

A Beamer Primer

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Frames

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You are looking at a frame.

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Create a frame as follows:

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```
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  ...  
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  ...  
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The contents of the frame can be pretty much any latex stuff.

Frame contents

You can use the usual environments like theorem, definition, etc:

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Theorem (Stokes)

$$\int_M d\omega = \int_{\partial M} \omega$$

Proof.

Left as an exercise. □

Frame contents

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$$\begin{aligned} \bar{\nabla}_{V_2} \begin{pmatrix} -\phi_1 E_2 \\ \phi_1 E_1 + N \\ -E_2 \end{pmatrix} &= \begin{pmatrix} -\partial_2(\phi_1) E_2 - \phi_1 \bar{\nabla}_{V_2} E_2 \\ \partial_2(\phi_1) E_1 + \phi_1 \bar{\nabla}_{V_2} E_1 + \bar{\nabla}_{V_2} N \\ -\bar{\nabla}_{V_2} E_2 \end{pmatrix} \\ &= \begin{pmatrix} -\phi_{12} E_2 + (\cos \phi) \phi_1 N \\ \phi_{12} E_1 + (\sin \phi) \phi_1 N - (\sin \phi) E_1 + (\cos \phi) E_2 \\ (\cos \phi) N \end{pmatrix} \end{aligned}$$

Frame contents

You can put in graphics:

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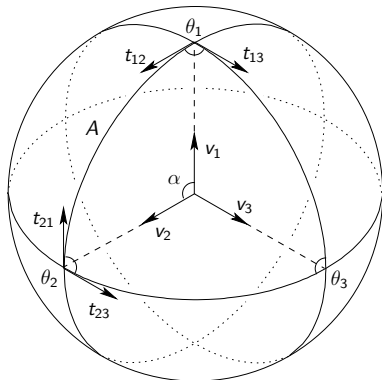


Figure: Spherical geometry!

This is the frame title

This is the subtitle

Frames can have titles and subtitles.

This is the frame title

This is the subtitle

Frames can have titles and subtitles.
Create them as follows:

LaTeX Code

```
\begin{frame}  
  \frametitle{This is the frame title}  
  \framesubtitle{This is the subtitle}  
  ...  
\end{frame }
```

Table of contents

Using `\section` and `\subsection` create a table of contents.

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Using `\section` and `\subsection` create a table of contents.
To create a frame with the table of contents, use:

LaTeX Code

```
\begin{frame}  
  \frametitle{Contents}  
  \tableofcontents  
\end{frame }
```

Overlays

Note that the frame contents are unveiled piece by piece.

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Incidentally, here is a mysterious button: 

Overlays

The pause command

Inserting a `\pause` splits the frame into multiple slides.

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The code for the previous frame is:

LaTeX Code

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```
\pause
```

That is, a frame may consist of multiple slides.

```
\pause
```

You have control over how the frame is unveiled.

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This is useful for talking through the steps of a proof, for example.

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Proof.

Go to the library.

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Proof.

Go to the library.
Get Spivak Vol 5.

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Theorem

$$\int_M \text{Pf} \left(\frac{\Omega}{2\pi} \right) = \chi(M)$$

Proof.

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Get Spivak Vol 5.

Read the proof there. □

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Specification	Effective on
<code><2></code>	Slide 2 only
<code><2-></code>	Slides 2 and later
<code><2,4></code>	Slides 2 and 4
<code><-3,7-9></code>	Slides 1 to 3 and 7 to 9

Overlays

Overlay specifications - an example

For example, we can make an itemized list which is revealed one item at a time, and with the current item bold:

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Overlay specifications - an example

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LaTeX Code

```
\begin{itemize}
  \item<1-> \textbf<1>{Item 1}
  \item<2-> \textbf<2>{Item 2}
  ...
  \item<5-> \textbf<5>{Item 5}
\end{itemize}
```

Overlays

Overlay specifications - an example

Here is the result:

- **Item 1**

Overlays

Overlay specifications - an example

Here is the result:

- Item 1
- **Item 2**

Overlays

Overlay specifications - an example

Here is the result:

- Item 1
- Item 2
- **Item 3**

Overlays

Overlay specifications - an example

Here is the result:

- Item 1
- Item 2
- Item 3
- **Item 4**

Overlays

Overlay specifications - an example

Here is the result:

- Item 1
- Item 2
- Item 3
- Item 4
- **Item 5**

Overlays

Overlay specifications - an example

Here is the result:

- Item 1
- Item 2
- Item 3
- Item 4
- Item 5

The overlay specifications do different things to different commands, but it is usually obvious.

Themes

At the beginning of this document is:

LaTeX Code

```
\documentclass{beamer}  
\usetheme{Copenhagen}
```

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There are many other themes to use. These have different colors, borders, and so on.

Verbatim

The `verbatim` environment can be used to show code:

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Example

```
import de.jreality.plugin.JRViewer;
public static void main(String[] args){
    JRViewer jrv = new JRViewer();
    jrv.addBasicUI();
    jrv.startup();
}
```

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Example

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import de.jreality.plugin.JRViewer;  
public static void main(String[] args){  
    JRViewer jrv = new JRViewer();  
    jrv.addBasicUI();  
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}
```

If you do this, you must start the frame with
`\begin{frame}[fragile]`

Columns

Use the `columns` environment to split a frame into columns:

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Below will be a theorem and proof.

Theorem

Here is a theorem in one column.

Proof.

Here is a proof. □

Here is an example block:

Example

An example

And a list:

- Item 1
- Item 2
- Item 3

Links

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LaTeX Code

```
\hyperlink{A}{\beamergotobutton{Link example}}  
\hypertarget{B}<3>{}
```

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On the table of contents is the mysterious button:

LaTeX Code

```
\hyperlink{B}{\beamerreturnbutton{Mystery}}  
\hypertarget{A}<4>{}
```

Links

Links can be created between frames. On this frame is:

LaTeX Code

```
\hyperlink{A}{\beamergotobutton{Link example}}  
\hypertarget{B}<3>{}
```

On the table of contents is the mysterious button:

LaTeX Code

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\hyperlink{B}{\beamerreturnbutton{Mystery}}  
\hypertarget{A}<4>{}
```

Here is the button: [▶ Link example](#)

That's all—but there is much more to beamer.

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Visit <http://math.arizona.edu/~tdm/beamer> to find:

- This file and a simple beamer template
- Links to various beamer documents
- A link to a website which shows some themes