Beamer All The Way

Victor Ivrii

Department of Mathematics, University of Toronto

July 23, 2013

Table of Contents

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX).

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

pdf has a lot of features great for presentation and pdfLATEX produces pdf directly, while LATEX produces dvi which in turn could be converted to pdf (we need this path if we use certain packages, f.e. pstricks.

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

pdf has a lot of features great for presentation and pdfLATEX produces pdf directly, while LATEX produces dvi which in turn could be converted to pdf (we need this path if we use certain packages, f.e. pstricks. Further, pdf files could be post processed using Adobe Acrobat, gs (ghostscript), or pdftk (where gs and pdftk are freeware).

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

pdf has a lot of features great for presentation and pdfLATEX produces pdf directly, while LATEX produces dvi which in turn could be converted to pdf (we need this path if we use certain packages, f.e. pstricks. Further, pdf files could be post processed using Adobe Acrobat, gs (ghostscript), or pdftk (where gs and pdftk are freeware).

On the other hand presentation is a very special kind of document, fundamentally different from an article, or a book, and it served best by a special documentclass.

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

pdf has a lot of features great for presentation and pdfLATEX produces pdf directly, while LATEX produces dvi which in turn could be converted to pdf (we need this path if we use certain packages, f.e. pstricks. Further, pdf files could be post processed using Adobe Acrobat, gs (ghostscript), or pdftk (where gs and pdftk are freeware).

On the other hand presentation is a very special kind of document, fundamentally different from an article, or a book, and it served best by a special documentclass. beamer is far the best and the most popular documentclass for presentations (with powerdot being the distant second.

Why Beamer?

When making mathematical presentation (i.e. presentation with a lot of formulae) it is only natural to use a software with a built-in capability to edit them, i.e. TEX (in particular, LATEX). As any mathematician knows it is the only software which can edit mathematical formulae properly.

pdf has a lot of features great for presentation and pdfLATEX produces pdf directly, while LATEX produces dvi which in turn could be converted to pdf (we need this path if we use certain packages, f.e. pstricks. Further, pdf files could be post processed using Adobe Acrobat, gs (ghostscript), or pdftk (where gs and pdftk are freeware).

On the other hand presentation is a very special kind of document, fundamentally different from an article, or a book, and it served best by a special documentclass. beamer is far the best and the most popular documentclass for presentations (with powerdot being the distant second. Everything else does not deserve even a mention.

My First Beamer

```
\documentclass{beamer}
\usepackage{amssymb}
 \title[Beamer]{Beamer for Novices}
\author{Victor Ivrii}
\institute{Department of Mathematics, University of Toronto}
\date{September 8, 2012}
\begin{document}
 \begin{frame}
 \titlepage
 \end{frame}
 \begin{frame}
 Some text with math ......
 \end{frame}
\end{document}
```

We will get . . .

Beamer for Novices

Victor Ivrii

Department of Mathematics, University of Toronto

September 8, 2012

Formula

$$(Au)(x) = (2\pi)^{-d} \iint a(x, y, h\xi) e^{i\langle x-y,\xi\rangle} u(y) dy d\xi \qquad (1)$$

defines an operator a from $\mathcal{S}(\mathbb{R}^d, \mathbb{H})$ to $\mathcal{S}'(\mathbb{R}^d, \mathbb{H}')$ which will be denoted by $\overset{3}{a}(\overset{1}{x}, \overset{2}{x}, hD)$.

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or “fit-to-width” mode because

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or "fit-to-width" mode because

1. The page size is correct (128 mm by 96 mm with the default aspect ratio 3:2);

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or "fit-to-width" mode because

1. The page size is correct (128 mm by 96 mm with the default aspect ratio 3:2);
2. Presentation is correctly aligned on the screen;

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or "fit-to-width" mode because

1. The page size is correct (128 mm by 96 mm with the default aspect ratio 3:2);
2. Presentation is correctly aligned on the screen;
3. Text and formulae are large and well visible;

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or "fit-to-width" mode because

1. The page size is correct (128 mm by 96 mm with the default aspect ratio 3:2);
2. Presentation is correctly aligned on the screen;
3. Text and formulae are large and well visible;
4. More robust and bright fonts are used; sanserif instead of roman serif for text, and especially robust fonts for mathematics instead of *mathitalic*; compare on the next page;

Discussion

It may be not very fancy but it is infinitely better many talks when the article is displayed either in full-screen mode or "fit-to-width" mode because

1. The page size is correct (128 mm by 96 mm with the default aspect ratio 3:2);
2. Presentation is correctly aligned on the screen;
3. Text and formulae are large and well visible;
4. More robust and bright fonts are used; sanserif instead of roman serif for text, and especially robust fonts for mathematics instead of *mathitalic*; compare on the next page;
5. By default beamer does not break text into pages: the speaker does it in the most logical places.

Beamer

Formula

$$(Au)(x) = (2\pi)^{-d} \iint a(x, y, h\xi) e^{i\langle x-y,\xi\rangle} u(y) dy d\xi \qquad (1)$$

defines an operator a from $\mathcal{S}(\mathbb{R}^d, \mathbb{H})$ to $\mathcal{S}'(\mathbb{R}^d, \mathbb{H}')$ which will be denoted by $\overset{3}{a}(\overset{1}{x}, \overset{2}{x}, hD)$.

Article

Formula

$$(Au)(x) = (2\pi)^{-d} \iint a(x, y, h\xi) e^{i\langle x-y,\xi\rangle} u(y) dy d\xi \qquad (1)$$

defines an operator a from $\mathcal{S}(\mathbb{R}^d, \mathbb{H})$ to $\mathcal{S}'(\mathbb{R}^d, \mathbb{H}')$ which will be denoted by $\overset{3}{a}(\overset{1}{x}, \overset{2}{x}, hD)$.

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames.

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame.

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame. So far each frame had just one slide, but now we consider dynamic frames.

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame. So far each frame had just one slide, but now we consider dynamic frames.

\pause

is a simplest command of this type;

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame. So far each frame had just one slide, but now we consider dynamic frames.

\pause

is a simplest command of this type; n such commands placed between few blocks of TEX source generate $(n+1)$ slides, adding step by step corresponding blocks of output (you can place it inside of the mathematical expression or other environment).

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame. So far each frame had just one slide, but now we consider dynamic frames.

\pause

is a simplest command of this type; n such commands placed between few blocks of TEX source generate $(n+1)$ slides, adding step by step corresponding blocks of output (you can place it inside of the mathematical expression or other environment). Also \pause<*number*>.

Dynamic frames

Discussion

Certain sequence of the pages can create an illusion of one changing page. Creation of such sequences inside of beamer is made through frames. So each frame would generate a sequence of pages called slides or overlays and numbered inside of each frame. So far each frame had just one slide, but now we consider dynamic frames.

\pause

is a simplest command of this type; n such commands placed between few blocks of TEX source generate $(n+1)$ slides, adding step by step corresponding blocks of output (you can place it inside of the mathematical expression or other environment). Also \pause<*number*>. However it does not allow to remove or replace the part of the page.

\onslide<*number*>{My text}

Also known as \uncover<*number*>{My text} My text appears on indicated slides of the frame. F.e.

```
\onslide<2,4-6>{We know that $x^2\ le 2^x$.}
```

We know that $x^2 \leq 2^x$ appears on slides 2,4–6.

\onslide<*number*>{My text}

Also known as \uncover<*number*>{My text} My text appears on indicated slides of the frame. F.e.

```
\onslide<2,4-6>{We know that $x^2\ le 2^x$.}
```

We know that $x^2 \leq 2^x$ appears on slides 2,4–6. On other slides an empty space is reserved.

\onslide<*number*>{My text}

Also known as \uncover<*number*>{My text} My text appears on indicated slides of the frame. F.e.

```
\onslide<2,4-6>{We know that $x^2\ le 2^x$.}
```

We know that $x^2 \leq 2^x$ appears on slides 2,4–6. On other slides an empty space is reserved.

\visible<*number*>{My text}

Usually works as above \onslide but in certain settings related to transparency covered text appears as "washed out" but invisible remains invisible.

\onslide<*number*>{My text}

Also known as \uncover<*number*>{My text} My text appears on indicated slides of the frame. F.e.

```
\onslide<2,4-6>{We know that $x^2\ le 2^x$.}
```

We know that $x^2 \leq 2^x$ appears on slides 2,4–6. On other slides an empty space is reserved.

