

The phfnote package¹

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phfnote—A handy \LaTeX package for typesetting short notes and medium-length reports, full of goodies to make it look just right.

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■ 1 Introduction

Have you ever thought, “let me write up these short notes using \LaTeX ,” but then disliked the default style of the `article` class? Have you ever asked yourself why half the page should be taken up by the title? Yes? Then welcome to `phfnote`.

The package `phfnote` provides basic formatting for short documents, such as notes on a specific topic, short documentation, or quick memos. It aims to cover all basic needs for such purposes: include a standard set of relevant packages, a nice title which doesn’t take up too much space, better page margin sizes, and some basic styling to make the note look nicer. At the same time, it is highly configurable so that nothing is really unchangeable. And all overridden features can be restored individually to their defaults provided by the underlying class.

This package has been designed to work optimally along with the `article` document class, but in principle any relatively standard \LaTeX class should work. Notes can be typeset in two-column mode with the `twocolumn` option of for example the `article` class. Settings such as the page margins and font goodies are automatically adapted to look best according to the standard document font size (10pt, 11pt, or 12pt).

Be aware that this package is not meant as a full-fledged formatting class for complicated articles. For that, you should use a specialized class such as `REVTeX`.¹

In the following, we detail individual features of this package, and explain how to activate, deactivate, and customize them.

■ 2 Basic Usage

2.1 Loading the Package

You can get started with the minimal template:

```
\documentclass[11pt,a4paper]{article}
\usepackage{phfnote}

\begin{document}
\title{Title of my notes}
\author{Me}
\date{\today}
\maketitle

...

\end{document}
```

The package `phfnote` introduces its default note formatting style, with a more compact title, and some formatting adjustments in the text and section headings.

2.2 Presets

There are a number of package options which can be provided to activate, deactivate or adjust the formatting. The most straightforward way of changing the formatting is to use *presets*.

Presets are processed immediately when given in the package option list, meaning that their position in the list is meaningful. For example, the option list

```
\usepackage[title=small,preset=article,par=skip]{phfnote}
```

¹See <https://journals.aps.org/revtex>

will set `title=small` only if it is not overridden by the `article` preset, but will enforce `par=skip` in any case. You may in theory load several presets, e.g. `preset=sfnote`, `preset=article`, but this is essentially useless since presets tend to set a wide range of settings such that in any case the last preset specified is effectively applied.

First, there is a set of presets which are different alternative “note” styles. All the following define the note to have spacing between paragraphs and no first line indentation, use the default note title style, and use a wider page geometry.

`preset=sfnote`

Format the note in L^AT_EX’ sans-serif “Computer Modern Bright” font. This is a nice, light, font for short notes, but I find it more difficult to read at smaller font sizes or in longer paragraphs.

`preset=sfssnote`

Format the note in L^AT_EX’ default sans-serif font. A very nice sans serif font. It might look heavy though, depending on your taste.

`preset=opensansnote`

Format the note in Open Sans font (using the ‘opensans’ package with some default options). A very beautiful and readable sans serif font.

`preset=utopianote`

Format the note in Utopia font (by using the `fourier` package). Perfect to my taste for documenting code for example, but I find it a bit heavy for scientific documents.

`preset=mnmynote`

Format the note in Minion Pro font, with sans serif text formatted with the Myriad Pro font (professional fonts by Adobe which can be used in L^AT_EX with the `MinionPro` and `MyriadPro` packages²). These beautiful fonts can be used for any purpose.

Based essentially on `utopianote`, the `preset/pkgdoc` sets up the document to look nice for a L^AT_EX package documentation. The `preset/xpkgdoc` adds additional definitions to aid in documenting L^AT_EX packages on top of `pkgdoc`.

`preset/pkgdoc`

Basic formatting and settings for documenting L^AT_EX packages. This preset was used for the current document.

`preset/xpkgdoc`

Same as `preset/pkgdoc`, but in addition a set of useful commands are

²See <https://github.com/sebschub/FontPro>; the fonts themselves ship with some Adobe products

also provided, the `tcolorbox` package is loaded along with some default boxes. Also some commands are patched to achieve some fixes. This preset is used for the documentation of packages in the `phfqitlx` package suite. (For details see the implementation of the `xpkgdoc` preset in [subsection 5.14.1](#).)

