

beamerswitch — Convenient mode selection in Beamer documents

Alex Ball

Class v1.6 — 2019/06/06

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<presentation>{% \usetheme{metropolis} } \title{Test presentation} \begin{document} \mode<all> \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 \TeX distributions.

- `beamer`
- `etoolbox`
- `hyperref`
- `iftex`
- `pgf`
- `shellessc`
- `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 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=`{\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{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.

`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.

`\articlayout`{*options*}

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

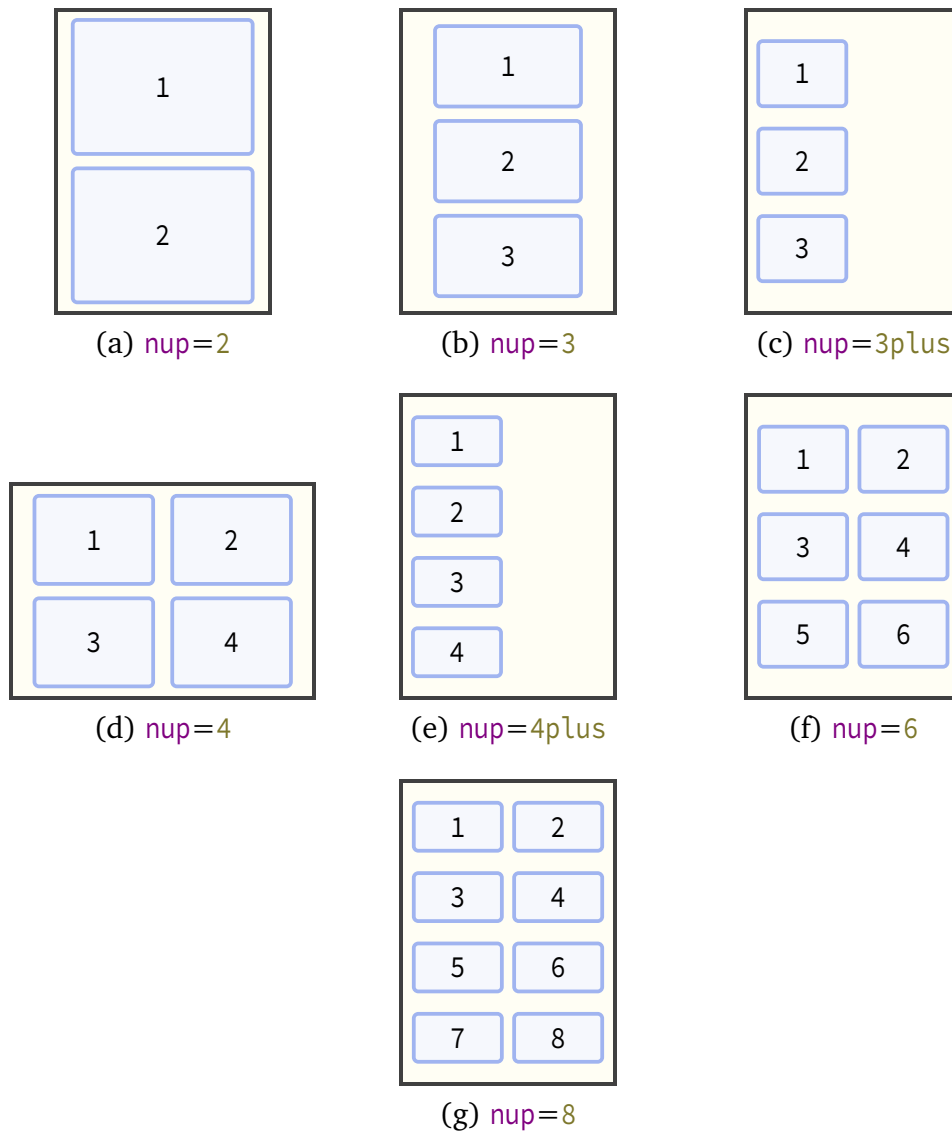


Figure 1: Handout layouts provided by `beamerswitch`

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
- shellsc for running parallel compilations
- iftex for determining which engine to use

```
19 \RequirePackage{xkeyval,xkvltxp,etoolbox,xstring,shellsc,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]{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}{alsotrans}[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 `nohyperref` option stops the class from loading the `hyperref` package in article mode.

```

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

```

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

```

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

```

The default behaviour is to use beamer mode only.

```

64 \setkeys[DC]{beamerswitch}{beamer=true,alsobeamer=false,alsotrans=false,%
65   alsohandout=false,alsoarticle=false}

```

Now we process the options given by the user.

```

66 \ProcessOptionsX[DC]<beamerswitch>

```

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

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.

```
91 \IfBeginWith*\jobname{"}{%
92   \IfEndWith*\jobname"}{%
93     \StrGobbleLeft{\jobname}{1}[\JobName]%
94     \StrGobbleRight{\JobName}{1}[\JobName]%
95     }{\let\JobName\jobname}%
96   }{\let\JobName\jobname}
```

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

```
97 \IfEndWith*\JobName{\BeamerSuffix}{%
98   \setkeys[DC]{beamerswitch}{beamer=true}
99 }{%
100 \IfEndWith*\JobName{\TransSuffix}{%
101   \setkeys[DC]{beamerswitch}{trans=true}
102 }{%
103 \IfEndWith*\JobName{\HandoutSuffix}{%
104   \setkeys[DC]{beamerswitch}{handout=true}
105 }{%
106 \IfEndWith*\JobName{\ArticleSuffix}{%
107   \setkeys[DC]{beamerswitch}{article=true}
108 }{%
109   \ifbool{DC@beamerswitch@alsobeamer}{%
```

```

110     \BeamerSwitchSpawn{\BeamerSuffix}%
111     {}
112     \ifbool{DC@beamerswitch@alsotrans}{%
113     \BeamerSwitchSpawn{\TransSuffix}%
114     {}
115     \ifbool{DC@beamerswitch@alsohandout}{%
116     \BeamerSwitchSpawn{\HandoutSuffix}%
117     {}
118     \ifbool{DC@beamerswitch@alsoarticle}{%
119     \BeamerSwitchSpawn{\ArticleSuffix}%
120     {}
121     }%
122   }%
123 }%
124 }%

```

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.