\visible<*number*>{My text}

Usually works as above \onslide but in certain settings related to transparency covered text appears as "washed out" but invisible remains invisible.

\invisible<*number*>{My text}

Opposite to \visible.

\only<*number*>{My text}

My text appears on indicated slides of the frame. On other slides no space is reserved.

\only<*number*>{My text}

My text appears on indicated slides of the frame. On other slides no space is reserved.

\alt<*number*>{Alternative text}{Main text}

Alternative text appears on indicated slides of the frame. On other slides Main text appears.

\only<*number*>{My text}

My text appears on indicated slides of the frame. On other slides no space is reserved.

\alt<*number*>{Alternative text}{Main text}

Alternative text appears on indicated slides of the frame. On other slides Main text appears.

\temporal<*number*>{Initial text}{Intermediate text}{Final text}

See manual

Some text formatting and textcoloring commands like

```
\emph{...}, \textbf{...}, \alert{...}
```

allow overlay specification

```
\emph<2>{...}, \textbf<3-5>{...},  \alert<3-4,7>{...}
```

Some text formatting and textcoloring commands like

```
\emph{...}, \textbf{...}, \alert{...}
```

allow overlay specification

```
\emph<2>{...}, \textbf<3-5>{...},  \alert<3-4,7>{...}
```

One can construct similar command

```
\newcommand{\myblue}{\only{\color{blue}}}
\newcommand{\myyellow}{\only{\colorbox{yellow}}}
\newcommand{\myst}{\only{\st}}
```

etc allowing overlay specification (the last one is from soul package).

Some text formatting and textcoloring commands like

```
\emph{...}, \textbf{...}, \alert{...}
```

allow overlay specification

```
\emph<2>{...}, \textbf<3-5>{...},  \alert<3-4,7>{...}
```

One can construct similar command

```
\newcommand{\myblue}{\only{\color{blue}}}
\newcommand{\myyellow}{\only{\colorbox{yellow}}}
\newcommand{\myst}{\only{\st}}
```

etc allowing overlay specification (the last one is from soul package).

```
\item, \label, \bibitem
```

also allow overlay specifications.

However, there is a problem:

However, there is a problem: try f.e.

```
\alt<2>{Short text}{Very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very,  very, very, very, very, very,
very loooooooooong text}
Second Part
```

because Second Part appears on both overlays but jumps forward on the second one.

However, there is a problem: try f.e.

```
\alt<2>{Short text}{Very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very, very,
very, very, very, very, very, very, very, very,
very, very, very,  very, very, very, very, very,
very loooooooooong text}
Second Part
```

because Second Part appears on both overlays but jumps forward on the second one.
Some other commands can cause similar problems.

Fixing this problem:

overprint[areawidth]

(default areawidth is textwidth) reserves for the the overlay specific ansatz a fixed (overlay independent) area.

Fixing this problem:

overprint[areawidth]

(default areawidth is textwidth) reserves for the the overlay specific ansatz a fixed (overlay independent) area. F.e.

```
\begin{overprint}
\alt<2>{Short text}{Very, ..............
very looooooooong text}
\end{overprint}
Second Part
```

Fixing this problem:

overprint[areawidth]

(default areawidth is textwidth) reserves for the the overlay specific ansatz a fixed (overlay independent) area. F.e.

```
\begin{overprint}
\alt<2>{Short text}{Very, ..............
very looooooooong text}
\end{overprint}
Second Part
```

overlayarea{areawidth}{areaheight}

works in the similar manner but gives even more control.

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available?

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes,

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes, which in turn contains subsubdirectories
color, font, inner, outer, theme;

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes, which in turn contains subsubdirectories
color, font, inner, outer, theme;
theme contains all main themes available: f.e. beamerthemeBerkeley.sty

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes, which in turn contains subsubdirectories
color, font, inner, outer, theme;
theme contains all main themes available: f.e. beamerthemeBerkeley.sty so you can use theme Berkeley.

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes, which in turn contains subsubdirectories
color, font, inner, outer, theme;
theme contains all main themes available: f.e. beamerthemeBerkeley.sty so you can use theme Berkeley.

compatibility is a directory for themes used in earlier versions of beamer.

Customization

So far (with dynamic pages) our presentation became sophisticated but remains a bit boring. How to add some juice and distinction from other beamer presentations?
The answer is simple themes of different levels.

\usetheme{name}

How to learn, which themes are available? locate beamer directory (use Unix command locate); it contains subdirectory themes, which in turn contains subsubdirectories
color, font, inner, outer, theme;
theme contains all main themes available: f.e. beamerthemeBerkeley.sty so you can use theme Berkeley.

compatibility is a directory for themes used in earlier versions of beamer. There are ≈ 30 themes and few more moonshine themes could be found over Internet.

You can go further in customization:

You can go further in customization:

\usecolortheme{}

look at subsubdirectory color. It contains f.e. beamercolorthemelily.sty and you can use colortheme lily.

You can go further in customization:

\usecolortheme{}

look at subsubdirectory color. It contains f.e. beamercolorthemelily.sty and you can use colortheme lily.

\usefonttheme{}

look at font. It contains f.e. beamerfontthemestructurebold.sty and you can use fonttheme structurebold.

You can go further in customization:

\usecolortheme{}

look at subsubdirectory color. It contains f.e. beamercolorthemelily.sty and you can use colortheme lily.

\usefonttheme{}

look at font. It contains f.e. beamerfontthemestructurebold.sty and you can use fonttheme structurebold.

\useinnertheme{}

look at inner.

You can go further in customization:

\usecolortheme{}

look at subsubdirectory color. It contains f.e. beamercolorthemelily.sty and you can use colortheme lily.

\usefonttheme{}

look at font. It contains f.e. beamerfontthemestructurebold.sty and you can use fonttheme structurebold.

\useinnertheme{}

look at inner.

\useoutertheme{}

look at outer.

This talk uses a custom theme Toronto which is a rip-off of CambridgeUS but uses colortheme raccoon instead of beaver;

This talk uses a custom theme Toronto which is a rip-off of CambridgeUS but uses colortheme raccoon instead of beaver;
raccoon is a rip-off beaver but changed color darkred to Torontoblue.

This talk uses a custom theme Toronto which is a rip-off of CambridgeUS but uses colortheme raccoon instead of beaver;
raccoon is a rip-off beaver but changed color darkred to Torontoblue. It is available on coxeter.

This talk uses a custom theme Toronto which is a rip-off of CambridgeUS but uses colortheme raccoon instead of beaver;
raccoon is a rip-off beaver but changed color darkred to Torontoblue. It is available on coxeter.
Also my titlepage includes a logo:

```
\begin{frame}\transwipe
\begin{textblock}{1}(-.6,.6)
\includegraphics[scale=.4]{/usr/local/texlive/texmf-local/tex/
\end{textblock}
\titlepage
```

This talk uses a custom theme Toronto which is a rip-off of CambridgeUS but uses colortheme raccoon instead of beaver;
raccoon is a rip-off beaver but changed color darkred to Torontoblue. It is available on coxeter.
Also my titlepage includes a logo:

```
\begin{frame}\transwipe
\begin{textblock}{1}(-.6,.6)
\includegraphics[scale=.4]{/usr/local/texlive/texmf-local/tex/
\end{textblock}
\titlepage
```

where I use textblock which is a command of the package textpos:

```
\usepackage[absolute,overlay]{textpos}
```

to put logo in a fixed place on the first frame (which would not change no matter how long is the other content of the titlepage.

/usr/local/texlive/texmf-local/tex/latex/beamer/themes/images/Utoronto_coa.pdf is a path to the high-quality graphic file

Adding more juice

You can do even more:

```
\beamersetaveragebackground{}
\definecolor{light}{rgb}{.95,.95,1}
\beamersetaveragebackground{light}
```

Here I did it for this frame only.

\setbeamertemplate{}[][]

On this page I changed background by command

```
\setbeamertemplate{background canvas}[vertical shading]
[bottom=red!30!blue!20,top=red!20!green!30]
\setbeamertemplate{background}[grid]
```

\setbeamertemplate{}[][]

On this page I changed background by command

```
\setbeamertemplate{background canvas}[vertical shading]
[bottom=red!30!blue!20,top=red!20!green!30]
\setbeamertemplate{background}[grid]
```

to make change for few frames I placed the whole chunk of presentation in { }.

Background graphics

is set by

```
\usebackgroundtemplate{\includegraphics{toronto.jpg}}
```

More frills

\section{My section}

affects table of contents and navigation bars. Should be placed outside of frames.

