

# beamerswitch — Convenient mode selection in Beamer documents

Alex Ball

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This class is a wrapper around the `beamer` class to make it easier to use the same document to generate the different forms of the presentation: the slides themselves, an abbreviated slide set for transparencies or online reference, an n-up handout version, and a transcript or set of notes using the `article` class.

To contact the author about this package, please visit the GitHub page where the code is hosted: <https://github.com/alex-ball/beamerswitch>.

## 1 Quick start guide

Here are the key facts:

- The `beamerswitch` class makes it easier to switch between `beamer` modes.
- It is aimed at you if you want to generate handouts from your presentation, whether printouts of your slides or something more like a paper or article.
- It is *not* a drop-in replacement for `beamer`.

If you have an existing `beamer` presentation and want convert it to use `beamerswitch` instead, here's what you need to do.

1. Have you specified class options other than `ignorenonframetext`? If so, start by rewriting your `\documentclass` line in terms of `\PassOptionsToClass` – note that the optional argument (in square brackets) becomes mandatory (in curly braces):

Before	After
<code>\documentclass[10pt]{beamer}</code>	<code>\PassOptionsToClass{10pt}{beamer}</code>

Then add `\documentclass{beamerswitch}` directly below.

Otherwise, simply replace your `\documentclass` line with the `beamerswitch` one.

2. If you did *not* specify `ignorenonframetext` as one of your `beamer` options, add a `\mode<all>` line directly after `\begin{document}`.

3. Wrap any preamble content intended only for your slides (like `\usetheme` or `\usepackage` commands) with ‘`\mode<presentation>\{...}`’ or something more specific, as required.

In summary, here is an example:

Before	After
<pre>\documentclass[10pt]{beamer}  \usetheme{metropolis}  \title{Test presentation} \begin{document}    \maketitle \end{document}</pre>	<pre>\PassOptionsToClass{10pt}{beamer} \documentclass{beamerswitch} \mode&lt;presentation&gt;{%   \usetheme{metropolis} } \title{Test presentation} \begin{document} \mode&lt;all&gt;   \maketitle \end{document}</pre>

At this point the document should compile exactly as before.

If you intend to use article mode at all, I strongly suggest that you proceed by converting your document body so it that works without the ‘`\mode<all>`’ line. That means making sure all slide content is in a `frame` environment, new command definitions are moved to the preamble, and so on.

Lastly, read through the rest of this manual and see what `beamerswitch` can do for you!

## 2 Introduction

With `beamer`, it is possible to typeset the same document code in different ways to get different effects. The result you get depends on a potentially confusing mix of options, modes, and indeed classes.

Beamer has five modes for typesetting content. There are three modes that produce regular slides:

- The `beamer` mode relates to the normal, default slide set.
- The `trans` class option switches to the mode of the same name. It is intended for transparencies, but is really just an alternative mode that ignores ‘bare’ overlay specifications.
- The `handout` class option switches to the mode of the same name. It is intended for print-friendly versions, but is really just another alternative mode that ignores ‘bare’ overlay specifications.

The `beamer` manual shows how to use `handout` mode in conjunction with `pgfpages` to get several slides on a single side of A4 (or Letter) paper.

Beamer can also produce a double-height or double-width slide set, with the intention that each half will be shown on a different display (e.g. one for the audience, one for the speaker). There are three variations of this, activated using `\setbeameroption`:

- `show notes on second screen` uses the second screen for text marked up using `\note{\text{}}`.
- `second mode text on second screen` uses the second screen for showing the slide typeset in `second` mode rather than `beamer`. Unlike `trans` and `handout`, `second` responds to ‘bare’ overlay specifications.
- `previous slide on second screen`, uses the second screen either for showing the previous slide or, if the slide has the `typeset second` option set, for showing the current slide typeset in `second` mode.

The final variation is to use a different class altogether, such as `article`, in conjunction with `beamerarticle`. In this case the content is set free-flowing in `article` mode, without any of the frame furniture.

The `beamer` manual suggests coping with all these variations by having the document code in one file, and using it as input to other files that each set up a different mode of operation. This is fine but a bit of a fiddle. It would be nice to be able to get the same effect using a single file and, ideally, a single command invocation.

The `beamerswitch` class addresses this issue by acting as a wrapper around the various options, and providing a common interface for switching between modes. More specifically, it has three main functions:

1. To provide more choice of handout-mode layouts than `pgfpages` gives you out-of-the-box. Additionally, I hope you will find the method for selecting them more memorable.
2. To enable you to switch to `article` mode with a simple change of class option, instead of having to fiddle with commented-out `\documentclass` and `\usepackage` lines.
3. To allow you to override the `beamer` mode from the command line, by choosing a given jobname suffix. Primarily this is to allow you to generate the different versions programmatically. Indeed, the class provides facilities for generating multiple versions with a single command.

### 3 Dependencies

To use `beamerswitch`, you will need to have the following packages available and reasonably up to date on your system. All of these ship with recent  $\text{\TeX}$  distributions.

- |                         |                         |                        |
|-------------------------|-------------------------|------------------------|
| • <code>beamer</code>   | • <code>iftex</code>    | • <code>xkeyval</code> |
| • <code>etoolbox</code> | • <code>pgf</code>      | • <code>xstring</code> |
| • <code>hyperref</code> | • <code>shellesc</code> |                        |

One feature of the class uses `latexmk` by default, though you can configure it to use something else if you need or want to.

## 4 Loading the class

The class is loaded in the usual way:

```
\documentclass[<options>]{beamerswitch}
```

The various options are described below.

### 4.1 Choosing the mode of the current run

The `beamerswitch` class, as explained above, does not do much itself but rather helps you to switch between `beamer` modes, specifically `article`, `beamer`, `trans` and `handout`. Note that it loads `beamer` with the `ignorenonframetext` option, so that text outside frames is only shown in `article` mode.

The normal way of choosing the mode is to use the respective class options.

**article** (no value, initially unset)

Switches to `article` mode, which uses the `article` class and resembles a normal article.

**beamer** (no value, initially set)

Switches to `beamer` mode, which uses the `beamer` class and resembles a normal slideshow.

**handout** (no value, initially unset)

Switches to `handout` mode, which uses the `beamer` class but uses a different series of overlay specifications. It resembles a set of printed pages with multiple slides shown on each page.

**trans** (no value, initially unset)

Switches to `trans` mode, which uses the `beamer` class and resembles a normal slideshow, but uses a different series of overlay specifications.

There is, however, a sneaky second way of setting the mode that overrides the first, and that is to use the `\jobname`. By default, this is the name of your `TEX` file minus the `.tex` extension, but you can set it to something else when you run `TEX`. If you set the `\jobname` to end in one of the following suffixes, the mode will automatically switch:

- `-article` will switch to `article` mode.
- `-handout` will switch to `handout` mode.
- `-slides` will switch to `beamer` mode.
- `-trans` will switch to `trans` mode.

The idea is that you can keep your source document the same, but by running `TEX` with an alternative `\jobname`, you can get a different version out with a meaningfully different file name.

Of course, you may not want to use those suffixes. Perhaps you want them in German; perhaps your document's file name already ends in one of them; perhaps 'article' or 'trans' doesn't describe what you're using those modes for. The suffixes are provided by the following commands:

### **\ArticleSuffix**

Holds the `\jobname` suffix that triggers `article` mode.

### **\BeamerSuffix**

Holds the `\jobname` suffix that triggers `beamer` mode.

### **\HandoutSuffix**

Holds the `\jobname` suffix that triggers `handout` mode.

### **\TransSuffix**

Holds the `\jobname` suffix that triggers `trans` mode.

The CamelCase is an admittedly rather obscure signal to you that, if you want to change them to something else, you should do so via `\newcommand` before loading the class:

```
\newcommand*\ArticleSuffix{-script}
\documentclass{beamerswitch}
```

## 4.2 Using more than one mode at once

Another handy feature of the class is that it can spawn parallel compilations, so you could in theory generate all four versions from a single command. It achieves this magic by escaping to the shell and running `latexmk`. Thus for it to work you need to run `TeX` with shell escape enabled and you need `latexmk` to be installed.

**alsoarticle** (no value, initially unset)

Spawns a new compilation process in `article` mode.

**alsobeamer** (no value, initially unset)

Spawns a new compilation process in `beamer` mode.

**alsohandout** (no value, initially unset)

Spawns a new compilation process in `handout` mode.

**alsotrans** (no value, initially unset)

Spawns a new compilation process in `trans` mode.

**also**=`{⟨comma-separated list of modes⟩}` (no default, initially empty)

Spawns compilation processes in each of the specified modes. Note that the list has to be wrapped in braces, and only the four aforementioned modes are recognized.

If you would rather use a tool other than `latexmk` to manage your spawned compilation processes, it is possible to do that. Bear in mind, though, that `beamerswitch` is not clever enough to spot if you have already compiled the other version on a previous run so you have to take care of that yourself. The command that does the business is this:

### **\BeamerswitchSpawn{⟨suffix⟩}**

Spawns a new compilation process with `⟨suffix⟩` appended to the `\jobname`.

