

# beamerswitch — Convenient mode selection in Beamer documents

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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. Replace the class `beamer` with `beamerswitch`.

Wrap any class options you have specified in braces and turn them into the value of the `beameroptions` option:

Before	After
<pre>\documentclass[10pt]{beamer}</pre>	<pre>\documentclass[beameroptions= ↪ {10pt}]{beamerswitch}</pre>

If you didn't specify any options, then give `beameroptions` a blank value:

Before	After
<pre>\documentclass{beamer}</pre>	<pre>\documentclass[beameroptions={}] ↪ ]{beamerswitch}</pre>

If you only specified `ignorenonframetext`, then you don't need `beameroptions`:

Before	After
<pre>\documentclass   ↳ [ignorenonframetext]   ↳ {beamer}</pre>	<pre>\documentclass{beamerswitch}</pre>

2. 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>\documentclass[beameroptions=   ↳ {10pt}]{beamerswitch} \mode&lt;presentation&gt;{%   \usetheme{metropolis} } \title{Test presentation} \begin{document}   \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 with `beamer's ignorenonframetext` option in place. 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  $\text{T}_{\text{E}}\text{X}$  distributions.

- beamer
- etoolbox
- hyperref
- iftex
- pgf
- shellesc
- xkeyval
- xstring

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 Passing options to the underlying classes

**articleclass**=⟨class⟩ (default and initially `article`)

Selects the ⟨class⟩ to use when in `article` mode.

**articleoptions**={⟨options⟩} (default and initially empty)

Passes the ⟨options⟩ to the underlying class (selected by `articleclass`) when in `article` mode.

**beameroptions**={⟨options⟩} (default and initially `ignorenonframetext`)

Passes the ⟨options⟩ to the `beamer` class when in `beamer`, `handout` or `trans` mode. Do not specify `handout` or `trans` among the options as `beamerswitch` handles those for you. Note that the default behaviour is to pass the `ignorenonframetext` option, so remember to include it yourself if you start specifying other options.

### 4.2 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`.

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{beamer-switch}
```

### 4.3 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**= $\langle$ comma-separated list of modes $\rangle$  (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 managed 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** $\langle$ suffix $\rangle$

Spawns a new compilation process with  $\langle$ suffix $\rangle$  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{beamerswitch}
```

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*\SpawnedLuaTeX}{\SpawnedCompiler -m lua $\text{latex}$ } % needs v1.6.0+
\newcommand*\SpawnedXeTeX}{\SpawnedCompiler -m x $\text{elatex}$ }
\documentclass{beamerswitch}
```

If you don't need the engine selection routine provided, you can replace it by pre-defining **\BeamerswitchSpawn** to do whatever you need it to do instead:

```
\newcommand*\BeamerswitchSpawn}[1]{%
  \ShellEscape{... -jobname= $\text{jobname}$ \#1 \mathit{jobname}}%
}
\documentclass{beamerswitch}
```

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

## 4.4 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, `beamerswitch` 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.

## 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**=*1|1plus|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.

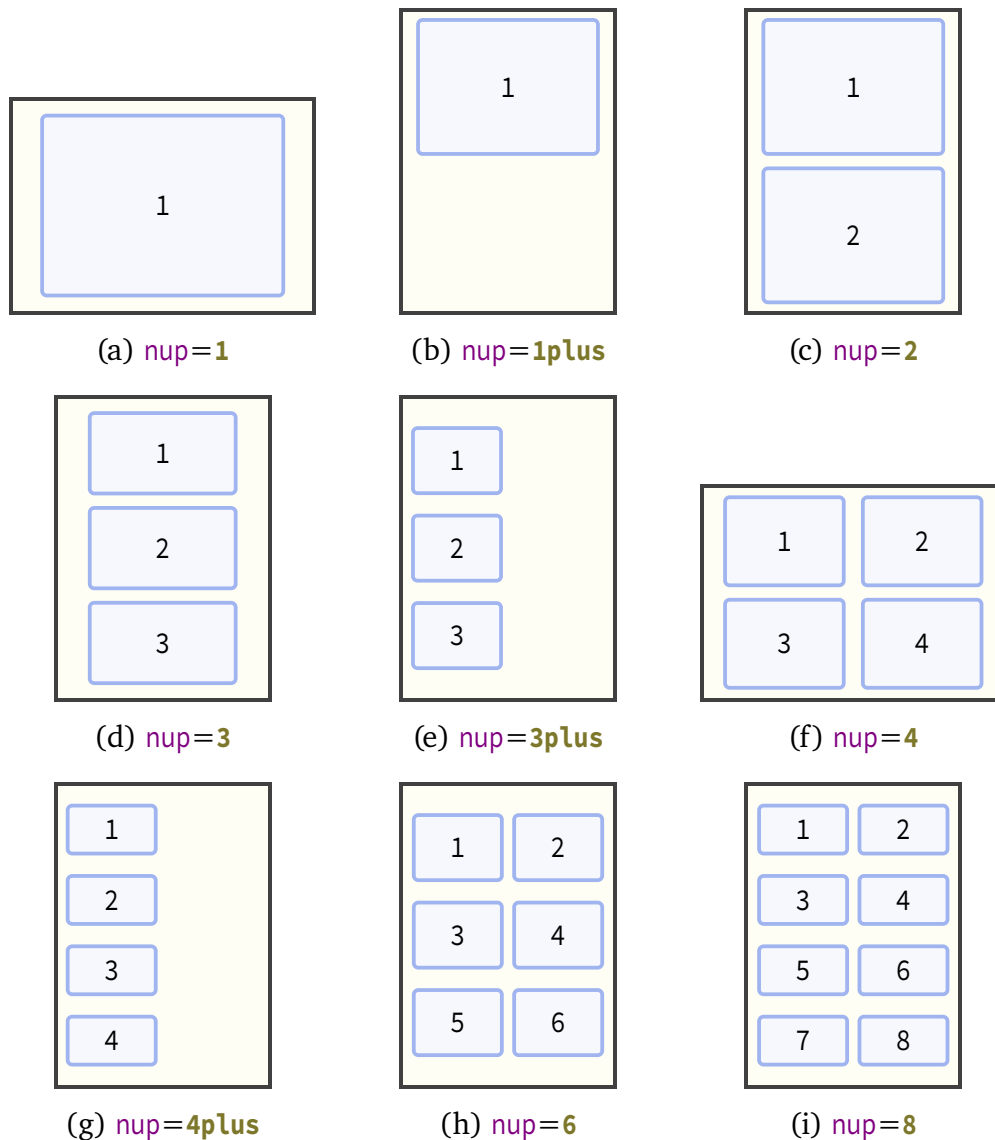


Figure 1: Handout layouts provided by `beamerswitch`

You can change this before calling `\handoutlayout`, if you like, using the usual mechanisms (e.g. `\setlength`).

**border**= $\langle length \rangle$  (default 0.4pt, initially 0pt)

Puts a rectangular border of thickness  $\langle length \rangle$  around each slide.

**margin**= $\langle length \rangle$  (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.

**`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}
```

**`instbreak`**=*definition* (no default, initially `\linebreak`)

In `article` mode, defines how `\and` is rendered when `\insertinstitute` is used (such when the `maketitle` option is active). Another good *definition* to use might be `\quad`.

## 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, if you don't like the class facilities for doing this:

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

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

```
\documentclass{beamer-switch}
\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
- `expl3` for cleaning options passed onward to underlying classes.

