

The Beamer class for L^AT_EX

A tutorial

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A minimalistic Example

```
\documentclass{beamer}

\begin{document}

\begin{frame}
  This is my first slide.
\end{frame}

\begin{frame}
  This is my second (and last) slide.
\end{frame}

\end{document}
```

The Beamer class

- ▶ slides of size 128×96 mm
- ▶ support for [overlays](#)
- ▶ appearance defined by different [themes](#)
- ▶ standard \LaTeX commands work
- ▶ creation of presentation, handouts and articles from the same source

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```
\documentclass[...]{beamer}
```

Options:

- ▶ 8pt, 9pt, 10pt, 11pt, 12pt, 14pt, 17pt, 20pt
- ▶ draft – no graphics, footlines,...
- ▶ handout – no overlays
`\usepackage{pgfpages}`
`\mode<handout>{\pgfpagesuselayout{2 on 1}[a4paper,border shrink=5mm]}`
- ▶ xcolor=x11names – define more names for colors

Print as article:

```
\documentclass[]{article}  
\usepackage{beamerarticle}
```

The beamer class automatically loads some other \LaTeX packages, including xcolor, amsmath, amsthm, calc, geometry, hyperref, extsizes.


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\documentclass[...]{beamer}
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Print as article:

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The `beamer` class automatically loads some other \LaTeX packages, including `xcolor`, `amsmath`, `amsthm`, `calc`, `geometry`, `hyperref`, `extsizes`.

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The `beamer` class automatically loads some other \LaTeX packages, including `xcolor`, `amsmath`, `amsthm`, `calc`, `geometry`, `hyperref`, `extsizes`.

Titlepage

```
\title[Short version]{A very long Title \\ over several lines}  
\subtitle[short version]{A subtitle}  
\date[2009]{STA Workshop 2009}  
\author[M. Maier]{Max Maier}  
\institute[Uni Leipzig]{Universität Leipzig}  
\logo{\includegraphics[scale=.25]{unilogo.pdf}}  
\begin{document}  
  
\frame{\maketitle} % <-- generate frame with title
```

- ▶ short versions of title, author,... are used in head- or footlines
- ▶ several authors:

```
\author[Meier et al.]{Max Meier\inst{1} \and Moritz Mayer\inst{2}}  
\institute[Leipzig and Berlin]{  
  \inst{1}Department of Theoretical Applications\\ Uni Ulm \and  
  \inst{2}Fakultät für angewandte Theorie\\  
  Leipzig University}
```

A very long Title over several lines

A subtitle

Max Meier¹ Moritz Mayer²

¹Department of Theoretical Applications
Uni Ulm

²Fakultät für angewandte Theorie
Leipzig University

STA Workshop 2009

Title of this Frame

Subtitle of this frame

A frame defines one “page” of the presentation

```
\begin{frame}[...]{Title}{Subtitle} ... \end{frame}
```

Options:

- plain – no headlines, footlines, sidebars
- squeeze – squeeze all vertical spaces ([this frame](#))
- shrink=0..100 – shrink everything by n percent
- b, c or t – vertically align at bottom, center or top ([this frame: b](#))
- fragile – if using macros (like `verbatim`) which change catcodes ([this frame](#))
- label=... – give frame a name for later reuse with `\againframe`

Subtitle and title are not mandatory

Environments

- ▶ usual \LaTeX environments: `itemize`, `enumerate`, `description`, ...
- ▶ usual AMS- \LaTeX environments: `theorem`, `corollary`, `definition`, ...
- ▶ additional block environments: `block`, `alertblock`, `exampleblock`, `beamercolorbox`, `beamerboxesrounded`
- ▶ multicolumns: `columns`, `column`

A block

```
\begin{block}{A block}  
...  
\end{block}
```

alertblock

```
\begin{alertblock}{An alert block}  
...  
\end{alertblock}
```

example block

```
\begin{exampleblock}{An example block}  
...  
\end{exampleblock}
```

Appearance of different block types is defined by style templates.
Title is mandatory. Use `\begin{block}{}` for empty title.

beamercolorbox and beamerboxesrounded

Define beamercolors (= pair of colors)

```
\setbeamercolor{eecks} {bg=Burlywood3, fg=RoyalBlue3}
```

```
\setbeamercolor{eecks2}{bg=Burlywood1, fg=RoyalBlue4}
```

```
\begin{beamercolorbox}[shadow=true, rounded=true]{eecks}
....
\end{beamercolorbox}
```

