面向语义分析的文本识别研究与实现
工作汇报 2020-04-06

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Donghua University, April 11, 2020

Table of Contents

Beamer Theme Flip

A work in progress

This is a template for Flip's Beamer theme. Features:

- Option for dark or light background.
- Option for large 'slide number / total slides' on bottom bar
- Option for watermark on top of a gradient background
- Only works for PDFLaTeX/XeLaTeX! (Default on OS X)
- ... work in progress!

2012 updates

The new package is streamlined for nicer code. Also uses `fontspec` for *XeLaTeX* support. You can now abuse fonts.

Contents

Animations of list

This code will generate 4 slides

- Text visible on slide 1

Animations of list

This code will generate 4 slides

- Text visible on slide 1
- Text visible on slide 2

Animations of list

This code will generate 4 slides

- Text visible on slide 1
- Text visible on slide 2
- Text visible on slides 3

Animations of list

This code will generate 4 slides

- Text visible on slide 1
- Text visible on slide 2

- Text visible on slide 4

Example of the `pause` command

In this slide

Example of the `pause` command

In this slide
the text will be partially visible

Example of the `pause` command

In this slide
the text will be partially visible
And finally everything will be there

Examples of `minted` for syntax highlighting

```
1  import PyInstaller.__main__
2  import os
3  import platform
4
5  UPX_PATH = os.environ.get("UPX_PATH")
6  pyinstall_args = [
7    '--noconfirm',
8    '--log-level=INFO',
9    '--onefile',
10   '--name=DHUHealthyFormTool',
11 ]
12 if UPX_PATH:
13   pyinstall_args.append('--upx-dir=%s' % (UPX_PATH))
14 system = platform.system()
15 exe_name = 'DHUHealthyFormTool'
16 if system == 'Linux':
17   exe_name += '_Linux_amd64.bin'
18 elif system == 'Windows':
19   pyinstall_args.append('--console')
20   exe_name += '_Windows_amd64.exe'
21 elif system == 'Darwin':
22   exe_name += '_macOS_amd64.app'
23   pyinstall_args.append('--console')
24
25 pyinstall_args.append('--name=' + exe_name)
26 pyinstall_args.append("DHU_healthy_form.py")
27
28 if __name__ == '__main__':
29   PyInstaller.__main__.run(pyinstall_args)
```

Block Party

Different kinds of blocks

Block

Normal block. Colorless, neutral.

Example Block

Example block. (Potential uses: list of pros, relaxing facts)

Alert Block

Alert block. (Potential uses: list of cons, impending doom)

$$A = \begin{pmatrix} \boxed{1} & 2 & 3 \\ 2 & 8 & 14 \\ 3 & 14 & 34 \end{pmatrix}$$

$$L = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$$

$tmp = 0$

Algorithm 1 Cholesky-Zerlegung

function Cholesky($A \in \mathbb{R}^{n \times n}$)

$L = 0 \in \mathbb{R}^{n \times n}$ ▷ Initialisiere L

for ($k = 1;\ k \leq n;\ k$++) **do**

$L_{k,k} = \sqrt{A_{k,k} - \sum_{i=1}^{k-1} L_{k,i}^2}$

for ($i = k + 1;\ i \leq n;\ i$++) **do**

$L_{i,k} = \frac{A_{i,k} - \sum_{j=1}^{k-1} L_{i,j} \cdot L_{k,j}}{L_{k,k}}$

end for

end for

return L

end function

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end function

Defined colors

- This is crimsonred.
- This is paleale / lager.
- This is turtlegreen / green.
- This is paleblue.
- This is gray.
- This is charcoal.
- This is jeans.
- This is regal.

You can use the `textcolor` command to use these, but the goal is to do things in a way where there are no calls to explicit colors, just user-adjustable values.

Color styles

These are some useful pre-defined color styles.

- This is alert.
- This is Alert.
- This is ALERT.

- This is comment.
- This is ▷ Comment.
- This is COMMENT.

