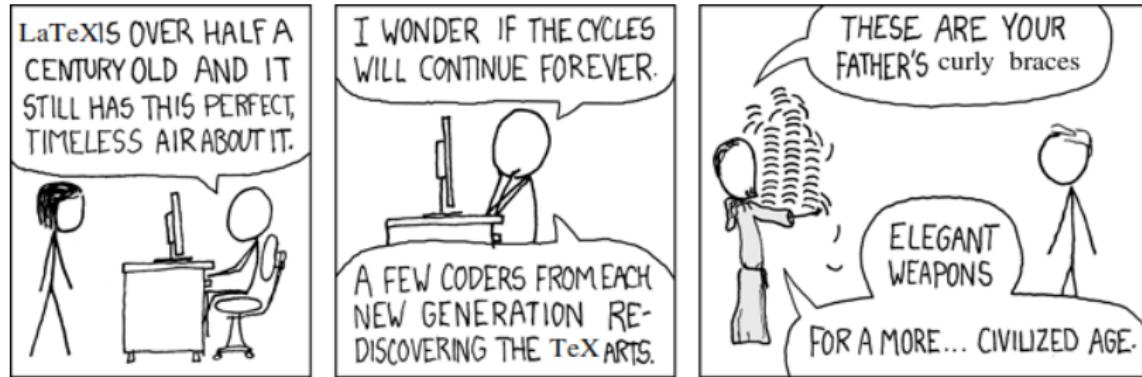
- ▶ Overleaf/ShareLaTeX
- ▶ Authorea

AU

Online collaborative options

- ▶ Overleaf/ShareLaTeX
- ▶ Authorea
- ▶ There are others which I have no experience with.

Learn to love braces



⁰With apologies to Randall Munroe

Commands and Environments

Uncentered

```
1 Uncentered
```

Centered Environment

```
1 \begin{center}  
2     Centered Environment  
3 \end{center}
```

Command Centered

```
1 \centering  
2 Command Centered
```

The Logical Structure of a L^AT_EX Document

Preamble

- ▶ Declare the document type you will be making:
`\documentclass[options]{class}`

The Logical Structure of a L^AT_EX Document

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`\usepackage[options]{package}`

The Logical Structure of a \LaTeX Document

Preamble

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`\documentclass[options]{class}`
- ▶ Declare what packages you will need:
`\usepackage[options]{package}`
- ▶ Define any custom functions or environments

The Logical Structure of a L^AT_EX Document

Preamble

- ▶ Declare the document type you will be making:
`\documentclass[options]{class}`
- ▶ Declare what packages you will need:
`\usepackage[options]{package}`
- ▶ Define any custom functions or environments
- ▶ Declare important variables

The Logical Structure of a L^AT_EX Document cont'd

Body

- ▶ Initialize the document in an environment

```
\begin{document}
```

...

```
\end{document}
```

The Logical Structure of a L^AT_EX Document cont'd

Body

- ▶ Initialize the document in an environment
`\begin{document}`
...
`\end{document}`
- ▶ Within this environment you will:

The Logical Structure of a L^AT_EX Document cont'd

Body

- ▶ Initialize the document in an environment
`\begin{document}`
...
`\end{document}`
- ▶ Within this environment you will:
 - ▶ Create the title page or section:
`\maketitle`

The Logical Structure of a L^AT_EX Document cont'd

Body

- ▶ Initialize the document in an environment
`\begin{document}`
...
`\end{document}`
- ▶ Within this environment you will:
 - ▶ Create the title page or section:
`\maketitle`
 - ▶ Write your document

The simplest document

The simplest

Wes Honeycutt

October 11, 2018

Lorum ipsum dolor sit amet, consectetur adipiscing elit. Ut pares elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida nascitur. Nam nec libero, nonummy egest, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Morbi sit amet nisi. Cras ornare metus rheme sem. Nulla et lectos vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, luctus in, pretium quis, viverra ac, nunc. Praesent egest sem vel leo ultricies blandit. Aenean quis, lobortis id, mollis non, nulla. Nulla facilisi. Curabitur auctor semper nulla. Donec varius erit egest risus. Donec nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Donec egest erit sit amet orci dignissim rutrum.

```
\documentclass{article}
\usepackage{lipsum}
\title{The simplest}
\author{Wes Honeycutt}
\begin{document}
\maketitle
\lipsum[1]
\end{document}
```

Making the \maketitle

The title can include several elements, which are declared by the user.

Making the \maketitle

The title can include several elements, which are declared by the user.

- ▶ \title{The Title}

Making the \maketitle

The title can include several elements, which are declared by the user.

- ▶ \title{The Title}
- ▶ \author{The Author's Name}

Making the \maketitle

The title can include several elements, which are declared by the user.

- ▶ \title{The Title}
- ▶ \author{The Author's Name}
 - ▶ This can include \thanks{Some Institution}

Making the \maketitle

The title can include several elements, which are declared by the user.

- ▶ \title{The Title}
- ▶ \author{The Author's Name}
 - ▶ This can include \thanks{Some Institution}
- ▶ \subtitle{A Clever Subtitle}

Making the \maketitle

The title can include several elements, which are declared by the user.

- ▶ \title{The Title}
- ▶ \author{The Author's Name}
 - ▶ This can include \thanks{Some Institution}
- ▶ \subtitle{A Clever Subtitle}
- ▶ \subject{A Subject Heading}

Our Sample Title Page

```
\title{The Pitfalls of LaTeX}

\author{
    Wesley T. Honeycutt
    \thanks{University of Oklahoma Department of Biology}
    \and Leon the Cat}

\subtitle{Stackexchange was down and other horror stories}

\subject{A Joke Paper}
```

```
\documentclass{article}
```

Stack Exchange was down and other horror stories A Joke Paper

The Pitfalls of LaTeX

Wesley T. Honeycutt * Leon the Cat

October 11, 2018

^aUniversity of Oklahoma Department of Biology

\documentclass{scrbook}

A Joke Paper

The Pitfalls of LaTeX

Stack Exchange was down and other horror stories

Wesley T. Honeycutt * Leon the Cat

October 11, 2018

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus id, vestibulum ut, placerat ac, adipiscing vestiua felis. Curabitur dignissima mauris. Nam arcu libero, nonummyneque est, consetetur id, vulputate a, magna. Donec vehicula augue in neque Pellentesque habitant morbi tristique semper. Et netus et malesuada fames ac turpis estegas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus in euismod sit amet tortor gravida pellentesque. Integer sapiens est, facilisis in, pretium quis, viverra id, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac nulla. Curabitur eleifend semper nulla. Donec varius orci eget risus. Duis nibh mi, congue ac, accusamus eleifend, scutellis quis, diam. Duis orci est ut amet orci rutrum.