More frills

\section{My section}

affects table of contents and navigation bars. Should be placed outside of frames. Also \subsection{My subsection}.

More frills

\section{My section}

affects table of contents and navigation bars. Should be placed outside of frames. Also \subsection{My subsection}.
There are \section*{My section}, \subsection*{My subsection} which don't affect table of contents.

More frills

\section{My section}

affects table of contents and navigation bars. Should be placed outside of frames. Also \subsection{My subsection}.
There are \section*{My section}, \subsection*{My subsection} which don't affect table of contents.

\frametitle{My frame}

gives the title to the frame.

\block{My block}

Is placed inside of frame as an environment:

```
\begin{block}{My block}
Some text
\end{block}
```

\block{My block}

Is placed inside of frame as an environment:

```
\begin{block}{My block}
Some text
\end{block}
```

theorem, proposition, proof etc are also blocks.

Theorem (about beamer)

Beamer rocks!

\block{My block}

Is placed inside of frame as an environment:

```
\begin{block}{My block}
Some text
\end{block}
```

theorem, proposition, proof etc are also blocks.

Theorem (about beamer)

Beamer rocks!

One does not need to specify their names ([about beamer] is optional):

```
\begin{theorem}[about beamer]
Beamer rocks!
\end{theorem}
```

\block{My block}

Is placed inside of frame as an environment:

```
\begin{block}{My block}
Some text
\end{block}
```

theorem, proposition, proof etc are also blocks.

Theorem (about beamer)

Beamer rocks!

One does not need to specify their names ([about beamer] is optional):

```
\begin{theorem}[about beamer]
Beamer rocks!
\end{theorem}
```

In some themes corresponding boxes have special colors.

\logo{}

is like \title{} or \author{}. It could be text or graphics:

```
\logo{\includegraphics[scale=0.1]{toronto.jpg}}
\title{Happy New Academic Year}
```

\logo{}

is like \title{} or \author{}. It could be text or graphics:

```
\logo{\includegraphics[scale=0.1]{toronto.jpg}}
\title{Happy New Academic Year}
```

I did it only for one page (and for this page only I changed the title of my talk! One can do it just placing these commands before frames to be affected, and also putting the needed part of presentation in { } unless the change should be until the end.)

frame switches

putting after \begin{frame} switch [plain] removes navigation bars from this frame;

frame switches

putting after \begin{frame} switch [plain] removes navigation bars from this frame; if frame contains verbatim one must put switch [fragile].

frame switches

putting after \begin{frame} switch [plain] removes navigation bars from this frame; if frame contains verbatim one must put switch [fragile].

\alert{My text}

colors My text in color, specified by theme or colortheme

frame switches

putting after \begin{frame} switch [plain] removes navigation bars from this frame; if frame contains verbatim one must put switch [fragile].

\alert{My text}

colors My text in color, specified by theme or colortheme

\beamerbutton{My button}

creates

My button

Lists

One can use enumerate and itemize and nest them (how they look depends on themes) but you can add a twist:

```
\begin{itemize}[<+->]
\item A
\item B
\end{itemize}
```

Lists

One can use enumerate and itemize and nest them (how they look depends on themes) but you can add a twist:

```
\begin{itemize}[<+->]
\item A
\item B
\end{itemize}
```

results in

- A

Lists

One can use enumerate and itemize and nest them (how they look depends on themes) but you can add a twist:

```
\begin{itemize}[<+->]
\item A
\item B
\end{itemize}
```

results in

- A
- B

```
\begin{itemize}[<+-|alert@+>]
\item A
\item B
\end{itemize}
```

```
\begin{itemize}[<+-|alert@+>]
\item A
\item B
\end{itemize}
```

results in

- A

```
\begin{itemize}[<+-|alert@+>]
\item A
\item B
\end{itemize}
```

results in

- A
- B

hyperlinks

As beamer automatically loads hyperref it creates a lot of links and you can make external links as well:
\href{http://www.math.toronto.edu}{Department of Mathematics}
produces link
Department of Mathematics

hyperlinks

As beamer automatically loads hyperref it creates a lot of links and you can make external links as well:
\href{http://www.math.toronto.edu}{Department of Mathematics}
produces link
Department of Mathematics

page transitions

As beamer automatically loads hyperref it understands page transitions but for them it has easy frontend command: like \transwipe.

hyperlinks

As beamer automatically loads hyperref it creates a lot of links and you can make external links as well:
\href{http://www.math.toronto.edu}{Department of Mathematics}
produces link
Department of Mathematics

page transitions

As beamer automatically loads hyperref it understands page transitions but for them it has easy frontend command: like \transwipe. Page transitions work only in full screen mode.

hyperlinks

As beamer automatically loads hyperref it creates a lot of links and you can make external links as well:
\href{http://www.math.toronto.edu}{Department of Mathematics}
produces link
Department of Mathematics

page transitions

As beamer automatically loads hyperref it understands page transitions but for them it has easy frontend command: like \transwipe. Page transitions work only in full screen mode.
Warning Page transitions, lots of different text colors, fancy backgrounds could be very disruptive and annoying. Use them with the moderation!

hyperlinks

As beamer automatically loads hyperref it creates a lot of links and you can make external links as well:
\href{http://www.math.toronto.edu}{Department of Mathematics}
produces link
Department of Mathematics

page transitions

As beamer automatically loads hyperref it understands page transitions but for them it has easy frontend command: like \transwipe. Page transitions work only in full screen mode.
Warning Page transitions, lots of different text colors, fancy backgrounds could be very disruptive and annoying. Use them with the moderation! Do not try to immitate Microcrap Powerlerss Pointless ugly presentations!!!

Graphics

Graphics could be included in beamer through usual

\includegraphics[]{}

procedure (no nead to load any packages). It plays nicely with overlays, but if you want to reserve specific area for graphics which changes from overlay to overlay you could use overprint or overlayarea commands.

Graphics

Graphics could be included in beamer through usual

\includegraphics[]{}

procedure (no nead to load any packages). It plays nicely with overlays, but if you want to reserve specific area for graphics which changes from overlay to overlay you could use overprint or overlayarea commands. Graphics could be manipulated in the usual way and placed in figure or subfloat (if you load subfig package).

You can generate graphics via LaTeX, use eso-pic, and many other packages. On the next frame I show dynamic graphics made with pgf (which is loaded automatically (and is made by the same original author [Prof. Till Tantau] as beamer), but you can load tikz which is a front-end for pgf.

