

BEAMER

Slides Using the BEAMER Class

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Outline

- 1 Introduction
 - What is BEAMER?
 - Basic Structure
- 2 Frames
 - Frame Basics
 - Overlays
 - Other Effects
- 3 Themes
- 4 Hyperlinks
- 5 Multimedia
 - Pictures
 - Movies

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Resources



The BEAMER class: Manual for version 3.07.

[http://www.stat.auckland.ac.nz/~dscott/779/
beameruserguide.pdf](http://www.stat.auckland.ac.nz/~dscott/779/beameruserguide.pdf)



Michel Goossens, Frank Mittelbach, Sebastian Rahtz, Denis Roegel, and Herbert Voss (2007) The \LaTeX Graphics Companion, 2nd Edition. Addison Wesley Professional.

Slides using BEAMER

- **BEAMER** is a document class to produce slides for display using a pdf reader such as **Acrobat Reader**
- Slides can be produced using `pdflatex` or `latex+dvips` (not `latex+dvipdfm`)
- It is a very sophisticated system but standard commands such as `\tableofcontents`, `\section`, etc, work as for the `article` class
- Its creator, Till Tantau, has written a complete graphics engine `pgf` as an alternative to drivers such as `dvips` or `dvipdfm` and a front-end called `TikZ`
- The manual for `pgf/TikZ` runs to over 400 pages!

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BEAMER Features

- A range of predefined themes with different possibilities for colour choice, fonts, environments such as itemize, and slide layout such as the use of sidebars and head and footlines
- Navigation icons
- Overlays to enable parts of a slide to be revealed in sequence—not limited to simply revealing itemized elements one by one
- Inclusion of animations and sounds
- Addition of hyperlinks and buttons
- Easy preparation of notes pages
- Creation of handouts pages
- Preparation of an article using the same file

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Notes

- When compiling, **BEAMER** can throw some errors which aren't errors in your code
- Often if you run pdf \LaTeX a second or even a third time, the problem resolves
- Errors of this kind when checked with `C-c-'` usually end with the message `No help available`
- Errors such as unknown control sequences or incorrect syntax need to be corrected however
- Compiling **BEAMER** can be quite slow
- To print handouts use the `handout` option to the `beamer` class

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Basic Structure

- To create a **BEAMER** slide show use
`\documentclass[<options>]{beamer}`
- Some useful options are
 - `compress` makes navigation bars as small as possible
 - `t` places itemize environments at the top of slides
 - `c` centres itemize environments on slides
- The basic display structure is called a **frame** and consists of one or more slides
- Create a frame using the **frame** environment
- The frame title and subtitle are created using
`\frametitle{Title}` and `\framesubtitle{Subtitle}`

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Navigation Symbols

- By default BEAMER displays a set of up to 9 navigation symbols
 - A slide icon—a single rectangle
 - A frame icon—a stack of three slide icons
 - A subsection icon—a highlighted section in a table of contents
 - A section icon—a highlighted section with subsections
 - A presentation icon—a completely highlighted table of contents
 - An appendix icon—highlighted table of contents with only one section
 - Back and forward arrows—curved arrows
 - A search icon—magnifying glass

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Frame Syntax

- The full syntax for the `frame` environment is

```
\begin{frame}<<overlay specification>>  
[<<default overlay specification>>]  
[<options>]{<title>}{<subtitle>}  
environment contents  
\end{frame}
```

- Note that elements inside `< >` delimiters are optional
- An overlay specification is a list of numbers or number ranges in pointed brackets put after certain commands, as in
`\uncover<1,2>{Text}`
- If a frame has overlays it will contain multiple slides, otherwise it will be a single slide

Frame Options

allowframebreaks Frames will be broken across a number of frames if they are too large. Overlays are not permitted

plain Headlines, footlines and sidebars are suppressed

shrink Causes the text of the frame to be shrunk if it too large to fit the frame

squeeze Causes all vertical spaces in frames to be squeezed together as much as possible

Overlays

- There are multiple ways to do overlays
- Simplest is to use `\pause` with optional number
- In list environments use specifications such as `\item<2>`, `\item<2,4>` or `\item<2->`
- In all environments use `\onslide` as in `\onslide<2>`, `\onslide<2,4>` or `\onslide<2->`