^aUniversity of Oklahoma Department of Biology

\documentclass{report}

Stack Exchange was down and other horror stories A Joke Paper

The Pitfalls of LaTeX

Wesley T. Honeycutt¹ Leon the Cat

October 11, 2018

¹University of Oklahoma Department of Biology

\documentclass{elsarticle}

Stack Exchange was down and other horror stories A Joke Paper

The Pitfalls of LaTeX

Wesley T. Honeycutt 2

Leon the Cat: *Lorema ipsum dolor*

it ariet, conseruator adipicere ult. Ut pars est, vestitulum ut, plateratur, ac, adipicere vita, felis. Curazilus dictum givnula muri. Nam artu
suumenit egit, conseruator si, vulpate a, maga. Donec velutum auge
neque. Pteroleptus habent muri tristipe seructas et actus et ambo
vulpi. Cuiusmodi sunt: vulpate, vulpate, vulpate, vulpate. Natura
et locis vespere in fragilla nitras. Iacilius in tenuis velitis aet tergor
gravia placert. Interrogat sapiens est, iacilius in pretiosa gria, vivere a et
sapiens. Praesent ope vel se ultrices bilobata. Aranea curazilus. Morbi doloris
sulla, maleposta eu, palmaris at, molla ac, mella. Curazilus anter sumper
sulpa. Donec variis oci regis. Dilia sib illi, coupe en, accusamus eleemos
sagittis que. Diam oci erit si sumat oci dignitas rutrum.

Publisher Distributed Classes

The previous example shows how different classes rearrange the same elements.

Publisher Distributed Classes

The previous example shows how different classes rearrange the same elements.

Academic Publishers

Elsevier - `elsarticle`

Springer - `lncs`

IEEE - `IEEEtran`

AMS - `amscls`

ACS - `achemso`

Some More Academic Publishers With Classes

- ▶ aaai www.aaai.org
- ▶ AAAS/science www.sciencemag.org
- ▶ American Chemical Society Publications
- ▶ Addison-Wesley
- ▶ algebra universalis
- ▶ American Institute of Physics www.aip.org
- ▶ American Meteorological Society www.ametsoc.org
- ▶ American Physical Society authors.aps.org
- ▶ Beech Stave Press
- ▶ Birkhäuser
- ▶ Cambridge University Press
- ▶ CRC
- ▶ Documenta Mathematica www.math.uiuc.edu
- ▶ Docscape
- ▶ Engine House Books

Some More Academic Publishers With Classes

- ▶ Fondo de Cultura Econmica
- ▶ Informs joc.pubs.informs.org
- ▶ Institut Mittag-Leffler (Royal Swedish Academy of Sciences)
- ▶ www.arkivformatematik.org
- ▶ IOP (institute of physics) authors.iop.org
- ▶ John Benjamins Publishing Company
- ▶ London Mathematical Society books www.lms.ac.uk
- ▶ Louisiana State University Press
- ▶ Mathematical Association of America www.maa.org
- ▶ National Research Council of Canada
- ▶ Oxford University Press www.oup.co.uk
- ▶ Princeton University Press press.princeton.edu
- ▶ Publications de l'Institut Mathmatique (Beograd)
www.emis.de

Some More Academic Publishers With Classes

- ▶ SAS Institute
- ▶ SIAM books www.siam.org
- ▶ Springer math www.springer.com
- ▶ Springer physics www.springer.com
- ▶ Thomson Delmar Learning
- ▶ UIT Cambridge
- ▶ Unipress (Institute of High Pressure Physics, Polish Academy of Sciences)
www.unipress.waw.pl
- ▶ University of California Press
- ▶ Wiley www.wiley.com
- ▶ William Andrew Publishing
- ▶ World Scientific
- ▶ WordTech

Text Formats

Be Bold!

Italicize!

Underline to accentuate!

Write with *emphasis*!

- 1 Be \textbf{Bold}!\\
- 2 \textit{Italicize}!\\
- 3 \underline{Underline} to
accentuate!\\
- 4 Write with \emph{emphasis}!\\

Font Size

I'm shrinking
I'm shrinking

```
1 {\Huge I'm shrinking}\  
2 {\huge I'm shrinking}\  
3 {\LARGE I'm shrinking}\  
4 {\Large I'm shrinking}\  
5 {\large I'm shrinking}\  
6 {\normalsize I'm shrinking}\  
7 {\small I'm shrinking}\  
8 {\footnotesize I'm shrinking}  
9 {\scriptsize I'm shrinking}\  
10 {\tiny I'm shrinking}\\"
```

Section Hierarchy

```
\section{The Topmost}
  \subsection{A Little Deeper}
    \subsubsection{Deeper Still}
```

...

Lists

- ▶ Boomer
- ▶ Sooner
- ▶ Oklahoma

1. Boomer
2. Sooner
3. Oklahoma

```
1 \begin{itemize}
2   \item Boomer
3   \item Sooner
4   \item Oklahoma
5 \end{itemize}
```

```
1 \begin{enumerate}
2   \item Boomer
3   \item Sooner
4   \item Oklahoma
5 \end{enumerate}
```

Nested Lists

- ▶ Boomer
 - ▶ Sooner
- ▶ Oklahoma

1. Boomer
 - 1.1 Sooner
2. Oklahoma

```
1 \begin{itemize}
2   \item Boomer
3   \begin{itemize}
4     \item Sooner
5   \end{itemize}
6   \item Oklahoma
7 \end{itemize}
```

```
1 \begin{enumerate}
2   \item Boomer
3   \begin{enumerate}
4     \item Sooner
5   \end{enumerate}
6   \item Oklahoma
7 \end{enumerate}
```

Exotic Page Sizes

You can alter the \geometry of a page.

Lore ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis egert orci sit amet orci dignissim rutrum.

```
\documentclass{article}
\usepackage{lipsum}
\usepackage[paperheight=5in,
           paperwidth=4in,
           margin=0.5in,
           heightrounded,
           showframe]{geometry}
\begin{document}
\lipsum[1]
\end{document}
```

Graphics

Graphics are included with size information, but not location.



```
1 \includegraphics[width=0.75\ linewidth]{leonbike.png}
```

They still need somewhere to go!

Graphics Locations

You can put graphics within containers.

- 😺 My cat's name is Leon
- 😺 He is a handsome little man
- 😺 Also a jerk

```
\documentclass{article}
\usepackage[paperheight=2
in,paperwidth=2in,
margin=0in]{geometry}
\usepackage{graphicx}
\newcommand*\{\meow}{\
    \includegraphics[width
=1em]{leon.png}}
\begin{document}
\begin{itemize}
\item[\meow] My cat's
name is Leon
\item[\meow] He is a
handsome little
man
\item[\meow] Also a
jerk
\end{itemize}
\end{document}
```

Floats

Floats hold things for you.

- ▶ *h* - Put it about *here*

Floats

Floats hold things for you.

- ▶ *h* - Put it about *here*
- ▶ *t* - Put it on the *top* of a page

Floats

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- ▶ *t* - Put it on the *top* of a page
- ▶ *b* - Put it on the *bottom* of a page

Floats

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- ▶ *t* - Put it on the *top* of a page
- ▶ *b* - Put it on the *bottom* of a page
- ▶ *p* - Put it on a dedicated *page*

Floats

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- ▶ *b* - Put it on the *bottom* of a page
- ▶ *p* - Put it on a dedicated *page*
- ▶ *!* - Listen to me you little...

