Howto: Introduction to Beamer
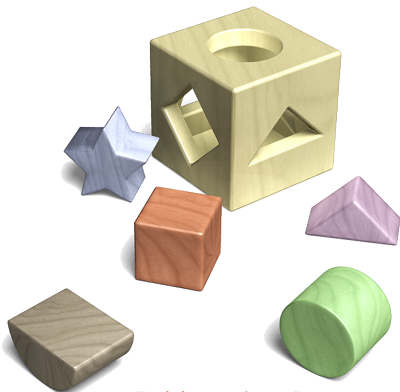
Emmanuelle Dietz

International Center for Computational Logic
Technische Universität Dresden
Germany

▶ **What is** BEAMER**?**

▶ **How to produce a presentation?**

▶ **How to create overlays?**

"Logic is everywhere …"

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Introduction

What is BEAMER?

- BEAMER **is a LATEX document class for producing slides created by Til Tantau at the Universität zu Lübeck**

Why using BEAMER to produce a presentation?

1. **LATEXbased (all common LATEX commands can be used), thus reuse already written up material**
2. **can also be used to create reports from presentations**
3. **easy overlays**
4. **no external programs needed other than what you already use for LATEX**

Structure of a BEAMER Document

Structure

1. **The basic structure is the standard in LATEX. But:**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard LATEX

\end{frame}

\subsection{Subsection 1}

 \end{document}
```

Structure

1. **The basic structure is the standard in LaTeX. But:**
   ▷ **Indicate that this document is of the BEAMER class.**

```latex
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard LaTeX

\end{frame}

\subsection{Subsection 1}

 \end{document}
```

Structure

1. **The basic structure is the standard in LATEX. But:**
   - ▷ **Indicate that this document is of the BEAMER class.**
   - ▷ **alternative themes: Frankfurt, Berlin, Bergen,Boadilla, Madrid, AnnArbor, Pittsburgh, Rochester,Antibes, ...**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard LATEX

\end{frame}

\subsection{Subsection 1}

 \end{document}
```

Structure

1. **The basic structure is the standard in LATEX. But:**
   - ▷ **Indicate that this document is of the BEAMER class.**
   - ▷ **alternative themes: Frankfurt, Berlin, Bergen,Boadilla, Madrid, AnnArbor, Pittsburgh, Rochester,Antibes, ...**
   - ▷ **Main document**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard LaTeX

\end{frame}

\subsection{Subsection 1}

 \end{document}
```

Structure

1. **The basic structure is the standard in LATEX. But:**
   - ▷ **Indicate that this document is of the BEAMER class.**
   - ▷ **alternative themes: Frankfurt, Berlin, Bergen,Boadilla, Madrid, AnnArbor, Pittsburgh, Rochester,Antibes, ...**
   - ▷ **Main document**
   - ▷ **Declare each slide (*frame*) you want to create.**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here


\begin{document}


\section{Section 1}
\begin{frame}
\frametitle{title}


% slide content in standard LaTeX


\end{frame}


\subsection{Subsection 1}


 \end{document}
```

Structure

1. **The basic structure is the standard in LaTeX. But:**
   - ▷ **Indicate that this document is of the BEAMER class.**
   - ▷ **alternative themes: Frankfurt, Berlin, Bergen,Boadilla, Madrid, AnnArbor, Pittsburgh, Rochester,Antibes, ...**
   - ▷ **Main document**
   - ▷ **Declare each slide (*frame*) you want to create.**
   - ▷ **Sections are used outside of the frame environment.**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard LaTeX

\end{frame}

\subsection{Subsection 1}

 \end{document}
```

Titlepage

Howto: Introduction to Beamer

Emmanuelle Dietz

TU Dresden

May 14, 2012

```
1 \documentclass{beamer}
2 \usetheme{Montpellier}
3 \usepackage{array}
4 \usepackage{graphicx}
5
6 \title{Howto: Introduction to Beamer}
7 \author{Emmanuelle Dietz}
8 \institute{TU Dresden}
9 \date{May 14, 2012}
10
11 \begin{document}
12 \maketitle
13
14 \end{document}
```

Sections

Introduction   . . .
   Structure
   Titlepage   `\section{Introduction}`
   Sections   . . .
Alerts
Overlays   `\section{Basics of Beamer}`
   Pause   . . .
   Lists
     `\only` and `\uncover`
     Example with Tikz   `\subsection{Basic Structure}`
Further Information
References   `\subsection{Titlepage}`

Alerts

We can emphasize portions of our slide using alerts.

```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
```

- **important item**
- **item**
- **item**

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Overlays

Pause

\pause creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}
 \item This item first \pause
 \item This item second \pause
 \item This item third
\end{itemize}
```

Pause

\pause creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}
 \item This item first \pause
 \item This item second \pause
 \item This item third
\end{itemize}
```

▶ **This item first**

Pause

\pause creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}
 \item This item first \pause
 \item This item second \pause
 \item This item third
\end{itemize}
```

- ► **This item first**
- ► **This item second**

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Pause

\pause creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}
 \item This item first \pause
 \item This item second \pause
 \item This item third
\end{itemize}
```

► **This item first**

► **This item second**

► **This item third**

Lists

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

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Lists

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

► **This item first**

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Lists

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

- **This item first**

- **This item second**

Lists

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

- ► **This item first**
- ► **This item third**
- ► **This item second**

Lists

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

▶ **This item first**

▶ **This item third**

▶ **This item second**

Note that the order is given by

▶ Show <1> *only* on slide 1

▶ Show <1-> on slide 1 onwards

▶ Show <1-4,6-8> on every slide except 5

Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
```

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Parts of the slides can be emphasized using overlays with alerts or color specifications.

