



UiO : **Department of Mathematics**
University of Oslo

Introduction to Beamer

MAT2000, MEK3200, STK-MAT2011

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March 6, 2020

Colours

- Most Beamer themes are designed around a single colour called the `structure colour`.
- Do not use *emph* to highlight something. Use `alert`. Normally, `alert` changes the text colour into something bright and highly visible, but it can be configured to modify the font further.
- You can of course use `any colour`, as usual.

The above three colour commands are compatible with overlays, which we will come back to.

Blocks

Basic Block

One common way to divide the text is to use blocks.

Example Block

They come in three types, for variation and highlighting.

Alert Block

Apart from `alertblock`, blocks are typically not used directly like this. . .

Theorem

... but via some environment.

Columns

Another way to divide the text is by the use of **columns**.

Example

This can easily be combined with **blocks**.

1 And with **lists**.

Note that the textwidth is locally redefined to equal the width of the column:



Textpos

There is no reason to use floats in a Beamer, as pictures and tables shall stay within the frame. There is also no need for captions, as you will explain the figure orally. Normally, we let \LaTeX decide where objects should be placed, but here we want complete control. This is attained with the **textpos** package.

The syntax for textpos is as follows:

```
\begin{textblock}{<width>}(x, y)  
  <content>  
\end{textblock}
```

This creates a box with the specified width and upper left corner at the point (x, y). For this document, I have set the units to be paperwidth and paperheight. The box can be filled with anything.

Textpos — Example



Overlays

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There are more flexible commands:

- onslide** displays text only on specified slides. The text occupies space when hidden.

- only** displays text only on specified slides. The text occupies no space when hidden.

- alt** displays one text on specified slides and another text on the rest of the slides.

Here 'text' also includes other objects, such as images.

Overlays — Examples

This text is shown on all slides.

This text is shown on all slides.

This text is shown on all slides. This text is shown on all slides.

This text is shown on the first and third slide.

Overlays — Examples

This text is shown on all slides. This text is only shown on the second slide. This text is shown on all slides.

This text is shown on all slides. This text is shown on all slides.

This text is shown on the second slide.

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Overlays — Further Examples

The same `syntax` can be used for many common `macros` and environments.

The latter takes up space when it is hidden.

- 1 This is the first list item.
-
- 3 This is the third list item.

Overlays — Further Examples

The same syntax can be used for many **common** macros and **environments**.

Lemma (Zorn)

Suppose a partially ordered set P has the property that every chain has an upper bound in P . Then the set P contains at least one maximal element.

The latter takes up space when it is hidden.

- 1 This is the first list item.
- 2 This is the second list item.
- 3 This is the third list item.

Overlays — Lists

For lists, there is a special syntax for adding a pause between each item:

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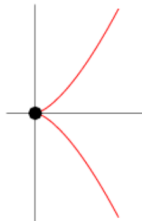
Overlays — Lists

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- This is the first list item.
- This is the second list item.
- This is the third list item.

We can take this one step further and highlight the last revealed item:

■ Cusp



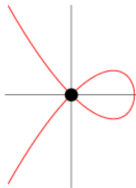
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We can take this one step further and highlight the last revealed item:

- Cusp
- Node



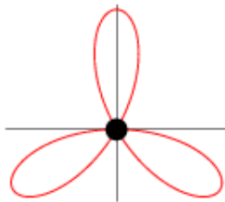
Overlays — Lists

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We can take this one step further and highlight the last revealed item:

- Cusp
- Node
- Triple point



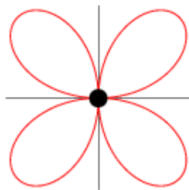
Overlays — Lists

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- Cusp
- Node
- Triple point
- **Quadruple point**



Overlays — TikZ

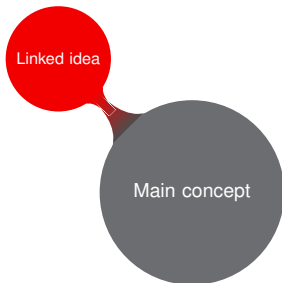
While you can use `pause`, `onslide`, `only` and `alt` in TikZ, this is often buggy. Instead, use the library `overlay-beamer-styles`, which provides tags such as ‘visible on’, ‘draw on’ and ‘fill on’. These can take overlay specifications:



Main concept

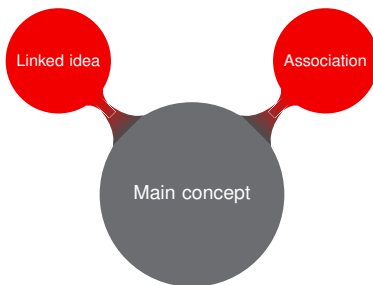
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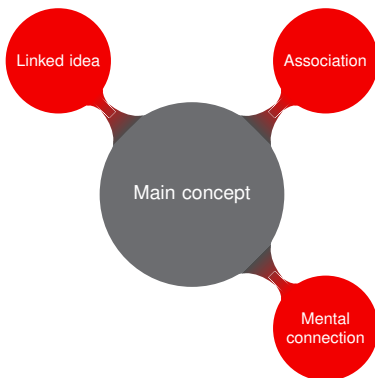
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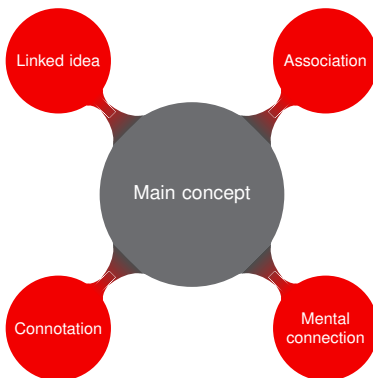
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Disable Overlays

You can remove all overlay effects with the document class option **handout**:

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

This collapses all slides in a frame to a single slide.

Animations and Sound

It is easy to include animations and sound in Beamer. Simply use the **multimedia** package and **movie** command (even for sound files!). The difficulty is finding a PDF viewer capable of playing the media file. Acrobat Reader 6 on MacOS can play anything that QuickTime can play. In Linux, you can play media files with Okular if you compile with the document class option `unknownkeysallowed`.

If the PDF viewer is capable of playing the media file, then you can use the options **autostart** or **loop** with the **movie** command.

Otherwise, use the option **externalviewer** in order to open another viewer to play the file.

The media file must lie in the same folder as the PDF.

Animations and Sound — Example

Check if your PDF viewer can play .mp4 by clicking the picture.



If it cannot, [click here](#).

Frame Options

`plain` removes the header and footer. Use this if you need extra space, for instance if displaying a full-frame picture.

`fragile` tells Beamer that the frame contains text that is not interpreted the way that text is usually interpreted by $\text{T}_\text{E}\text{X}$. In particular, use this if the frame contains verbatim text, such as code.

`allowframebreaks` automatically splits the frame into several frames if the content exceeds a single frame. The drawback is that overlays cannot be used with this option in effect. Hence, reserve this option for a long bibliography.



Posters

You can easily create posters with Beamer. All you need is the package **beamerposter**. The package provides options for selecting paper size, orientation and a scale factor for fonts. The poster itself consists of a single Beamer frame with no overlays.

Bibliography

A bibliography is neither necessary nor recommended in a presentation. It should be written manually and contain less information than a bibliography found in a research paper.



R. Hartshorne

Algebraic Geometry

Springer-Verlag, 1977



M. Helsø

Rational Quartic Symmetroids, 2017

<https://arxiv.org/abs/1708.04101>



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Quartic spectrahedra

Mathematical Programming, 2014

UiO : Department of Mathematics

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