```
19 \RequirePackage{xkeyval,xkvltxp,etoolbox,xstring,shellesc,iftex,expl3}
```

### 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]{beamerswitch}{article}[true]{%
42   \ifbool{DC@beamerswitch@article}{%
43     \setkeys[DC]{beamerswitch}{beamer=false}
44     \setkeys[DC]{beamerswitch}{trans=false}
45     \setkeys[DC]{beamerswitch}{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]{beamerswitch}{alsobeamer}[true]{}
49 \define@boolkey[DC]{beamerswitch}{alsostrans}[true]{}
50 \define@boolkey[DC]{beamerswitch}{alsohandout}[true]{}
51 \define@boolkey[DC]{beamerswitch}{alsoarticle}[true]{}
52 \newcommand{\beamerswitch@SetAlso}[1]{%
53   \key@ifundefined[DC]{beamerswitch}{also#1}{%
54     \ClassWarning{beamerswitch}{`#1' is not a valid value for option `also'}%
55   }{}%
56   \setkeys[DC]{beamerswitch}{also#1}%
57 }%
58 }
59 \define@key[DC]{beamerswitch}{also}{%
60   \forcsvlist{\beamerswitch@SetAlso}{#1}%
61 }

```

The `beameroptions` will be passed to the `beamer` class.

```

62 \define@cmdkey[DC]{beamerswitch}{beameroptions}[ignorenonframetext]{}

```

The `articleclass` option allows the class used for article mode to be customized.

```

63 \define@cmdkey[DC]{beamerswitch}{articleclass}[article]{}

```

The `articleoptions` will be passed to the class used for `article` mode.

```

64 \define@cmdkey[DC]{beamerswitch}{articleoptions}[]{}

```

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

```

65 \define@boolkey[DC]{beamerswitch}{nohyperref}[true]{}

```

The `textinst` option enforces `\textsuperscript` for institution markers. Recent versions of `beamer` do this by default.

```

66 \define@boolkey[DC]{beamerswitch}{textinst}[true]{}

```

The default behaviour is to use `beamer` mode only.

```

67 \setkeys[DC]{beamer-switch}{beamer=true,also-beamer=false,also-trans=false,%
68   also-handout=false,also-article=false,beamer-options,article-class,%
69   article-options}

```

Now we process the options given by the user.

```

70 \ProcessOptionsX[DC]<beamer-switch>

```

We remove problematic whitespace from `articleoptions` and `beameroptions`.

```

71 \ExplSyntaxOn
72 \tl_replace_all:Nnn \cmdDC@beamer-switch@article-options { ,~ } { , }
73 \tl_replace_all:Nnn \cmdDC@beamer-switch@beamer-options { ,~ } { , }
74 \ExplSyntaxOff

```

### 9.3 Jobname-based mode switching

We define some default values for the special suffixes.

```

75 \providecommand*\BeamerSuffix{-slides}
76 \providecommand*\TransSuffix{-trans}
77 \providecommand*\HandoutSuffix{-handout}
78 \providecommand*\ArticleSuffix{-article}

```

We provide a special routine for spawning new  $\text{\LaTeX}$  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.

```

79 \providecommand*\SpawnedCompiler{\latexmk -silent -synctex=1 -interaction=batchmode
   ↪ }
80 \providecommand*\SpawnedTeX{\SpawnedCompiler}
81 \providecommand*\SpawnedPDFTeX{\SpawnedCompiler -pdf }
82 \providecommand*\SpawnedLuaTeX{\SpawnedCompiler -pdflua }
83 \providecommand*\SpawnedXeTeX{\SpawnedCompiler -pdfxe }
84 \providecommand*\BeamerSwitchSpawn}[1]{%
85   \ifbool{PDFTeX}{%
86     \ShellEscape{\SpawnedPDFTeX -jobname=\jobname#1 \jobname}
87   }{%
88     \ifbool{LuaTeX}{%
89       \ShellEscape{\SpawnedLuaTeX -jobname=\jobname#1 \jobname}
90     }{%
91       \ifbool{XeTeX}{%
92         \ShellEscape{\SpawnedXeTeX -jobname=\jobname#1 \jobname}
93       }{%
94         \ShellEscape{\SpawnedTeX -jobname=\jobname#1 \jobname}
95       }%
96     }%
97   }%
98 }

```

We check for special jobnames and use them to override the above mode-related options. In certain circumstances, the jobname is wrapped in quote marks, so in that case we strip them off before running the tests.

```

99  \IfBeginWith*{\jobname}{"}{%
100  \IfEndWith*{\jobname}{"}{%
101  \StrGobbleLeft{\jobname}{1}[\JobName]%
102  \StrGobbleRight{\JobName}{1}[\JobName]%
103  }{\let\JobName\jobname}%
104  }{\let\JobName\jobname}

```

Now we run the tests. Note that the `also*` options are only acted upon if the all the tests fail.

```

105  \IfEndWith*{\JobName}{\BeamerSuffix}{%
106  \setkeys[DC]{beamerswitch}{beamer=true}
107  }{%
108  \IfEndWith*{\JobName}{\TransSuffix}{%
109  \setkeys[DC]{beamerswitch}{trans=true}
110  }{%
111  \IfEndWith*{\JobName}{\HandoutSuffix}{%
112  \setkeys[DC]{beamerswitch}{handout=true}
113  }{%
114  \IfEndWith*{\JobName}{\ArticleSuffix}{%
115  \setkeys[DC]{beamerswitch}{article=true}
116  }{%
117  \ifbool{DC@beamerswitch@alsobeamer}{%
118  \BeamerswitchSpawn{\BeamerSuffix}%
119  }{}
120  \ifbool{DC@beamerswitch@alsotrans}{%
121  \BeamerswitchSpawn{\TransSuffix}%
122  }{}
123  \ifbool{DC@beamerswitch@alsohandout}{%
124  \BeamerswitchSpawn{\HandoutSuffix}%
125  }{}
126  \ifbool{DC@beamerswitch@alsoarticle}{%
127  \BeamerswitchSpawn{\ArticleSuffix}%
128  }{}
129  }%
130  }%
131  }%
132  }%

```

## 9.4 Setting up modes

For article mode, we load the class selected by the `articleclass` option and require the `beamerarticle` support package. We also add some beamer base macros that are needed for the `\insertinstitute` command.

```

133  \ifbool{DC@beamerswitch@article}{%
134  \PassOptionsToClass{\cmdDC@beamerswitch@articleoptions}{%
135  \cmdDC@beamerswitch@articleclass}
136  \LoadClass{\cmdDC@beamerswitch@articleclass}
137  \RequirePackage{beamerarticle}
138  \def\beamer@insttitle#1{\textsuperscript{#1}}
139  \def\beamer@andtitle{\quad}
140  \def\beamer@instinst#1{\textsuperscript{#1}\ignorespaces}
141  \def\beamer@andinst{\linebreak}

```

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`.

```

142 \ifbool{DC@beamerswitch@nohyperref}{}{%
143   \RequirePackage[bookmarks=true,%
144     bookmarksoopen=true,%
145     pdfborder={0 0 0},%
146     pdfhighlight={/N},%
147     linkbordercolor={.5 .5 .5}]{hyperref}%
148 }

```

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`.

```

149 \AtBeginDocument{%
150   \@ifpackageloaded{hyperref}{}%
151   \pdfstringdefDisableCommands{\def\<#1>#2{ - #2}}
152   \begingroup
153   \hypersetup{pdftitle={\@title}}%
154   \def\and{\unskip, }%
155   \let\thanks=\@gobble
156   \let\inst=\@gobble
157   \hypersetup{pdfauthor={\@author}}%
158   \endgroup
159 }{}%
160 }
161 }{}%

```

For the presentation modes, we load the `beamer` class with the appropriate mode option as well those chosen using `beameroptions`.