```
\begin{beamercolorbox}[wd=7cm]{eecks}
....
\end{beamercolorbox}
```

A Title

```
\begin{beamerboxesrounded}[lower=eecks2,upper=eecks,
  shadow=true]{A Title}
...
\end{beamerboxesrounded}
```

Multiple columns

```
\begin{columns}
  \begin{column}[t]{5cm}
  ...
  \end{column}

  \begin{column}[t]{5cm}
  .....
  \end{column}
\end{columns}
```

- ▶ two columns of 5 cm width
- ▶ in the columns: text,

blocks and other environments

Overlays

```
\begin{itemize}
\item<1-> a first item
\item<2-> a second item
\item<3-> a third item
\item<4-> \dots
\end{itemize}
```

- ▶ a first item
- ▶ a second item
- ▶ a third item
- ▶ ...

Overlays

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Overlays

A shorter form:

```
\begin{itemize}[<+>]  
\item a first item  
\item a second item  
\item a third item  
\item \dots  
\end{itemize}
```

- ▶ a first item
- ▶ a second item
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- ▶ ...

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- ▶ a third item
- ▶ ...

Overlay specifications

```
\begin{itemize}
\item<1-> from first layer on
\item<2-> from second layer on
\item<4> only in the 4. layer
\item<3,5-> in the 3., 5. and all further layers
\end{itemize}
```

- ▶ from first layer on
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- ▶ from second layer on
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All mentioned environments (`itemize`, ..., `theorem`, ..., `beamer` blocks) allow an overlay specification:

```
\begin{block}<2->[options]{Title}
  % this block is only visible from the second layer onwards
  ...
\end{block}
```

Many commands allow an overlay specification

```
\textbf<2->{commands}
  % text is bold only from second layer onwards
\includegraphics<3-5>[scale=0.2]{unilogo}
  % graphics only visible on layers 3,4,5
```

The `\pause` command

The command `\pause` allows to construct simple overlays.

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`\pause``\pause``\pause` The command `\pause``\verb+\pause+` allows `\pause` to construct simple overlays. `\pause`

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text for first slide

```
\only<1> {text for first slide}  
\only<2> {this is on the 2. slide}
```

text for first slide this is on the 2. and 6. slide

```
\uncover<1> {text for first slide}  
\uncover<2,6> {this is on the 2. and 6. slide}
```

Not on slide 3. ←
Shown on 1 and 2 ←

```
\alt<3>{On slide 3}{Not on slide 3.} $\leftarrow$\\  
\temporal<3-4>{Shown on 1 and 2}{Shown on 3, 4}  
{Shown on 5, ...} $\leftarrow$
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```

Problem: “wobbling” slides with `\only`, `\alt`,...

Some text for the first slide.
Possibly several lines long.

```
\begin{block}{}  
  \begin{overlayarea}{\textwidth}{3em}  
    \only<1>{Some text for the first slide.\  
            Possibly several lines long.}  
    \only<2>{Replacement on the second slide.}  
  \end{overlayarea}  
\end{block}
```

Problem: “wobbling” slides with `\only`, `\alt`,...

Replacement on the second slide.

```
\begin{block}{}  
  \begin{overlayarea}{\textwidth}{3em}  
    \only<1>{Some text for the first slide.\  
            Possibly several lines long.}  
    \only<2>{Replacement on the second slide.}  
  \end{overlayarea}  
\end{block}
```

How to show covered parts

- ▶ I used: `\setbeamercovered{transparent}`
- ▶ default: `\setbeamercovered{invisible}`
- ▶ other possibilities: `\setbeamercovered{dynamic}`
 - ▶ first item
 - ▶ second item
 - ▶ third item
 - ▶ fourth item
- ▶ or: `\setbeamercovered{transparent=50}` (default is 15% opaqueness)
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Transitions between slides

```
\transdissolve<1-3>
```

- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.