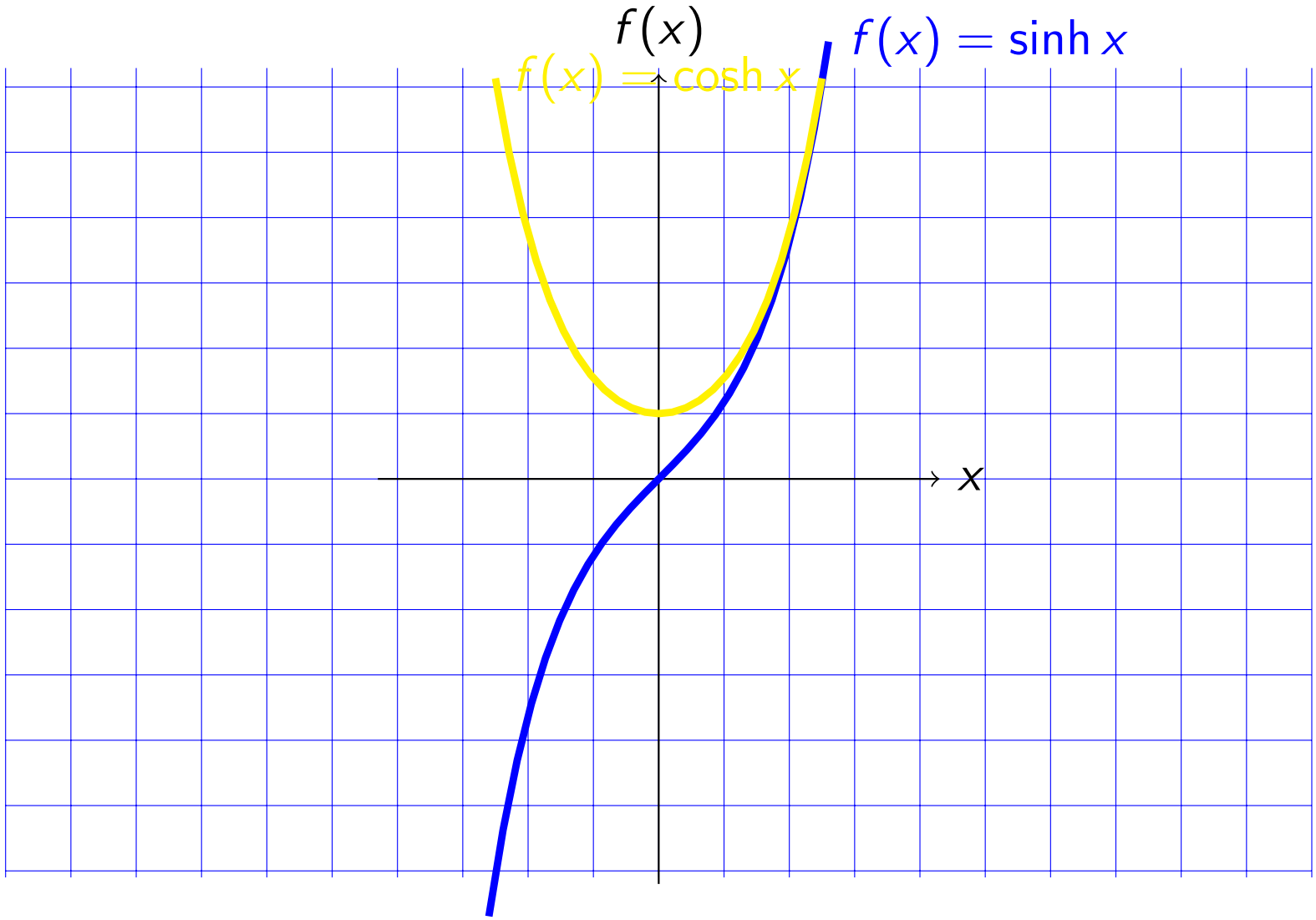


Figure : Example

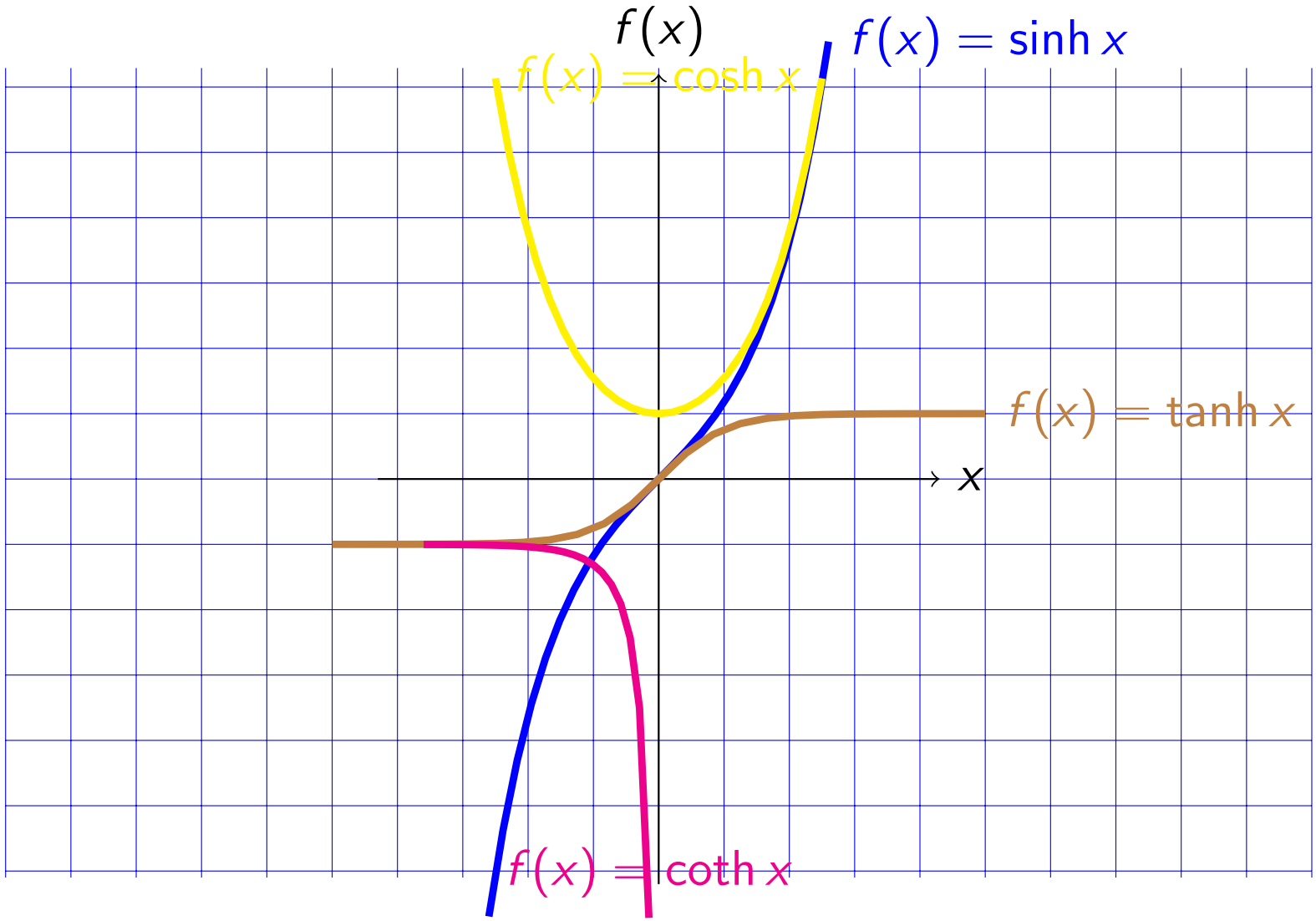


Figure : Example

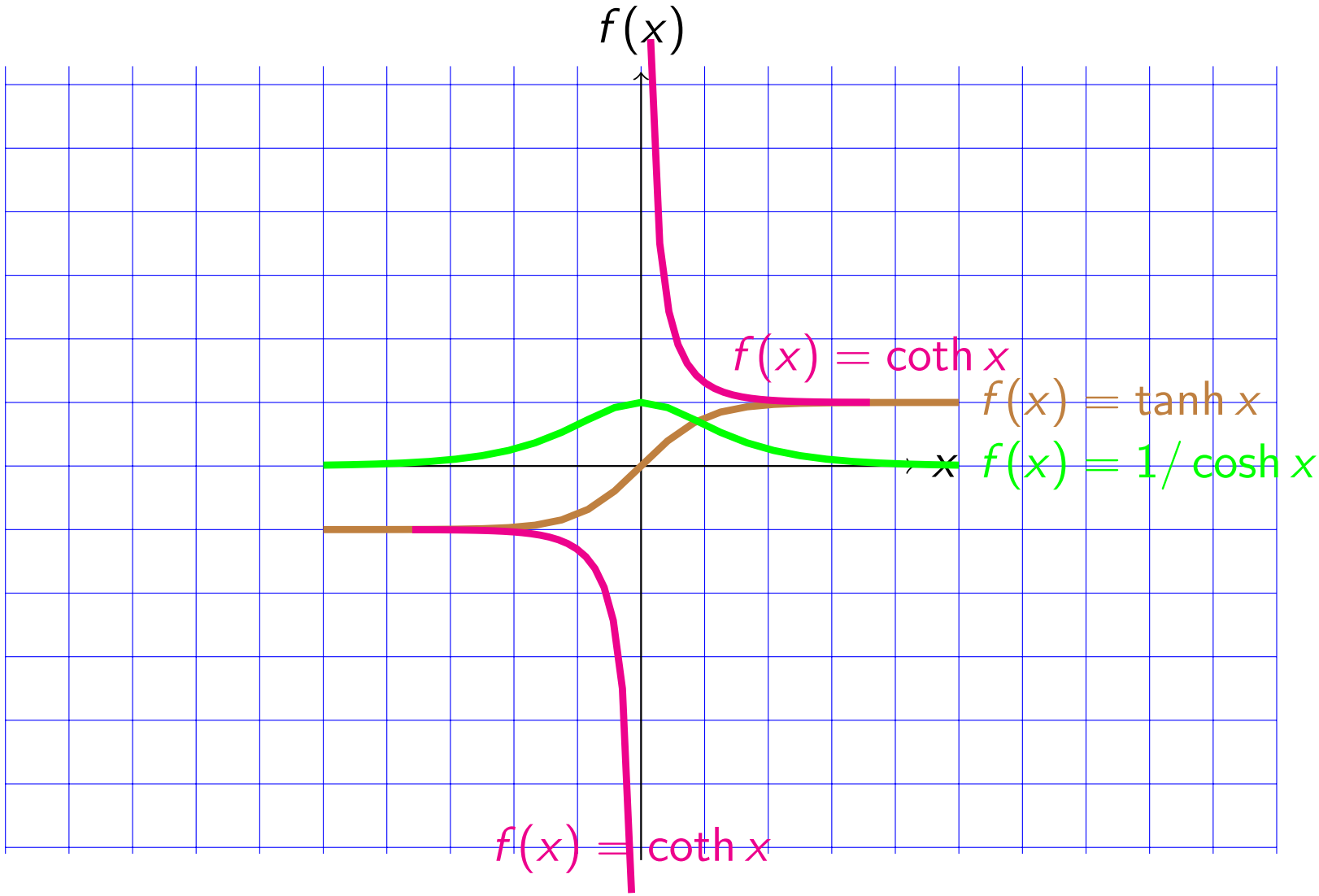