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- **item**
- **item**

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```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
```

- **important item**
- **item**
- **item**

```
\begin{itemize}
\item \alert<1>{first important item}
\item {\color<3>{blue}{third item}}
\item \alert<2>{second important item}
\end{itemize}
```

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\begin{itemize}
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- **important item**
- **item**
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\begin{itemize}
\item \alert<1>{first important item}
\item {\color<3>{blue}{third item}}
\item \alert<2>{second important item}
\end{itemize}
```

- **first important item**
- **third item**
- **second important item**

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- **item**
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\begin{itemize}
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\item {\color<3>{blue}{third item}}
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```

- **first important item**
- **third item**
- **second important item**

Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
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\item item
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\item \alert<2>{second important item}
\end{itemize}
```

- **first important item**
- **third item**
- **second important item**

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```
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\begin{itemize}
\item \alert<1>{first important item}
\item {\color<3>{blue}{third item}}
\item \alert<2>{second important item}
\end{itemize}
```

- **first important item**
- **third item**
- **second important item**

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Overlays for Non-Lists

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Non-Lists

For non-lists there are several alternatives:

- ▶ **onslide**
- ▶ **only**
- ▶ **visible**
- ▶ **uncover**

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

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Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

Initial text.

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Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

Replaced by this on second slide.

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

Replaced again by this on third slide.

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

\uncover

```
\uncover<1>{Text shown on slide 1.}
\uncover<2>{Text shown on slide 2.}
\uncover<3>{Text shown on slide 3.}
```

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

\uncover

```
\uncover<1>{Text shown on slide 1.}
\uncover<2>{Text shown on slide 2.}
\uncover<3>{Text shown on slide 3.}
```

Text shown on slide 1.

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

\uncover

```
\uncover<1>{Text shown on slide 1.}
\uncover<2>{Text shown on slide 2.}
\uncover<3>{Text shown on slide 3.}
```

Text shown on slide 2.

Overlays for Non-Lists

\only

```
\only<1>{Initial text.}
\only<2>{Replaced by this on second slide.}
\only<3>{Replaced again by this on third slide.}
```

\uncover

```
\uncover<1>{Text shown on slide 1.}
\uncover<2>{Text shown on slide 2.}
\uncover<3>{Text shown on slide 3.}
```

Text shown on slide 3.

Overlays with Tikz

```
\node (l1)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```

Overlays with Tikz

```
\node (11)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (12) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (13) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (14) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (15) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (16) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (17) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (11) -- (12); \draw (11) --(13);}

\uncover<4->{
\draw (12) -- (14); \draw (12) -- (15);

\draw (13) -- (16); \draw (13) -- (17);}
```

Overlays with Tikz

```
\node (l1)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```
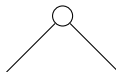
Overlays with Tikz

```
\node (l1)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```
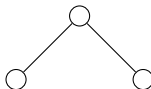
Overlays with Tikz

```
\node (l1)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```
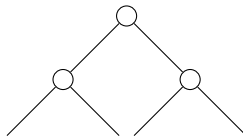
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Overlays with Tikz

```
\node (l1)  [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```
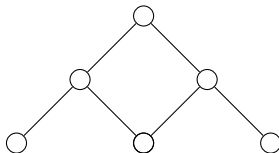
Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```

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Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```

Example

```
\begin{semiverbatim}
\alert<3>{\\alert<2>{important item}}
\end{semiverbatim}
```

```
\alert<2>{important item}
```

Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```

Example

```
\begin{semiverbatim}
\alert<3>{\\alert<2>{important item}}
\end{semiverbatim}
```

\alert<2>{important item}

Other Stuff

- **Suppress naviation symbols**

  `\setbeamertemplate{navigation symbols}{}`

- **Suppress the headlines, footlines, and sidebars**

  `\begin{frame}[plain]`

- **Add "handout" parameter for slides without overlays (e.g. for printout)**

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

- **Include blank black slide**

  ```
  \bgroup
  \setbeamercolor{background canvas}{bg=black}
  \begin{frame}[plain]{}
  \end{frame}
  \egroup
  ```

Further Information

- **Till Tantau, Joseph Wright, Vedran Miletić: The** BEAMER **class**
  `http://www.ctan.org/tex-archive/macros/latex/contrib/beamer/doc/`
  `beameruserguide.pdf`
- **Charles T. Batts: A Beamer Tutorial in Beamer**
  `http://www.scribd.com/doc/47716986/Charles-Batts-Beamer-Tutorial`

References

- **Charles T. Batts: A Beamer Tutorial in Beamer**
  `http://www.scribd.com/doc/47716986/Charles-Batts-Beamer-Tutorial`
- **Matthias Gerdts: Introduction to Beamer**
  `http://www.unibw.de/lrt1/gerdts/lehre/zusatzmaterial-und-links/beamer-intro.pdf`
- **Gonzalo Rivero: Presentations in LaTeX , Introduction to the BEAMER class**
  `www.nyu.edu/projects/politicsdatalab/latex/beamer_nyu.pdf`
- **Till Tantau, Vedran Miletić, Joseph Wright: Creating Overlays**
  `http://get-software.net/macros/latex/contrib/beamer/doc/beamerug-overlays.tex`

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