By default, `\BeamerswitchSpawn` checks which `TeX` engine you are running, and then runs the matching one of `\SpawnedPDFTeX`, `\SpawnedXeTeX`, `\SpawnedLuaTeX`, or if all the tests fail, `\SpawnedTeX`, with the converted `\jobname`. These commands all add an engine-selecting option to a base command, `\SpawnedCompiler`, which by default is `latexmk` with `synctex` enabled, shell escape disabled and interaction set to batch mode. See the [Implementation](#) section below for details.

Any of these commands can be pre-defined to something else, depending on what you want to do. So, for example, if you want to change the base `latexmk` options, pre-define `\SpawnedCompiler` to `latexmk` plus your chosen options:

```
\newcommand*\SpawnedCompiler{%
  latexmk -silent -shell-escape -interaction=nonstopmode}
\documentclass{beamer-switch}
```

If you want to switch to using `rubber`, say, pre-define `\SpawnedPDFTeX` and friends accordingly (perhaps taking advantage of `\SpawnedCompiler` to reduce repetition):

```
\newcommand*\SpawnedCompiler{rubber -q --synctex}
\newcommand*\SpawnedPDFTeX{\SpawnedCompiler -m pdftex}
\newcommand*\SpawnedXeTeX{\SpawnedCompiler -m xelatex}
\documentclass{beamer-switch}
```

If you don't need the engine selection routine provided, simply pre-define `\BeamerSwitchSpawn` to do whatever you need it to do:

```
\newcommand*\BeamerSwitchSpawn[1]{%
  \ShellEscape{... -jobname=\jobname#1 \jobname}%
}
\documentclass{beamer-switch}
```

If you want to use `arara` to compile everything, the class options won't help you as `arara` does not let you change `\jobnames` on the command line. That's no problem, though, because you can do it manually within your list of directives:

```
% arara: lualatex
% arara: lualatex: { options: "-jobname beamer-switch-example-article" }
% arara: lualatex: { options: "-jobname beamer-switch-example-handout" }
% arara: lualatex: { options: "-jobname beamer-switch-example-trans" }
\documentclass{beamer-switch}
```

## 4.3 Improving compatibility

### `nohyperref`

(no value, initially unset)

The `beamer` class loads `hyperref` for you, but when you switch to `article` mode, `beamerarticle` doesn't, so it is easy for you to get caught out. To protect you from this, `beamer-switch` does load `hyperref` in `article` mode, with the pleasing side effect that `\subject` and `\keywords` then work as intended instead of throwing errors.

To achieve this, the class has to load `hyperref` quite early on, which can cause trouble with certain other packages. If you would rather load `hyperref` yourself at a different point, use this option.

### `textinst`

(no value, initially unset)

In all modes, patches the `\inst` command so that it prints its argument using `\textsuperscript` instead of a mathematical superscript. This helps avoid unnecessary font changes.

## 5 Setting the layout of the handouts

The class provides a simplified interface to the `pgfpages` package. By default, it prints six slides to a side of A4 paper, but you can change this by using the following command in the preamble.

**`\handoutlayout{<options>}`**

Configures the layout of the page when using `handout` mode. It has no effect in other modes. The available `<options>` are listed below.

**`paper=<paper size>`** (no default, initially `a4paper`)

Selects the size of paper to use for `handout` mode. The value is passed directly to `pgfpages`, so consult the documentation of that package for the allowed values. You can find them under the documentation for the `resize to layout`.

**`nup=2|3|3plus|4|4plus|6|8`** (no default, initially `6`)

Selects how many slides are shown on a single page in `handout` mode. The ‘plus’ layouts leave blank space for recipients to make handwritten notes next to each slide. The effects of the various values are shown in Figure 1 on page 8. Note that the `2`, `3plus`, `4` and `6` layouts are intended for slides in the usual 4:3 aspect ratio, while the `3`, `4plus` and `8` layouts are intended for widescreen slides.

**`pnos`** (no value, initially unset)

Adds page numbers to the bottom of each page. The number appears at a distance of `\handoutpnobaseline` (initially 5mm) from the bottom edge of the page. You can change this before calling `\handoutlayout`, if you like, using the usual mechanisms (e.g. `\setlength`).

**`border=<length>`** (default 0.4pt, initially 0pt)

Puts a rectangular border of thickness `<length>` around each slide. Note that the borders are drawn regardless of whether a slide is actually printed, so you may end up with empty boxes on the last page.

**`margin=<length>`** (default 0pt, initially 5mm)

Sets how much extra space to leave around each slide on the page. To achieve this it uses the `border shrink` option from `pgfpages`. If you add page numbers, this value will increase if necessary to prevent the number colliding with the slides, so treat it as a minimum.

**`align`** (no value, initially unset)

When `margin` is non-zero, the effective page margins are approximately half the size of the gaps between slides (some additional white space comes from preserving the aspect ratio of the slides). When set, this option tweaks the positions of the slides so that the page margins are approximately the same as the interior gaps.

## 6 Changing the look of article mode

Some additional options can be set by using the following command in the preamble.

**`\articlelayout{<options>}`**

Configures the appearance of `article` mode. It has no effect in other modes. The available `<options>` are listed below.

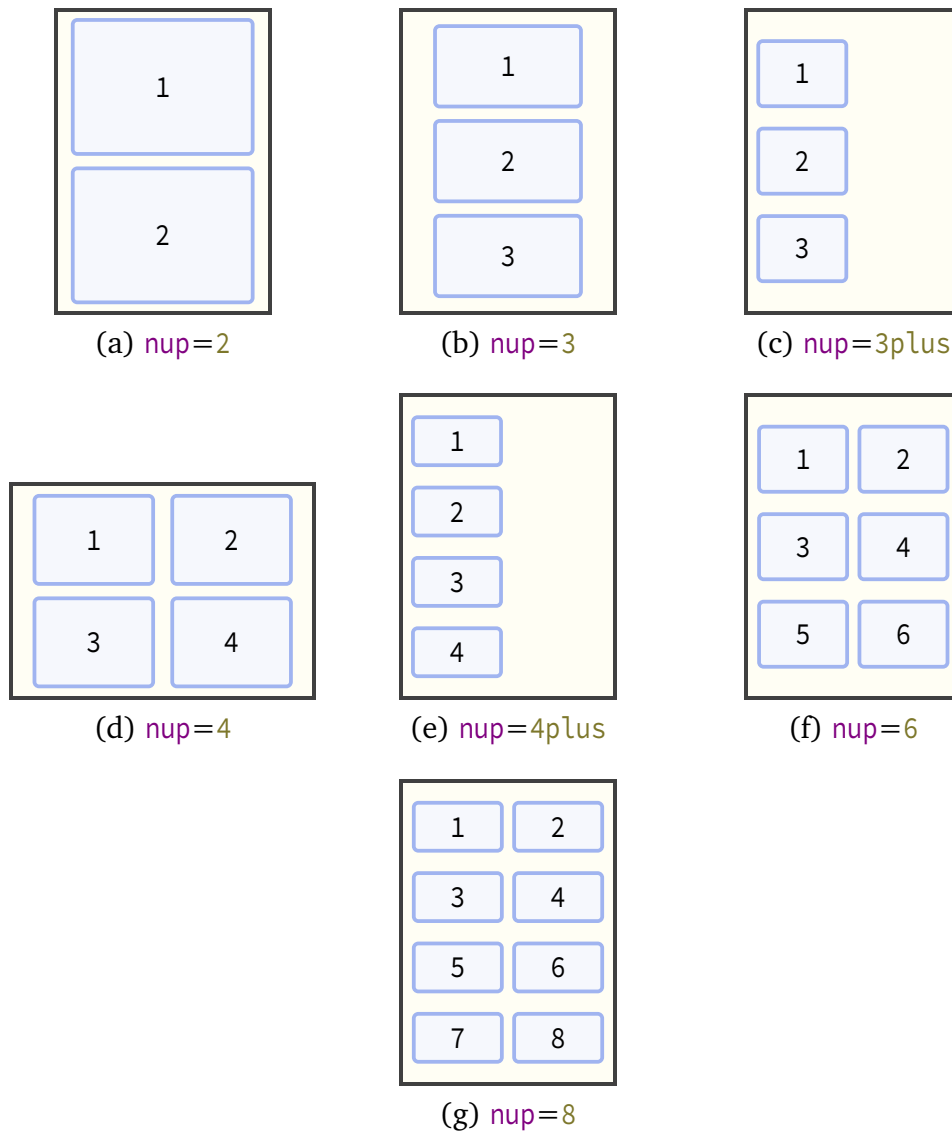


Figure 1: Handout layouts provided by `beamerswitch`

**frametitles**=`para`|`margin`|`none` (no default, initially `para`)

In `article` mode, affects how frame titles are printed. By default, `beamerarticle` prints them as paragraph headings, represented by the value `para`. To have them printed in the margin (using `\marginpar`), use `margin`. To omit them altogether, use the value `none`.