```

125 \ifbool{DC@beamerswitch@article}{%
126 \LoadClass{article}
127 \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`.

```

128 \ifbool{DC@beamerswitch@nohyperref}{}{}%
129 \RequirePackage[bookmarks=true,%
130 bookmarksopen=true,%
131 pdfborder={0 0 0},%
132 pdfhighlight={/N},%
133 linkbordercolor={.5 .5 .5}]{hyperref}%
134 }

```

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`.

```

135 \AtBeginDocument{%
136 \ifpackageloaded{hyperref}{%
137 \pdfstringdefDisableCommands{\def\<#1>#2{ - #2}}
138 \begingroup
139 \hypersetup{pdftitle={\@title}}%
140 \def\and{\unskip, }%
141 \let\thanks=\@gobble
142 \let\inst=\@gobble
143 \hypersetup{pdfauthor={\@author}}%
144 \endgroup
145 }{}%

```

```
146 }
147 }{%
```

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`.

```
148 \ifbool{DC@beamerswitch@handout}{%
149 \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.

```
150 \RequirePackage{pgfpages}
```

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

```
151 }{%
152 \ifbool{DC@beamerswitch@trans}{%
153 \LoadClass[ignorenonframetext,trans]{beamer}
154 }{%
155 \LoadClass[ignorenonframetext]{beamer}
156 }%
157 }
158 }
```

9.5 Mode-independent layout

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

```
159 \ifbool{DC@beamerswitch@textinst}{%
160 \def\beamer@insttitle#1{\textsuperscript{#1}}
161 \def\beamer@instinst#1{\textsuperscript{#1}\ignorespaces}
162 }{}
```

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.

```
163 \def\beamerswitch@handoutpaper{a4paper}
164 \define@key[HL]{beamerswitch}{paper}{%
165 \def\beamerswitch@handoutpaper{#1}%
166 }
```

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

```

167 \newcounter{beamerswitch@nupcase}
168 \setcounter{beamerswitch@nupcase}{5}
169 \define@choicekey+{HL}{beamerswitch}{nup}{\val\nr}[2, 3, 3plus, 4, 4plus, 6, 8]{%
170 \setcounter{beamerswitch@nupcase}{\nr}
171 }{%
172 \ClassWarning{beamerswitch}{Value of `nup' not recognized.
173 Allowed values are 2, 3, 3plus, 4, 4plus, 6, and 8.}%
174 }

```

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.

```

175 \newcommand*\beamerswitch@Border{\relax}
176 \define@key[HL]{beamerswitch}{border}[0.4pt]{%
177 \RequirePackage{pgf}%
178 \ifdimcomp{#1}>{0pt}{%
179 \renewcommand*\beamerswitch@Border{%
180 \ifnumcomp{(\value{handoutpno} * \beamerswitch@nup) + \the\pgf@cpn}{%
181 >}{\beamer@endpageofdocument}{%
182 \relax
183 }{%
184 \pgfsetlinewidth{#1}\pgfstroke
185 }%
186 }%
187 }%
188 \renewcommand*\beamerswitch@Border{\relax}%
189 }%
190 }

```

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`.

```

191 \newlength{\beamerswitch@margin}
192 \setlength{\beamerswitch@margin}{5mm}
193 \define@key[HL]{beamerswitch}{margin}[0pt]{%
194 \setlength{\beamerswitch@margin}{#1}%
195 }

```

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.

```

196 \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`.

```

197 \newlength{\handoutpnobaseline}
198 \setlength{\handoutpnobaseline}{5mm}
199 \newcounter{handoutpno}
200 \define@boolkey[HL]{beamerswitch}{pnos}[true]{}

```

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

```

201 \def\beamerswitch@footer{}
202 \patchcmd{\pgfpages@buildshipoutbox}{}%
203 \pgfsys@endpicture
204 }{}%
205 \beamerswitch@footer\pgfsys@endpicture
206 }{}{}

```

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`.

```

207 \newlength{\beamerswitch@pnoadjust}
208 \newcommand*\handoutlayout[1]{%
209 \only<handout>{%
210 \setlength{\beamerswitch@pnoadjust}{1em}%
211 \setkeys[HL]{beamerswitch}{#1}%
212 \ifbool{HL@beamerswitch@pnos}{%
213 \def\beamerswitch@footer{%
214 \stepcounter{handoutpno}%
215 \setbox0\vbox{\makebox[0pt][c]{\arabic{handoutpno}}}%
216 \pgfsys@beginscope
217 \pgflevel{\pgftransformshift{%
218 \pgfpoint{.5\pgfphysicalwidth}{\handoutpnobaseline}}}%
219 \wd0=0pt%
220 \dp0=-\ht0%
221 \pgfsys@hbox0%
222 \pgfsys@endscope
223 }%
224 \ifbool{HL@beamerswitch@align}{%
225 \ifcase\value{beamerswitch@nupcase}\relax
226 \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%
227 \or
228 \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
229 \or
230 \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
231 \or
232 \addtolength{\beamerswitch@pnoadjust}{-0.333\beamerswitch@margin}%

```



```

233     \or
234     \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
235     \or
236     \addtolength{\beamerswitch@pnoadjust}{-0.5\beamerswitch@margin}%
237     \or
238     \addtolength{\beamerswitch@pnoadjust}{-0.6\beamerswitch@margin}%
239     \fi
240   }{}%
241   \ifdimcomp{\beamerswitch@margin}{<}%
242     {\handoutpnobaseline + \beamerswitch@pnoadjust}{%
243     \setlength{\beamerswitch@margin}%
244     {\the\dimexpr\handoutpnobaseline + \beamerswitch@pnoadjust\relax}%
245   }{}%
246 }{}%
247 \def\beamerswitch@footer{\stepcounter{handoutpno}}%
248 }%