Figure : Example

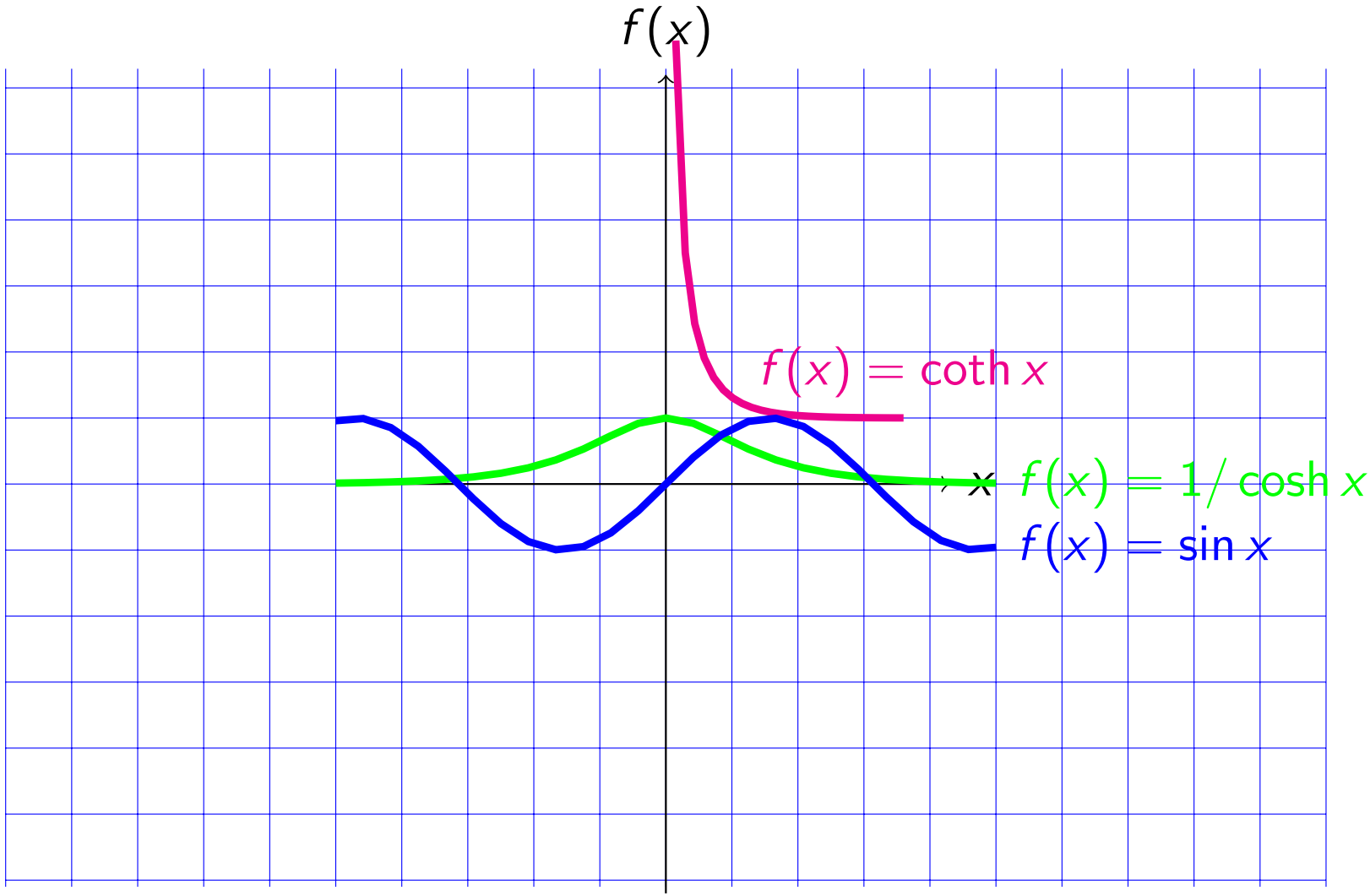
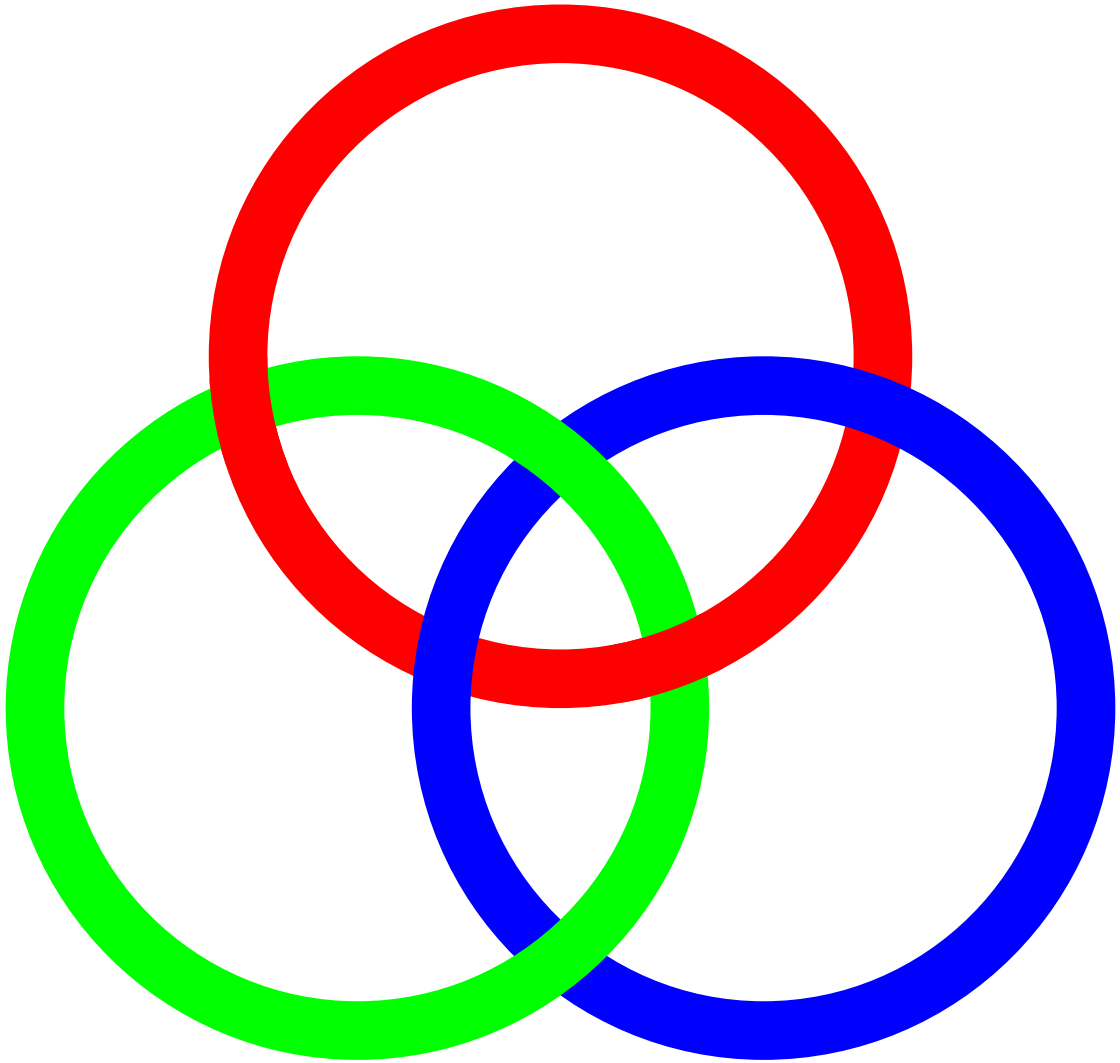
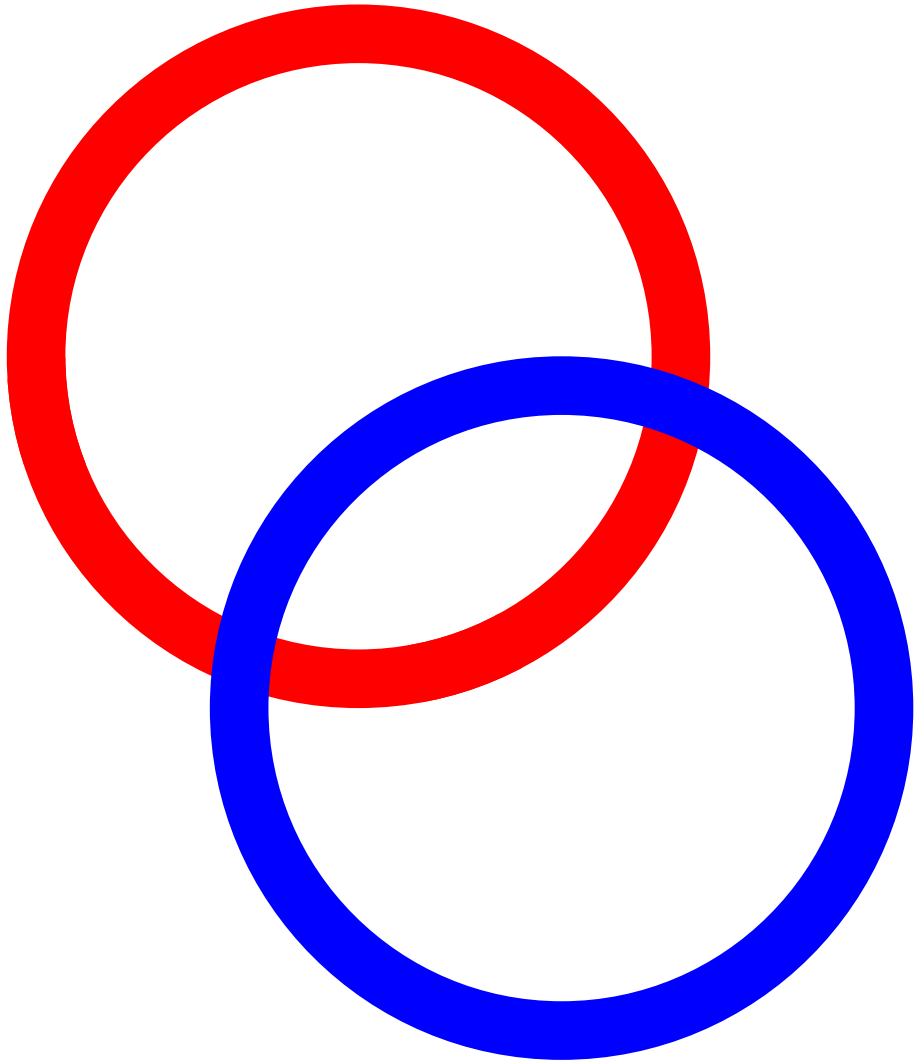