**maketitle** (no value, initially unset)

In `article` mode, adjusts the `\maketitle` routine:

- The title is printed closer to the top margin.
- The subtitle is shown joined to the title using a colon (rather than on a new line).
- The institute is shown directly beneath the author name, similar to the `beamer` layout, so you can use `\inst` just as in `beamer` to tie authors to their affiliations.

If you have `xparse` (and hence `expl3`) installed, the class will detect cases where your title ends in a character like ‘?’ and will not add a colon to it in that case. You



can also suppress the colon manually with the following code (add it *after* using `\title` if automatic detection is in effect):

```
\toggletrue{titlepunct}
```

## 7 Tips for further configuration

There are some other ways to customize the behaviour of the various modes.

You can use the standard  $\TeX$  methods for customizing how the `article` and `beamer` classes are loaded:

```
\PassOptionsToClass{a4paper,11pt}{article} % for article mode
\PassOptionsToClass{utf8}{beamer} % for beamer, handout, trans modes
\documentclass{beamerswitch}
```

And of course there is the standard `beamer` way of passing different options to different modes:

```
\documentclass{beamerswitch}
\mode<article>{
  \usepackage[utf8]{inputenc}
}
\mode<beamer>{
  \setbeameroption{second mode text on second screen}
}
```

## 8 Feedback

I hope you find this class useful. Please report any bugs and add any suggestions for improvements or new features to the [Issue Tracker](#) on GitHub.

## 9 Implementation

### 9.1 Dependencies

We use the following packages:

- `xkeyval` with `xkvltxp` for setting options
- `etoolbox` for command patches and list processing
- `xstring` for comparisons
- `shellesc` for running parallel compilations
- `iftex` for determining which engine to use

```
19 \RequirePackage{xkeyval,xkvltxp,etoolbox,xstring,shellesc,iftex}
```

### 9.2 Class options

We recognize four main modes of operation: ‘beamer’, ‘trans’, ‘handout’, and ‘article’.

The `beamer` option triggers beamer mode.

```
20 \define@boolkey[DC]{beamerswitch}{beamer}[true]{%  
21   \ifbool{DC@beamerswitch@beamer}{%  
22     \setkeys[DC]{beamerswitch}{trans=false}  
23     \setkeys[DC]{beamerswitch}{handout=false}  
24     \setkeys[DC]{beamerswitch}{article=false}  
25   }{}%  
26 }
```

The `trans` option triggers trans mode.

```
27 \define@boolkey[DC]{beamerswitch}{trans}[true]{%  
28   \ifbool{DC@beamerswitch@trans}{%  
29     \setkeys[DC]{beamerswitch}{beamer=false}  
30     \setkeys[DC]{beamerswitch}{handout=false}  
31     \setkeys[DC]{beamerswitch}{article=false}  
32   }{}%  
33 }
```

The `handout` option triggers handout mode.

```
34 \define@boolkey[DC]{beamerswitch}{handout}[true]{%  
35   \ifbool{DC@beamerswitch@handout}{%  
36     \setkeys[DC]{beamerswitch}{beamer=false}  
37     \setkeys[DC]{beamerswitch}{trans=false}  
38     \setkeys[DC]{beamerswitch}{article=false}  
39   }{}%  
40 }
```

The `article` option triggers article mode.

```

41 \define@boolkey[DC]{beamer switch}{article}[true]{%
42   \ifbool{DC@beamer switch@article}{%
43     \setkeys[DC]{beamer switch}{beamer=false}
44     \setkeys[DC]{beamer switch}{trans=false}
45     \setkeys[DC]{beamer switch}{handout=false}
46   }{}%
47 }

```

The `also` option allows the user to specify a set of alternative modes to typeset in parallel, in a comma-separated list. Alternatively, the user can specify the Boolean `also*` options directly.

```

48 \define@boolkey[DC]{beamer switch}{also beamer}[true]{}
49 \define@boolkey[DC]{beamer switch}{also trans}[true]{}
50 \define@boolkey[DC]{beamer switch}{also handout}[true]{}
51 \define@boolkey[DC]{beamer switch}{also article}[true]{}
52 \newcommand{\beamer switch@SetAlso}[1]{%
53   \key@ifundefined[DC]{beamer switch}{also#1}{%
54     \ClassWarning{beamer switch}{`#1' is not a valid value for option `also'}%
55   }{}%
56   \setkeys[DC]{beamer switch}{also#1}%
57 }%
58 }
59 \define@key[DC]{beamer switch}{also}{%
60   \forcsvlist{\beamer switch@SetAlso}{#1}%
61 }

```

The `nohyperref` option stops the class from loading the `hyperref` package in article mode.

```

62 \define@boolkey[DC]{beamer switch}{nohyperref}[true]{}

```

The `textinst` option adjusts the superscript used for institution markers.

```

63 \define@boolkey[DC]{beamer switch}{textinst}[true]{}

```

The default behaviour is to use beamer mode only.

```

64 \setkeys[DC]{beamer switch}{beamer=true,also beamer=false,also trans=false,%
65   also handout=false,also article=false}

```

Now we process the options given by the user.

```

66 \ProcessOptionsX[DC]<beamer switch>

```

### 9.3 Jobname-based mode switching

We define some default values for the special suffixes.

```

67 \providecommand*\BeamerSuffix{-slides}
68 \providecommand*\TransSuffix{-trans}
69 \providecommand*\HandoutSuffix{-handout}

```

```
70 \providecommand*\ArticleSuffix{-article}
```

We provide a special routine for spawning new  $\TeX$  processes. We allow for the possibility of the user overriding this routine with another one, perhaps using a different automation tool; it should take one argument, being the jobname suffix.

```
71 \providecommand\SpawnedCompiler{latexmk -silent -synctex=1
   ↪ -interaction=batchmode }
72 \providecommand\SpawnedTeX{\SpawnedCompiler}
73 \providecommand\SpawnedPDFTeX{\SpawnedCompiler -pdf }
74 \providecommand\SpawnedLuaTeX{\SpawnedCompiler -pdf lua }
75 \providecommand\SpawnedXeTeX{\SpawnedCompiler -pdf x e }
76 \providecommand\BeamerswitchSpawn[1]{%
77   \ifbool{PDFTeX}{%
78     \ShellEscape{\SpawnedPDFTeX -jobname=\jobname#1 \jobname}
79   }{%
80     \ifbool{LuaTeX}{%
81       \ShellEscape{\SpawnedLuaTeX -jobname=\jobname#1 \jobname}
82     }{%
83       \ifbool{XeTeX}{%
84         \ShellEscape{\SpawnedXeTeX -jobname=\jobname#1 \jobname}
85       }{%
86         \ShellEscape{\SpawnedTeX -jobname=\jobname#1 \jobname}
87       }%
88     }%
89   }%
90 }
```

We check for special jobnames and use them to override the above mode-related options. Note that if this happens, the `also*` options are ignored.

```
91 \IfEndWith*\jobname{\BeamerSuffix}{%
92   \setkeys[DC]{beamerswitch}{beamer=true}
93 }{%
94   \IfEndWith*\jobname{\TransSuffix}{%
95     \setkeys[DC]{beamerswitch}{trans=true}
96   }{%
97     \IfEndWith*\jobname{\HandoutSuffix}{%
98       \setkeys[DC]{beamerswitch}{handout=true}
99     }{%
100       \IfEndWith*\jobname{\ArticleSuffix}{%
101         \setkeys[DC]{beamerswitch}{article=true}
102       }{%
103         \ifbool{DC@beamerswitch@alsobeamer}{%
104           \BeamerswitchSpawn\BeamerSuffix}%
105         }{}
106         \ifbool{DC@beamerswitch@alsotrans}{%
107           \BeamerswitchSpawn\TransSuffix}%
108         }{}
109         \ifbool{DC@beamerswitch@alsohandout}{%
110           \BeamerswitchSpawn\HandoutSuffix}%
111         }{}
112         \ifbool{DC@beamerswitch@alsoarticle}{%
113           \BeamerswitchSpawn\ArticleSuffix}%
114         }{}

```

```

115     }%
116   }%
117 }%
118 }%

```

## 9.4 Setting up modes

For article mode, we load the `article` class and the `beamerarticle` support package. Apologies for anyone hoping for `scrartcl` or `memoir` alternatives.

```

119 \ifbool{DC@beamerswitch@article}{%
120   \LoadClass{article}
121   \RequirePackage{beamerarticle}

```

It seems as though `beamerarticle` expects `hyperref` to be loaded, but doesn't actually do it itself. So we oblige, using the default options specified by `beamer`.

```

122 \ifbool{DC@beamerswitch@nohyperref}{}{%
123   \RequirePackage[bookmarks=true,%
124     bookmarksopen=true,%
125     pdfborder={0 0 0},%
126     pdfhighlight={/N},%
127     linkbordercolor={.5 .5 .5}]{hyperref}%
128 }