```

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.

```

249 \ifcase\value{beamerswitch@nupcase}\relax
250 \def\beamerswitch@nup{2}%
251 \pgfpagesuselayout{1 by 2}[\beamerswitch@handoutpaper,%
252 border shrink=\the\beamerswitch@margin]%
253 \or
254 \def\beamerswitch@nup{3}%
255 \pgfpagesuselayout{1 by 3}[\beamerswitch@handoutpaper,%
256 border shrink=\the\beamerswitch@margin]%
257 \or
258 \def\beamerswitch@nup{3}%
259 \pgfpagesuselayout{1 by 3 narrow}[\beamerswitch@handoutpaper,%
260 border shrink=\the\beamerswitch@margin]%
261 \or
262 \def\beamerswitch@nup{4}%
263 \pgfpagesuselayout{2 by 2}[\beamerswitch@handoutpaper,%
264 landscape,border shrink=\the\beamerswitch@margin]%
265 \or
266 \def\beamerswitch@nup{4}%
267 \pgfpagesuselayout{1 by 4 narrow}[\beamerswitch@handoutpaper,%
268 border shrink=\the\beamerswitch@margin]%
269 \or
270 \def\beamerswitch@nup{6}%
271 \pgfpagesuselayout{2 by 3}[\beamerswitch@handoutpaper,%
272 border shrink=\the\beamerswitch@margin]%
273 \or
274 \def\beamerswitch@nup{8}%
275 \pgfpagesuselayout{2 by 4}[\beamerswitch@handoutpaper,%
276 border shrink=\the\beamerswitch@margin]%
277 \fi
278 }%
279 }

```

We initialize the class with the defaults set above.

```

280 \AtEndPreamble{%
281   \ifdef{\beamerswitch@nup}{}{}%
282   \handoutlayout{}%
283 }%
284 }

```

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.

```

285 \mode<handout>{%
286   \pgfpagesdeclarelayout{1 by 2}
287   {
288     \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
289     \edef\pgfpageoptionwidth{\the\paperheight}
290     \def\pgfpageoptionborder{0pt}
291     \def\pgfpageoptionfirstshipout{1}
292   }
293   {
294     \pgfpagesphysicalpageoptions
295     {%
296       logical pages=2,%
297       physical height=\pgfpageoptionheight,%
298       physical width=\pgfpageoptionwidth,%
299       current logical shipout=\pgfpageoptionfirstshipout%
300     }
301     \ifdim\paperheight>\paperwidth\relax
302     % put side-by-side
303     \pgfpageslogicalpageoptions{1}
304     {%
305       border shrink=\pgfpageoptionborder,%
306       border code=\beamerswitch@Border,%
307       resized width=.5\pgfphysicalwidth,%
308       resized height=\pgfphysicalheight,%
309       center=\ifbool{HL@beamerswitch@align}{%
310         \pgfpoint{.25\pgfphysicalwidth +
311           ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
312         }{%
313           \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
314         }%
315     }%
316     \pgfpageslogicalpageoptions{2}
317     {%
318       border shrink=\pgfpageoptionborder,%
319       border code=\beamerswitch@Border,%
320       resized width=.5\pgfphysicalwidth,%
321       resized height=\pgfphysicalheight,%
322       center=\ifbool{HL@beamerswitch@align}{%
323         \pgfpoint{.75\pgfphysicalwidth -
324           ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
325         }{%
326           \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
327         }%
328     }%
329   }%
330 }%
331 \else

```

```

328 % stack on top of one another
329 \pgfpageslogicalpageoptions{1}
330 {%
331   border shrink=\pgfpageoptionborder,%
332   border code=\beamerswitch@Border,%
333   resized width=\pgfphysicalwidth,%
334   resized height=.5\pgfphysicalheight,%
335   center=\ifbool{HL@beamerswitch@align}{%
336     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
      ↪ 0.333\beamerswitch@margin}%
337   }{%
338     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
339   }%
340 }%
341 \pgfpageslogicalpageoptions{2}
342 {%
343   border shrink=\pgfpageoptionborder,%
344   border code=\beamerswitch@Border,%
345   resized width=\pgfphysicalwidth,%
346   resized height=.5\pgfphysicalheight,%
347   center=\ifbool{HL@beamerswitch@align}{%
348     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
      ↪ 0.333\beamerswitch@margin}%
349   }{%
350     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}%
351   }%
352 }%
353 \fi
354 }

```

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

```

355 \pgfpagesdeclarelayout{1 by 3}
356 {
357   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
358   \edef\pgfpageoptionwidth{\the\paperheight}
359   \def\pgfpageoptionborder{0pt}
360   \def\pgfpageoptionfirstshipout{1}
361 }
362 {
363   \pgfpagesphysicalpageoptions
364   {%
365     logical pages=3,%
366     physical height=\pgfpageoptionheight,%
367     physical width=\pgfpageoptionwidth,%
368     current logical shipout=\pgfpageoptionfirstshipout%
369   }
370   \ifdim\paperheight>\paperwidth\relax
371     % put side-by-side
372     \pgfpageslogicalpageoptions{1}
373   {%
374     border shrink=\pgfpageoptionborder,%
375     border code=\beamerswitch@Border,%
376     resized width=.333\pgfphysicalwidth,%
377     resized height=\pgfphysicalheight,%
378     center=\ifbool{HL@beamerswitch@align}{%

```

```

379     \pgfpoint{.167\pgfphysicalwidth +
      ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
380   }{%
381     \pgfpoint{.167\pgfphysicalwidth}{.5\pgfphysicalheight}%
382   }%
383 }%
384 \pgfpageslogicalpageoptions{2}
385 {%
386   border shrink=\pgfpageoptionborder,%
387   border code=\beamerswitch@Border,%
388   resized width=.333\pgfphysicalwidth,%
389   resized height=\pgfphysicalheight,%
390   center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
391 }%
392 \pgfpageslogicalpageoptions{3}
393 {%
394   border shrink=\pgfpageoptionborder,%
395   border code=\beamerswitch@Border,%
396   resized width=.333\pgfphysicalwidth,%
397   resized height=\pgfphysicalheight,%
398   center=\ifbool{HL@beamerswitch@align}{%
399     \pgfpoint{.833\pgfphysicalwidth -
      ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
400   }{%
401     \pgfpoint{.833\pgfphysicalwidth}{.5\pgfphysicalheight}%
402   }%
403 }%
404 \else
405 % stack on top of one another
406 \pgfpageslogicalpageoptions{1}
407 {%
408   border shrink=\pgfpageoptionborder,%
409   border code=\beamerswitch@Border,%
410   resized width=\pgfphysicalwidth,%
411   resized height=.333\pgfphysicalheight,%
412   center=\ifbool{HL@beamerswitch@align}{%
413     \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight -
      ↪ 0.5\beamerswitch@margin}%
414   }{%
415     \pgfpoint{.5\pgfphysicalwidth}{.833\pgfphysicalheight}%
416   }%
417 }%
418 \pgfpageslogicalpageoptions{2}
419 {%
420   border shrink=\pgfpageoptionborder,%
421   border code=\beamerswitch@Border,%
422   resized width=\pgfphysicalwidth,%
423   resized height=.333\pgfphysicalheight,%
424   center=\pgfpoint{.5\pgfphysicalwidth}{.5\pgfphysicalheight}%
425 }%
426 \pgfpageslogicalpageoptions{3}
427 {%
428   border shrink=\pgfpageoptionborder,%
429   border code=\beamerswitch@Border,%
430   resized width=\pgfphysicalwidth,%
431   resized height=.333\pgfphysicalheight,%