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

```

162 \ifbool{DC@beamerswitch@handout}{}%
163   \PassOptionsToClass{\cmdDC@beamerswitch@beameroptions}{beamer}
164   \LoadClass[handout]{beamer}
165   \RequirePackage{pgfpages}
166 }{}%
167 \ifbool{DC@beamerswitch@trans}{}%
168   \PassOptionsToClass{\cmdDC@beamerswitch@beameroptions}{beamer}
169   \LoadClass[trans]{beamer}
170 }{}%
171 \PassOptionsToClass{\cmdDC@beamerswitch@beameroptions}{beamer}
172 \LoadClass{beamer}
173 }{}%
174 }
175 }

```

## 9.5 Mode-independent layout

We implement the option that formats institution markers in text mode rather than math mode in older versions of `beamer`.

```
176 \ifbool{DC@beamerswitch@textinst}{%
177   \def\beamer@insttitle#1{\textsuperscript{#1}}
178   \def\beamer@instinst#1{\textsuperscript{#1}\ignorespaces}
179 }{}
```

## 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.

```
180 \def\beamerswitch@handoutpaper{a4paper}
181 \define@key[HL]{beamerswitch}{paper}{%
182   \def\beamerswitch@handoutpaper{#1}%
183 }
```

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

```
184 \newcounter{beamerswitch@nupcase}
185 \setcounter{beamerswitch@nupcase}{7}
186 \define@choicekey+{HL}[beamerswitch]{nup}[\val\nr]{1, 1plus, 2, 3, 3plus, 4, 4plus,
187   ↪ 6, 8}{%
188   \setcounter{beamerswitch@nupcase}{\nr}
189 }{%
189   \ClassWarning{beamerswitch}{Value of `nup' not recognized.
190     Allowed values are 1, 1plus, 2, 3, 3plus, 4, 4plus, 6, and 8.}%
191 }
```

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. As part of this, we calculate the number of the current slide (`handoutpno` gives the current page number minus one; `\beamerswitch@nup` is the number of slides per page; and `\pgf@cpn` gives the count of the current slide on the current page). If this exceeds the total number of slides, we suppress the border.

```
192 \newcommand*\beamerswitch@Border{\relax}
193 \define@key[HL]{beamerswitch}{border}[0.4pt]{%
194   \RequirePackage{pgf}%
195   \ifdimcomp{#1}{>}{0pt}{%
196     \renewcommand*\beamerswitch@Border{%
197       \ifnumcomp{(\value{handoutpno} * \beamerswitch@nup) + \the\pgf@cpn}{%
198         >}{\beamer@endpageofdocument}{%
```



```

199     \relax
200     }{%
201     \pgfsetlinewidth{#1}\pgfstroke
202     }%
203     }%
204     }{%
205     \renewcommand*{\beamerswitch@Border}{\relax}%
206     }%
207     }

```

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`.

```

208     \newlength{\beamerswitch@margin}
209     \setlength{\beamerswitch@margin}{5mm}
210     \define@key[HL]{beamerswitch}{margin}[0pt]{%
211     \setlength{\beamerswitch@margin}{#1}%
212     }

```

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.

```

213     \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`.

```

214     \newlength{\handoutpnobaseline}
215     \setlength{\handoutpnobaseline}{5mm}
216     \newcounter{handoutpno}
217     \define@boolkey[HL]{beamerswitch}{pnos}[true]{}

```

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

```

218     \def\beamerswitch@footer{}
219     \patchcmd{\pgfpages@buildshipoutbox}{%
220     \pgfsys@endpicture
221     }{%
222     \beamerswitch@footer\pgfsys@endpicture
223     }{}{}

```

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

The hook `\beamerswitch@footer` is used to step the page number counter `handoutpno`; if page numbering is active, it also places the number on the page centered and `\handoutpnobaseline` up from the bottom.

The length `\beamerswitch@pnoadjust` is, conceptually, the height of the page number. When page numbers are active, the margin around slides is automatically increased to guarantee that the top of the page number will not be higher than the bottom of the lowest slide. Currently this does not account for extra whitespace arising from aspect

ratio issues. When the `align` option is active, the margin at the bottom of the page is increased, but to save a register we make the adjustment to `\beamerswitch@pnoadjust` instead of a copy of `\beamerswitch@margin`.

```

224 \newlength{\beamerswitch@pnoadjust}
225 \newcommand*{\handoutlayout}[1]{%
226   \only<handout>{%
227     \setlength{\beamerswitch@pnoadjust}{1em}%
228     \setkeys{HL}{beamerswitch}{#1}%
229     \ifbool{HL@beamerswitch@pnos}{%
230       \def\beamerswitch@footer{%
231         \stepcounter{handoutpno}%
232         \setbox0\vbox{\makebox[0pt][c]{\arabic{handoutpno}}}%
233         \pgfsys@beginscope
234         \pgflevel{\pgftransformshift{%
235           \pgfpoint{.5\pgfphysicalwidth}{\handoutpnobaseline}}}%
236         \wd0=0pt%
237         \dp0=-\ht0%
238         \pgfsys@hbox0%
239         \pgfsys@endscope
240       }%
241       \ifbool{HL@beamerswitch@align}{%
242         \ifcase\value{beamerswitch@nupcase}\relax
243         \relax
244         \or
245         \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
246         \or
247         \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
248         \or
249         \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
250         \or
251         \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
252         \or
253         \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
254         \or
255         \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
256         \or
257         \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
258         \or
259         \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
260         \fi
261       }{%
262         \ifdimcomp{\beamerswitch@margin}{<}{%
263           {\handoutpnobaseline + \beamerswitch@pnoadjust}{%
264             \setlength{\beamerswitch@margin}{%
265               {\the\dimexpr\handoutpnobaseline + \beamerswitch@pnoadjust\relax}}%
266           }{%
267         }{%
268       \def\beamerswitch@footer{\stepcounter{handoutpno}}%
269     }%

```

The value of the `nup` option is used both to select the layout and set the value of `\beamerswitch@nup`. The latter is used to suppress unwanted borders and check if `\handoutlayout` has been called.

```

270 \ifcase\value{beamerswitch@nupcase}\relax
271 \def\beamerswitch@nup{1}%
272 \pgfpagesuselayout{1 by 1}[\beamerswitch@handoutpaper,%
273 landscape,border shrink=\the\beamerswitch@margin]%
274 \or
275 \def\beamerswitch@nup{1}%
276 \pgfpagesuselayout{1 by 1 narrow}[\beamerswitch@handoutpaper,%
277 border shrink=\the\beamerswitch@margin]%
278 \or
279 \def\beamerswitch@nup{2}%
280 \pgfpagesuselayout{1 by 2}[\beamerswitch@handoutpaper,%
281 border shrink=\the\beamerswitch@margin]%
282 \or
283 \def\beamerswitch@nup{3}%
284 \pgfpagesuselayout{1 by 3}[\beamerswitch@handoutpaper,%
285 border shrink=\the\beamerswitch@margin]%
286 \or
287 \def\beamerswitch@nup{3}%
288 \pgfpagesuselayout{1 by 3 narrow}[\beamerswitch@handoutpaper,%
289 border shrink=\the\beamerswitch@margin]%
290 \or
291 \def\beamerswitch@nup{4}%
292 \pgfpagesuselayout{2 by 2}[\beamerswitch@handoutpaper,%
293 landscape,border shrink=\the\beamerswitch@margin]%
294 \or
295 \def\beamerswitch@nup{4}%
296 \pgfpagesuselayout{1 by 4 narrow}[\beamerswitch@handoutpaper,%
297 border shrink=\the\beamerswitch@margin]%
298 \or
299 \def\beamerswitch@nup{6}%
300 \pgfpagesuselayout{2 by 3}[\beamerswitch@handoutpaper,%
301 border shrink=\the\beamerswitch@margin]%
302 \or
303 \def\beamerswitch@nup{8}%
304 \pgfpagesuselayout{2 by 4}[\beamerswitch@handoutpaper,%
305 border shrink=\the\beamerswitch@margin]%
306 \fi
307 }%
308 }

```

We initialize the class with the defaults set above.

```

309 \AtEndPreamble{%
310 \ifdef{\beamerswitch@nup}{%
311 \handoutlayout{}%
312 }%
313 }

```

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

The '1 by 1' layout has a single slide per page.