```

While `beamer` takes care of adding presentation metadata to the PDF properties, `beamerarticle` misses the title and author properties. (It does manage to set the subject and keywords, though.) We achieve parity with some additional `\hypersetup`. Note that `beamerarticle` appends the subtitle to `\@title` with a linebreak and this does odd things in the context of `pdftitle`, so we fix it with `\pdfstringdefDisableCommands`.

```

129 \AtBeginDocument{%
130   \@ifpackageloaded{hyperref}{%
131     \pdfstringdefDisableCommands{\def\<#1>#2{ - #2}}
132     \begingroup
133     \hypersetup{pdftitle={\@title}}%
134     \def\and{\unskip, }%
135     \let\thanks=\@gobble
136     \let\inst=\@gobble
137     \hypersetup{pdfauthor={\@author}}%
138     \endgroup
139   }{}%
140 }
141 }%

```

For the presentation modes, we load the `beamer` class with appropriate options. Since we are targeting users wanting different versions of their presentations with the same code, we activate `ignorenonframetext`.

```

142 \ifbool{DC@beamerswitch@handout}{%
143   \LoadClass[ignorenonframetext,handout]{beamer}

```

Handout mode lays multiple slides out on a single page. For this we use `pgfpages`. The actual configuration is handled later.

```
144 \RequirePackage{pgfpages}
```

We also activate `ignorenonframetext` for the other two modes.

```
145 }{%
146 \ifbool{DC@beamerswitch@trans}{%
147 \LoadClass[ignorenonframetext,trans]{beamer}
148 }{%
149 \LoadClass[ignorenonframetext]{beamer}
150 }%
151 }
152 }
```

## 9.5 Mode-independent layout

We implement the option that formats institution markers in text mode rather than math mode.

```
153 \ifbool{DC@beamerswitch@textinst}{%
154 \def\beamer@insttitle#1{\textsuperscript{#1}}
155 \def\beamer@instinst#1{\textsuperscript{#1}\ignorespaces}
156 }{}
```

## 9.6 Handout layout

In theory it would be nice to anticipate the paper size that the article mode would use, and pass that as an option to `\pgfpagesuselayout` but as that's unlikely to be clean code, we settle here for setting it with an option.

```
157 \def\beamerswitch@handoutpaper{a4paper}
158 \define@key[HL]{beamerswitch}{paper}{%
159 \def\beamerswitch@handoutpaper{#1}%
160 }
```

The `nup` option specifies how many slides to include per page. The ‘plus’ keyword indicates a layout with additional gaps for writing.

```
161 \newcounter{beamerswitch@nupcase}
162 \setcounter{beamerswitch@nupcase}{5}
163 \define@choicekey+{HL}[beamerswitch]{nup}{\val\nr}{2, 3, 3plus, 4, 4plus, 6, 8}{%
164 \setcounter{beamerswitch@nupcase}{\nr}
165 }{%
166 \ClassWarning{beamerswitch}{Value of `nup' not recognized.
167 Allowed values are 2, 3, 3plus, 4, 4plus, 6, and 8.}%
168 }
```

The `borders` option switches on borders around the slides on handout pages (and gaps where slides would appear if there were enough). The value is used to set the width of the border.

This is implemented as a PGF drawing command, which is initially set up to do nothing but gets filled out if the option is selected.

```

169 \newcommand*{\beamerswitch@border}{\relax}
170 \define@key[HL]{beamerswitch}{border}[0.4pt]{%
171   \RequirePackage{pgf}%
172   \ifdimcomp{#1}{>}{0pt}{%
173     \renewcommand*{\beamerswitch@border}{\pgfsetlinewidth{#1}\pgfstroke}%
174   }%
175   \renewcommand*{\beamerswitch@border}{\relax}%
176 }%
177 }

```

The `margin` option controls how much white space is added around each slide on handout pages. It corresponds to the `border shrink` option of `\pgfpagesuselayout`.

```

178 \newlength{\beamerswitch@margin}
179 \setlength{\beamerswitch@margin}{5mm}
180 \define@key[HL]{beamerswitch}{margin}[0pt]{%
181   \setlength{\beamerswitch@margin}{#1}%
182 }

```

The `align` option chooses whether to rejig the positions of the slides on the page so that the effective page margin is the same as, rather than half, the space between adjacent slides.

```

183 \define@boolkey[HL]{beamerswitch}{align}[true]{}

```

The `pnos` option switches on page numbers for handout pages. The height at which the baseline of the number sits, relative to the bottom edge of the paper, is given by the length `\handoutpnobaseline`.

```

184 \newlength{\handoutpnobaseline}
185 \setlength{\handoutpnobaseline}{5mm}
186 \newcounter{handoutpno}
187 \define@boolkey[HL]{beamerswitch}{pnos}[true]{}

```

In order to implement the page numbers, we need to add a hook to the `pgfpages shipout` routine.

```

188 \def\beamerswitch@footer{}
189 \patchcmd{\pgfpages@buildshipoutbox}{%
190   \pgfsys@endpicture
191 }{%
192   \beamerswitch@footer\pgfsys@endpicture
193 }{}{}

```

We set up the `\handoutlayout` command for applying these options.

```

194 \newlength{\beamerswitch@pnoadjust}
195 \newcommand*{\handoutlayout}[1]{%
196   \only<handout>{%
197     \setlength{\beamerswitch@pnoadjust}{1em}%
198     \setkeys[HL]{beamerswitch}{#1}%
199     \ifbool{HL@beamerswitch@pnos}{%
200       \def\beamerswitch@footer{%
201         \stepcounter{handoutpno}%
202         \setbox0\vbox{\makebox[0pt][c]{\arabic{handoutpno}}}%
203         \pgfsys@beginscope
204         \pgflevel{\pgftransformshift}%
205         \pgfpoint{.5\pgfphysicalwidth}{\handoutpnobaseline}}}%
206         \wd0=0pt%
207         \dp0=-\ht0%
208         \pgfsys@hbox0%
209         \pgfsys@endscope
210       }%
211       \ifbool{HL@beamerswitch@align}{%
212         \ifcase\value{beamerswitch@nupcase}\relax
213           \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
214         \or
215           \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
216         \or
217           \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
218         \or
219           \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
220         \or
221           \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
222         \or
223           \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
224         \or
225           \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
226         \fi
227       }{}%
228       \ifdimcomp{\beamerswitch@margin}{<}%
229         {\handoutpnobaseline + \beamerswitch@pnoadjust}{%
230           \setlength{\beamerswitch@margin}%
231             {\the\dimexpr\handoutpnobaseline + \beamerswitch@pnoadjust\relax}%
232         }{}%
233     }{}%
234     \def\beamerswitch@footer{}%
235   }%
236   \ifcase\value{beamerswitch@nupcase}\relax
237     \def\beamerswitch@nup{2}%
238     \pgfpagesuselayout{1 by 2}[\beamerswitch@handoutpaper,%
239       border shrink=\the\beamerswitch@margin]%
240   \or
241     \def\beamerswitch@nup{3}%
242     \pgfpagesuselayout{1 by 3}[\beamerswitch@handoutpaper,%
243       border shrink=\the\beamerswitch@margin]%
244   \or
245     \def\beamerswitch@nup{3}%
246     \pgfpagesuselayout{1 by 3 narrow}[\beamerswitch@handoutpaper,%
247       border shrink=\the\beamerswitch@margin]%
248   \or
249     \def\beamerswitch@nup{4}%

```



```

250     \pgfpagesuselayout{2 by 2}[\beamerswitch@handoutpaper,%
251         landscape,border shrink=\the\beamerswitch@margin]%
252     \or
253     \def\beamerswitch@nup{4}%
254     \pgfpagesuselayout{1 by 4 narrow}[\beamerswitch@handoutpaper,%
255         border shrink=\the\beamerswitch@margin]%
256     \or
257     \def\beamerswitch@nup{6}%
258     \pgfpagesuselayout{2 by 3}[\beamerswitch@handoutpaper,%
259         border shrink=\the\beamerswitch@margin]%
260     \or
261     \def\beamerswitch@nup{8}%
262     \pgfpagesuselayout{2 by 4}[\beamerswitch@handoutpaper,%
263         border shrink=\the\beamerswitch@margin]%
264     \fi
265 }%
266 }

```

We initialize the class with the defaults set above.

```

267 \AtEndPreamble{%
268     \ifdef\beamerswitch@nup{}\{}%
269     \handoutlayout{}\{}%
270 }%
271 }

```

Though `pgfpages` defines some perfectly fine layouts, we need to add configurability to the existing ones and provide some new ones.