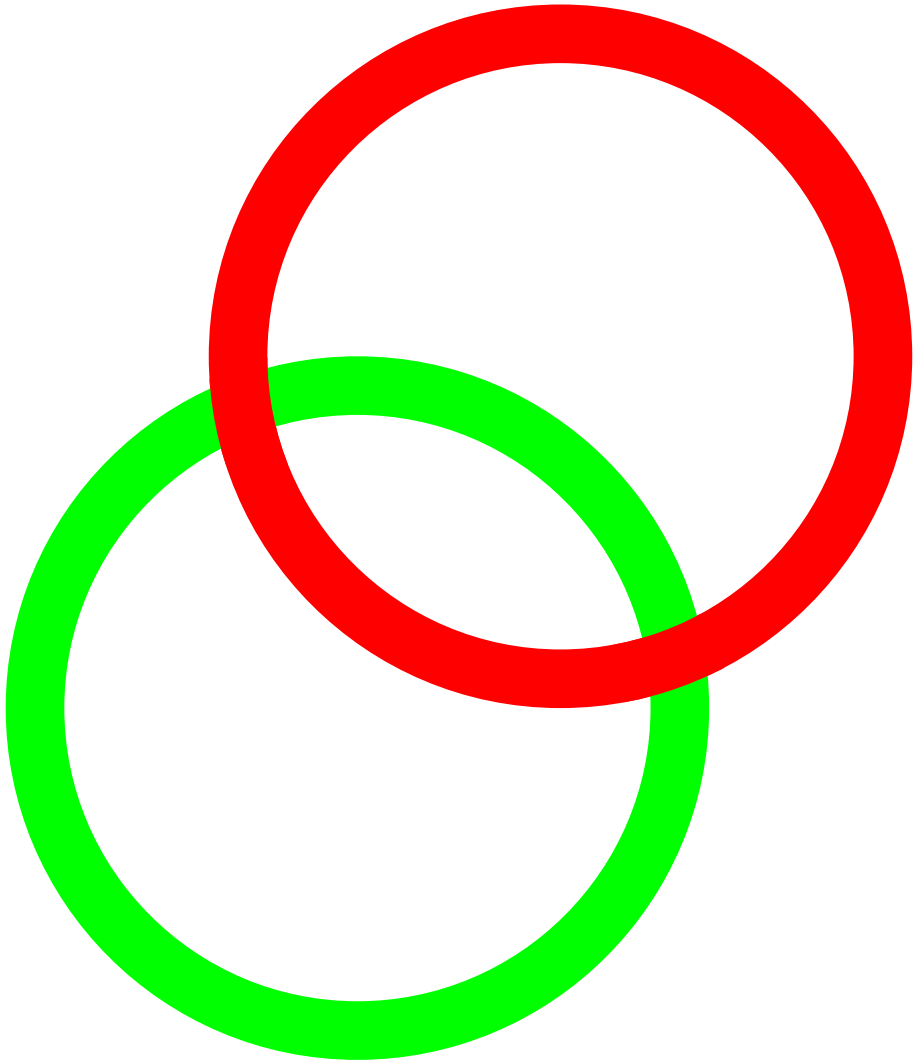
Figure : Example



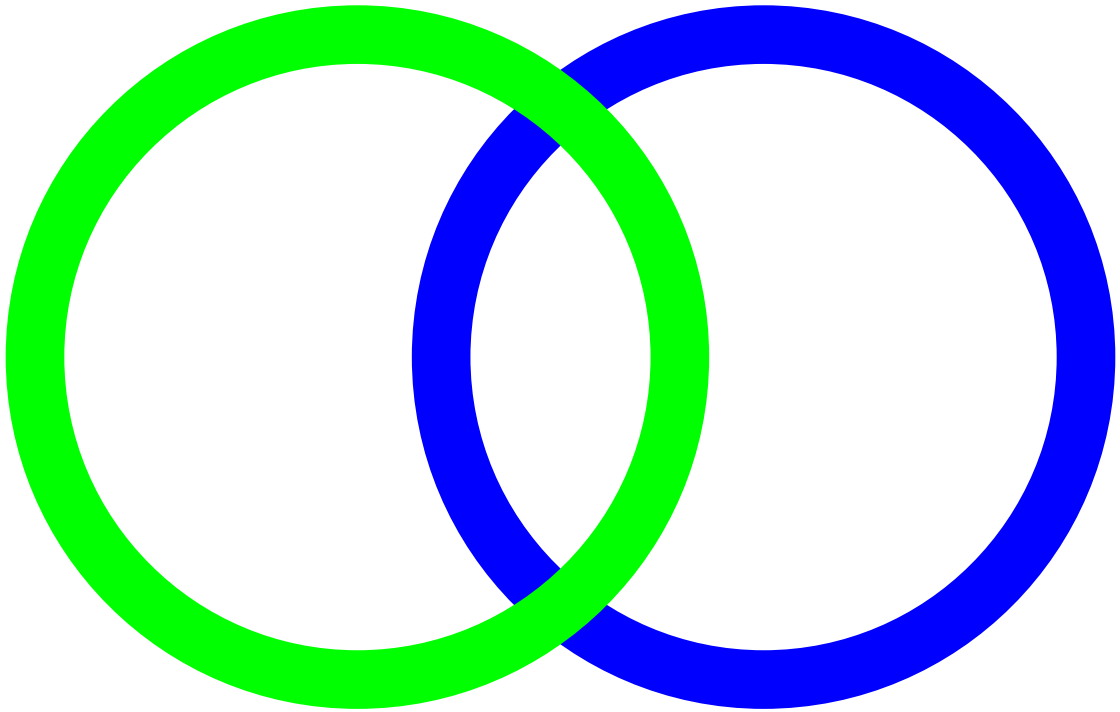
Borromean rings are entangled



Remove green: blue and red rings are unentangled



Remove blue: green and red rings are unentangled



Remove red: blue and green rings are unentangled

Sounds, Movies, 3D

movie15

1. One can use movie15 package, loaded by

   `\usepackage[u3d]{movie15}`

   where [u3d] switch is needed for inclusion of 3D objects (format u3d or better prc).