```

314 \mode<handout>{%
315 \pgfpagesdeclarelayout{1 by 1}
316 {

```

```

317 \edef\pgfpageoptionheight{\the\paperheight}
318 \edef\pgfpageoptionwidth{\the\paperwidth}
319 \edef\pgfpageoptionborder{0pt}
320 \def\pgfpageoptionfirstshipout{1}
321 }
322 {
323 \pgfpagesphysicalpageoptions
324 {%
325 logical pages=1,%
326 physical height=\pgfpageoptionheight,%
327 physical width=\pgfpageoptionwidth,%
328 current logical shipout=\pgfpageoptionfirstshipout%
329 }
330 \pgfpageslogicalpageoptions{1}
331 {%
332 border shrink=\pgfpageoptionborder,%
333 border code=\beamerswitch@Border,%
334 resized width=\pgfphysicalwidth,%
335 resized height=\pgfphysicalheight,%
336 center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
337 }%
338 }%

```

The ‘1 by 1 narrow’ layout is similar to the normal 2 on 1 layout, but there is a notes area instead of the second slide.

```

339 \pgfpagesdeclarelayout{1 by 1 narrow}
340 {
341 \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
342 \edef\pgfpageoptionwidth{\the\paperheight}
343 \def\pgfpageoptionborder{0pt}
344 \def\pgfpageoptionfirstshipout{1}
345 }
346 {
347 \pgfpagesphysicalpageoptions
348 {%
349 logical pages=1,%
350 physical height=\pgfpageoptionheight,%
351 physical width=\pgfpageoptionwidth,%
352 current logical shipout=\pgfpageoptionfirstshipout%
353 }
354 \ifdim\paperheight>\paperwidth\relax
355 % put side-by-side
356 \pgfpageslogicalpageoptions{1}
357 {%
358 border shrink=\pgfpageoptionborder,%
359 border code=\beamerswitch@Border,%
360 resized width=.5\pgfphysicalwidth,%
361 resized height=\pgfphysicalheight,%
362 center=\ifbool{HL@beamerswitch@align}{%
363 \pgfpoint{.25\pgfphysicalwidth +
364 ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
365 }{%
366 \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
367 }%

```

```

368 \else
369 % stack on top of one another
370 \pgfpageslogicalpageoptions{1}
371 {%
372 border shrink=\pgfpageoptionborder,%
373 border code=\beamerswitch@Border,%
374 resized width=\pgfphysicalwidth,%
375 resized height=.5\pgfphysicalheight,%
376 center=\ifbool{HL@beamerswitch@align}{%
377 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
    ↪ 0.333\beamerswitch@margin}}{%
378 }{%
379 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}}%
380 }%
381 }%
382 \fi
383 }

```

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

```

384 \pgfpagesdeclarelayers{1 by 2}
385 {
386 \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
387 \edef\pgfpageoptionwidth{\the\paperheight}
388 \def\pgfpageoptionborder{0pt}
389 \def\pgfpageoptionfirstshipout{1}
390 }
391 {
392 \pgfpagesphysicalpageoptions
393 {%
394 logical pages=2,%
395 physical height=\pgfpageoptionheight,%
396 physical width=\pgfpageoptionwidth,%
397 current logical shipout=\pgfpageoptionfirstshipout%
398 }
399 \ifdim\paperheight>\paperwidth\relax
400 % put side-by-side
401 \pgfpageslogicalpageoptions{1}
402 {%
403 border shrink=\pgfpageoptionborder,%
404 border code=\beamerswitch@Border,%
405 resized width=.5\pgfphysicalwidth,%
406 resized height=\pgfphysicalheight,%
407 center=\ifbool{HL@beamerswitch@align}{%
408 \pgfpoint{.25\pgfphysicalwidth +
    ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}}{%
409 }{%
410 \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}}%
411 }%
412 }%
413 \pgfpageslogicalpageoptions{2}
414 {%
415 border shrink=\pgfpageoptionborder,%
416 border code=\beamerswitch@Border,%
417 resized width=.5\pgfphysicalwidth,%
418 resized height=\pgfphysicalheight,%

```

```

419 center=\ifbool{HL@beamerswitch@align}{%
420   \pgfpoint{.75\pgfphysicalwidth -
      ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
421 }{%
422   \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
423 }%
424 }%
425 \else
426 % stack on top of one another
427 \pgfpageslogicalpageoptions{1}
428 {%
429   border shrink=\pgfpageoptionborder,%
430   border code=\beamerswitch@Border,%
431   resized width=\pgfphysicalwidth,%
432   resized height=.5\pgfphysicalheight,%
433   center=\ifbool{HL@beamerswitch@align}{%
434     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
      ↪ 0.333\beamerswitch@margin}%
435   }{%
436     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
437   }%
438 }%
439 \pgfpageslogicalpageoptions{2}
440 {%
441   border shrink=\pgfpageoptionborder,%
442   border code=\beamerswitch@Border,%
443   resized width=\pgfphysicalwidth,%
444   resized height=.5\pgfphysicalheight,%
445   center=\ifbool{HL@beamerswitch@align}{%
446     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
      ↪ 0.333\beamerswitch@margin}%
447   }{%
448     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}%
449   }%
450 }%
451 \fi
452 }

```

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

```

453 \pgfpagesdeclarelayout{1 by 3}
454 {
455   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
456   \edef\pgfpageoptionwidth{\the\paperheight}
457   \def\pgfpageoptionborder{0pt}
458   \def\pgfpageoptionfirstshipout{1}
459 }
460 {
461   \pgfpagesphysicalpageoptions
462   {%
463     logical pages=3,%
464     physical height=\pgfpageoptionheight,%
465     physical width=\pgfpageoptionwidth,%
466     current logical shipout=\pgfpageoptionfirstshipout%
467   }
468   \ifdim\paperheight>\paperwidth\relax

```

```

469 % put side-by-side
470 \pgfpageslogicalpageoptions{1}
471 {%
472 border shrink=\pgfpageoptionborder,%
473 border code=\beamerswitch@Border,%
474 resized width=.333\pgfphysicalwidth,%
475 resized height=\pgfphysicalheight,%
476 center=\ifbool{HL@beamerswitch@align}{%
477 \pgfpoint{.167\pgfphysicalwidth +
478 ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}}%
479 }{%
480 \pgfpoint{.167\pgfphysicalwidth}{.5\pgfphysicalheight}}%
481 }%
482 \pgfpageslogicalpageoptions{2}
483 {%
484 border shrink=\pgfpageoptionborder,%
485 border code=\beamerswitch@Border,%
486 resized width=.333\pgfphysicalwidth,%
487 resized height=\pgfphysicalheight,%
488 center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}}%
489 }%
490 \pgfpageslogicalpageoptions{3}
491 {%
492 border shrink=\pgfpageoptionborder,%
493 border code=\beamerswitch@Border,%
494 resized width=.333\pgfphysicalwidth,%
495 resized height=\pgfphysicalheight,%
496 center=\ifbool{HL@beamerswitch@align}{%
497 \pgfpoint{.833\pgfphysicalwidth -
498 ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}}%
499 }{%
500 \pgfpoint{.833\pgfphysicalwidth}{.5\pgfphysicalheight}}%
501 }%
502 \else
503 % stack on top of one another
504 \pgfpageslogicalpageoptions{1}
505 {%
506 border shrink=\pgfpageoptionborder,%
507 border code=\beamerswitch@Border,%
508 resized width=\pgfphysicalwidth,%
509 resized height=.333\pgfphysicalheight,%
510 center=\ifbool{HL@beamerswitch@align}{%
511 \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight -
512 ↪ 0.5\beamerswitch@margin}}%
513 }{%
514 \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight}}%
515 }%
516 \pgfpageslogicalpageoptions{2}
517 {%
518 border shrink=\pgfpageoptionborder,%
519 border code=\beamerswitch@Border,%
520 resized width=\pgfphysicalwidth,%
521 resized height=.333\pgfphysicalheight,%

```

```

522     center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
523 }%
524 \pgfpageslogicalpageoptions{3}
525 {%
526     border shrink=\pgfpageoptionborder,%
527     border code=\beamerswitch@Border,%
528     resized width=\pgfphysicalwidth,%
529     resized height=.333\pgfphysicalheight,%
530     center=\ifbool{HL@beamerswitch@align}{%
531         \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight +
532         ↪ 0.5\beamerswitch@margin}%
533     }{%
534         \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight}%
535     }%
536 }%
537 \fi
538 }

```

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