The ‘1 by 2’ layout is similar to the normal 2 on 1 layout.

```

272 \mode<handout>{%
273     \pgfpagesdeclarelayout{1 by 2}
274     {
275         \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
276         \edef\pgfpageoptionwidth{\the\paperheight}
277         \def\pgfpageoptionborder{0pt}
278         \def\pgfpageoptionfirstshipout{1}
279     }
280     {
281         \pgfpagesphysicalpageoptions
282         {%
283             logical pages=2,%
284             physical height=\pgfpageoptionheight,%
285             physical width=\pgfpageoptionwidth,%
286             current logical shipout=\pgfpageoptionfirstshipout%
287         }
288         \ifdim\paperheight>\paperwidth\relax
289             % put side-by-side
290             \pgfpageslogicalpageoptions{1}
291             {%
292                 border shrink=\pgfpageoptionborder,%
293                 border code=\beamerswitch@Border,%
294                 resized width=.5\pgfphysicalwidth,%
295                 resized height=\pgfphysicalheight,%
296                 center=\ifbool{HL@beamerswitch@align}{%

```

```

297     \pgfpoint{.25\pgfphysicalwidth +
      ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
298   }{%
299     \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
300   }%
301 }%
302 \pgfpageslogicalpageoptions{2}
303 {%
304   border shrink=\pgfpageoptionborder,%
305   border code=\beamerswitch@Border,%
306   resized width=.5\pgfphysicalwidth,%
307   resized height=\pgfphysicalheight,%
308   center=\ifbool{HL@beamerswitch@align}{%
309     \pgfpoint{.75\pgfphysicalwidth -
      ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
310   }{%
311     \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
312   }%
313 }%
314 \else
315   % stack on top of one another
316   \pgfpageslogicalpageoptions{1}
317   {%
318     border shrink=\pgfpageoptionborder,%
319     border code=\beamerswitch@Border,%
320     resized width=\pgfphysicalwidth,%
321     resized height=.5\pgfphysicalheight,%
322     center=\ifbool{HL@beamerswitch@align}{%
323       \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
        ↪ 0.333\beamerswitch@margin}%
324     }{%
325       \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
326     }%
327   }%
328   \pgfpageslogicalpageoptions{2}
329   {%
330     border shrink=\pgfpageoptionborder,%
331     border code=\beamerswitch@Border,%
332     resized width=\pgfphysicalwidth,%
333     resized height=.5\pgfphysicalheight,%
334     center=\ifbool{HL@beamerswitch@align}{%
335       \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
        ↪ 0.333\beamerswitch@margin}%
336     }{%
337       \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}%
338     }%
339   }%
340 \fi
341 }

```

The ‘1 by 3’ layout is similar to the ‘1 by 2’, but with an extra row.

```

342 \pgfpagesdeclarelayout{1 by 3}
343 {
344   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
345   \edef\pgfpageoptionwidth{\the\paperheight}

```

```

346 \def\pgfpagoptionborder{0pt}
347 \def\pgfpagoptionfirstshipout{1}
348 }
349 {
350 \pgfpagesphysicalpageoptions
351 {%
352 logical pages=3,%
353 physical height=\pgfpagoptionheight,%
354 physical width=\pgfpagoptionwidth,%
355 current logical shipout=\pgfpagoptionfirstshipout%
356 }
357 \ifdim\paperheight>\paperwidth\relax
358 % put side-by-side
359 \pgfpageslogicalpageoptions{1}
360 {%
361 border shrink=\pgfpagoptionborder,%
362 border code=\beamerswitch@Border,%
363 resized width=.333\pgfphysicalwidth,%
364 resized height=\pgfphysicalheight,%
365 center=\ifbool{HL@beamerswitch@align}{%
366 \pgfpoint{.167\pgfphysicalwidth +
367 ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
368 }{%
369 \pgfpoint{.167\pgfphysicalwidth}{.5\pgfphysicalheight}%
370 }%
371 \pgfpageslogicalpageoptions{2}
372 {%
373 border shrink=\pgfpagoptionborder,%
374 border code=\beamerswitch@Border,%
375 resized width=.333\pgfphysicalwidth,%
376 resized height=\pgfphysicalheight,%
377 center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
378 }%
379 \pgfpageslogicalpageoptions{3}
380 {%
381 border shrink=\pgfpagoptionborder,%
382 border code=\beamerswitch@Border,%
383 resized width=.333\pgfphysicalwidth,%
384 resized height=\pgfphysicalheight,%
385 center=\ifbool{HL@beamerswitch@align}{%
386 \pgfpoint{.833\pgfphysicalwidth -
387 ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
388 }{%
389 \pgfpoint{.833\pgfphysicalwidth}{.5\pgfphysicalheight}%
390 }%
391 }%
392 \else
393 % stack on top of one another
394 \pgfpageslogicalpageoptions{1}
395 {%
396 border shrink=\pgfpagoptionborder,%
397 border code=\beamerswitch@Border,%
398 resized width=\pgfphysicalwidth,%
399 resized height=.333\pgfphysicalheight,%
400 center=\ifbool{HL@beamerswitch@align}{%

```

```

400      \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight -
      ↪ 0.5\beamerswitch@margin}%
401    }{%
402      \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight}%
403    }%
404  }%
405  \pgfpageslogicalpageoptions{2}
406  {%
407    border shrink=\pgfpageoptionborder,%
408    border code=\beamerswitch@Border,%
409    resized width=\pgfphysicalwidth,%
410    resized height=.333\pgfphysicalheight,%
411    center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
412  }%
413  \pgfpageslogicalpageoptions{3}
414  {%
415    border shrink=\pgfpageoptionborder,%
416    border code=\beamerswitch@Border,%
417    resized width=\pgfphysicalwidth,%
418    resized height=.333\pgfphysicalheight,%
419    center=\ifbool{HL@beamerswitch@align}{%
420      \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight +
      ↪ 0.5\beamerswitch@margin}%
421    }{%
422      \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight}%
423    }%
424  }%
425  \fi
426  }

```

The ‘1 by 3 narrow’ layout is like the ‘1 by 3’ layout but restricted to the left (or top) half of the page.

```

427  \pgfpagesdeclarelayout{1 by 3 narrow}
428  {
429    \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
430    \edef\pgfpageoptionwidth{\the\paperheight}
431    \def\pgfpageoptionborder{0pt}
432    \def\pgfpageoptionfirstshipout{1}
433  }
434  {
435    \pgfpagesphysicalpageoptions
436    {%
437      logical pages=3,%
438      physical height=\pgfpageoptionheight,%
439      physical width=\pgfpageoptionwidth,%
440      current logical shipout=\pgfpageoptionfirstshipout%
441    }
442    \ifdim\paperheight>\paperwidth\relax
443      % put side-by-side
444    \pgfpageslogicalpageoptions{1}
445    {%
446      border shrink=\pgfpageoptionborder,%
447      border code=\beamerswitch@Border,%
448      resized width=.333\pgfphysicalwidth,%
449      resized height=.5\pgfphysicalheight,%

```

```

450 center=\ifbool{HL@beamerswitch@align}{%
451   \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
452   {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
453 }{%
454   \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
455 }%
456 }%
457 \pgfpageslogicalpageoptions{2}
458 {%
459   border shrink=\pgfpageoptionborder,%
460   border code=\beamerswitch@Border,%
461   resized width=.333\pgfphysicalwidth,%
462   resized height=.5\pgfphysicalheight,%
463   center=\ifbool{HL@beamerswitch@align}{%
464     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
465       ↪ 0.5\beamerswitch@margin}%
466   }{%
467     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
468   }%
469 \pgfpageslogicalpageoptions{3}
470 {%
471   border shrink=\pgfpageoptionborder,%
472   border code=\beamerswitch@Border,%
473   resized width=.333\pgfphysicalwidth,%
474   resized height=.5\pgfphysicalheight,%
475   center=\ifbool{HL@beamerswitch@align}{%
476     \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
477     {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
478   }{%
479     \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
480   }%
481 }%
482 \else
483 % stack on top of one another
484 \pgfpageslogicalpageoptions{1}
485 {%
486   border shrink=\pgfpageoptionborder,%
487   border code=\beamerswitch@Border,%
488   resized width=.5\pgfphysicalwidth,%
489   resized height=.333\pgfphysicalheight,%
490   center=\ifbool{HL@beamerswitch@align}{%
491     \pgfpoint{.25\pgfphysicalwidth + 0.5\beamerswitch@margin}%
492     {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
493   }{%
494     \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}%
495   }%
496 }%
497 \pgfpageslogicalpageoptions{2}
498 {%
499   border shrink=\pgfpageoptionborder,%
500   border code=\beamerswitch@Border,%
501   resized width=.5\pgfphysicalwidth,%
502   resized height=.333\pgfphysicalheight,%
503   center=\ifbool{HL@beamerswitch@align}{%

```

```

504     \pgfpoint{.25\pgfphysicalwidth +
      ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
505   }{%
506     \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
507   }%
508 }%
509 \pgfpageslogicalpageoptions{3}
510 {%
511   border shrink=\pgfpageoptionborder,%
512   border code=\beamerswitch@Border,%
513   resized width=.5\pgfphysicalwidth,%
514   resized height=.333\pgfphysicalheight,%
515   center=\ifbool{HL@beamerswitch@align}{%
516     \pgfpoint{.25\pgfphysicalwidth + 0.5\beamerswitch@margin}%
517     {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
518   }{%
519     \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
520   }%
521 }%
522 \fi
523 }