```

```

432 center=\ifbool{HL@beamerswitch@align}{%
433   \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight +
      ↪ 0.5\beamerswitch@margin}%
434 }{%
435   \pgfpoint{.5\pgfphysicalwidth}{.167\pgfphysicalheight}%
436 }%
437 }%
438 \fi
439 }

```

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

```

440 \pgfpagesdeclarelayout{1 by 3 narrow}
441 {
442   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
443   \edef\pgfpageoptionwidth{\the\paperheight}
444   \def\pgfpageoptionborder{0pt}
445   \def\pgfpageoptionfirstshipout{1}
446 }
447 {
448   \pgfpagesphysicalpageoptions
449   {%
450     logical pages=3,%
451     physical height=\pgfpageoptionheight,%
452     physical width=\pgfpageoptionwidth,%
453     current logical shipout=\pgfpageoptionfirstshipout%
454   }
455   \ifdim\paperheight>\paperwidth\relax
456     % put side-by-side
457     \pgfpageslogicalpageoptions{1}
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{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
465           {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
466       }{%
467         \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
468       }%
469     }%
470     \pgfpageslogicalpageoptions{2}
471     {%
472       border shrink=\pgfpageoptionborder,%
473       border code=\beamerswitch@Border,%
474       resized width=.333\pgfphysicalwidth,%
475       resized height=.5\pgfphysicalheight,%
476       center=\ifbool{HL@beamerswitch@align}{%
477         \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
478           ↪ 0.5\beamerswitch@margin}%
479       }{%
480         \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
481       }%

```

```

482 \pgfpageslogicalpageoptions{3}
483 {%
484 border shrink=\pgfpageoptionborder,%
485 border code=\beamerswitch@Border,%
486 resized width=.333\pgfphysicalwidth,%
487 resized height=.5\pgfphysicalheight,%
488 center=\ifbool{HL@beamerswitch@align}{%
489 \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
490 {.75\pgfphysicalheight - 0.5\beamerswitch@margin}%
491 }{%
492 \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
493 }%
494 }%
495 \else
496 % stack on top of one another
497 \pgfpageslogicalpageoptions{1}
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}%
505 {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
506 }{%
507 \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}%
508 }%
509 }%
510 \pgfpageslogicalpageoptions{2}
511 {%
512 border shrink=\pgfpageoptionborder,%
513 border code=\beamerswitch@Border,%
514 resized width=.5\pgfphysicalwidth,%
515 resized height=.333\pgfphysicalheight,%
516 center=\ifbool{HL@beamerswitch@align}{%
517 \pgfpoint{.25\pgfphysicalwidth +
518 ↪ 0.5\beamerswitch@margin}{.5\pgfphysicalheight}%
519 }{%
520 \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
521 }%
522 }%
523 \pgfpageslogicalpageoptions{3}
524 {%
525 border shrink=\pgfpageoptionborder,%
526 border code=\beamerswitch@Border,%
527 resized width=.5\pgfphysicalwidth,%
528 resized height=.333\pgfphysicalheight,%
529 center=\ifbool{HL@beamerswitch@align}{%
530 \pgfpoint{.25\pgfphysicalwidth + 0.5\beamerswitch@margin}%
531 {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
532 }{%
533 \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
534 }%
535 }%
536 \fi
537 }

```

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

```
537 \pgfpagesdeclarelayout{2 by 2}
538 {
539   \edef\pgfpageoptionheight{\the\paperheight}
540   \edef\pgfpageoptionwidth{\the\paperwidth}
541   \edef\pgfpageoptionborder{0pt}
542 }
543 {
544   \pgfpagesphysicalpageoptions
545   {%
546     logical pages=4,%
547     physical height=\pgfpageoptionheight,%
548     physical width=\pgfpageoptionwidth%
549   }
550   \pgfpageslogicalpageoptions{1}
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{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
558       {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
559     }{%
560       \pgfpoint{.25\pgfphysicalwidth}{.75\pgfphysicalheight}%
561     }%
562   }%
563   \pgfpageslogicalpageoptions{2}
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{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
571       {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
572     }{%
573       \pgfpoint{.75\pgfphysicalwidth}{.75\pgfphysicalheight}%
574     }%
575   }%
576   \pgfpageslogicalpageoptions{3}
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{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
584       {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
585     }{%
586       \pgfpoint{.25\pgfphysicalwidth}{.25\pgfphysicalheight}%
587     }%
588   }%
589   \pgfpageslogicalpageoptions{4}
590   {%
591     border shrink=\pgfpageoptionborder,%
```

```

592 border code=\beamerswitch@Border,%
593 resized width=.5\pgfphysicalwidth,%
594 resized height=.5\pgfphysicalheight,%
595 center=\ifbool{HL@beamerswitch@align}{%
596   \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
597   {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
598 }{%
599   \pgfpoint{.75\pgfphysicalwidth}{.25\pgfphysicalheight}%
600 }%
601 }%
602 }

```

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).

```

603 \pgfpagesdeclarelayout{1 by 4 narrow}
604 {
605   \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
606   \edef\pgfpageoptionwidth{\the\paperheight}
607   \def\pgfpageoptionborder{0pt}
608   \def\pgfpageoptionfirstshipout{1}
609 }
610 {
611   \pgfpagesphysicalpageoptions
612   {%
613     logical pages=4,%
614     physical height=\pgfpageoptionheight,%
615     physical width=\pgfpageoptionwidth,%
616     current logical shipout=\pgfpageoptionfirstshipout%
617   }
618   \ifdim\paperheight>\paperwidth\relax
619     % put side-by-side
620     \pgfpageslogicalpageoptions{1}
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{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
628         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
629       }{%
630         \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
631       }%
632     }%
633     \pgfpageslogicalpageoptions{2}
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{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
641         {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
642       }{%
643         \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%