Overlay Specifications

- To reveal items sequentially use `item<+-->`
- This incantation can be added as an option to a frame or itemize environment as `[<+-->]`
- To have transparent text in the background before it is revealed, use `\setbeamercovered{transparent}`
- The degree of transparency can be altered
- Many environments can be overlay aware (`theorem`, `proof`, `eqnarray`), including new ones

Use of Alerts

- Text marked with `alert` is like an extreme form of emphasis
- Here is some alert text: `this is an alert`
- You can have alert blocks:

Wrong Theorem

$$1 = 2$$

- Alerts can be combined with overlays

Column Environment

- BEAMER has a very nice `column` environment
- Allows for any number of columns and you can have multiple column environments on any page
- Syntax is:

```
\begin{columns}[t]  
  \column{0.25\textwidth}  
    contents  
  \column{0.5\textwidth}  
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Column Environment

- For example

The first column



The third column

Figure: Picture in a Column

Column Environment

- For example

The first column



The third column

Figure: Picture in a Column

Column Environment

- For example

The first column



The third column

Figure: Picture in a Column

Column Environment

- For example

The first column



The third
column

Figure: Picture in a Column

Column Environment

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The first column



The third column

Figure: Picture in a Column

Themes

- Five style levels can be set to alter the appearance of **BEAMER**

Theme Covers all aspects of the presentation

Outer theme Controls frame layout: head- and footline; sidebars; logo; frame title

Inner theme Controls frame contents layout: title and part pages; itemize, enumerate, description, block, theorem, and proof environments; figures and tables; footnotes; bibliography

Color theme The color scheme for slides

Font theme All aspects of fonts

Themes

- Presentation themes are (mostly) named after cities: **Antibes**, **Bergen**, **Berkeley**, **Berlin**, . . . , **Singapore**, **Szeged**, **Warsaw**
- This is **Warsaw**
- Outer themes are **default**, **infolines**, **miniframes**, **shadow**, **sidebar**, **smoothbars**, **smoothtree**, **split**, **tree**
- Inner themes are **circles**, **default**, **inmargin**, **rectangles**, **rounded**
- Color themes are **albatross**, **beetle**, **crane**, **default**, **dolphin**, **dove**, **fly**, **lily**, **orchid**, **rose**, **seagull**, **seahorse**, **sidebartab**, **structure**, **whale**
- Font themes are **default**, **professionalfonts**, **serif**, **structurebold**, **structureitalicserif**, **structuresmallcapserif**

Themes

- Without a navigation bar: default, boxes, Bergen, Madrid, Pittsburgh, Rochester
- Tree-like navigation bar: Antibes, JuanLesPins, Montpellier
- With ToC sidebar: Berkeley, PaloAlto, Goettingen, Marburg, Hannover
- With a miniframe navigation: Berlin, Ilmenau, Dresden, Darmstadt, Frankfurt, Singapore, Szeged
- With sections and subsection titles: Copenhagen, Luebeck, Malmoe, Warsaw

Hyperlinks

- **hyperref** is loaded automatically by **BEAMER**
- Links are created as usual by `\hypertarget` or `\label` commands
- Frames with multiple slides have a target created for each slide
- If a frame is called `frameIII` then `frameIII<2>` refers to the second slide of that frame
- Buttons are created with
`\beamergotobutton{button text}`
- Normal labels get an overlay specification added, eg the outline frame has the label `outline`
- We can create a goto button linking to the second slide of that frame with

```
\hyperlink{outline<2>}{\beamergotobutton{Jump to Outline}}
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▶ Jump to Outline

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Pictures

- The standard \LaTeX **figure** environment can be used
- The **graphicx** package can be used, with the usual file types depending how the file is processed (via postscript or directly to pdf)
- The file extension does not have to be included
- Till Tantau's graphics driver **pgf** can be used:
`\pgfimage[height=4cm]{Figures/lion}`

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- The **graphicx** package can be used, with the usual file types depending how the file is processed (via postscript or directly to pdf)
- The file extension does not have to be included
- Till Tantau's graphics driver **pgf** can be used:
`\pgfimage[height=4cm]{Figures/lion}`

Zooming

- You can zoom in on a portion of your picture

Zoom Example



Zoom Example



Including Movies

Click for Movie

Movie Formats

- You should be able to include movies in any format which is supported by your viewer: `.mov`, `.avi`, `.mp4`
- I had some trouble with formats, my example is in `.mov` format
- To change formats use a teenage boy—a teenage son is the most convenient arrangement