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\transdissolve<1-3>
```

- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
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Transitions between slides

```
\transdissolve<1-3>
```

- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.
- ▶ Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede.

Transitions between slides

```
\transblindsvertical
```

The transition effects only work in the **fullscreen presentation mode** of Acrobat Reader! You won't see them with the usual preview programs.

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Transitions between slides

```
\transglitter
```

The transition effects only work in the **fullscreen presentation mode** of Acrobat Reader! You won't see them with the usual preview programs.

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Multimedia

```
\usepackage{multimedia}  
...  
\movie[width=3cm, height=2cm, loop, showcontrols,  
start=5s, poster]{}{film.avi}
```

At the moment, only this seems to work with Linux:

```
\movie[externalviewer]  
{\beamergotobutton{Start movie}}{cc.mp4}
```

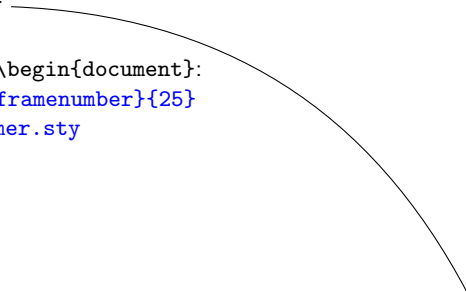
▶ Start movie

Structuring the presentation

- ▶ use the usual `\section[]{}` and `\subsection[]{}` commands **between** frames
- ▶ they do not generate text on the slides
- ▶ they appear in the `\tableofcontents`
- ▶ in many themes, they appear in the sidebar or headline

Appendix

```
\section{...}  
\begin{frame} ... \end{frame}  
\appendix  
\begin{frame} ... \end{frame}  
\begin{frame} ... \end{frame}
```

- ▶ everything after `\appendix` does not appear in the table of contents
 - ▶ but it still affects the page counter
solution:
 - ▶ set pagecounter manually after `\begin{document}`:
`\renewcommand{\inserttotalframenumber}{25}`
 - ▶ google for `appendixnumberbeamer.sty`
- 

Hyperlinks

Targets

- ▶ put `\hypertarget{bla1}{}` into some frame
- ▶ or `\hypertarget<2>{blum3}{}` in order to target the second layer of the frame

Add hyperlinks in order to jump to the targets:

▶ go to bla1 and another one: ▶ go to blum3

```
\hyperlink{bla1}{\beamergotobutton{go to bla1}} and another one:  
\hyperlink{blum3}{\beamergotobutton{go to blum3}}
```

Button types

```
▶ go to hell \beamergotobutton{go to hell}  
▶▶ go to x \beamerskipbutton{go to x}  
◀ go to y \beamerreturnbutton{go to y}
```

Presentation themes

Presentation themes

Presentation themes completely define the appearance of the presentation.

Examples:

- ▶ `\usetheme{default}` – very simple
- ▶ `\usetheme{Madrid}` – blueish, no navigation bars
- ▶ `\usetheme{CambridgeUS}` – red, no navigation bars
- ▶ `\usetheme{Antibes}` – blueish, tree-like navigation bar
- ▶ `\usetheme{Berkeley}` – blueish, table of contents in sidebar
- ▶ `\usetheme{Marburg}` – sidebar on the right
- ▶ `\usetheme{Berlin}` – navigation bar in the headline
- ▶ `\usetheme{Szeged}` – navigation bar in the headline, horizontal lines
- ▶ `\usetheme{Malmoe}` – section/subsection in the headline

Themes

- `inner theme` specifies appearance of blocks, enumerations and other environments inside the frame
- `outer theme` specifies head- and footlines, sidebar, logo, frame title
- `color theme` specifies colors, can be complete, inner or outer
- `font theme` specifies fonts

This defines the Madrid presentation theme:

```
\usecolortheme{whale} % outer color
\usecolortheme{orchid} % inner
\useinnertheme[shadow]{rounded}
\useoutertheme{infolines}
\usefonttheme{default}
```

Color themes

complete:

- ▶ albatross, beetle, crane, fly, seagull, wolferine, beaver

inner:

- ▶ lily, orchid, rose

outer:

- ▶ shale, seahorse, dolphin

Font themes

default, serif, structurebold, structureitalicserif, structuresmallcapserif

Inner themes

- ▶ default, circles, rectangles, rounded, inmargin

Outer themes

- ▶ default, infolines, miniframes, smoothbars, sidebar, split, shadow, tree, smoothtree

This presentation

```
\documentclass[10pt, xcolor=x11names]{beamer}

\usecolortheme{seagull}
\useoutertheme{infolines}
\usefonttheme[onlymath]{serif}

\setbeamertemplate{headline}[default]
\setbeamertemplate{navigation symbols}{}
\mode<beamer>{\setbeamertemplate{blocks}[rounded] [shadow=true]}

\setbeamercovered{transparent}
\setbeamercolor{block body example}{fg=blue, bg=black!20}
```