```



```

644 }%
645 }%
646 \pgfpageslogicalpageoptions{3}
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{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
654   {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
655 }{%
656   \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
657 }%
658 }%
659 \pgfpageslogicalpageoptions{4}
660 {%
661 border shrink=\pgfpageoptionborder,%
662 border code=\beamerswitch@Border,%
663 resized width=.25\pgfphysicalwidth,%
664 resized height=.5\pgfphysicalheight,%
665 center=\ifbool{HL@beamerswitch@align}{%
666   \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
667   {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
668 }{%
669   \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
670 }%
671 }%
672 \else
673 % stack on top of one another
674 \pgfpageslogicalpageoptions{1}
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   {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
683 }{%
684   \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
685 }%
686 }%
687 \pgfpageslogicalpageoptions{2}
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   {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
696 }{%
697   \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
698 }%
699 }%

```

```

700 \pgfpageslogicalpageoptions{3}
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 {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
709 }{%
710 \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
711 }%
712 }%
713 \pgfpageslogicalpageoptions{4}
714 {%
715 border shrink=\pgfpageoptionborder,%
716 border code=\beamerswitch@Border,%
717 resized width=.5\pgfphysicalwidth,%
718 resized height=.25 \pgfphysicalheight,%
719 center=\ifbool{HL@beamerswitch@align}{%
720 \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
721 {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
722 }{%
723 \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
724 }%
725 }%
726 \fi
727 }

```

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

```

728 \pgfpagesdeclarelayers{2 by 3}
729 {
730 \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
731 \edef\pgfpageoptionwidth{\the\paperheight}
732 \def\pgfpageoptionborder{0pt}
733 \def\pgfpageoptionfirstshipout{1}
734 }
735 {
736 \pgfpagesphysicalpageoptions
737 {%
738 logical pages=6,%
739 physical height=\pgfpageoptionheight,%
740 physical width=\pgfpageoptionwidth,%
741 current logical shipout=\pgfpageoptionfirstshipout%
742 }
743 \ifdim\paperheight>\paperwidth\relax
744 % put side-by-side
745 \pgfpageslogicalpageoptions{1}
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{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%

```

```

753     {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
754   }{%
755     \pgfpoint{.167\pgfphysicalwidth}{.75\pgfphysicalheight}%
756   }%
757 }%
758 \pgfpageslogicalpageoptions{2}
759 {%
760   border shrink=\pgfpageoptionborder,%
761   border code=\beamerswitch@Border,%
762   resized width=.333\pgfphysicalwidth,%
763   resized height=.5\pgfphysicalheight,%
764   center=\ifbool{HL@beamerswitch@align}{%
765     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight -
766     ↪ 0.333\beamerswitch@margin}%
767   }{%
768     \pgfpoint{.5\pgfphysicalwidth}{.75\pgfphysicalheight}%
769   }%
770 \pgfpageslogicalpageoptions{3}
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{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
778     {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
779   }{%
780     \pgfpoint{.833\pgfphysicalwidth}{.75\pgfphysicalheight}%
781   }%
782 }%
783 \pgfpageslogicalpageoptions{4}
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{.167\pgfphysicalwidth + 0.5\beamerswitch@margin}%
791     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
792   }{%
793     \pgfpoint{.167\pgfphysicalwidth}{.25\pgfphysicalheight}%
794   }%
795 }%
796 \pgfpageslogicalpageoptions{5}
797 {%
798   border shrink=\pgfpageoptionborder,%
799   border code=\beamerswitch@Border,%
800   resized width=.333\pgfphysicalwidth,%
801   resized height=.5\pgfphysicalheight,%
802   center=\ifbool{HL@beamerswitch@align}{%
803     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight +
804     ↪ 0.333\beamerswitch@margin}%
805   }{%
806     \pgfpoint{.5\pgfphysicalwidth}{.25\pgfphysicalheight}%

```

```

807 }%
808 \pgfpageslogicalpageoptions{6}
809 {%
810   border shrink=\pgfpageoptionborder,%
811   border code=\beamerswitch@Border,%
812   resized width=.333\pgfphysicalwidth,%
813   resized height=.5\pgfphysicalheight,%
814   center=\ifbool{HL@beamerswitch@align}{%
815     \pgfpoint{.833\pgfphysicalwidth - 0.5\beamerswitch@margin}%
816     {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
817   }{%
818     \pgfpoint{.833\pgfphysicalwidth}{.25\pgfphysicalheight}%
819   }%
820 }%
821 \else
822 % stack on top of one another
823 \pgfpageslogicalpageoptions{1}
824 {%
825   border shrink=\pgfpageoptionborder,%
826   border code=\beamerswitch@Border,%
827   resized width=.5\pgfphysicalwidth,%
828   resized height=.333\pgfphysicalheight,%
829   center=\ifbool{HL@beamerswitch@align}{%
830     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
831     {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
832   }{%
833     \pgfpoint{.25\pgfphysicalwidth}{.833\pgfphysicalheight}%
834   }%
835 }%
836 \pgfpageslogicalpageoptions{2}
837 {%
838   border shrink=\pgfpageoptionborder,%
839   border code=\beamerswitch@Border,%
840   resized width=.5\pgfphysicalwidth,%
841   resized height=.333\pgfphysicalheight,%
842   center=\ifbool{HL@beamerswitch@align}{%
843     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
844     {.833\pgfphysicalheight - 0.5\beamerswitch@margin}%
845   }{%
846     \pgfpoint{.75\pgfphysicalwidth}{.833\pgfphysicalheight}%
847   }%
848 }%
849 \pgfpageslogicalpageoptions{3}
850 {%
851   border shrink=\pgfpageoptionborder,%
852   border code=\beamerswitch@Border,%
853   resized width=.5\pgfphysicalwidth,%
854   resized height=.333\pgfphysicalheight,%
855   center=\ifbool{HL@beamerswitch@align}{%
856     \pgfpoint{.25\pgfphysicalwidth +
857       ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
858   }{%
859     \pgfpoint{.25\pgfphysicalwidth}{.5\pgfphysicalheight}%
860   }%
861 \pgfpageslogicalpageoptions{4}