Floats

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- ▶ *b* - Put it on the *bottom* of a page
- ▶ *p* - Put it on a dedicated *page*
- ▶ ! - Listen to me you little...

Feel free to mix and match.

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- ▶ *p* - Put it on a dedicated *page*
- ▶ ! - Listen to me you little...

Feel free to mix and match.

- ▶ *tb* - Put it on the top or bottom of the page, whatever works

Floats

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- ▶ *p* - Put it on a dedicated *page*
- ▶ ! - Listen to me you little...

Feel free to mix and match.

- ▶ *tb* - Put it on the top or bottom of the page, whatever works
- ▶ *htbp* - I don't care where you put it

FLOATS

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- ▶ *h* - Put it about *here*
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- ▶ *!* - Listen to me you little...

Feel free to mix and match.

- ▶ *tb* - Put it on the top or bottom of the page, whatever works
- ▶ *htbp* - I don't care where you put it
- ▶ *h!* - If you don't put it here I swear to Papa Knuth I will
apt remove you

Tables

Tables are made within the `tabular` float environment.

	col1	col2	col3
row1	a	b	c
row2	aa	bb	cc
row3	aaa	bbb	ccc

```
1 \begin{tabular}[htbp]{l|c|c|c}
2   }
3   ~ & col1 & col2 & col3 \\
4   \hline
5   row1 & a & b & c \\
6   row2 & aa & bb & cc \\
7   row3 & aaa & bbb & ccc \\
8 \end{tabular}
```

These can be as complicated as you want to make them.

III–V Compounds		Group III				
		5 B	13 Al	31 Ga	69 In	81 Tl
Group V	7 N	BN	AlN	GaN (3.4)	InN	TlN
	15 P	BP	AlP (2.55)	GaP (2.24)	InP (1.27)	TlP
	33 As	BAs	AlAs	GaAs (1.35)	InAs	TlAs
	51 Sb	BSb	AlSb	GaSb (9.67)	InSb	TlSb
	84 Bi	BBi	AlBi	GaBi	InBi	TlBi
	Atomic number in black above element			Energy band gap (eV) of some of the selected elements within bracket		

Math

$$x^2 + y^2 = z^2 \quad (1)$$

```
1 \begin{equation}
2   x^2 + y^2 = z^2
3 \end{equation}
```

$$\frac{\hbar^2}{2m} \nabla^2 \Psi + V(\mathbf{r}) \Psi = -i\hbar \frac{\partial \Psi}{\partial t} \quad (2)$$

```
1 \begin{equation}
2   \frac{\hbar^2}{2m} \nabla^2 \Psi + V(\mathbf{r}) \Psi
3   = -i\hbar \frac{\partial \Psi}{\partial t}
4 \end{equation}
```

Inline $y = m * x + b$ equations.

```
1 Inline $y = m*x+b$ equations.
```

Aligned math

$$0 = ax^2 + bx + c$$

$$0 = x^2 + \frac{b}{a}x + \frac{c}{a}$$

$$0 = x^2 + \frac{b}{a}x + \frac{b^2}{4a^2} + \frac{c}{a} - \frac{b^2}{4a^2}$$

$$\frac{b^2}{4a^2} - \frac{c}{a} = \left(x + \frac{b}{2a} \right)^2$$

$$\frac{b^2 - 4ac}{4a^2} = \left(x + \frac{b}{2a} \right)^2$$

$$\frac{\pm\sqrt{b^2 - 4ac}}{2a} = x + \frac{b}{2a}$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = x$$

Citing and Referencing

- \LaTeX can create perfect bibliographies with \BIBTeX

Citing and Referencing

- ▶ \LaTeX can create perfect bibliographies with \BIBTeX
- ▶ \BIBTeX files are sets of information which contain everything relevant to citing a source

Citing and Referencing

- ▶ \LaTeX can create perfect bibliographies with \BIBTeX
- ▶ \BIBTeX files are sets of information which contain everything relevant to citing a source
- ▶ Most citation managers can export \BIBTeX files

A BiBTeX Entry

```
@inproceedings{jacob2016,
series = {20},
title = {Monitoring of {{Carbon Dioxide}} and {{Methane
Plumes}} from {{Combined Ground}}-{{Airborne Sensors}}},
volume = {61},
booktitle = {Convection and {{Boyancy Driven Flows}}: {{Environmental}}},
publisher = {{APS}},
author = {Jacob, Jamey and Mitchell, Taylor and Honeycutt,
          Wesley T. and Materer, Nicholas F. and Clark, Peter},
month = nov,
year = {2016}
}

@phdthesis{dissertation,
address = {Stillwater, Oklahoma},
type = {Dissertation},
title = {Development and {{Applications}} of {{Chemical
Sensors}} for the {{Detection}} of {{Atmospheric Carbon
Dioxide}} and {{Methane}}},
school = {Oklahoma State University},
author = {Honeycutt, Wesley T.},
month = may,
year = {2017}
}
```

I like using Zotero

The screenshot shows the Zotero desktop application window. On the left is a sidebar with a tree view of 'My Library' containing various collections like 'Aeroecology Biologging Initiative', 'CO2-CH4 sensor', 'E-Cigarettes', etc., and 'Group Libraries' with 'eos3test'. The main pane displays a list of selected items with columns for Title, Creator, Date, and Tags. A context menu is open over the selected items, with 'Export Items...' highlighted. The status bar at the bottom indicates '5 items selected'.

Title	Creator	Date	Tags
A Comparison of the Properties of Selecte...	Honeycutt et al.	2017-06-14	honeycuttC...
Development and Applications of Chemical...	Honeycutt	May 2, 2017	honeycutt...
Monitoring of Carbon Dioxide and Methan...	Jacob et al.	Nov 2, 2015	jacobMonit...
Selectivity and kinetic behavior of heavy m...	Honeycutt et al.	2015-04-22	honeycuttS...
Uptake kinetics of heavy metals from wate...	Honeycutt et al.	2014-03-17	honeycutt...

View Online
Remove Items from Collection...
Move Items to Trash...
Merge Items...
Export Items...
Create Bibliography from Items...
Generate Report from Items...
Better BibTeX

5 items selected

Now I can easily cite a source.

Not only does the illustrious Dr. Honeycutt have a PhD in chemistry [1], but he likes to give technical talks [2, 3]. Other people even like giving presentations on his work [4]!

Not only does the
illustrious Dr.
Honeycutt have a PhD in
chemistry~\cite{
dissertation}, but he
likes to give technical
talks~\cite{talk2014,
talk2015}. Other people
even like giving
presentations on his
work~\cite{jacob2016}!