Sounds, Movies, 3D

movie15

1. One can use movie15 package, loaded by

   ```
   \usepackage[u3d]{movie15}
   ```

   where [u3d] switch is needed for inclusion of 3D objects (format u3d or better prc).

2. movie15 requires pdftex-1.30 at least. (latest movie15 works with pdflatex-1.20) Run in terminal

   ```
   % pdftex -v
   ```

Sounds, Movies, 3D

movie15

1. One can use movie15 package, loaded by

   ```
   \usepackage[u3d]{movie15}
   ```

   where [u3d] switch is needed for inclusion of 3D objects (format u3d or better prc).
2. movie15 requires pdftex-1.30 at least. (latest movie15 works with pdflatex-1.20) Run in terminal

   ```
   % pdftex -v
   ```
3. movie is included by

   ```
   \includemovie[ ]{width}{height}{mediafile}
   ```

   with different options;

Sounds, Movies, 3D

movie15

1. One can use movie15 package, loaded by

   ```
   \usepackage[u3d]{movie15}
   ```

   where [u3d] switch is needed for inclusion of 3D objects (format u3d or better prc).
2. movie15 requires pdftex-1.30 at least. (latest movie15 works with pdflatex-1.20) Run in terminal

   ```
   % pdftex -v
   ```
3. movie is included by

   ```
   \includemovie[ ]{width}{height}{mediafile}
   ```

   with different options;
4. movie15 is deprecated and replaced by media9.

media9

1. We need media9 package, loaded by

   `\usepackage{media9}`

media9

1. We need media9 package, loaded by

   ```
   \usepackage{media9}
   ```

2. movie or 3D object is included by (see example)

```
\includemedia[
      activate=pageopen,
      deactivate=pageclose,
      width=200pt, height=150pt,
      addresource=weyllaw.mp4,
      flashvars={
         src=weyllaw.mp4
&loop=false
&autoPlay=true
      }
   ]{StrobeMediaPlayback.swf}
```

Caveat

Sometimes embedded movie in the some format (say .mov) is played in Adobe Acrobat or Reader and sometimes movie in the same format does not.

Caveat

Sometimes embedded movie in the some format (say .mov) is played in Adobe Acrobat or Reader and sometimes movie in the same format does not.

Explanation: .mov (etc) is a container format consisting of video stream, audio stream and synchronization between them and has no idea how these streams are encoded (compressed) or even about the nature of these data streams.

Caveat

Sometimes embedded movie in the some format (say .mov) is played in Adobe Acrobat or Reader and sometimes movie in the same format does not.

Explanation: .mov (etc) is a container format consisting of video stream, audio stream and synchronization between them and has no idea how these streams are encoded (compressed) or even about the nature of these data streams.

Since only some codecs are supported by Adobe Acrobat or Reader one should have these streams encoded using these codecs.

Caveat

Sometimes embedded movie in the some format (say .mov) is played in Adobe Acrobat or Reader and sometimes movie in the same format does not.

Explanation: .mov (etc) is a container format consisting of video stream, audio stream and synchronization between them and has no idea how these streams are encoded (compressed) or even about the nature of these data streams.

Since only some codecs are supported by Adobe Acrobat or Reader one should have these streams encoded using these codecs.

Free program ffmpeg can take care of a proper encoding (H264):

```
% ffmpeg -i foo.mov -vcodec libx264 foo.mp4
```

Caveat

Sometimes embedded movie in the some format (say .mov) is played in Adobe Acrobat or Reader and sometimes movie in the same format does not.

Explanation: .mov (etc) is a container format consisting of video stream, audio stream and synchronization between them and has no idea how these streams are encoded (compressed) or even about the nature of these data streams.

Since only some codecs are supported by Adobe Acrobat or Reader one should have these streams encoded using these codecs.

Free program ffmpeg can take care of a proper encoding (H264):

```
% ffmpeg -i foo.mov -vcodec libx264 foo.mp4
```

One can check in advance the encoding by

```
% ffprobe foo.mov
```

(if you compiled and installed ffmpeg by yourself, you should have ffprobe).

Including 3D object

```
\includemedia[
  width=0.8\linewidth,height=0.6\linewidth,
  activate=pageopen,
  add3Djscript=asylabels.js,  %upright text labels
  add3Djscript=3Dspintool.js, %let scene rotate about z-axis
  % 3Dcoo, 3Droo values found with 'Generate Default View' fro
  % context menu
  3Dmenu,
  3Dtoolbar,
  3Dcoo=-21.371112823486328 -19.702425003051758 -395.400848388
  3Droo=472.3543474473915,
  3Dc2c=4 2 3
]{}{epix.prc}
```

epix.prc has been generated by asymptote.

Including sound (in movie15) with autoplay and controls options:

```
\includemovie[autoplay,control]{.5\linewidth}{}{soundfile}
```

or without controls:

```
\includemovie[autoplay,control]{}{}{soundfile}
```

animation

Some notes

1. All movies and sounds and 3D objects are generated by external programs;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!
    1. Convert if needed;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!
    1. Convert if needed;
    2. Remember that Adobe introduces new media types but added security denies access to old ones;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!
    1. Convert if needed;
    2. Remember that Adobe introduces new media types but added security denies access to old ones;
    3. F.e. On Mac AR 7 can access QuickTime and mp3 and AR 8 can access QuickTime and SWF (Macromedia/Adobe Flash);

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!
    1. Convert if needed;
    2. Remember that Adobe introduces new media types but added security denies access to old ones;
    3. F.e. On Mac AR 7 can access QuickTime and mp3 and AR 8 can access QuickTime and SWF (Macromedia/Adobe Flash);
6. For sounds one can put autoPlay, skip all controls and set 0 width and height;

Some notes

1. All movies and sounds and 3D objects are generated by external programs;
2. Some of them cost an arm and a leg but some are free;
3. Frame with movie ~~must~~ contain just one slide!
4. You must use Adobe Reader (or Acrobat) to play them;
5. You must ensure that movie/sound are of the type your particular version of Adobe Reader on your Computer can play (may have problems on other computers)!
    1. Convert if needed;
    2. Remember that Adobe introduces new media types but added security denies access to old ones;
    3. F.e. On Mac AR 7 can access QuickTime and mp3 and AR 8 can access QuickTime and SWF (Macromedia/Adobe Flash);
6. For sounds one can put autoPlay, skip all controls and set 0 width and height;
7. Animation uses javascript; You must use Adobe Reader (or Acrobat) to play it.