```

```

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{.75\pgfphysicalwidth -
869        ↪ 0.333\beamerswitch@margin}{.5\pgfphysicalheight}%
870    }{%
871      \pgfpoint{.75\pgfphysicalwidth}{.5\pgfphysicalheight}%
872    }%
873  \pgfpageslogicalpageoptions{5}
874  {%
875    border shrink=\pgfpageoptionborder,%
876    border code=\beamerswitch@Border,%
877    resized width=.5\pgfphysicalwidth,%
878    resized height=.333\pgfphysicalheight,%
879    center=\ifbool{HL@beamerswitch@align}{%
880      \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
881        {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
882    }{%
883      \pgfpoint{.25\pgfphysicalwidth}{.167\pgfphysicalheight}%
884    }%
885  }%
886  \pgfpageslogicalpageoptions{6}
887  {%
888    border shrink=\pgfpageoptionborder,%
889    border code=\beamerswitch@Border,%
890    resized width=.5\pgfphysicalwidth,%
891    resized height=.333\pgfphysicalheight,%
892    center=\ifbool{HL@beamerswitch@align}{%
893      \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
894        {.167\pgfphysicalheight + 0.5\beamerswitch@margin}%
895    }{%
896      \pgfpoint{.75\pgfphysicalwidth}{.167\pgfphysicalheight}%
897    }%
898  }%
899  \fi
900 }

```

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

```

901  \pgfpagesdeclarelayout{2 by 4}
902  {
903    \edef\pgfpageoptionheight{\the\paperwidth} % landscaped by default
904    \edef\pgfpageoptionwidth{\the\paperheight}
905    \def\pgfpageoptionborder{0pt}
906    \def\pgfpageoptionfirstshipout{1}
907  }
908  {
909    \pgfpagesphysicalpageoptions
910    {%
911      logical pages=8,%
912      physical height=\pgfpageoptionheight,%
913      physical width=\pgfpageoptionwidth,%

```

```

914     current logical shipout=\pgfpageoptionfirstshipout%
915 }
916 \ifdim\paperheight>\paperwidth\relax
917 % put side-by-side
918 \pgfpageslogicalpageoptions{1}
919 {%
920     border shrink=\pgfpageoptionborder,%
921     border code=\beamerswitch@Border,%
922     resized width=.25\pgfphysicalwidth,%
923     resized height=.5\pgfphysicalheight,%
924     center=\ifbool{HL@beamerswitch@align}{%
925         \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
926             {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
927     }{%
928         \pgfpoint{.125\pgfphysicalwidth}{.75\pgfphysicalheight}%
929     }%
930 }%
931 \pgfpageslogicalpageoptions{2}
932 {%
933     border shrink=\pgfpageoptionborder,%
934     border code=\beamerswitch@Border,%
935     resized width=.25\pgfphysicalwidth,%
936     resized height=.5\pgfphysicalheight,%
937     center=\ifbool{HL@beamerswitch@align}{%
938         \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
939             {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
940     }{%
941         \pgfpoint{.375\pgfphysicalwidth}{.75\pgfphysicalheight}%
942     }%
943 }%
944 \pgfpageslogicalpageoptions{3}
945 {%
946     border shrink=\pgfpageoptionborder,%
947     border code=\beamerswitch@Border,%
948     resized width=.25\pgfphysicalwidth,%
949     resized height=.5\pgfphysicalheight,%
950     center=\ifbool{HL@beamerswitch@align}{%
951         \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
952             {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
953     }{%
954         \pgfpoint{.625\pgfphysicalwidth}{.75\pgfphysicalheight}%
955     }%
956 }%
957 \pgfpageslogicalpageoptions{4}
958 {%
959     border shrink=\pgfpageoptionborder,%
960     border code=\beamerswitch@Border,%
961     resized width=.25\pgfphysicalwidth,%
962     resized height=.5\pgfphysicalheight,%
963     center=\ifbool{HL@beamerswitch@align}{%
964         \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
965             {.75\pgfphysicalheight - 0.333\beamerswitch@margin}%
966     }{%
967         \pgfpoint{.875\pgfphysicalwidth}{.75\pgfphysicalheight}%
968     }%
969 }%

```

```

970 \pgfpageslogicalpageoptions{5}
971 {%
972 border shrink=\pgfpageoptionborder,%
973 border code=\beamerswitch@Border,%
974 resized width=.25\pgfphysicalwidth,%
975 resized height=.5\pgfphysicalheight,%
976 center=\ifbool{HL@beamerswitch@align}{%
977 \pgfpoint{.125\pgfphysicalwidth + 0.6\beamerswitch@margin}%
978 {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
979 }{%
980 \pgfpoint{.125\pgfphysicalwidth}{.25\pgfphysicalheight}%
981 }%
982 }%
983 \pgfpageslogicalpageoptions{6}
984 {%
985 border shrink=\pgfpageoptionborder,%
986 border code=\beamerswitch@Border,%
987 resized width=.25\pgfphysicalwidth,%
988 resized height=.5\pgfphysicalheight,%
989 center=\ifbool{HL@beamerswitch@align}{%
990 \pgfpoint{.375\pgfphysicalwidth + 0.2\beamerswitch@margin}%
991 {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
992 }{%
993 \pgfpoint{.375\pgfphysicalwidth}{.25\pgfphysicalheight}%
994 }%
995 }%
996 \pgfpageslogicalpageoptions{7}
997 {%
998 border shrink=\pgfpageoptionborder,%
999 border code=\beamerswitch@Border,%
1000 resized width=.25\pgfphysicalwidth,%
1001 resized height=.5\pgfphysicalheight,%
1002 center=\ifbool{HL@beamerswitch@align}{%
1003 \pgfpoint{.625\pgfphysicalwidth - 0.2\beamerswitch@margin}%
1004 {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1005 }{%
1006 \pgfpoint{.625\pgfphysicalwidth}{.25\pgfphysicalheight}%
1007 }%
1008 }%
1009 \pgfpageslogicalpageoptions{8}
1010 {%
1011 border shrink=\pgfpageoptionborder,%
1012 border code=\beamerswitch@Border,%
1013 resized width=.25\pgfphysicalwidth,%
1014 resized height=.5\pgfphysicalheight,%
1015 center=\ifbool{HL@beamerswitch@align}{%
1016 \pgfpoint{.875\pgfphysicalwidth - 0.6\beamerswitch@margin}%
1017 {.25\pgfphysicalheight + 0.333\beamerswitch@margin}%
1018 }{%
1019 \pgfpoint{.875\pgfphysicalwidth}{.25\pgfphysicalheight}%
1020 }%
1021 }%
1022 \else
1023 % stack on top of one another
1024 \pgfpageslogicalpageoptions{1}
1025 {%