```

The ‘2 by 2’ layout is similar to the normal 4 on 1 layout.

```

524 \pgfpagesdeclarelayout{2 by 2}
525 {
526   \edef\pgfpageoptionheight{\the\paperheight}
527   \edef\pgfpageoptionwidth{\the\paperwidth}
528   \edef\pgfpageoptionborder{0pt}
529 }
530 {
531   \pgfpagesphysicalpageoptions
532   {%
533     logical pages=4,%
534     physical height=\pgfpageoptionheight,%
535     physical width=\pgfpageoptionwidth%
536   }
537   \pgfpageslogicalpageoptions{1}
538   {%
539     border shrink=\pgfpageoptionborder,%
540     border code=\beamerswitch@Border,%
541     resized width=.5\pgfphysicalwidth,%
542     resized height=.5\pgfphysicalheight,%
543     center=\ifbool{HL@beamerswitch@align}{%
544       \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
545       {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
546     }{%
547       \pgfpoint{.25\pgfphysicalwidth}{.75\pgfphysicalheight}%
548     }%
549   }%
550   \pgfpageslogicalpageoptions{2}
551   {%
552     border shrink=\pgfpageoptionborder,%
553     border code=\beamerswitch@Border,%
554     resized width=.5\pgfphysicalwidth,%
555     resized height=.5\pgfphysicalheight,%

```

```

556 center=\ifbool{HL@beamerswitch@align}{%
557   \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
558   {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
559 }{%
560   \pgfpoint{.75\pgfphysicalwidth}{.75\pgfphysicalheight}%
561 }%
562 }%
563 \pgfpageslogicalpageoptions{3}
564 {%
565   border shrink=\pgfpageoptionborder,%
566   border code=\beamerswitch@Border,%
567   resized width=.5\pgfphysicalwidth,%
568   resized height=.5\pgfphysicalheight,%
569   center=\ifbool{HL@beamerswitch@align}{%
570     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
571     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
572   }{%
573     \pgfpoint{.25\pgfphysicalwidth}{.25\pgfphysicalheight}%
574   }%
575 }%
576 \pgfpageslogicalpageoptions{4}
577 {%
578   border shrink=\pgfpageoptionborder,%
579   border code=\beamerswitch@Border,%
580   resized width=.5\pgfphysicalwidth,%
581   resized height=.5\pgfphysicalheight,%
582   center=\ifbool{HL@beamerswitch@align}{%
583     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
584     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
585   }{%
586     \pgfpoint{.75\pgfphysicalwidth}{.25\pgfphysicalheight}%
587   }%
588 }%
589 }

```

The ‘1 by 4 narrow’ layout puts four slides in a column on the left half of the page (or in a row on the top half).

```

590 \pgfpagesdeclarelayout{1 by 4 narrow}
591 {
592   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
593   \edef\pgfpageoptionwidth{\the\paperheight}
594   \def\pgfpageoptionborder{0pt}
595   \def\pgfpageoptionfirstshipout{1}
596 }
597 {
598   \pgfpagesphysicalpageoptions
599   {%
600     logical pages=4,%
601     physical height=\pgfpageoptionheight,%
602     physical width=\pgfpageoptionwidth,%
603     current logical shipout=\pgfpageoptionfirstshipout%
604   }
605   \ifdim\paperheight>\paperwidth\relax
606     % put side-by-side
607     \pgfpageslogicalpageoptions{1}

```

```

608 {%
609     border shrink=\pgfpageoptionborder,%
610     border code=\beamerswitch@Border,%
611     resized width=.25\pgfphysicalwidth,%
612     resized height=.5\pgfphysicalheight,%
613     center=\ifbool{HL@beamerswitch@align}{%
614         \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
615         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
616     }{%
617         \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
618     }%
619 }%
620 \pgfpageslogicalpageoptions{2}
621 {%
622     border shrink=\pgfpageoptionborder,%
623     border code=\beamerswitch@Border,%
624     resized width=.25\pgfphysicalwidth,%
625     resized height=.5\pgfphysicalheight,%
626     center=\ifbool{HL@beamerswitch@align}{%
627         \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
628         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
629     }{%
630         \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%
631     }%
632 }%
633 \pgfpageslogicalpageoptions{3}
634 {%
635     border shrink=\pgfpageoptionborder,%
636     border code=\beamerswitch@Border,%
637     resized width=.25\pgfphysicalwidth,%
638     resized height=.5\pgfphysicalheight,%
639     center=\ifbool{HL@beamerswitch@align}{%
640         \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
641         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
642     }{%
643         \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
644     }%
645 }%
646 \pgfpageslogicalpageoptions{4}
647 {%
648     border shrink=\pgfpageoptionborder,%
649     border code=\beamerswitch@Border,%
650     resized width=.25\pgfphysicalwidth,%
651     resized height=.5\pgfphysicalheight,%
652     center=\ifbool{HL@beamerswitch@align}{%
653         \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
654         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
655     }{%
656         \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
657     }%
658 }%
659 \else
660 % stack on top of one another
661 \pgfpageslogicalpageoptions{1}
662 {%
663     border shrink=\pgfpageoptionborder,%

```



```

664 border code=\beamerswitch@Border,%
665 resized width=.5\pgfphysicalwidth,%
666 resized height=.25\pgfphysicalheight,%
667 center=\ifbool{HL@beamerswitch@align}{%
668     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
669     {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
670 }{%
671     \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
672 }%
673 }%
674 \pgfpageslogicalpageoptions{2}
675 {%
676 border shrink=\pgfpageoptionborder,%
677 border code=\beamerswitch@Border,%
678 resized width=.5\pgfphysicalwidth,%
679 resized height=.25\pgfphysicalheight,%
680 center=\ifbool{HL@beamerswitch@align}{%
681     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
682     {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
683 }{%
684     \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
685 }%
686 }%
687 \pgfpageslogicalpageoptions{3}
688 {%
689 border shrink=\pgfpageoptionborder,%
690 border code=\beamerswitch@Border,%
691 resized width=.5\pgfphysicalwidth,%
692 resized height=.25 \pgfphysicalheight,%
693 center=\ifbool{HL@beamerswitch@align}{%
694     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
695     {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
696 }{%
697     \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
698 }%
699 }%
700 \pgfpageslogicalpageoptions{4}
701 {%
702 border shrink=\pgfpageoptionborder,%
703 border code=\beamerswitch@Border,%
704 resized width=.5\pgfphysicalwidth,%
705 resized height=.25 \pgfphysicalheight,%
706 center=\ifbool{HL@beamerswitch@align}{%
707     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
708     {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
709 }{%
710     \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
711 }%
712 }%
713 \fi
714 }

```

The ‘2 by 3’ layout positions the slides as three rows of two slides each.

```

715 \pgfpagesdeclarelayout{2 by 3}
716 {

```

```

717 \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
718 \edef\pgfpageoptionwidth{\the\paperheight}
719 \def\pgfpageoptionborder{0pt}
720 \def\pgfpageoptionfirstshipout{1}
721 }
722 {
723 \pgfpagesphysicalpageoptions
724 {%
725 logical pages=6,%
726 physical height=\pgfpageoptionheight,%
727 physical width=\pgfpageoptionwidth,%
728 current logical shipout=\pgfpageoptionfirstshipout%
729 }
730 \ifdim\paperheight>\paperwidth\relax
731 % put side-by-side
732 \pgfpageslogicalpageoptions{1}
733 {%
734 border shrink=\pgfpageoptionborder,%
735 border code=\beamerswitch@Border,%
736 resized width=.333\pgfphysicalwidth,%
737 resized height=.5\pgfphysicalheight,%
738 center=\ifbool{HL@beamerswitch@align}{%
739 \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}{%
740 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}}%
741 }{%
742 \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
743 }%
744 }%
745 \pgfpageslogicalpageoptions{2}
746 {%
747 border shrink=\pgfpageoptionborder,%
748 border code=\beamerswitch@Border,%
749 resized width=.333\pgfphysicalwidth,%
750 resized height=.5\pgfphysicalheight,%
751 center=\ifbool{HL@beamerswitch@align}{%
752 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
753 ↪ 0.333\beamerswitch@margin}}%
754 }{%
755 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
756 }%
757 \pgfpageslogicalpageoptions{3}
758 {%
759 border shrink=\pgfpageoptionborder,%
760 border code=\beamerswitch@Border,%
761 resized width=.333\pgfphysicalwidth,%
762 resized height=.5\pgfphysicalheight,%
763 center=\ifbool{HL@beamerswitch@align}{%
764 \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}{%
765 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}}%
766 }{%
767 \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
768 }%
769 }%
770 \pgfpageslogicalpageoptions{4}
771 {%