Tips on presentation

1. Use Adobe Reader (the only full featured PDF browser);

Tips on presentation

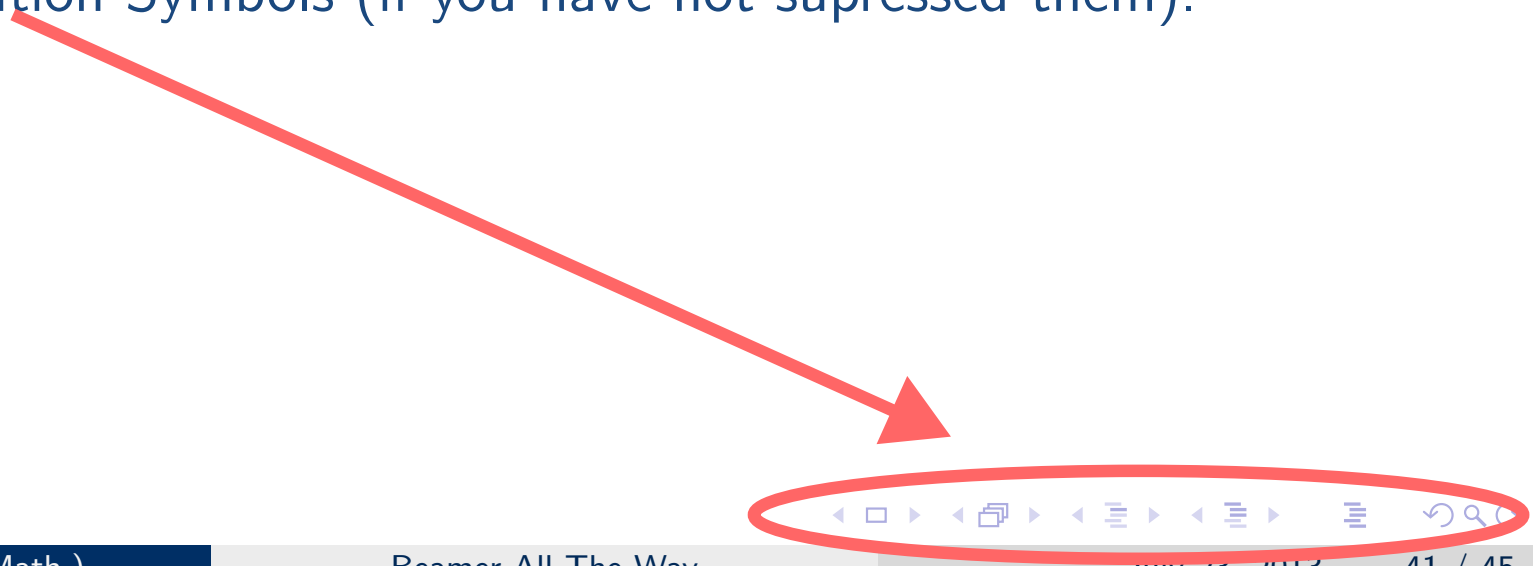
1. Use Adobe Reader (the only full featured PDF browser);
2. Use Full Screen Mode;

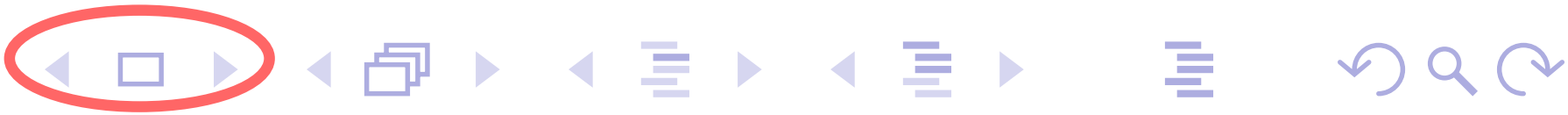
Tips on presentation

1. Use Adobe Reader (the only full featured PDF browser);
2. Use Full Screen Mode;
3. Use Navigation Bars (if theme has it)

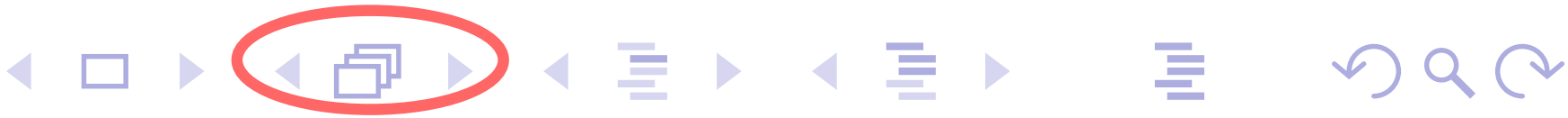
Tips on presentation

1. Use Adobe Reader (the only full featured PDF browser);
2. Use Full Screen Mode;
3. Use Navigation Bars (if theme has it)
4. Use Navigation Symbols (if you have not supressed them).

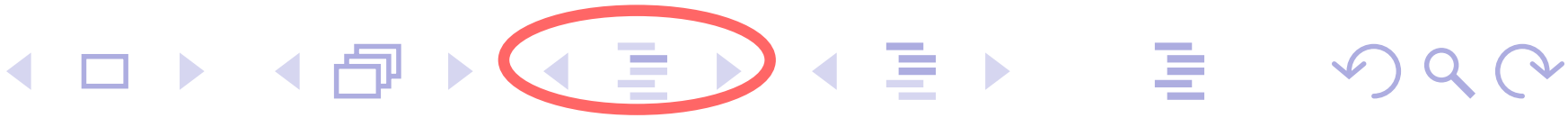




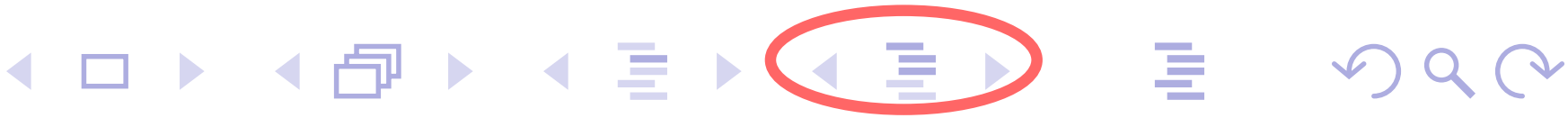
1. slide control (previous slide, popup for slide to go, next slide);



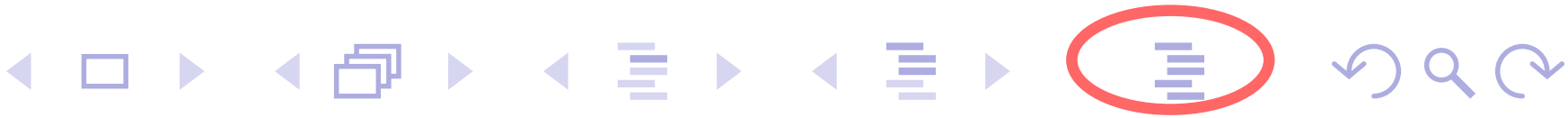
1. slide control (previous slide, popup for slide to go, next slide);
2. frame control;



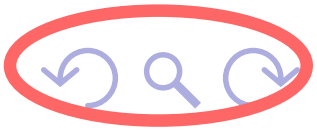
1. slide control (previous slide, popup for slide to go, next slide);
2. frame control;
3. subsection control;



1. slide control (previous slide, popup for slide to go, next slide);
2. frame control;
3. subsection control;
4. section control;



1. slide control (previous slide, popup for slide to go, next slide);
2. frame control;
3. subsection control;
4. section control;
5. appendix control;



1. slide control (previous slide, popup for slide to go, next slide);
2. frame control;
3. subsection control;
4. section control;
5. appendix control;
6. previous view, popup search, next view;

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,
   - % texdoc pgf,

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,
   - % texdoc pgf,
   - % texdoc movie15,

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,
   - % texdoc pgf,
   - % texdoc movie15,
   - % texdoc media9,

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google “latex beamer”;
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,
   - % texdoc pgf,
   - % texdoc movie15,
   - % texdoc media9,
   - % texdoc animate;

Getting Help

1. Read the friendly manual (beameruserguide): on Unix prompt::
   - % texdoc beamer;
2. In the same directory plenty of sample .tex files;
3. Google "latex beamer";
4. Make sure you have a current version of beamer (3.16 at this moment);
5. Look at documentations of all packages you use:
   - % texdoc graphicx,
   - % texdoc textpos (for exact positioning of the text and graphics),
   - % texdoc eso-pic,
   - % texdoc pgf,
   - % texdoc movie15,
   - % texdoc media9,
   - % texdoc animate;
6. Ask more experienced users; look at beamer mailing list:

http://sourceforge.net/mailarchive/forum.php?forum_name=latex-beamer-users

Truly Annoying

Using too much

Truly Annoying

Using too much colors

Truly Annoying

Using too much colors or/and

Truly Annoying

Using too much colors or/and transitions

Truly Annoying

Using too much colors or/and transitions you can really

Truly Annoying

Using too much colors or/and transitions you can really make your talk

Truly Annoying

Using too much colors or/and transitions you can really make your talk

Truly Annoying!!!

The End