```

538 \pgfpagesdeclarelayout{1 by 3 narrow}
539 {
540     \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
541     \edef\pgfpageoptionwidth{\the\paperheight}
542     \def\pgfpageoptionborder{0pt}
543     \def\pgfpageoptionfirstshipout{1}
544 }
545 {
546     \pgfpagesphysicalpageoptions
547     {%
548         logical pages=3,%
549         physical height=\pgfpageoptionheight,%
550         physical width=\pgfpageoptionwidth,%
551         current logical shipout=\pgfpageoptionfirstshipout%
552     }
553     \ifdim\paperheight>\paperwidth\relax
554     % put side-by-side
555     \pgfpageslogicalpageoptions{1}
556     {%
557         border shrink=\pgfpageoptionborder,%
558         border code=\beamerswitch@Border,%
559         resized width=.333\pgfphysicalwidth,%
560         resized height=.5\pgfphysicalheight,%
561         center=\ifbool{HL@beamerswitch@align}{%
562             \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
563             {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
564         }{%
565             \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
566         }%
567     }%
568     \pgfpageslogicalpageoptions{2}
569     {%
570         border shrink=\pgfpageoptionborder,%
571         border code=\beamerswitch@Border,%
572         resized width=.333\pgfphysicalwidth,%

```



```

573 resized height=.5\pgfphysicalheight,%
574 center=\ifbool{HL@beamerswitch@align}{%
575   \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
      ↪ 0.5\beamerswitch@margin}%
576 }{%
577   \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
578 }%
579 }%
580 \pgfpageslogicalpageoptions{3}
581 {%
582 border shrink=\pgfpageoptionborder,%
583 border code=\beamerswitch@Border,%
584 resized width=.333\pgfphysicalwidth,%
585 resized height=.5\pgfphysicalheight,%
586 center=\ifbool{HL@beamerswitch@align}{%
587   \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
588   {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
589 }{%
590   \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
591 }%
592 }%
593 \else
594 % stack on top of one another
595 \pgfpageslogicalpageoptions{1}
596 {%
597 border shrink=\pgfpageoptionborder,%
598 border code=\beamerswitch@Border,%
599 resized width=.5\pgfphysicalwidth,%
600 resized height=.333\pgfphysicalheight,%
601 center=\ifbool{HL@beamerswitch@align}{%
602   \pgfpoint{.25\pgfphysicalwidth + 0.5\beamerswitch@margin}%
603   {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
604 }{%
605   \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}%
606 }%
607 }%
608 \pgfpageslogicalpageoptions{2}
609 {%
610 border shrink=\pgfpageoptionborder,%
611 border code=\beamerswitch@Border,%
612 resized width=.5\pgfphysicalwidth,%
613 resized height=.333\pgfphysicalheight,%
614 center=\ifbool{HL@beamerswitch@align}{%
615   \pgfpoint{.25\pgfphysicalwidth +
      ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
616 }{%
617   \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
618 }%
619 }%
620 \pgfpageslogicalpageoptions{3}
621 {%
622 border shrink=\pgfpageoptionborder,%
623 border code=\beamerswitch@Border,%
624 resized width=.5\pgfphysicalwidth,%
625 resized height=.333\pgfphysicalheight,%
626 center=\ifbool{HL@beamerswitch@align}{%

```

```

627     \pgfpoint{.25\pgfphysicalwidth + 0.5\beamerswitch@margin}%
628         {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
629     }{%
630     \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
631     }%
632 }%
633 \fi
634 }

```

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

```

635 \pgfpagesdeclarelayout{2 by 2}
636 {
637     \edef\pgfpageoptionheight{\the\paperheight}
638     \edef\pgfpageoptionwidth{\the\paperwidth}
639     \edef\pgfpageoptionborder{0pt}
640 }
641 {
642     \pgfpagesphysicalpageoptions
643     {%
644         logical pages=4,%
645         physical height=\pgfpageoptionheight,%
646         physical width=\pgfpageoptionwidth%
647     }
648     \pgfpageslogicalpageoptions{1}
649     {%
650         border shrink=\pgfpageoptionborder,%
651         border code=\beamerswitch@Border,%
652         resized width=.5\pgfphysicalwidth,%
653         resized height=.5\pgfphysicalheight,%
654         center=\ifbool{HL@beamerswitch@align}{%
655             \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
656                 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
657             }{%
658                 \pgfpoint{.25\pgfphysicalwidth}{.75\pgfphysicalheight}%
659             }%
660     }%
661     \pgfpageslogicalpageoptions{2}
662     {%
663         border shrink=\pgfpageoptionborder,%
664         border code=\beamerswitch@Border,%
665         resized width=.5\pgfphysicalwidth,%
666         resized height=.5\pgfphysicalheight,%
667         center=\ifbool{HL@beamerswitch@align}{%
668             \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
669                 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
670             }{%
671                 \pgfpoint{.75\pgfphysicalwidth}{.75\pgfphysicalheight}%
672             }%
673     }%
674     \pgfpageslogicalpageoptions{3}
675     {%
676         border shrink=\pgfpageoptionborder,%
677         border code=\beamerswitch@Border,%
678         resized width=.5\pgfphysicalwidth,%
679         resized height=.5\pgfphysicalheight,%

```

```

680     center=\ifbool{HL@beamerswitch@align}{%
681         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
682         {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
683     }{%
684         \pgfpoint{.25\pgfphysicalwidth}{.25\pgfphysicalheight}%
685     }%
686 }%
687 \pgfpageslogicalpageoptions{4}
688 {%
689     border shrink=\pgfpageoptionborder,%
690     border code=\beamerswitch@Border,%
691     resized width=.5\pgfphysicalwidth,%
692     resized height=.5\pgfphysicalheight,%
693     center=\ifbool{HL@beamerswitch@align}{%
694         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
695         {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
696     }{%
697         \pgfpoint{.75\pgfphysicalwidth}{.25\pgfphysicalheight}%
698     }%
699 }%
700 }

```

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).

```

701 \pgfpagesdeclarelayout{1 by 4 narrow}
702 {
703     \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
704     \edef\pgfpageoptionwidth{\the\paperheight}
705     \def\pgfpageoptionborder{0pt}
706     \def\pgfpageoptionfirstshipout{1}
707 }
708 {
709     \pgfpagesphysicalpageoptions
710     {%
711         logical pages=4,%
712         physical height=\pgfpageoptionheight,%
713         physical width=\pgfpageoptionwidth,%
714         current logical shipout=\pgfpageoptionfirstshipout%
715     }
716     \ifdim\paperheight>\paperwidth\relax
717         % put side-by-side
718     \pgfpageslogicalpageoptions{1}
719     {%
720         border shrink=\pgfpageoptionborder,%
721         border code=\beamerswitch@Border,%
722         resized width=.25\pgfphysicalwidth,%
723         resized height=.5\pgfphysicalheight,%
724         center=\ifbool{HL@beamerswitch@align}{%
725             \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
726             {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
727         }{%
728             \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
729         }%
730     }%
731     \pgfpageslogicalpageoptions{2}

```