```



```

1026 border shrink=\pgfpageoptionborder,%
1027 border code=\beamerswitch@Border,%
1028 resized width=.5\pgfphysicalwidth,%
1029 resized height=.25\pgfphysicalheight,%
1030 center=\ifbool{HL@beamerswitch@align}{%
1031     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1032     {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1033 }{%
1034     \pgfpoint{.25\pgfphysicalwidth}{.875\pgfphysicalheight}%
1035 }%
1036 }%
1037 \pgfpageslogicalpageoptions{2}
1038 {%
1039 border shrink=\pgfpageoptionborder,%
1040 border code=\beamerswitch@Border,%
1041 resized width=.5\pgfphysicalwidth,%
1042 resized height=.25\pgfphysicalheight,%
1043 center=\ifbool{HL@beamerswitch@align}{%
1044     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1045     {.875\pgfphysicalheight - 0.6\beamerswitch@margin}%
1046 }{%
1047     \pgfpoint{.75\pgfphysicalwidth}{.875\pgfphysicalheight}%
1048 }%
1049 }%
1050 \pgfpageslogicalpageoptions{3}
1051 {%
1052 border shrink=\pgfpageoptionborder,%
1053 border code=\beamerswitch@Border,%
1054 resized width=.5\pgfphysicalwidth,%
1055 resized height=.25\pgfphysicalheight,%
1056 center=\ifbool{HL@beamerswitch@align}{%
1057     \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1058     {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
1059 }{%
1060     \pgfpoint{.25\pgfphysicalwidth}{.625\pgfphysicalheight}%
1061 }%
1062 }%
1063 \pgfpageslogicalpageoptions{4}
1064 {%
1065 border shrink=\pgfpageoptionborder,%
1066 border code=\beamerswitch@Border,%
1067 resized width=.5\pgfphysicalwidth,%
1068 resized height=.25\pgfphysicalheight,%
1069 center=\ifbool{HL@beamerswitch@align}{%
1070     \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1071     {.625\pgfphysicalheight - 0.2\beamerswitch@margin}%
1072 }{%
1073     \pgfpoint{.75\pgfphysicalwidth}{.625\pgfphysicalheight}%
1074 }%
1075 }%
1076 \pgfpageslogicalpageoptions{5}
1077 {%
1078 border shrink=\pgfpageoptionborder,%
1079 border code=\beamerswitch@Border,%
1080 resized width=.5\pgfphysicalwidth,%
1081 resized height=.25 \pgfphysicalheight,%

```



```

1082     center=\ifbool{HL@beamerswitch@align}{%
1083         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1084         {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1085     }{%
1086         \pgfpoint{.25\pgfphysicalwidth}{.375\pgfphysicalheight}%
1087     }%
1088 }%
1089 \pgfpageslogicalpageoptions{6}
1090 {%
1091     border shrink=\pgfpageoptionborder,%
1092     border code=\beamerswitch@Border,%
1093     resized width=.5\pgfphysicalwidth,%
1094     resized height=.25 \pgfphysicalheight,%
1095     center=\ifbool{HL@beamerswitch@align}{%
1096         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1097         {.375\pgfphysicalheight + 0.2\beamerswitch@margin}%
1098     }{%
1099         \pgfpoint{.75\pgfphysicalwidth}{.375\pgfphysicalheight}%
1100     }%
1101 }%
1102 \pgfpageslogicalpageoptions{7}
1103 {%
1104     border shrink=\pgfpageoptionborder,%
1105     border code=\beamerswitch@Border,%
1106     resized width=.5\pgfphysicalwidth,%
1107     resized height=.25 \pgfphysicalheight,%
1108     center=\ifbool{HL@beamerswitch@align}{%
1109         \pgfpoint{.25\pgfphysicalwidth + 0.333\beamerswitch@margin}%
1110         {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1111     }{%
1112         \pgfpoint{.25\pgfphysicalwidth}{.125\pgfphysicalheight}%
1113     }%
1114 }%
1115 \pgfpageslogicalpageoptions{8}
1116 {%
1117     border shrink=\pgfpageoptionborder,%
1118     border code=\beamerswitch@Border,%
1119     resized width=.5\pgfphysicalwidth,%
1120     resized height=.25 \pgfphysicalheight,%
1121     center=\ifbool{HL@beamerswitch@align}{%
1122         \pgfpoint{.75\pgfphysicalwidth - 0.333\beamerswitch@margin}%
1123         {.125\pgfphysicalheight + 0.6\beamerswitch@margin}%
1124     }{%
1125         \pgfpoint{.75\pgfphysicalwidth}{.125\pgfphysicalheight}%
1126     }%
1127 }%
1128 \fi
1129 }
1130 }

```

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.

```
1131 \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.

```
1132 \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.

```
1133 \IfFileExists{xparse.sty}{\@tempwattrue}{\@tempwafalse}
1134 \if@tempswa
1135   \RequirePackage{xparse}
1136   \ExplSyntaxOn
1137   \NewDocumentCommand{\bsw@punct@test}{m}{\l_bsw_punct_test:n {#1}}
1138   \cs_new_protected:Nn \l_bsw_punct_test:n
1139   {
1140     \str_case_x:nnTF { \str_item:nn {#1} {-1} }
1141     {
1142       { , } { }
1143       { ; } { }
1144       { : } { }
1145       { . } { }
1146       { ! } { }
1147       { ? } { }
1148     }
1149     { \global\toggletrue{titlepunct} }
1150     { \global\togglefalse{titlepunct} }
1151   }
1152   \ExplSyntaxOff
```

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

```
1153 \mode<article>{%
1154   \renewcommand{\title}[2][\beamer@origtitle{#2}\bsw@punct@test{#2}]
1155 }
1156 \mode<presentation>{%
1157   \long\def\beamer@title[#1]#2{%
1158     \def\inserttitle{#2}%
1159     \def\beamer@shorttitle{#1}%
1160     \bsw@punct@test{#2}%
1161   }
1162 }
1163 \else
1164   \wlog{Beamerswitch: Auto-detection of title punctuation not available.}
```

```
1165 \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.

```
1166 \define@choicekey+{AL}{beamerswitch}{frametitles}{para, margin, none}{%
1167 \def\beamerswitch@articleframetitles{#1}%
1168 }{%
1169 \ClassWarning{beamerswitch}{Value of `frametitles' not recognized.
1170 Allowed values are para, margin, and none.}%
1171 }
```

We provide a command for setting these options.