Then we create our bibliography

```
\bibliographystyle{natbib}  
\bibliography{bib}
```

References

- [1] Wesley T. Honeycutt. *Development and Applications of Chemical Sensors for the Detection of Atmospheric Carbon Dioxide and Methane*. Dissertation, Oklahoma State University, Stillwater, Oklahoma, May 2017.
- [2] Wesley T. Honeycutt, Hayden Hamby, Allen Apblett, and Nicholas F. Materer. Uptake kinetics of heavy metals from water using a high surface area supported inorganic metal oxide.[4] In *Abstracts of Papers, 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014*, pages ENVR-272. American Chemical Society, 2014. Copyright (C) 2015 American Chemical Society (ACS). All Rights Reserved.
- [3] Wesley T. Honeycutt, Evgueni B. Kadosssov, Allen W. Apblett, and Nicholas F. Materer. Selectivity and kinetic behavior of heavy metal and radionuclides on supported ion-exchange adsorbant. In *Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015*, pages I+EC-44. American Chemical Society, 2015. Copyright (C) 2016 American Chemical Society (ACS). All Rights Reserved.
- [4] Jamey Jacob, Taylor Mitchell, Wesley T. Honeycutt, Nicholas F. Materer, and Peter Clark. Monitoring of Carbon Dioxide and Methane Plumes from Combined Ground-Airborne Sensors. In *Convection and Boyancy Driven Flows: Environmental*, volume 61 of 20. APS, November 2016.

Super Powerful for Theses

Pop a chapter out,
boom... you got a paper.

My last school didn't have a template. So I had to make one myself.

But you are lucky! The OU math department has one.

The screenshot shows the homepage of the LaTeX - resources website. The header reads "LaTeX - resources". On the right, there's a "Site menu" with links to "Front Page", "Resources", "Finding a Job", "Webalbum", "Links", and "About this site". Below the menu, a "On this page:" section lists "About", "Learning LaTeX", "Getting LaTeX", "Templates", and "Other useful things". Each section contains a bulleted list of links. At the bottom, there are navigation icons for a presentation slide.

About

This is a resource page for LaTeX for students (and faculty) at the Department of Mathematics at the University of Oklahoma. Please contact [Thomas Madsen](#) for comments and suggestions for improvements.

Learning LaTeX

- Newest version of [The Not So Short Introduction To LaTeX](#)

Getting LaTeX

You need two things on your computer to use LaTeX. First you need to LaTeX itself. Then you need an editor. There are many different versions of both out there. Some cost money, but some are free.

- [LaTeX homepage](#) (the official LaTeX homepage)
- [Miktex](#) (A LaTeX implementation for Windows)
- [WinEdt](#) (A free editor for Windows. Don't pay for your editor!)
- [Emacs](#) (Excellent free editor. Might be more complicated to install and use.)
- [VIM](#) (Not free. This editor has been installed on the computers at the math department)
- [WPS](#) (A good free program for Windows for creating pictures that can be included in your tex-document.)

Templates

- Template for quizzes: [quiz-template.tex](#), [quiz-template.pdf](#)
- Template for homework assignments: [homework-template.tex](#), [homework.pdf](#)
- Template for a presentation: [math-presentation-template.tex](#), [math-presentation.pdf](#)
- Template for a Ph.D. thesis: [thesis-template.tex](#), [thesis-template.pdf](#) (Created by Eduardo Martinez Pedrosa. Thank you Eduardo!)

Other useful things

- [List of journals](#)
- [Font reader for Windows](#) (free, small, and fast pdf-viewer.)
- [The Not So Short Introduction to LaTeX2e](#)

Graphics Generation with TikZ

High quality vector images can be produced from within LaTeX using a package called TikZ.

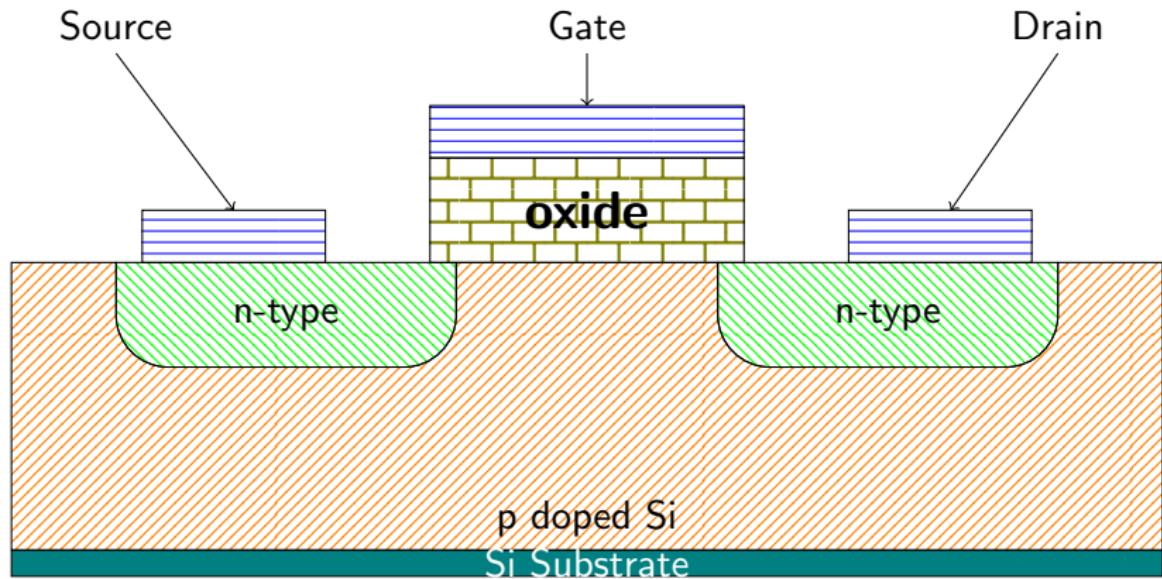
Additionally, Inkscape can export TikZ directly.

```

\begin{tikzpicture}
\draw \pdifff (0,.25) -- (0,3) -- (1,3) -- (1,2.5) to [out=270,in=180] (1.5,2) --
(3.75,2) to [out=0,in=270] (4.25,2.5) -- (4.25,3) -- (6.75,3) --
(6.75,2.5) to [out=270,in=180] (7.25,2) -- (9.5,2) to [out=0,in=270]
(10,2.5) -- (10,3) -- (11,3) -- (11,.25) -- (0,.25) node [midway,above] {p
doped Si};
\draw \metalthree (0,0) rectangle (11,.25) node [midway, color=white]
{Si Substrate};
\draw \oxide (4,3) rectangle (7,4) node [pos=.5,font=\bf\Large] {oxide};
\draw \metalone (4,4) rectangle (7,4.5);
\draw \ndiff (4.25,3) -- (1,3) -- (1,2.5) to [out=270,in=180] (1.5,2) --
(3.75,2) to [out=0,in=270] (4.25,2.5) -- (4.25,3) node at (2.625,2.5) [
align=center] {n-type};
\draw \ndiff (10,3) -- (6.75,3) -- (6.75,2.5) to [out=270,in=180] (7.25,2) --
(9.5,2) to [out=0,in=270] (10,2.5) -- (10,3) node at (8.375,2.5) [align=
center] {n-type};
\draw \metalone (1.25,3) rectangle (3,3.5);
\draw \metalone (8,3) rectangle (9.75,3.5);
\draw [->] (1,5) node [above] {Source} -- (2.125,3.5);
\draw [->] (10,5) node [above] {Drain} -- (8.975,3.5);
\draw [->] (5.5,5) node [above] {Gate} -- (5.5,4.5);
\node at (5.5,-.5) [align=center] {$V_{GS} < V_{threshold}$};
\end{tikzpicture}

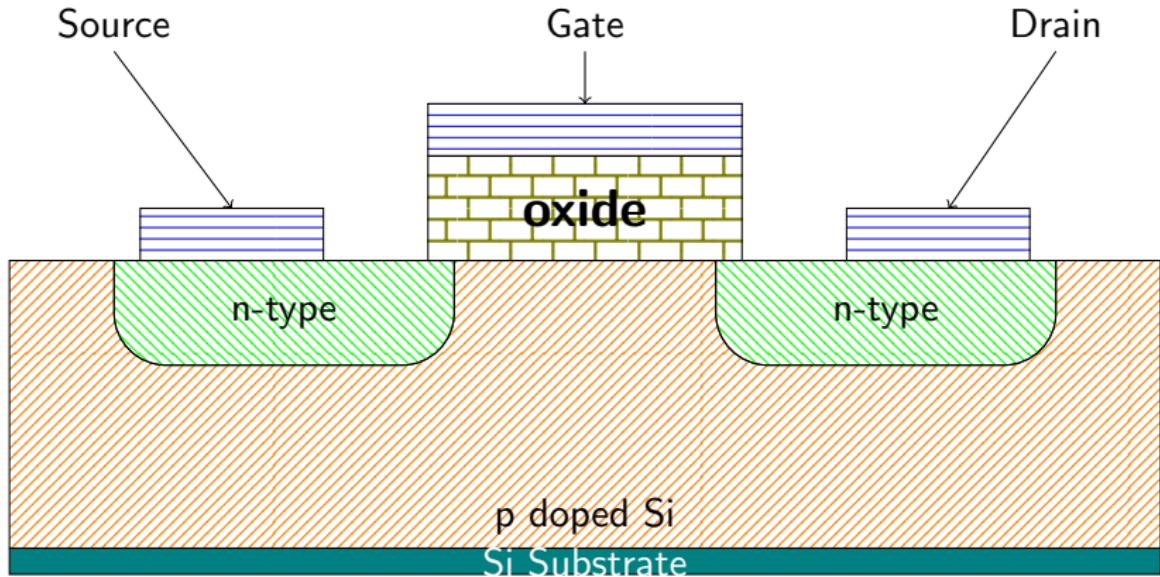
```