```

732  {%
733    border shrink=\pgfpageoptionborder,%
734    border code=\beamerswitch@Border,%
735    resized width=.25\pgfphysicalwidth,%
736    resized height=.5\pgfphysicalheight,%
737    center=\ifbool{HL@beamerswitch@align}{%
738      \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
739      {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
740    }{%
741      \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%
742    }%
743  }%
744  \pgfpageslogicalpageoptions{3}
745  {%
746    border shrink=\pgfpageoptionborder,%
747    border code=\beamerswitch@Border,%
748    resized width=.25\pgfphysicalwidth,%
749    resized height=.5\pgfphysicalheight,%
750    center=\ifbool{HL@beamerswitch@align}{%
751      \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
752      {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
753    }{%
754      \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
755    }%
756  }%
757  \pgfpageslogicalpageoptions{4}
758  {%
759    border shrink=\pgfpageoptionborder,%
760    border code=\beamerswitch@Border,%
761    resized width=.25\pgfphysicalwidth,%
762    resized height=.5\pgfphysicalheight,%
763    center=\ifbool{HL@beamerswitch@align}{%
764      \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
765      {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
766    }{%
767      \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
768    }%
769  }%
770  \else
771  % stack on top of one another
772  \pgfpageslogicalpageoptions{1}
773  {%
774    border shrink=\pgfpageoptionborder,%
775    border code=\beamerswitch@Border,%
776    resized width=.5\pgfphysicalwidth,%
777    resized height=.25\pgfphysicalheight,%
778    center=\ifbool{HL@beamerswitch@align}{%
779      \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
780      {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
781    }{%
782      \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
783    }%
784  }%
785  \pgfpageslogicalpageoptions{2}
786  {%
787    border shrink=\pgfpageoptionborder,%

```

```

788 border code=\beamerswitch@Border,%
789 resized width=.5\pgfphysicalwidth,%
790 resized height=.25\pgfphysicalheight,%
791 center=\ifbool{HL@beamerswitch@align}{%
792   \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
793   {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
794 }{%
795   \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
796 }%
797 }%
798 \pgfpageslogicalpageoptions{3}
799 {%
800 border shrink=\pgfpageoptionborder,%
801 border code=\beamerswitch@Border,%
802 resized width=.5\pgfphysicalwidth,%
803 resized height=.25 \pgfphysicalheight,%
804 center=\ifbool{HL@beamerswitch@align}{%
805   \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
806   {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
807 }{%
808   \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
809 }%
810 }%
811 \pgfpageslogicalpageoptions{4}
812 {%
813 border shrink=\pgfpageoptionborder,%
814 border code=\beamerswitch@Border,%
815 resized width=.5\pgfphysicalwidth,%
816 resized height=.25 \pgfphysicalheight,%
817 center=\ifbool{HL@beamerswitch@align}{%
818   \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
819   {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
820 }{%
821   \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
822 }%
823 }%
824 \fi
825 }

```

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

```

826 \pgfpagesdeclarelayers{2 by 3}
827 {
828   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
829   \edef\pgfpageoptionwidth{\the\paperheight}
830   \def\pgfpageoptionborder{0pt}
831   \def\pgfpageoptionfirstshipout{1}
832 }
833 {
834   \pgfpagesphysicalpageoptions
835   {%
836     logical pages=6,%
837     physical height=\pgfpageoptionheight,%
838     physical width=\pgfpageoptionwidth,%
839     current logical shipout=\pgfpageoptionfirstshipout%
840   }

```

```

841 \ifdim\paperheight>\paperwidth\relax
842 % put side-by-side
843 \pgfpageslogicalpageoptions{1}
844 {%
845 border shrink=\pgfpageoptionborder,%
846 border code=\beamerswitch@Border,%
847 resized width=.333\pgfphysicalwidth,%
848 resized height=.5\pgfphysicalheight,%
849 center=\ifbool{HL@beamerswitch@align}{%
850 \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
851 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
852 }{%
853 \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
854 }%
855 }%
856 \pgfpageslogicalpageoptions{2}
857 {%
858 border shrink=\pgfpageoptionborder,%
859 border code=\beamerswitch@Border,%
860 resized width=.333\pgfphysicalwidth,%
861 resized height=.5\pgfphysicalheight,%
862 center=\ifbool{HL@beamerswitch@align}{%
863 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
864 → 0.333\beamerswitch@margin}%
865 }{%
866 \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
867 }%
868 }%
869 \pgfpageslogicalpageoptions{3}
870 {%
871 border shrink=\pgfpageoptionborder,%
872 border code=\beamerswitch@Border,%
873 resized width=.333\pgfphysicalwidth,%
874 resized height=.5\pgfphysicalheight,%
875 center=\ifbool{HL@beamerswitch@align}{%
876 \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
877 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
878 }{%
879 \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
880 }%
881 }%
882 \pgfpageslogicalpageoptions{4}
883 {%
884 border shrink=\pgfpageoptionborder,%
885 border code=\beamerswitch@Border,%
886 resized width=.333\pgfphysicalwidth,%
887 resized height=.5\pgfphysicalheight,%
888 center=\ifbool{HL@beamerswitch@align}{%
889 \pgfpoint{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
890 {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
891 }{%
892 \pgfpoint{.167\pgfphysicalwidth}{.25\pgfphysicalheight}%
893 }%
894 }%
895 \pgfpageslogicalpageoptions{5}
896 {%

```

```

896 border shrink=\pgfpageoptionborder,%
897 border code=\beamerswitch@Border,%
898 resized width=.333\pgfphysicalwidth,%
899 resized height=.5\pgfphysicalheight,%
900 center=\ifbool{HL@beamerswitch@align}{%
901   \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
     ↪ 0.333\beamerswitch@margin}%
902 }{%
903   \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}%
904 }%
905 }%
906 \pgfpageslogicalpageoptions{6}
907 {%
908 border shrink=\pgfpageoptionborder,%
909 border code=\beamerswitch@Border,%
910 resized width=.333\pgfphysicalwidth,%
911 resized height=.5\pgfphysicalheight,%
912 center=\ifbool{HL@beamerswitch@align}{%
913   \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
914   {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
915 }{%
916   \pgfpoint{.833\pgfphysicalwidth}{.25\pgfphysicalheight}%
917 }%
918 }%
919 \else
920 % stack on top of one another
921 \pgfpageslogicalpageoptions{1}
922 {%
923 border shrink=\pgfpageoptionborder,%
924 border code=\beamerswitch@Border,%
925 resized width=.5\pgfphysicalwidth,%
926 resized height=.333\pgfphysicalheight,%
927 center=\ifbool{HL@beamerswitch@align}{%
928   \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
929   {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
930 }{%
931   \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}%
932 }%
933 }%
934 \pgfpageslogicalpageoptions{2}
935 {%
936 border shrink=\pgfpageoptionborder,%
937 border code=\beamerswitch@Border,%
938 resized width=.5\pgfphysicalwidth,%
939 resized height=.333\pgfphysicalheight,%
940 center=\ifbool{HL@beamerswitch@align}{%
941   \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
942   {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
943 }{%
944   \pgfpoint{.75\pgfphysicalwidth}{.833\pgfphysicalheight}%
945 }%
946 }%
947 \pgfpageslogicalpageoptions{3}
948 {%
949 border shrink=\pgfpageoptionborder,%
950 border code=\beamerswitch@Border,%

```

```

951     resized width=.5\pgfphysicalwidth,%
952     resized height=.333\pgfphysicalheight,%
953     center=\ifbool{HL@beamerswitch@align}{%
954         \pgfpoint{.25\pgfphysicalwidth +
          ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
955     }{%
956         \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
957     }%
958 }%
959 \pgfpageslogicalpageoptions{4}
960 {%
961     border shrink=\pgfpageoptionborder,%
962     border code=\beamerswitch@Border,%
963     resized width=.5\pgfphysicalwidth,%
964     resized height=.333\pgfphysicalheight,%
965     center=\ifbool{HL@beamerswitch@align}{%
966         \pgfpoint{.75\pgfphysicalwidth -
          ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
967     }{%
968         \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
969     }%
970 }%
971 \pgfpageslogicalpageoptions{5}
972 {%
973     border shrink=\pgfpageoptionborder,%
974     border code=\beamerswitch@Border,%
975     resized width=.5\pgfphysicalwidth,%
976     resized height=.333\pgfphysicalheight,%
977     center=\ifbool{HL@beamerswitch@align}{%
978         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
979         {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
980     }{%
981         \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
982     }%
983 }%
984 \pgfpageslogicalpageoptions{6}
985 {%
986     border shrink=\pgfpageoptionborder,%
987     border code=\beamerswitch@Border,%
988     resized width=.5\pgfphysicalwidth,%
989     resized height=.333\pgfphysicalheight,%
990     center=\ifbool{HL@beamerswitch@align}{%
991         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
992         {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
993     }{%
994         \pgfpoint{.75\pgfphysicalwidth}{.167\pgfphysicalheight}%
995     }%
996 }%
997 \fi
998 }

```

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