```
1172 \newcommand{\articlelayout}[1]{%
1173 \setkeys[AL]{beamerswitch}{#1}%
```

The following options are mode specific.

```
1174 \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`.

```
1175 \ifcsstring{beamerswitch@articleframetitles}{margin}{%
1176 \setbeamertemplate{frametitle}{%
1177 \marginpar[%
1178 \raggedleft\noindent\emshape\textbf{\insertframetitle}\par
1179 \noindent\insertframesubtitle\par
1180 ]{%
1181 \raggedright\noindent\emshape\textbf{\insertframetitle}\par
1182 \noindent\insertframesubtitle\par
1183 }%
1184 }
1185 }{%
1186 \ifcsstring{beamerswitch@articleframetitles}{none}{%
1187 \setbeamertemplate{frametitle}{}
1188 }{%
1189 \ifcsstring{beamerswitch@articleframetitles}{para}{%
1190 \setbeamertemplate{frametitle}[default]
1191 }{}%
1192 }%
1193 }
```

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.

```

1194 \ifbool{AL@beamerswitch@maketitle}{%
1195   \renewcommand{\subtitle}[2][ ]{%
1196     \def\insertsubtitle{##2}\gappto\@title{\iftoggle{titlepunct}{:} ##2}%
1197   }

```

We add support for printing the institute information.

```

1198 \ifundef{\beamer@originstitute}{%
1199   \renewcommand{\institute}[2][ ]{\def\insertinstitute{##2}}%
1200 }{%
1201   \renewcommand{\institute}[2][ ]{%
1202     \def\insertinstitute{##2}\beamer@originstitute{##2}}%
1203 }%

```

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

```

1204 \def\@maketitle{%
1205   \newpage
1206   \null
1207   \begin{center}%
1208     \let\footnote\thanks
1209     {\LARGE \@title \par}%
1210     \vskip 1.5em%
1211     {%
1212       \large\lineskip .5em%
1213       \begin{tabular}[t]{c}%
1214         \@author
1215       \end{tabular}\par
1216     }%

```

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

```

1217 \ifdefvoid{\insertinstitute}{ }{%
1218   {%
1219     \normalsize\lineskip .5em%
1220     \begin{tabular}[t]{c}%
1221       \insertinstitute
1222     \end{tabular}\par
1223   }%
1224 }%
1225 \vskip 1em%
1226 {\large \@date}%
1227 \end{center}%
1228 \par\vskip 1.5em%
1229 }%
1230 } }%
1231 }%

```

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.

```

1232 \mode<presentation>{%
1233   \ifbool{AL@beamerswitch@maketitle}{%
1234     \ifbool{beamer@autopdfinfo}{%
1235       \patchcmd{\beamer@firstminutepatches}{%

```

```

1236     \inserttitle\ifx\insertsubtitle\@empty\else\ - \insertsubtitle\fi
1237     }{%
1238     \inserttitle\ifx\insertsubtitle\@empty\else\iftoggle{titlepunct}{\{:}
      ↪ \insertsubtitle\fi
1239     }{}%
1240     }{}%
1241     }{}%
1242     }%
1243     }

```

There is no more.

```

1244     \endinput

```

Change History

v1.1		
	\articlelayout: Remove personal customizations from <code>maketitle</code> code.	36
	General: Fix <code>maketitle</code> and <code>textinst</code> options.	33
	Improve documentation of <code>\BeamerswitchSpawn</code> , <code>\handoutlayout</code> and <code>\articlelayout</code>	5
v1.2		
	General: Add ‘Quick start guide’ section.	1
v1.3		
	\BeamerswitchSpawn: Decompose <code>\BeamerswitchSpawn</code> into further configurable macros.	12
v1.4		
	General: Make margins around slides a configurable size	15
v1.5		
	\beamerswitch@Border: Remove empty frames from end of handout.	15
v1.6		
	\JobName: Fix bug triggered by spaces in job names.	12

Index

3plus value, 7, 14–15

4plus value, 7, 14–15

2 value, 7, 14–15

3 value, 7, 14–15

4 value, 7, 14–15

6 value, 7, 14–15

8 value, 7, 14–15

align key, 7, 15

also key, 5, 11

alsoarticle key, 5, 11

alsobeamer key, 5, 11

alsohandout key, 5, 11

alsotrans key, 5, 11

article key, 4, 10–11

\articlelayout, 7, 35–37

\ArticleSuffix, 5, 11–12

beamer key, 4, 10

\BeamerSuffix, 5, 11–12

\beamerswitch@articleframetitles, 35

\beamerswitch@border, 15

\beamerswitch@footer, 16

\beamerswitch@handoutpaper, 14

\beamerswitch@margin, 15

\beamerswitch@nup, 17

\beamerswitch@pnoadjust, 16–17

\beamerswitch@SetAlso, 11

\BeamerswitchSpawn, 5, 12

border key, 7, 15

\bsw@punct@test, 34–35

frametitles key, 8, 35

handout key, 4, 10

\handoutlayout, 7, 16–17

\handoutpnobaseline, 15–16

\HandoutSuffix, 5, 11–12

\JobName, 12

Keys

align, 7, 15

also, 5, 11

alsoarticle, 5, 11

alsobeamer, 5, 11

alsohandout, 5, 11

alsotrans, 5, 11

article, 4, 10–11

beamer, 4, 10

border, 7, 15

frametitles, 8, 35

handout, 4, 10

maketitle, 8, 33–34

margin, 7, 15

nohyperref, 6, 11

nup, 7, 14–15

paper, 7, 14

pnos, 7, 15–16

textinst, 6, 11

trans, 4, 10

maketitle key, 8, 33–34

margin key, 7, 15

margin value, 8, 35

nohyperref key, 6, 11

none value, 8, 35

nup key, 7, 14–15

paper key, 7, 14

para value, 8, 35

pnos key, 7, 15–16

\SpawnedCompiler, 12

\SpawnedLuaTeX, 12

\SpawnedPDFTeX, 12

\SpawnedTeX, 12

\SpawnedXeTeX, 12

textinst key, 6, 11

trans key, 4, 10

\TransSuffix, 5, 11–12

Values

3plus, 7, 14–15

4plus, 7, 14–15

2, 7, 14–15

3, 7, 14–15

4, 7, 14–15

6, 7, 14–15

8, 7, 14–15

margin, 8, 35

none, 8, 35

para, 8, 35