Some colors like FlipGreen and FlipSand will automatically change tint when when you define light or dark backgrounds.
▷ This makes it easier to swap between light/dark backgrounds by just modifying one option and recompiling.

▷ The 'comment' styles are automatically footnote-sized.

Absolute placement

This slide demonstrates

- absolute placement of images using the `put` command in the `picture` environment.
- Note the overlap. Further, note that the particular depend on where the picture is defined.

  If you define the picture at the top of the slide, then it will have fixed coordinates (using the [t] alignment). The cost is that the image is then behind all the text.
- Beamer respects `png` and `pdf` transparencies.

▷ Image: `http://www.smbc-comics.com/index.php?db=comics&id=2109` Some alternatives for placing images: `http://www.texample.net/tikz/examples/transparent-png-overlay/`

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Columns

Sometimes it's useful to split the screen

Test why is it gray?

Here's a column where I can write a bunch of things.

- There are all sorts of things I can do in paragraph form.

- Here's a column
- where I can itemize
- a bunch of things.

Blocks

...work in here too.

Contents

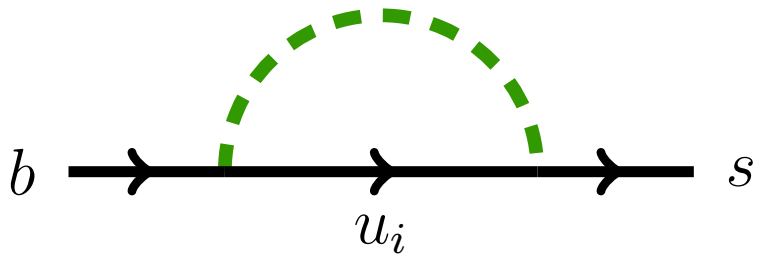
Feynman diagrams and overlays

Penguin diagram

Allows FCNC sub-diagram to occur on-shell.

Here's an example where a sequence of overlays can be used to illustrate some useful physics.

Feynman diagrams and overlays



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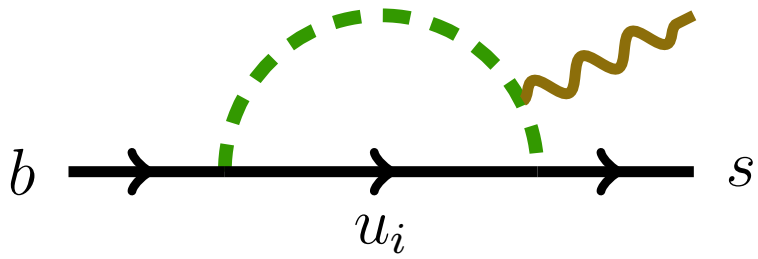

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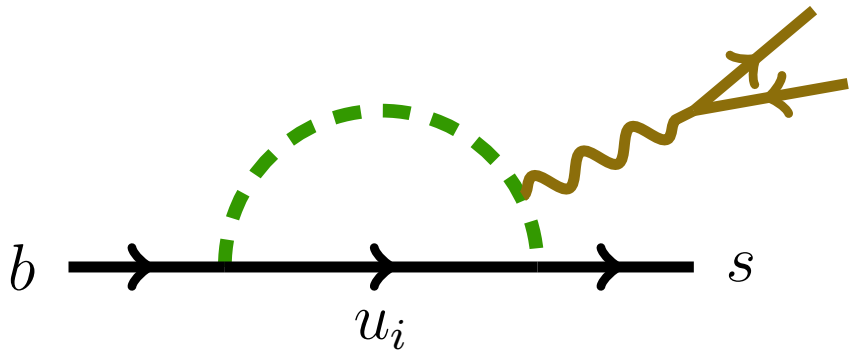