```

```

772 border shrink=\pgfpageoptionborder,%
773 border code=\beamerswitch@Border,%
774 resized width=.333\pgfphysicalwidth,%
775 resized height=.5\pgfphysicalheight,%
776 center=\ifbool{HL@beamerswitch@align}{%
777   \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}{%
778     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}}%
779 }{%
780   \pgfpoint{.167\pgfphysicalwidth}{.25\pgfphysicalheight}}%
781 }%
782 }%
783 \pgfpageslogicalpageoptions{5}
784 {%
785 border shrink=\pgfpageoptionborder,%
786 border code=\beamerswitch@Border,%
787 resized width=.333\pgfphysicalwidth,%
788 resized height=.5\pgfphysicalheight,%
789 center=\ifbool{HL@beamerswitch@align}{%
790   \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
791     ↪ 0.333\beamerswitch@margin}}%
792 }{%
793   \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}}%
794 }%
795 \pgfpageslogicalpageoptions{6}
796 {%
797 border shrink=\pgfpageoptionborder,%
798 border code=\beamerswitch@Border,%
799 resized width=.333\pgfphysicalwidth,%
800 resized height=.5\pgfphysicalheight,%
801 center=\ifbool{HL@beamerswitch@align}{%
802   \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}{%
803     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}}%
804 }{%
805   \pgfpoint{.833\pgfphysicalwidth}{.25\pgfphysicalheight}}%
806 }%
807 }%
808 \else
809 % stack on top of one another
810 \pgfpageslogicalpageoptions{1}
811 {%
812 border shrink=\pgfpageoptionborder,%
813 resized width=.5\pgfphysicalwidth,%
814 resized height=.333\pgfphysicalheight,%
815 center=\ifbool{HL@beamerswitch@align}{%
816   \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}{%
817     {.833\pgfphysicalheight - 0.5\beamerswitch@margin}}%
818 }{%
819   \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}}%
820 }%
821 }%
822 \pgfpageslogicalpageoptions{2}
823 {%
824 border shrink=\pgfpageoptionborder,%
825 border code=\beamerswitch@Border,%
826 resized width=.5\pgfphysicalwidth,%

```

```

827 resized height=.333\pgfphysicalheight,%
828 center=\ifbool{HL@beamerswitch@align}{%
829   \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}{%
830     {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
831   }{%
832     \pgfpoint{.75\pgfphysicalwidth}{.833\pgfphysicalheight}%
833   }%
834 }%
835 \pgfpageslogicalpageoptions{3}
836 {%
837   border shrink=\pgfpageoptionborder,%
838   border code=\beamerswitch@Border,%
839   resized width=.5\pgfphysicalwidth,%
840   resized height=.333\pgfphysicalheight,%
841   center=\ifbool{HL@beamerswitch@align}{%
842     \pgfpoint{.25\pgfphysicalwidth +
843       → 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
844     }{%
845       \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
846     }%
847   }%
848 \pgfpageslogicalpageoptions{4}
849 {%
850   border shrink=\pgfpageoptionborder,%
851   border code=\beamerswitch@Border,%
852   resized width=.5\pgfphysicalwidth,%
853   resized height=.333\pgfphysicalheight,%
854   center=\ifbool{HL@beamerswitch@align}{%
855     \pgfpoint{.75\pgfphysicalwidth -
856       → 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
857     }{%
858       \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
859     }%
860   }%
861 \pgfpageslogicalpageoptions{5}
862 {%
863   border shrink=\pgfpageoptionborder,%
864   border code=\beamerswitch@Border,%
865   resized width=.5\pgfphysicalwidth,%
866   resized height=.333\pgfphysicalheight,%
867   center=\ifbool{HL@beamerswitch@align}{%
868     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}{%
869       {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
870     }{%
871       \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
872     }%
873   }%
874 \pgfpageslogicalpageoptions{6}
875 {%
876   border shrink=\pgfpageoptionborder,%
877   border code=\beamerswitch@Border,%
878   resized width=.5\pgfphysicalwidth,%
879   resized height=.333\pgfphysicalheight,%
880   center=\ifbool{HL@beamerswitch@align}{%
881     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}{%
882       {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%

```

```

881     }{%
882     \pgfpoint{.75\pgfphysicalwidth}{.167\pgfphysicalheight}%
883     }%
884 }%
885 \fi
886 }

```

The '2 by 4' layout layout positions the slides as four rows of two slides each.

```

887 \pgfpagesdeclarelayout{2 by 4}
888 {
889   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
890   \edef\pgfpageoptionwidth{\the\paperheight}
891   \def\pgfpageoptionborder{0pt}
892   \def\pgfpageoptionfirstshipout{1}
893 }
894 {
895   \pgfpagesphysicalpageoptions
896   {%
897     logical pages=8,%
898     physical height=\pgfpageoptionheight,%
899     physical width=\pgfpageoptionwidth,%
900     current logical shipout=\pgfpageoptionfirstshipout%
901   }
902   \ifdim\paperheight>\paperwidth\relax
903   % put side-by-side
904   \pgfpageslogicalpageoptions{1}
905   {%
906     border shrink=\pgfpageoptionborder,%
907     border code=\beamerswitch@Border,%
908     resized width=.25\pgfphysicalwidth,%
909     resized height=.5\pgfphysicalheight,%
910     center=\ifbool{HL@beamerswitch@align}{%
911       \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
912       {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
913     }{%
914       \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
915     }%
916   }%
917   \pgfpageslogicalpageoptions{2}
918   {%
919     border shrink=\pgfpageoptionborder,%
920     border code=\beamerswitch@Border,%
921     resized width=.25\pgfphysicalwidth,%
922     resized height=.5\pgfphysicalheight,%
923     center=\ifbool{HL@beamerswitch@align}{%
924       \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
925       {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
926     }{%
927       \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%
928     }%
929   }%
930   \pgfpageslogicalpageoptions{3}
931   {%
932     border shrink=\pgfpageoptionborder,%
933     border code=\beamerswitch@Border,%

```

```

934 resized width=.25\pgfphysicalwidth,%
935 resized height=.5\pgfphysicalheight,%
936 center=\ifbool{HL@beamerswitch@align}{%
937   \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
938   {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
939 }{%
940   \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
941 }%
942 }%
943 \pgfpageslogicalpageoptions{4}
944 {%
945   border shrink=\pgfpageoptionborder,%
946   border code=\beamerswitch@Border,%
947   resized width=.25\pgfphysicalwidth,%
948   resized height=.5\pgfphysicalheight,%
949   center=\ifbool{HL@beamerswitch@align}{%
950     \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
951     {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
952   }{%
953     \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
954   }%
955 }%
956 \pgfpageslogicalpageoptions{5}
957 {%
958   border shrink=\pgfpageoptionborder,%
959   border code=\beamerswitch@Border,%
960   resized width=.25\pgfphysicalwidth,%
961   resized height=.5\pgfphysicalheight,%
962   center=\ifbool{HL@beamerswitch@align}{%
963     \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
964     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
965   }{%
966     \pgfpoint{.125\pgfphysicalwidth}{.25\pgfphysicalheight}%
967   }%
968 }%
969 \pgfpageslogicalpageoptions{6}
970 {%
971   border shrink=\pgfpageoptionborder,%
972   border code=\beamerswitch@Border,%
973   resized width=.25\pgfphysicalwidth,%
974   resized height=.5\pgfphysicalheight,%
975   center=\ifbool{HL@beamerswitch@align}{%
976     \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
977     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
978   }{%
979     \pgfpoint{.375\pgfphysicalwidth}{.25\pgfphysicalheight}%
980   }%
981 }%
982 \pgfpageslogicalpageoptions{7}
983 {%
984   border shrink=\pgfpageoptionborder,%
985   border code=\beamerswitch@Border,%
986   resized width=.25\pgfphysicalwidth,%
987   resized height=.5\pgfphysicalheight,%
988   center=\ifbool{HL@beamerswitch@align}{%
989     \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%

```

```

990         {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
991     }{%
992         \pgfpoint{.625\pgfphysicalwidth}{.25\pgfphysicalheight}%
993     }%
994 }%
995 \pgfpageslogicalpageoptions{8}
996 {%
997     border shrink=\pgfpageoptionborder,%
998     border code=\beamerswitch@Border,%
999     resized width=.25\pgfphysicalwidth,%
1000    resized height=.5\pgfphysicalheight,%
1001    center=\ifbool{HL@beamerswitch@align}{%
1002        \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
1003        {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1004    }{%
1005        \pgfpoint{.875\pgfphysicalwidth}{.25\pgfphysicalheight}%
1006    }%
1007 }%
1008 \else
1009 % stack on top of one another
1010 \pgfpageslogicalpageoptions{1}
1011 {%
1012     border shrink=\pgfpageoptionborder,%
1013     border code=\beamerswitch@Border,%
1014     resized width=.5\pgfphysicalwidth,%
1015     resized height=.25\pgfphysicalheight,%
1016     center=\ifbool{HL@beamerswitch@align}{%
1017         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1018         {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1019     }{%
1020         \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
1021     }%
1022 }%
1023 \pgfpageslogicalpageoptions{2}
1024 {%
1025     border shrink=\pgfpageoptionborder,%
1026     border code=\beamerswitch@Border,%
1027     resized width=.5\pgfphysicalwidth,%
1028     resized height=.25\pgfphysicalheight,%
1029     center=\ifbool{HL@beamerswitch@align}{%
1030         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1031         {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1032     }{%
1033         \pgfpoint{.75\pgfphysicalwidth}{.875\pgfphysicalheight}%
1034     }%
1035 }%
1036 \pgfpageslogicalpageoptions{3}
1037 {%
1038     border shrink=\pgfpageoptionborder,%
1039     border code=\beamerswitch@Border,%
1040     resized width=.5\pgfphysicalwidth,%
1041     resized height=.25\pgfphysicalheight,%
1042     center=\ifbool{HL@beamerswitch@align}{%
1043         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1044         {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
1045     }{%