MOSFET



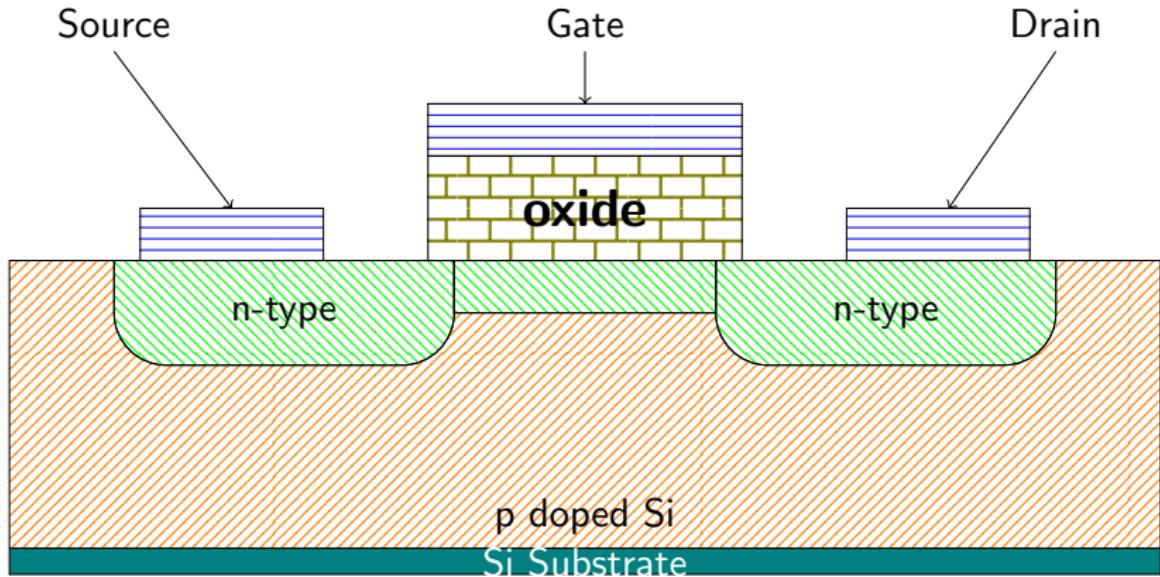
$$V_{GS} < V_{threshold}$$

MOSFET



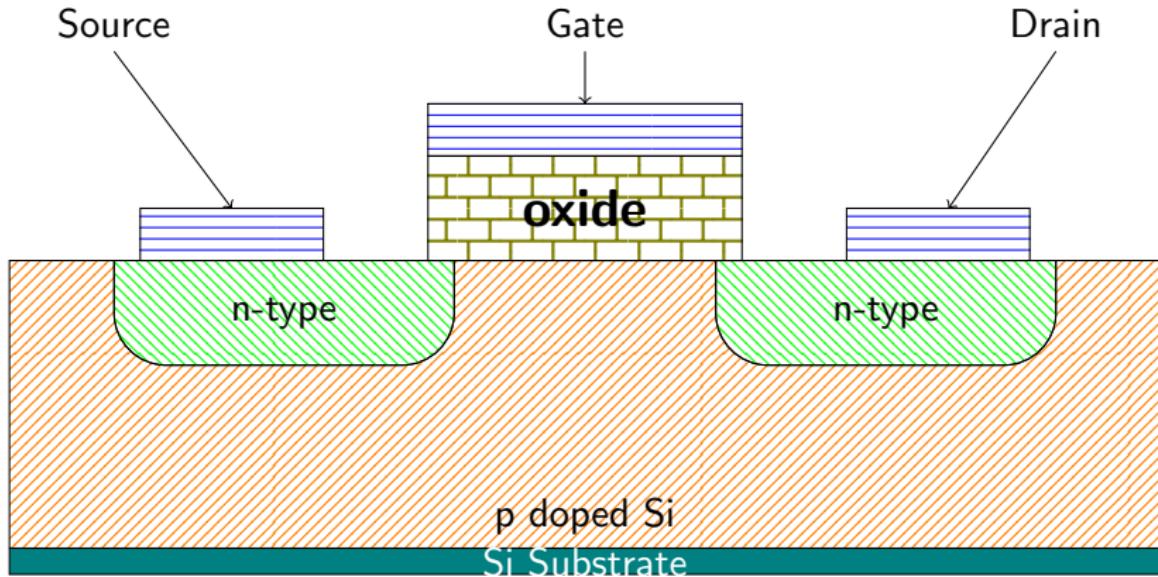
$$V_{GS} \geq V_{threshold}$$
$$V_{DS} < V_{GS} - V_{threshold}$$

