A guide to the beamer package `kthpq`

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General information

Customization and special commands

Long section title to showcase different line wrapping options, and some math showcases

General information

Introduction

- **`kthpq`** is a beamer template that implements the KTH Brand guidelines published in October 2023.
  - The starting point is the provided PowerPoint template, although some liberties have been taken regarding beamer-specific elements, such as block environments and math formatting.
- The name pays homage to **PQ** (Promenadorquestern och med Baletten Paletten), KTH's student jazz band :)

General description

`kthpq` is not too special, but there are some things to note:

- Slides either contain line patterns from KTH's Brands, or they can be added with the command `\insertlines`. Some level of customization of the line patterns is possible; see next section.
- The header and footer are rather minimal.
  - The header shows the current section. This can be removed by adding `\def\insertsection{}` in the preamble.
  - The footer can be customized with the commands `\deffootline` and `\setfootline`. There are three arguments, which correspond to the left, middle, and right parts of the footer.
- Title and section slides contain neither the header nor the footer and are created by new commands `\inserttitlepage` and `\insertsectionpage`.

In the background

- All extra files are found in the `kthpq-files` directory.
- `kthpq` requires compiling with **LuaLaTeX** in order to use the required font, **Figtree**.
  - For some reason the package `fontspec` used to load fonts is very verbose in its warnings, so it is called with the `quiet` option.
- Figtree is actually quite limited in scope, so `kthpq` also uses **Fira Math** for sans serif math symbols and **Bera Mono** for monospace fonts. The fonts are located in the `fonts/` directory.
- KTH's visual elements are stored in the `figs/` directory.

How to use

- To use `kthpq`, add the command `\usepackage{kthpq}` in the preamble, probably towards the end.
- There are two options you can add when loading the theme:
  - `engine=lualatex` or `pdflatex`. The default and recommended engine for compiling with `kthpq` is `lualatex`, which is the only way to get the recommended fonts Figtree and Georgia. The option `pdflatex` should be faster, but uses Helvetica and Bitstream Charter.
  - `mathshape=sf`, `rm`, or `custom`. This determines the shape used for math. The default is `sf`, sans-serif. `rm` corresponds to serif and `custom` means that no new math font is loaded (in case you want to load your own font).

License

- The source code of `kthpq` is distributed under the MIT license. See `LICENSE.txt` for more information, although if you are just using this template for a presentation, you shouldn't need to worry about it :)

What is not included?

The following features are not included:

- Other types of headers or footers that are commonly used, such as `miniframes`, `split`, or `infolines`.
- Frame subtitles and sidebars.
- Article mode.
- Different sized slides: the template is designed for 254 × 143mm (16:9) slides. The options `[17pt, lualatex]` are highly recommended, and the option `[t]` is recommended, following the guidelines.

Reporting issues

- This package is actively maintained by me (Isaac Ren), at least for the next few years (this is written in 2023).
- If you encounter any issues or have any feature requests, please contact me by email. I'm not sure who will see this, so I won't write my email out here: it's `firstlast@kth.se`.

Customization and special commands

New commands

- The title slide is inserted using the command **`\inserttitlepage[`***template*`]`**.
  - The default template option for title slides is `center`. There is currently one other option, `left`, which is shown on the next slide.
- The similar commands **`\insertsectionpage`** and **`\insertendpage`** insert section pages and end pages, respectively.
- You can also insert lines in any `frame` environment by adding the command **`\insertlines`**. See further for more detailed explanations.
- The commands **`\deffootline`** and **`\setfootline`** both take three arguments, which correspond to the left, middle, and right parts of the footer.

A left-aligned title

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Lines

- KTH's Brand guidelines allow users to insert certain abstract line patters on slides.
- `kthpq` comes with premade selections of lines. These are contained in macros of the form **`\lines`***cardinal*, where *cardinal* is one of the following: `northwest, northeast, east, southeast` (with some variants). These can be found in `kthpq-files/beamerinnerthemekthpq.sty`.
- The command `\insertlines` will insert `\linesnortheast`. This is what you see on this slide.

Smaller changes

The following small features are also included and can be customized:

- The `\emph` command has been changed to **bold** instead of *italic*. A new beamer color `emph` has also been added, which is used by the command
- All of KTH's recommended colors have been introduced and can be used to customize the color theme. See `kthpq-files/beamercolorthemekthpq.sty` for details.

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Prime numbers

Theorem

There is no largest prime number.

Proof.

1. Suppose p were the largest prime number.
2. Consider $q := p! + 1$.
3. q is not divisible by any number $\leq p$, so either it is prime or it is divisible by a prime number strictly greater than p.
4. Contradiction, so there is no largest prime number.

□

Examples

The following are **prime numbers**:

$$2, 3, 5, 7, 11, 13, 17, 19, 23.$$

Warning

The number 1 is not prime!

A more complicated formula [?]

Defining the **logarithmic integral** and **Riemann's prime-power counting function** respectively as

$$\operatorname{li}(x) := \int_0^x \frac{\mathrm{d}t}{\ln t} \qquad \text{and} \qquad \Pi_0(x) := \frac{1}{2}\left(\sum_{p,n:p^n<x} \frac{1}{n} + \sum_{p,n:p^n\le x} \frac{1}{n}\right),$$

where p spans prime numbers, we have the equation

$$\Pi_0(x) = \operatorname{li}(x) - \sum_{\rho} \operatorname{li}(x^\rho) - \ln 2 + \int_x^\infty \frac{\mathrm{d}t}{t(t^2-1)\ln t},$$

where ρ spans the nontrivial zeros of the Riemann zeta function and $x > 1$.

References


KTH
VETENSKAP
OCH KONST