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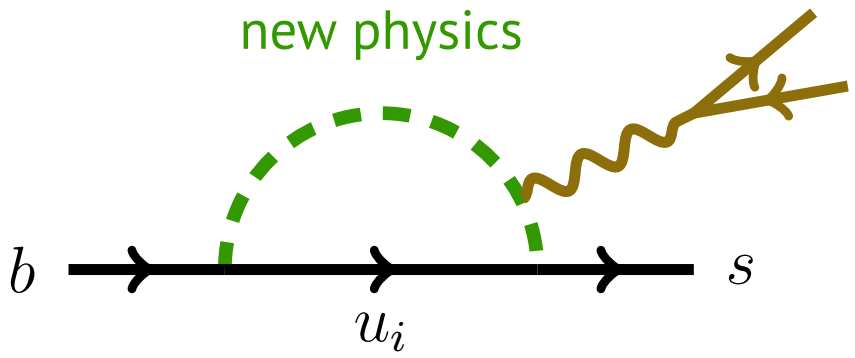

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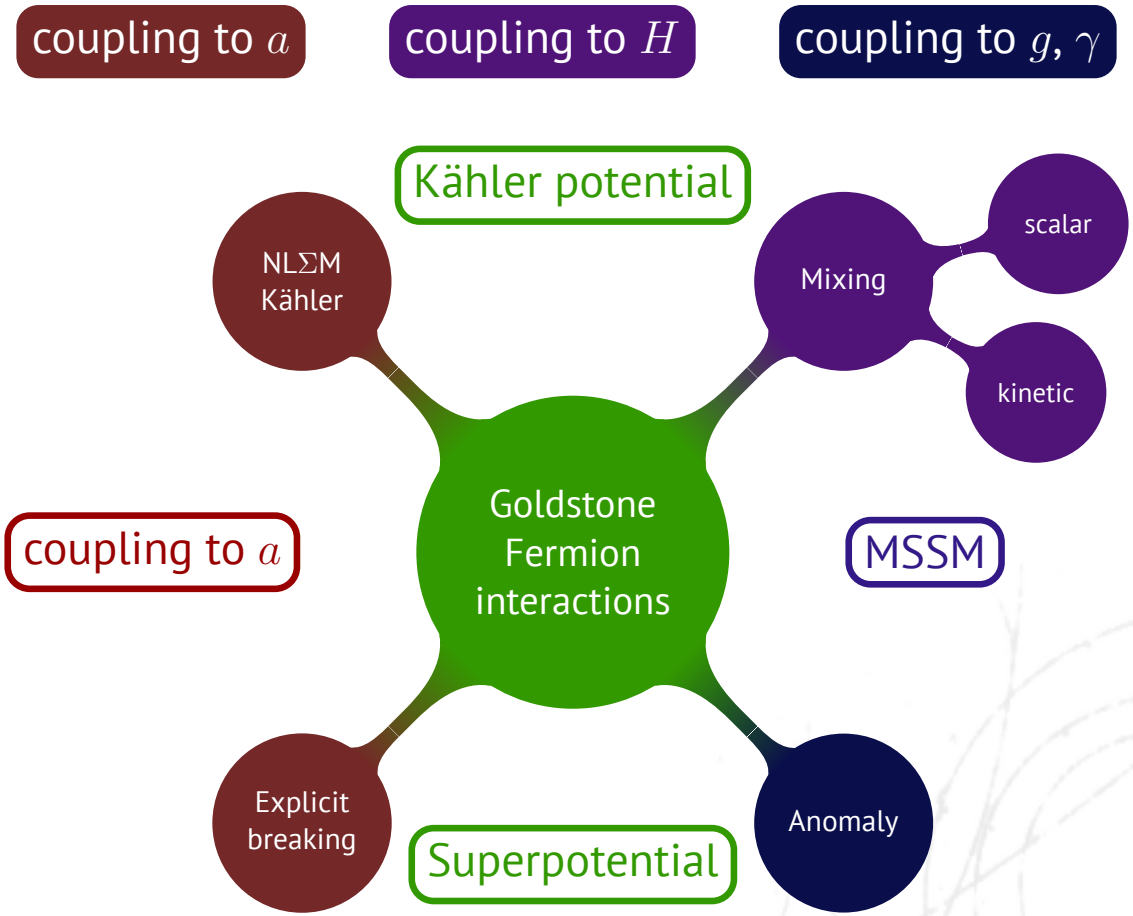
Mind Maps