MOSFET



$$V_{GS} \geq V_{threshold}$$
$$V_{DS} < V_{GS} - V_{threshold}$$

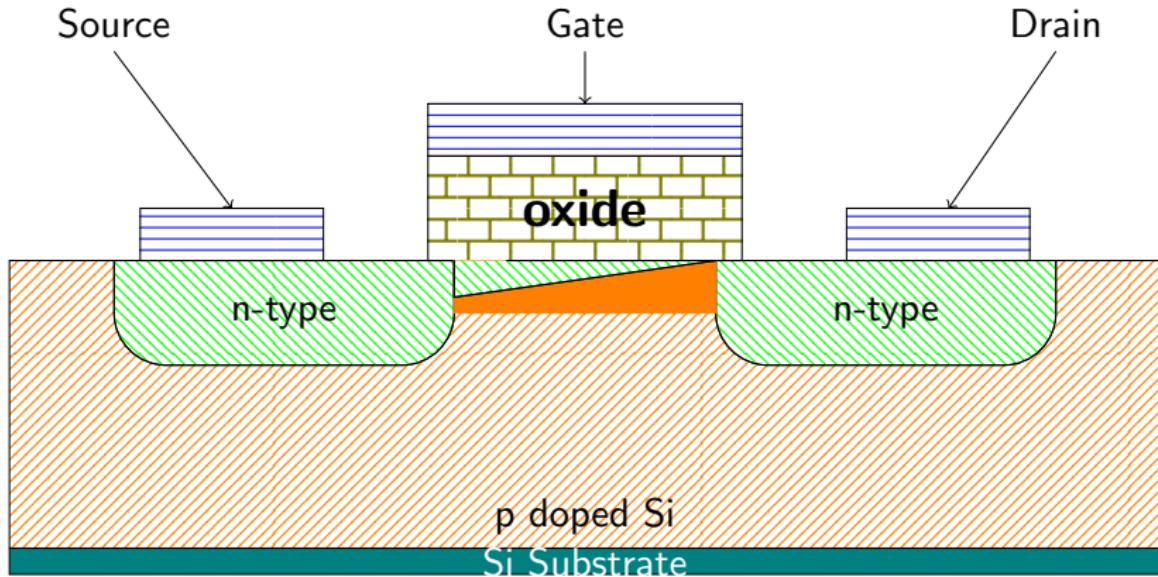
MOSFET



$$V_{GS} \geq V_{threshold}$$

$$V_{DS} = V_{GS} - V_{threshold}$$

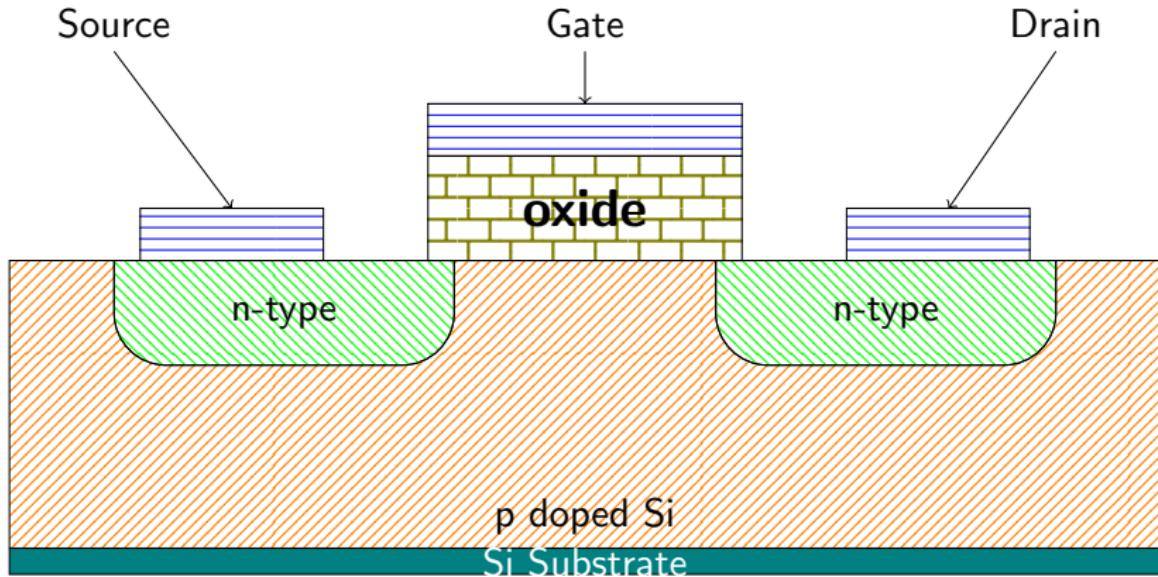
MOSFET



$$V_{GS} \geq V_{threshold}$$

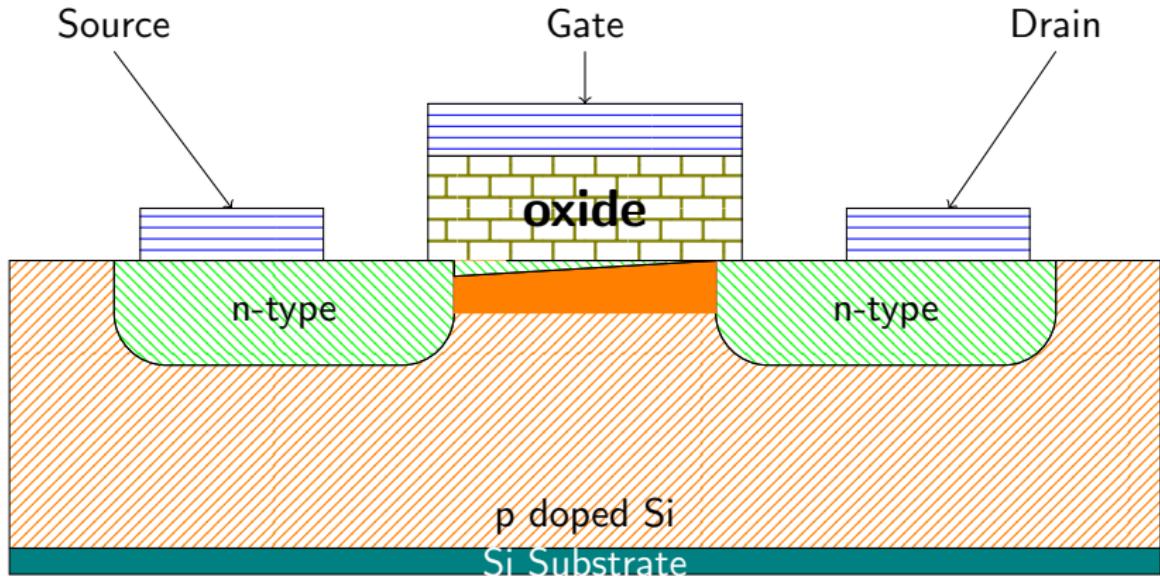
$$V_{DS} = V_{GS} - V_{threshold}$$

MOSFET



$$V_{GS} \geq V_{threshold}$$
$$V_{DS} > V_{GS} - V_{threshold}$$

MOSFET



$$V_{GS} \geq V_{threshold}$$
$$V_{DS} > V_{GS} - V_{threshold}$$

Make a Custom Class

October 11, 2018

2.7 LOCATION AND FACILITIES

Redcedar Products is seeking an industrial facility near Stillwater, Oklahoma to start operations. It is estimated that currently, 25% of the state is covered with eastern redcedar (Figure 1). As satellite imaging shows (Figure 2), Payne county in particular has a large number of these trees in the vicinity. Considering access to plenty of foliage, Stillwater offers the benefits of proximity to a large research institution which can benefit company growth. The facility will offer storage for purchased foliage and a factory containing extraction equipment. A small office will be utilized for administration activities and a small conference room.