```



```

1046     \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
1047 }%
1048 }%
1049 \pgfpageslogicalpageoptions{4}
1050 {%
1051     border shrink=\pgfpageoptionborder,%
1052     border code=\beamerswitch@Border,%
1053     resized width=.5\pgfphysicalwidth,%
1054     resized height=.25\pgfphysicalheight,%
1055     center=\ifbool{HL@beamerswitch@align}{%
1056         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1057         {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
1058     }{%
1059         \pgfpoint{.75\pgfphysicalwidth}{.625\pgfphysicalheight}%
1060     }%
1061 }%
1062 \pgfpageslogicalpageoptions{5}
1063 {%
1064     border shrink=\pgfpageoptionborder,%
1065     border code=\beamerswitch@Border,%
1066     resized width=.5\pgfphysicalwidth,%
1067     resized height=.25 \pgfphysicalheight,%
1068     center=\ifbool{HL@beamerswitch@align}{%
1069         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1070         {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1071     }{%
1072         \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
1073     }%
1074 }%
1075 \pgfpageslogicalpageoptions{6}
1076 {%
1077     border shrink=\pgfpageoptionborder,%
1078     border code=\beamerswitch@Border,%
1079     resized width=.5\pgfphysicalwidth,%
1080     resized height=.25 \pgfphysicalheight,%
1081     center=\ifbool{HL@beamerswitch@align}{%
1082         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1083         {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1084     }{%
1085         \pgfpoint{.75\pgfphysicalwidth}{.375\pgfphysicalheight}%
1086     }%
1087 }%
1088 \pgfpageslogicalpageoptions{7}
1089 {%
1090     border shrink=\pgfpageoptionborder,%
1091     border code=\beamerswitch@Border,%
1092     resized width=.5\pgfphysicalwidth,%
1093     resized height=.25 \pgfphysicalheight,%
1094     center=\ifbool{HL@beamerswitch@align}{%
1095         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1096         {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1097     }{%
1098         \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
1099     }%
1100 }%
1101 \pgfpageslogicalpageoptions{8}

```



```

1102 {%
1103   border shrink=\pgfpageoptionborder,%
1104   border code=\beamerswitch@Border,%
1105   resized width=.5\pgfphysicalwidth,%
1106   resized height=.25 \pgfphysicalheight,%
1107   center=\ifbool{HL@beamerswitch@align}{%
1108     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1109     {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1110   }{%
1111     \pgfpoint{.75\pgfphysicalwidth}{.125\pgfphysicalheight}%
1112   }%
1113 }%
1114 \fi
1115 }
1116 }

```

## 9.7 Article layout

We provide some options for configuring the appearance of article mode.

The `maketitle` option triggers adjustments in how the title block is printed.

```

1117 \define@boolkey[AL]{beamerswitch}{maketitle}[true]{}

```

One will be to join the title and subtitle with a colon. There is an edge case where, if the user provides a title that ends in ‘!’ or ‘?’ and provides a subtitle while this option is in effect, they will end up with clashing punctuation in the middle of the displayed title (‘!.’ or ‘?:’). We therefore introduce a toggle that, if set true, suppresses the additional colon.

```

1118 \newtoggle{titlepunct}

```

Of course, we would rather not bother the user with this, so we introduce a command for testing the title for final punctuation.

The only way I can seem to do this is by switching to `expl3` syntax. Rather than introduce extra hard dependencies to cope with what will probably be quite a rare issue, we make the dependency soft: it will only be applied if `xparse` is available. If there is demand for it, we could introduce a class option to switch this code on or off, but let’s see how we go.

```

1119 \IfFileExists{xparse.sty}{\@tempswatrue}{\@tempswafalse}
1120 \if@tempswa
1121   \RequirePackage{xparse}
1122   \ExplSyntaxOn
1123   \NewDocumentCommand{\bsw@punct@test}{m}{\l_bsw_punct_test:n {#1}}
1124   \cs_new_protected:Nn \l_bsw_punct_test:n
1125   {
1126     \str_case:x:nnTF { \str_item:nn {#1} {-1} }
1127     {
1128       { , } { }
1129       { ; } { }
1130       { : } { }

```

```

1131     { . } { }
1132     { ! } { }
1133     { ? } { }
1134   }
1135   { \global\toggletrue{titlepunct} }
1136   { \global\togglefalse{titlepunct} }
1137 }
1138 \ExplSyntaxOff

```

We insert this test into the definitions for `\title` introduced by `beamer/beamerarticle`.

```

1139 \mode<article>{%
1140   \renewcommand{\title}[2][\beamer@origtitle{#2}\bsw@punct@test{#2}]
1141 }
1142 \mode<presentation>{%
1143   \long\def\beamer@title[#1]#2{%
1144     \def\inserttitle{#2}%
1145     \def\beamer@shorttitle{#1}%
1146     \bsw@punct@test{#2}%
1147   }
1148 }
1149 \else
1150   \wlog{Beamerswitch: Auto-detection of title punctuation not available.}
1151 \fi

```

We offer some alternatives for handling frame titles in article mode.

- `para` is what `beamerarticle` normally does.
- `margin` puts the frame titles in the margin.
- `none` gets rid of them entirely.

```

1152 \define@choicekey+{AL}{beamerswitch}{frametitles}{para, margin, none}{%
1153   \def\beamerswitch@articleframetitles{#1}%
1154 }{%
1155   \ClassWarning{beamerswitch}{Value of `frametitles' not recognized.
1156     Allowed values are para, margin, and none.}%
1157 }

```

We provide a command for setting these options.

```

1158 \newcommand{\articlelayout}[1]{%
1159   \setkeys{AL}{beamerswitch}{#1}%

```

The following options are mode specific.

```

1160 \mode<article>{%

```

Personally I find slide titles somewhat intrusive in article mode. They can easily end up duplicating section headings in running text, or captions in figures. You may have other ideas, so we keep this behaviour configurable.

The `margin` value is implemented using `\marginpar`.

```

1161 \ifcsstring{beamerswitch@articleframetitles}{margin}{%
1162   \setbeamertemplate{frametitle}{%
1163     \marginpar[%
1164       \raggedleft\noindent\emshape\textbf{\insertframetitle}\par
1165       \noindent\insertframesubtitle\par
1166     ]{%
1167       \raggedright\noindent\emshape\textbf{\insertframetitle}\par
1168       \noindent\insertframesubtitle\par
1169     }%
1170   }
1171 }{%
1172   \ifcsstring{beamerswitch@articleframetitles}{none}{%
1173     \setbeamertemplate{frametitle}{}
1174   }{%
1175     \ifcsstring{beamerswitch@articleframetitles}{para}{%
1176       \setbeamertemplate{frametitle}[default]
1177     }{}%
1178   }%
1179 }

```

This is where we make our adjustments to `\maketitle`. We start by joining the subtitle to the title by means of a colon instead of a newline.

```

1180 \ifbool{AL@beamerswitch@maketitle}{%
1181   \renewcommand{\subtitle}[2][]{%
1182     \def\insertsubtitle{##2}\gappto@title{\iftoggle{titlepunct}{}{:} ##2}%
1183   }

```

We add support for printing the institute information.

```

1184 \ifundef{\beamer@originstitute}{%
1185   \renewcommand{\institute}[2][]{\def\insertinstitute{##2}}%
1186 }{%
1187   \renewcommand{\institute}[2][]{%
1188     \def\insertinstitute{##2}\beamer@originstitute{##2}}%
1189 }%

```

Our first change to `\maketitle` itself is to remove the initial vertical space.

```

1190 \def\@maketitle{%
1191   \newpage
1192   \null
1193   \begin{center}%
1194     \let\footnote\thanks
1195     {\LARGE \@title \par}%
1196     \vskip 1.5em%
1197     {%
1198       \large\lineskip .5em%
1199       \begin{tabular}[t]{c}%
1200         \@author
1201         \end{tabular}\par
1202     }%

```

The other is to add in a row for the institute information.

```

1203     \ifdefvoid{\insertinstitute}{\}%
1204     {%
1205         \normalsize\lineskip .5em%
1206         \begin{tabular}[t]{c}%
1207             \insertinstitute
1208         \end{tabular}\par
1209     }%
1210 }%
1211 \vskip 1em%
1212 {\large \@date}%
1213 \end{center}%
1214 \par\vskip 1.5em%
1215 }%
1216 }{}%
1217 }%

```

For consistency, if the `maketitle` option has been passed, we change the PDF metadata in the other modes to use the colon convention for joining the title and subtitle.

```

1218 \mode<presentation>{%
1219     \ifbool{AL@beamerswitch@maketitle}{%
1220         \ifbool{beamer@autopdfinfo}{%
1221             \patchcmd{\beamer@firstminutepatches}{%
1222                 \inserttitle\ifx\insertsubtitle\@empty\else\ - \insertsubtitle\fi
1223             }{%
1224                 \inserttitle\ifx\insertsubtitle\@empty\else\iftoggle{titlepunct}{\}{:}
1225                 ↪ \insertsubtitle\fi
1226             }{}{}%
1227         }{}%
1228     }%
1229 }

```

There is no more.

```

1230 \endinput

```

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