▷ `usetikzlibrary{mindmap}`



Other diagrams

Here's a nice picture illustrating Seiberg duality:

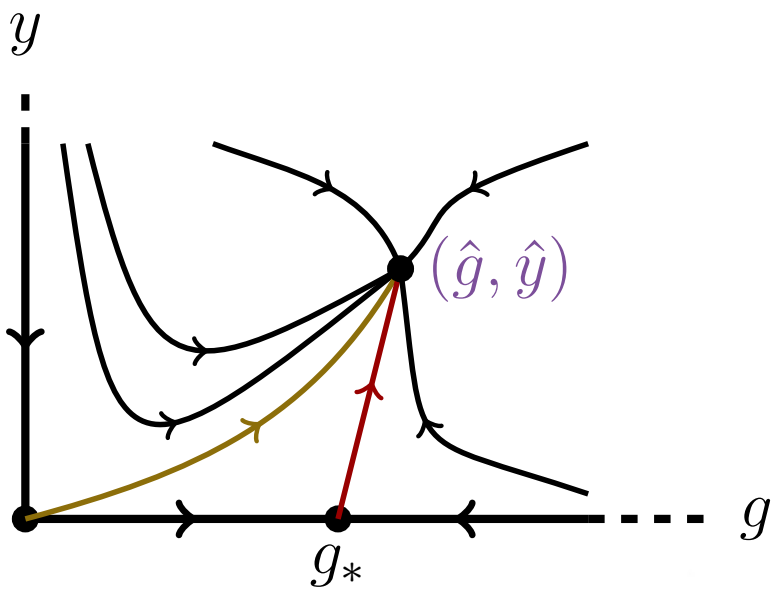


Image based on Strassler's 'unorthodox' review of SUSY gauge theory.

Contents

Including a table

Here's how you include a table.

Channel	Expt.	Bound (90% CL)	SM Prediction
$B_s^0 \to \mu^+\mu^-$	CDF II	$< 4.7 \times 10^{-8}$	$(4.8 \pm 1.3) \times 10^{-9}$
$B_d^0 \to \mu^+\mu^-$	CDF II	$< 1.5 \times 10^{-8}$	$(1.4 \pm 0.4) \times 10^{-10}$
$B_s^0 \to \mu^+ e^-$	CDF II	$< 2.0 \times 10^{-7}$	≈ 0
$B_d^0 \to \mu^+ e^-$	CDF II	$< 6.4 \times 10^{-8}$	≈ 0

Some equations

As if you didn't think Beamer could typeset equations...

$$\left(\frac{\Lambda}{m}\right)^{b} = \left(\frac{\Lambda_L}{m}\right)^{b_L} \quad \Rightarrow \quad \left(\frac{\Lambda_{N,F}}{m}\right)^{3N-F} = \left(\frac{\Lambda_{N,F-1}}{m}\right)^{3N-(F-1)}$$

$$G_k(z,z') = \frac{(R')^2}{R} G_y(x,x') = \frac{(R')^2}{R}\frac{xx'}{y}\frac{T(x,y)T(x',y)}{S(wy,y)}$$

$$f_c = \sqrt{\frac{1-2c}{1-(R/R')^{1-2c}}}$$

Design Notes

Watermarking

- Watermarks need to really be transparent or else the background won't show through, e.g. if your background color is not plain white. Fortunately, PGF respects png transparency so watermark images can be saved as png images. Alternately, if you have a nice vector representation in TikZ, you can use the "opacity" option to make it semi-opaque.
- The second problem with watermarks is that even once you have a transparent image, how do you stick it behind the main text of each slide? This is surprisingly subtle. The solution is to put all watermarks the "sidebar right" region controlled by the outer theme style. Anything placed here will remain behind the main text of the screen.
- At the moment this is not implemented in this theme.