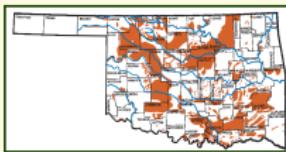


FIGURE 1: A CARTOON OF THE DISTRIBUTION OF REDCEDAR OVER OKLAHOMA.

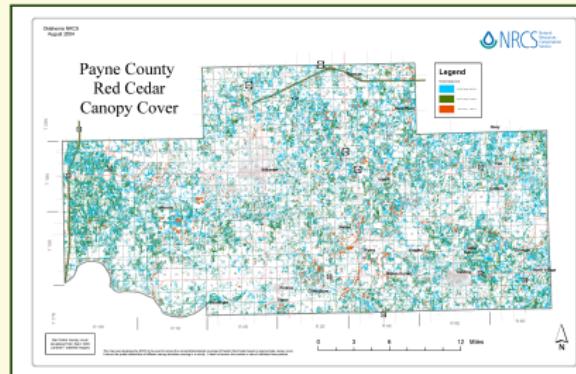


FIGURE 2: A DETAILED MAP OF THE REDCEDAR GROWTH IN PAYNE COUNTY PRODUCED FROM SATELLITE IMAGING COMPILED BY THE NRCS.

Make a Custom Class

NIPAJIN

SHOTS

REGELN FÜR SPIELER

WURFELVORLÉSSEN

Bedingungen	Würfel
keine Bedingung	1-6
gute Bedingungen	2-6
große Bedingungen	3-6
schlechte Bedingungen	4-6
sehr schlechte Bedingungen	5-6
extrem schlechte Bedingungen	6

DER LETZTE WEG

WÜRFEL IMPROVISIEREN

WURFEL

L. Würfel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
W1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

<https://github.com/ludus-leonis/nipajin>

Make a Custom Class



Dumnezii mihi - ie - stă.

Credinciosii: Doamne milostive.

Pronoul: Pe Preasfântă, curată, preaheacă-
dintasă, mărtă săpătoare noastră, de Dumnezeu
Nașătoare și purușă Regeasă Maria, cu năfi-
sfintită adă paroameni.

People: Lord, have mercy.

Priest: Let us remember our most holy, pure,
blessed, and glorious Lady, the Mother of God and
ever virgin Mary, with all the saints.



Preasfântă Nașătoare de Dumnezeu - mihi - ie - stă - ne pe mi.

Credinciosii: Preasfântă Nașătoare de Dum-
nezeu, milostivie pe noi.

Pronoul: Pe noi înșine și unii pe alții și moar-
ita noastră, lui Hristos, Dumnezeu să o dâm.

People: Most holy Mother of God, have mercy
upon us.

Priest: Let us commit ourselves and one another
and all our life to Christ our God.



Tie - Dum - ni -.

Credinciosii: Tie, Domne.

Pronoul: Că Tie se cunoscătă slava, cinstea și
inchinăciunea, Tăruș și Răduș și Sfîntul Duh,
acum și purușă și în vechi vechile.

People: To You, O Lord.

Priest: For You belong all glory, honor, and
worship to the Father and the Son and the Holy
Spirit, now and forever and to the ages of ages.



A-min.

Credinciosii: Amin.

People: Amen.

ANTIPONAL INTĂI²



Credinciosii: Mărturie Trădări și Sfântul și
Sfântul Duh, și acum și purușă și în vechi
vechi, A - min. Binecuvântă - ten - zah, sunde - te al meu pe - Dum-nul. Si tan - ce -

THE FIRST ANTIPHON²

Binecuvântă - tat - egă Dum - ne. **People:** Glory to the Father, and to the Son,
and to the Holy Spirit, now and ever, and to the
ages of ages. Amen. Bless the Lord, O my soul.
And all that is within me, bless His holy Name.
Blessed are You, O Lord.

²Conform scrierii vine din limba greacă și înseamnă
steaguri. Antiphon întăi exprimă începutul liturghiei 102 și
este o cantică de alături a lui Dumnezeu.

The word «antiphon» comes from Greek, meaning
steps. The First Antiphon encompasses the beginning of
Hours 102, and it is a song of praise to God.

Make a Custom Class

2. Creation de l'homme. — Genèse.

17 "en fâche, "en iour, & en aas.
18 Et l'oyent pour lumineux au fin
ment du ciel, & le plus grand lumineux
dans tout l'univers.
19 D'ien donc fit des grandeas étoiles
plus que grand lumineux pour g
uérir le iour, & le moindre pour faire
la nuit & les éteindreus.
20 Et Dieu les blesa.
18. Et pour gauurir le iour, &
nuit, & pour lever la lumine de
nebres. Et Dieu vid qu'ela estoit bon.
20. Louz fai le soleil & le lune, &
quatre étoiles.
21 ¶ Or Dieu dit, Que les e
produisent abondamant: repele a
vianie, & soleil vole sur la
terre enuisse éteindre du ciel.
22. Dous descouer de grades bœufs
de la terre, & de la mer, & de la
que las eaus produisent tels bœufs
pe: & toute avale ays es
cuse felon epeze: & Dieu
que celi estoit bon.
23. Louz fai le bœuf, dilane, Eru
fie, & multitudes, & remplifia
eau des mers, que la valie se fit
rigide en la teme.
23. Louz fut fait le soleil & le matin
cligneteau.
24 ¶ Or Dieu dit, Que la ter
re estoit tout auantien fons et
beffal & reptile, & animale de
tere chacun felon epeze. Et il
ainf faict.
25. Diou donc fit lumine de la s
telle felon epeze, & beffal et
reptile, & animale de la interne
des mers, & de la mer, & fer-
liseau des mers, & fer-
liseau du ciel, & sur les bœufs, & sur osa
tere, & fur tout riple camp fuisse
terre.
26. Dieu donc fit l'humaine a son
image, & a son ressemblance. De
la ressemblance d'humaine de
la crete male, & semelle.
28. Et Dieu les benit de leur dñe.

fira, & multiplie, & remplisse la terre,
& l'affublentise : & tenez frigescence
pour les poissonn de la mer, & pour les oï-
feaux du ciel, & pour tous animaux qui
le mouvent sur la terre.

29. D'auantage Dieu dit, Voici, je vous
ay donne toutes herbe qui produit fe-
mence quil ell sur toute la terre. & une
arbre qui a en soy fruit d'abre produ-
ctifant femme : à fin qu'ils vous
foyent pour viande.

30. M. Et il fut ainsi.

30. Mennies aussi à tous animaux de la terre,& à tous oiseaux du ciel,& à toute chose mouvante sur la terre, qui a en soi une viante, toute herbe vendue sera pour viande. Et fut ainsi fait.
31. "Et Dieu vid tout ce qu'il auroit fait, & voila il estoit moult bon. Lors fut fait le foir & le matin du sixieme leur.