```

999     \pgfpagesdeclarelayout{2 by 4}
1000     {
1001         \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default

```



```

1002 \edef\pgfpageoptionwidth{\the\paperheight}
1003 \def\pgfpageoptionborder{0pt}
1004 \def\pgfpageoptionfirstshipout{1}
1005 }
1006 {
1007 \pgfpagesphysicalpageoptions
1008 {%
1009 logical pages=8,%
1010 physical height=\pgfpageoptionheight,%
1011 physical width=\pgfpageoptionwidth,%
1012 current logical shipout=\pgfpageoptionfirstshipout%
1013 }
1014 \ifdim\paperheight>\paperwidth\relax
1015 % put side-by-side
1016 \pgfpageslogicalpageoptions{1}
1017 {%
1018 border shrink=\pgfpageoptionborder,%
1019 border code=\beamerswitch@Border,%
1020 resized width=.25\pgfphysicalwidth,%
1021 resized height=.5\pgfphysicalheight,%
1022 center=\ifbool{HL@beamerswitch@align}{%
1023 \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
1024 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
1025 }{%
1026 \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
1027 }%
1028 }%
1029 \pgfpageslogicalpageoptions{2}
1030 {%
1031 border shrink=\pgfpageoptionborder,%
1032 border code=\beamerswitch@Border,%
1033 resized width=.25\pgfphysicalwidth,%
1034 resized height=.5\pgfphysicalheight,%
1035 center=\ifbool{HL@beamerswitch@align}{%
1036 \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
1037 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
1038 }{%
1039 \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%
1040 }%
1041 }%
1042 \pgfpageslogicalpageoptions{3}
1043 {%
1044 border shrink=\pgfpageoptionborder,%
1045 border code=\beamerswitch@Border,%
1046 resized width=.25\pgfphysicalwidth,%
1047 resized height=.5\pgfphysicalheight,%
1048 center=\ifbool{HL@beamerswitch@align}{%
1049 \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
1050 {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
1051 }{%
1052 \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
1053 }%
1054 }%
1055 \pgfpageslogicalpageoptions{4}
1056 {%
1057 border shrink=\pgfpageoptionborder,%

```

```

1058 border code=\beamerswitch@Border,%
1059 resized width=.25\pgfphysicalwidth,%
1060 resized height=.5\pgfphysicalheight,%
1061 center=\ifbool{HL@beamerswitch@align}{%
1062     \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
1063     {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
1064 }{%
1065     \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
1066 }%
1067 }%
1068 \pgfpageslogicalpageoptions{5}
1069 {%
1070 border shrink=\pgfpageoptionborder,%
1071 border code=\beamerswitch@Border,%
1072 resized width=.25\pgfphysicalwidth,%
1073 resized height=.5\pgfphysicalheight,%
1074 center=\ifbool{HL@beamerswitch@align}{%
1075     \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
1076     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1077 }{%
1078     \pgfpoint{.125\pgfphysicalwidth}{.25\pgfphysicalheight}%
1079 }%
1080 }%
1081 \pgfpageslogicalpageoptions{6}
1082 {%
1083 border shrink=\pgfpageoptionborder,%
1084 border code=\beamerswitch@Border,%
1085 resized width=.25\pgfphysicalwidth,%
1086 resized height=.5\pgfphysicalheight,%
1087 center=\ifbool{HL@beamerswitch@align}{%
1088     \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
1089     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1090 }{%
1091     \pgfpoint{.375\pgfphysicalwidth}{.25\pgfphysicalheight}%
1092 }%
1093 }%
1094 \pgfpageslogicalpageoptions{7}
1095 {%
1096 border shrink=\pgfpageoptionborder,%
1097 border code=\beamerswitch@Border,%
1098 resized width=.25\pgfphysicalwidth,%
1099 resized height=.5\pgfphysicalheight,%
1100 center=\ifbool{HL@beamerswitch@align}{%
1101     \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
1102     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1103 }{%
1104     \pgfpoint{.625\pgfphysicalwidth}{.25\pgfphysicalheight}%
1105 }%
1106 }%
1107 \pgfpageslogicalpageoptions{8}
1108 {%
1109 border shrink=\pgfpageoptionborder,%
1110 border code=\beamerswitch@Border,%
1111 resized width=.25\pgfphysicalwidth,%
1112 resized height=.5\pgfphysicalheight,%
1113 center=\ifbool{HL@beamerswitch@align}{%

```

```

1114     \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
1115     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1116   }{%
1117     \pgfpoint{.875\pgfphysicalwidth}{.25\pgfphysicalheight}%
1118   }%
1119 }%
1120 \else
1121 % stack on top of one another
1122 \pgfpageslogicalpageoptions{1}
1123 {%
1124   border shrink=\pgfpageoptionborder,%
1125   border code=\beamerswitch@Border,%
1126   resized width=.5\pgfphysicalwidth,%
1127   resized height=.25\pgfphysicalheight,%
1128   center=\ifbool{HL@beamerswitch@align}{%
1129     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1130     {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1131   }{%
1132     \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
1133   }%
1134 }%
1135 \pgfpageslogicalpageoptions{2}
1136 {%
1137   border shrink=\pgfpageoptionborder,%
1138   border code=\beamerswitch@Border,%
1139   resized width=.5\pgfphysicalwidth,%
1140   resized height=.25\pgfphysicalheight,%
1141   center=\ifbool{HL@beamerswitch@align}{%
1142     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1143     {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1144   }{%
1145     \pgfpoint{.75\pgfphysicalwidth}{.875\pgfphysicalheight}%
1146   }%
1147 }%
1148 \pgfpageslogicalpageoptions{3}
1149 {%
1150   border shrink=\pgfpageoptionborder,%
1151   border code=\beamerswitch@Border,%
1152   resized width=.5\pgfphysicalwidth,%
1153   resized height=.25\pgfphysicalheight,%
1154   center=\ifbool{HL@beamerswitch@align}{%
1155     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1156     {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
1157   }{%
1158     \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
1159   }%
1160 }%
1161 \pgfpageslogicalpageoptions{4}
1162 {%
1163   border shrink=\pgfpageoptionborder,%
1164   border code=\beamerswitch@Border,%
1165   resized width=.5\pgfphysicalwidth,%
1166   resized height=.25\pgfphysicalheight,%
1167   center=\ifbool{HL@beamerswitch@align}{%
1168     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1169     {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%

```

```

1170     }{%
1171     \pgfpoint{.75\pgfphysicalwidth}{.625\pgfphysicalheight}%
1172     }%
1173 }%
1174 \pgfpageslogicalpageoptions{5}
1175 {%
1176     border shrink=\pgfpageoptionborder,%
1177     border code=\beamerswitch@Border,%
1178     resized width=.5\pgfphysicalwidth,%
1179     resized height=.25 \pgfphysicalheight,%
1180     center=\ifbool{HL@beamerswitch@align}{%
1181     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1182     {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1183     }{%
1184     \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
1185     }%
1186 }%
1187 \pgfpageslogicalpageoptions{6}
1188 {%
1189     border shrink=\pgfpageoptionborder,%
1190     border code=\beamerswitch@Border,%
1191     resized width=.5\pgfphysicalwidth,%
1192     resized height=.25 \pgfphysicalheight,%
1193     center=\ifbool{HL@beamerswitch@align}{%
1194     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1195     {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1196     }{%
1197     \pgfpoint{.75\pgfphysicalwidth}{.375\pgfphysicalheight}%
1198     }%
1199 }%
1200 \pgfpageslogicalpageoptions{7}
1201 {%
1202     border shrink=\pgfpageoptionborder,%
1203     border code=\beamerswitch@Border,%
1204     resized width=.5\pgfphysicalwidth,%
1205     resized height=.25 \pgfphysicalheight,%
1206     center=\ifbool{HL@beamerswitch@align}{%
1207     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1208     {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1209     }{%
1210     \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
1211     }%
1212 }%
1213 \pgfpageslogicalpageoptions{8}
1214 {%
1215     border shrink=\pgfpageoptionborder,%
1216     border code=\beamerswitch@Border,%
1217     resized width=.5\pgfphysicalwidth,%
1218     resized height=.25 \pgfphysicalheight,%
1219     center=\ifbool{HL@beamerswitch@align}{%
1220     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1221     {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1222     }{%
1223     \pgfpoint{.75\pgfphysicalwidth}{.125\pgfphysicalheight}%
1224     }%
1225 }%

```

```

1226   \fi
1227   }
1228 }

```

## 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.