Aesthetic use of arrows and nodes

The WIMP Miracle

Contains factors of M_{Pl}, s_0, $\cdots$

$$\Omega_{\mathrm{DM}}h^2 \approx 0.1 \left(\frac{x_{\mathrm{f}}}{20}\right)\left(\frac{g_*}{80}\right)^{-\frac{1}{2}}\left(\frac{\langle\sigma v\rangle_0}{3\times 10^{-26}\ \mathrm{cm}^3/\mathrm{s}}\right)$$

$$\sim \left\langle \frac{\alpha^2 v}{(100\ \mathrm{GeV})^2} \right\rangle$$

`http://www.texample.net/tikz/examples/beamer-arrows/`

Node decorations, arrows

The new scalar interactions take the form

$$\mathcal{L} \supset \left[\frac{1}{2}(\partial a)^2 + \frac{1}{2}\bar{\chi}\not{\partial}\chi\right]\left(1 + c_h\frac{v}{f}h + \cdots\right)$$

c_h depends on c_i and the Higgs mixing angles.

c_h controls direct detection

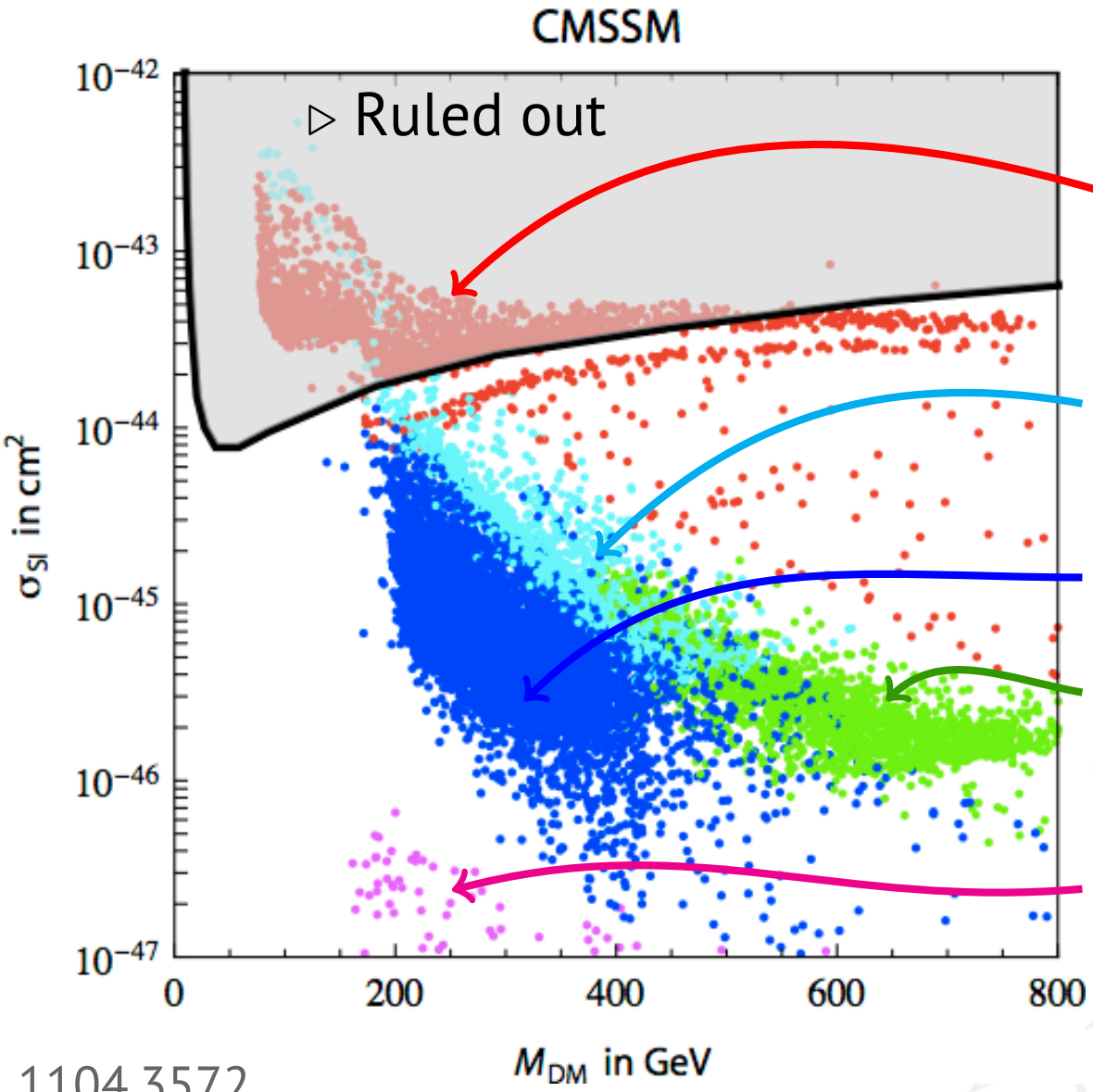
Contents

Fonts

Some comments on fonts.

- I use *XeLaTeX* and `fontspec` to specify local fonts. I try to only use readily available fonts on OS X and Adobe, but occasionally I will use a silly font like augie.
- To mitigate incompatibility with users without these fonts, I include them as user-specified commands in the main file: `\newcommand{\handwriting}{\fontspec{augie}}`
- If you don't have augie, just replace it with a font you do have... or an empty bracket.

Drawing arrows onto a plot



Well tempered neutralino

h^0 resonance

slepton co-annihilations

A^0 resonance

stop co-annihilations

1104.3572

Miscellaneous

- Use `\only<2>` to only show something for one overlay
- Can also use `<2->`
- For example, can highlight a word
- If you use `\uncover<3->` you get a … see?
- Protip: use `\textbackslash` to get a backslash

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Problems and Kludges

Things to work on

- There seems to be a bug in Beamer where the footnote color (defined using `setbeamercolor{footnote}` and `setbeamercolor{footnote mark}`) contaminates the normal text color. For now I suggest not using footnotes.