C H A P . 21

Goélie le temps de l'empereur aujourdhui, & le bruit est de l'ordre
de 15 à 20 millions d'hommes qu'il y a dans la Chine.
Mais l'empereur n'a pas été vaincu. Il a été vaincu par l'opposition
des hommes qui détestent son autorité. Il a été vaincu par les
gens qui ont détesté sa politique.

Encore une fois la terre fut
parfaite, & tout l'exercice d'
elle.

Cet Dieu aussi accepta au peuple
pour lui-même qu'il avait failli.

2. "Car Dieu ainsi acapli au fépime pour lour amme qu'il auoit faite,
& fe repoua au fépime pour de toute fe ouure qu'il auoit faite.

3. En Dieu benit le fépime pour le familié, pour ce qm tient il auant celi de toute fe ouure, qu'il auoit cree pour être faite.

4. Telles lors les générations du del & de la terre quand ils furent croas, au jour que le Seigneur Dieu fit le del & la terre.

5. Et tout lemon du champ deute qu'il faut en la terre, & tout herbage du champ deute qu'il genraulmeut le Seigneur Dieu n'auoit point faict 'plouuoir sur la terre, & n'y auoit homme pour labourer la terre;
6. Mais vame vapour moisois de la terre, qui arrosoit tout le deuts de la terre.
7. Or le Seigneur Dieu auoit forme l'homme 'de la poudre de la terre, & auoit inspire en la face d'elur inspiration de vie, & l'homme fut fait en ame vivante.

Rulli

L Faciens donc dans la terre furent parfaits, & tout l'ensemble d'eux.

2. "Car Dieu aussi accépli au septième jour son œuvre qu'il avait faite,
& se reposa au septième jour de toute son œuvre qu'il avait faite.

3. Et Dieu bénit le septième jour & le sanctifia pour ce qu'il avait fait auz effets de toute son œuvre qu'il avait

4 Telles furent les générations du ciel & de la terre, quand ils furent créés, au jour que le Seigneur Dieu fit le ciel & la terre,

5 Et tout tesson du champ deute qu'il fuist en la terre, & tout herbage du champ deuant qu'il gemaistur le Seigneur Dieu n'avoit point fait "plou-

uoit sur la terre, & n'y avoit homme pour labourer la terre:
 6 Mais vne vapeur mōsoit de la terre, qui arrosoit tout le déflis de la terre.
 7 Or le Seigneur Dieu avoit formé l'homme "de la poudre de la terre, & avoit inspiré en la face d'icelui l'piration de vie, & l'homme fut fait en ame vivante.

https://github.com/raphink/geneve_1564

Make a Custom Class

Nexus.sty
A style file for L^AT_EX

Alexis Flesch

version 1.1

$$(a+b)^n = \sum_{k=0}^n \binom{n}{k} a^k b^{n-k}$$
$$\zeta_k = |a|^{1/n} e^{i(\arg(a) + 2k\pi)/n}$$
$$e^{ix} + 1 = 0$$
$$\neg(p \vee q) \equiv (\neg p) \wedge (\neg q)$$
$$\binom{n}{k} = \frac{n!}{k!(n-k)!}$$

Contents

CHAPTER 1	This is a Chapter	Page 4
1.1	This is a section	4
This is a subsection - This is a subsection		
1.2	This is a section	7
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5.1	This is a section	24
This is a subsection - This is a subsection		
5.2	This is a section	27
This is a subsection - This is a subsection		
APPENDIX A	This is a Chapter	Page 29
A.1	This is a section	29
This is a subsection - This is a subsection		
A.2	This is a section	33
This is a subsection - This is a subsection		

1 2 3 4 5 A B

<https://github.com/alexisflesch/nexus>

Unique Words and Hyphenation

\LaTeX automatically hyphenates words in the dictionary. What if you have something that isn't common?

```
\hyphenation{Red-ce-dar May-ap-ple Ok-la-ho-ma che-mo-ther  
-apy through}
```

Do calculations

\LaTeX wasn't made for math, but you do have access to registers . . .

```
\usepackage{calc}
```

```
1 \newlength{\mylength}
2 \setlength{\mylength}{\textwidth}%
3 \noindent\rule{\mylength}{20pt}
4
5 \bigskip
6 \setlength{\mylength}{\textwidth-1cm}%
7 \noindent\rule{\mylength}{20pt}
8
9 \bigskip
10 \setlength{\mylength}{\textwidth-80pt+5mm-1bp}%
11 \noindent\rule{\mylength}{20pt}
```

Do calculations

. . . and floating points.

\usepackage{fp}

The following arithmetic is easy:

- ▶ $5 + 6 = 11$
- ▶ $2 + 3/5 \times \pi = 3.88496$

```
1 The following arithmetic is
  easy:
2 \begin{itemize}
3 \item \FPeval{\result}{clip
  (5+6)}%
4 \$5+6=\result$
5 \item \FPeval{\result}{round
  (2+3/5*pi,5)}%
6 \$2+3/5\pi=\result$%
7 \end{itemize}
```

I use math for my consulting invoices.

Wesley Honeycutt

111 Chesapeake St.
Norman, OK 73019

(405) 555-5555
honeycutt@ou.edu

Invoice To:

Jimmy Gallogly
University of Oklahoma
660 Paddington Oval
Norman, OK 73019

Invoice Date:

October 11, 2018

Invoice Terms
Due on Receipt

Description of Services	Quantity	Unit Price	Amount
Purchased Materials			
Beard Growth Oil		\$337.39	\$337.39
Consulting Services			
July 9 th , 2018	1.00 hours	\$12.00	\$12.00
July 10 th , 2018	8.00 hours	\$34.00	\$272.00
July 11 th , 2018	3.00 hours	\$12.00	\$36.00
July 14 th , 2018	3.00 hours	\$34.00	\$102.00
July 15 th , 2018	3.00 hours	\$12.00	\$36.00
July 20 th , 2018	1.00 hours	\$34.00	\$34.00
July 21 st , 2018	2.00 hours	\$12.00	\$24.00
July 31 st , 2018	4.00 hours	\$34.00	\$136.00
Balance Due			\$989.39

\microtype aka Giving in to typesetting

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RTFM

The Comprehensive \TeX Archive Network is a package repository

This also includes manuals and examples

The screenshot shows the homepage of the Comprehensive TeX Archive Network (CTAN). The header features the text "CTAN Comprehensive TeX Archive Network". Below the header, there are navigation links for "Cover", "Upload", "Browse", and "Search". A sidebar on the left lists "Locales" and "CTAN Comprehensive TeX Archive Network". The main content area has a heading "The Comprehensive TeX Archive Network" followed by a paragraph about the network's purpose. It includes sections for "Announcements on CTAN-announce", "Did you know?", and "Activity on CTAN". The "Announcements" section lists several recent updates. The "Did you know?" section provides information about the "Bookhead Font". The "Activity on CTAN" section shows a line graph of activity levels over time. The footer contains a "TeX" logo and a brief description of the TeX typesetting system.

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