```

1229 \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.

```

1230 \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.

```

1231 \IfFileExists{xparse.sty}{\@tempswatrue}{\@tempswafalse}
1232 \if@tempswa
1233   \RequirePackage{xparse}
1234   \ExplSyntaxOn
1235   \NewDocumentCommand{\bsw@punct@test}{m}{\l_bsw_punct_test:n {#1}}
1236   \cs_new_protected:Nn \l_bsw_punct_test:n
1237   {
1238     \str_case_e:nnTF { \str_item:nn {#1} {-1} }
1239     {
1240       { , } { }
1241       { ; } { }
1242       { : } { }
1243       { . } { }
1244       { ! } { }
1245       { ? } { }
1246     }
1247     { \global\toggletrue{titlepunct} }
1248     { \global\togglefalse{titlepunct} }
1249   }
1250   \ExplSyntaxOff

```

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

```

1251 \mode<article>{%
1252   \renewcommand{\title}[2][\beamer@origtitle{#2}\bsw@punct@test{#2}]
1253 }
1254 \mode<presentation>{%
1255   \long\def\beamer@title[#1]#2{%
1256     \def\inserttitle{#2}%
1257     \def\beamer@shorttitle{#1}%
1258     \bsw@punct@test{#2}%
1259   }
1260 }
1261 \else
1262 \wlog{Beamerswitch: Auto-detection of title punctuation not available.}
1263 \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.

```

1264 \define@choicekey+{AL}{beamerswitch}{frametitles}{para, margin, none}{%
1265   \def\beamerswitch@articleframetitles{#1}%
1266 }{%
1267   \ClassWarning{beamerswitch}{Value of `frametitles' not recognized.
1268     Allowed values are para, margin, and none.}%
1269 }

```

We offer an easy way of customizing how institutes are strung together.

```

1270 \let\beamerswitch@andinst\beamer@andinst
1271 \define@key[AL]{beamerswitch}{instbreak}{%
1272   \def\beamerswitch@andinst{#1}%
1273 }

```

We provide a command for setting these options.

```

1274 \newcommand{\articlelayout}[1]{%
1275   \setkeys[AL]{beamerswitch}{#1}%

```

The following options are mode specific.

```

1276 \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`.

```

1277   \ifcsstring{beamerswitch@articleframetitles}{margin}{%
1278     \setbeamertemplate{frametitle}{%
1279       \marginpar{
1280         \raggedleft\noindent\itshape\textbf{\insertframetitle}\par

```

```

1281     \noindent\insertframesubtitle\par
1282   ]{%
1283     \raggedright\noindent\itshape\textbf{\insertframetitle}\par
1284     \noindent\insertframesubtitle\par
1285   }%
1286 }
1287 }{%
1288   \ifcsstring{beamerswitch@articleframetitles}{none}{%
1289     \setbeamertemplate{frametitle}{}
1290   }{%
1291     \ifcsstring{beamerswitch@articleframetitles}{para}{%
1292       \setbeamertemplate{frametitle}[default]
1293     }{}%
1294   }%
1295 }

```

This is where the `instbreak` option takes effect.

```

1296   \let\beamer@andinst\beamerswitch@andinst

```

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.

```

1297   \ifbool{AL@beamerswitch@maketitle}{%
1298     \renewcommand{\subtitle}[2][]{%
1299       \def\insertsubtitle{##2}\gappto\@title{\iftoggle{titlepunct}{:}{:} ##2}%
1300     }

```

We add support for printing the institute information.

```

1301   \ifundef{\beamer@originstitute}{%
1302     \renewcommand{\institute}[2][]{%
1303       ↪ \def\insertinstitute{\def\inst{\beamer@instinst}\def\and{\beamer@andinst}##2}}%
1304   }{%
1305     \renewcommand{\institute}[2][]{%
1306       ↪ \def\insertinstitute{\def\inst{\beamer@instinst}\def\and{\beamer@andinst}##2}%
1307     \beamer@originstitute{##2}}%
1308   }%

```

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

```

1309   \def\@maketitle{%
1310     \newpage
1311     \null
1312     \begin{center}%
1313       \let\footnote\thanks
1314       {\LARGE \@title \par}%
1315       \vskip 1.5em%
1316       {%
1317         \large\lineskip .5em%

```

The second is to add the beamer definitions for `\inst` and `\and` in the author row.

```

1318     \begin{tabular}[t]{c}%
1319     \def\inst{\beamer@insttitle}\def\and{\beamer@andtitle}%
1320     \@author
1321     \end{tabular}\par
1322 }%

```

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

```

1323     \ifdefvoid{\insertinstitute}{}{%
1324     {%
1325     \normalsize\lineskip .5em%
1326     \insertinstitute\par
1327     }%
1328     }%
1329     \vskip 1em%
1330     {\large \@date}%
1331     \end{center}%
1332     \par\vskip 1.5em%
1333     }%
1334     }{}%
1335     }%

```

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.

```

1336     \mode<presentation>{%
1337     \ifbool{AL@beamerswitch@maketitle}{}%
1338     \ifbool{beamer@autopdfinfo}{}%
1339     \patchcmd{\beamer@firstminutepatches}{}%
1340     \inserttitle\ifx\insertsubtitle\@empty\else\ - \insertsubtitle\fi
1341     }{}%
1342     \inserttitle\ifx\insertsubtitle\@empty\else\iftoggle{titlepunct}{}{:}
1343     ↪ \insertsubtitle\fi
1344     }{}{}%
1345     }{}%
1346     }%
1347     }

```

There is no more.

```

1348     \endinput

```



# Change History

v1.1	
General: Improve documentation of <code>\BeamerSwitchSpawn</code> , <code>\handoutlayout</code> and <code>\articlelayout</code> .	6
<code>\articlelayout</code> : Fix <code>maketitle</code> and <code>textinst</code> options.	37
Remove personal customizations from <code>maketitle</code> code.	39
v1.2	
General: Add ‘Quick start guide’ section.	1
v1.3	
<code>\BeamerSwitchSpawn</code> : Decompose <code>\BeamerSwitchSpawn</code> into further configurable macros.	13
v1.4	
<code>\handoutlayout</code> : Make margins around slides a configurable size.	17
v1.5	
<code>\beamerswitch@Border</code> : Remove empty frames from end of handout.	16
v1.6	
<code>\JobName</code> : Fix bug triggered by spaces in job names.	13
v1.6.1	
<code>\bsw@punct@test</code> : Update <code>expl3</code> syntax.	37
v1.7	
General: Add ‘1 by 1 narrow’ layout.	20
Add ‘1 by 1’ layout.	19
<code>\handoutlayout</code> : Add <code>nup=1plus</code> option.	16
Add <code>nup=1</code> option.	16
v1.8	
General: Add <code>articleoptions</code> option.	12
Add <code>beameroptions</code> option.	12
Deprecate redundant <code>textinst</code> option.	12
<code>\articlelayout</code> : Add <code>instbreak</code> option.	38
Ensure proper rendering of <code>\inst</code> and <code>\and</code> in <code>\author</code> .	39
v1.9	
General: Add <code>articleclass</code> option.	12

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