  They're of questionable use in a talk, anyway.
- Even though comment text is footnote-sized, it still has normal text line spacing. The `setspace` environment can fix this, but it forces a newline and it seems to make footnotes disappear.
- Make color theme more uniform and based on palette colors.

Problems and Kludges

XeLaTeX, LuaLaTeX

XeLaTeX doesn't allow one to use `setbeamertemplate[background canvas]` multiple times (e.g. to have one slide with a different background). A fix is to include `\def \pgfsysdriver{pgfsys-dvipdfmx.def}` before the `documentclass`, but this ends up breaking the arrows pointing to nodes.

In principle, LuaLaTeX can solve this, but that also requires some work since it only looks at Open Type Fonts (e.g. Gill Sans is not available by default).

`http://tex.stackexchange.com/questions/29497/xelatex-preventing-beamer-from-using-different-backgrounds`

Acknowledgements

I have borrowed heavily (and learned much) from Marco Barisione's Torino theme, which can be found one his blog. I have also learned and borrowed from Shawn Lankton's Keynote theme.

These can be found at

- `http://blog.barisione.org`
- `http://www.shawnlankton.com/2008/02/beamer-and-latex-with-keynote-theme/`

I've tried to maintain lots of comments in the `.tex` and `.sty` files to help other template-designers. At the moment it's all a jumbled mess, though!

Extra page: Additional hints

Look, it doesn't add to the total page count!

- Be sure to turn off any auto-notifiers (e.g. GMail)
- Consider using a PDF-to-keynote program; `http://www.cs.hmc.edu/~oneill/freesoftware/pdftokeynote.html`.
- Don't ever go over time.
- TikZ transparency trick: `http://www.texample.net/tikz/examples/transparent-png-overlay/`
- Use `addtocounter{framenumber}{-1}` for extra slides (like this one) to prevent it from screwing up the page numbering.