The following preset makes the document look more like an article. There are some slight minor differences with respect to the default `article` class' title in the choice of formatting the title and text.

```
preset=article
```

Sets a more title style closer to `article`'s default title style (but slightly more compact) and sets paragraphs to indent with no skip.

The last preset, `reset`, guarantees that including this package is non-invasive, meaning that only new \LaTeX macros are made available without altering any appearance. This is useful if you want to use a small feature provided by this package, but you already have all the page geometry, title, etc. set up and want to make sure those aren't touched.

```
preset=reset
```

Deactivates all features of this package by default. Individual settings can still later be switched on via specific package options. Use this to activate only a specific set of features: `[preset=reset, . . .]` will ensure that only the additional given features are set.

This is safer than deactivating individually all other features, because in the future we may add new features which may be on by default. In this case, the preset `reset` will guarantee all features to be deactivated.

■ 3 Summary of Package Options

```
preset=<preset name>
```

Load a preset specifying a predefined set of options for the general appearance of the document. See documentation in [subsection 2.2](#)

```
title=<title style>, notitle
```

Set the title style. Use `notitle` to disable feature and use latex default. Documentation in [subsection 4.1.1](#)

```
abstract=<abstract attributes>, noabstract
```

Set the abstract style by specifying a comma-separated list of attributes. Don't forget to put the list of attributes within braces, `[abstract={wide,noname,it}]`. Documentation in [subsection 4.2](#)

`pkgset=<package set>`

Specify a standard set of L^AT_EX packages to load. See [subsection 4.4](#).

`pagegeom=<geom style>`, `nopagegeom`

Set a page margin style. Use `nopagegeom` to leave page geometry unchanged. Options are documented in [subsection 4.5](#).

`secfmt=<section formatting attributes>`, `nosecfmt`

A list of attributes defining how section (and possibly paragraph) headings should look like. See [subsection 4.6](#).

`par=<par style>`, `nopar`

Define how paragraphs should be spaced. Refer to [subsection 4.7](#).

`spacingdefs`, `nospacingdefs`

Adjust spacing of lines and words ([subsection 4.8](#)).

`fontdefs`, `nofontdefs`

Adjust some fonts ([subsection 4.9](#)).

`footnotedefs`, `nofootnotedefs`

Adjust slightly the appearance of footnotes. See [subsection 4.10](#).

`hyperrefdefs=<settings>`, `nohyperrefdefs`

Load the `hyperref` package, and set some default settings. See [subsection 4.11](#).

`bibliographydefs`, `nobibliographydefs`

Adjust the appearance and style of the bibliography. See [subsection 4.12](#).

TIP

To activate only a subset of features, use `preset=reset` and then enable only the features required. In this way, you can ensure that only those features which are explicitly specified are enabled.

■ 4 Features

This package provides a large collection of small features, which, put all together, make the document look nicer (hopefully). Let's go through these features, one by one.

Note also that some features provided in the presets, such as changing the document font, are not provided as individual features here. This is because they

may be set and customized directly using few lines of \LaTeX code or directly by including an external package. In those cases, you may have a look at the preset's definition for inspiration (see [subsubsection 5.13.2](#)).

For a summary of package options, see [section 3](#).

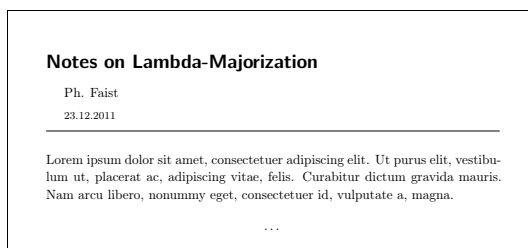
4.1 Title Formatting

4.1.1 Title Styles

The `phfnote` package allows a set of alternative title styles. By default, the `default` title style is used. You may change this setting with the `title=...` package option.

```
title=default
```

The default title style displays the title in large bold sans serif font, left-aligned. Below the title appears the information about author and date, indented, followed by a horizontal rule. It looks like this:



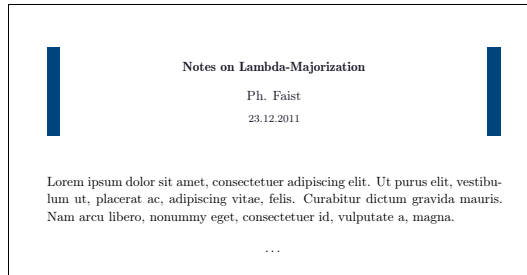
As you can see, it saves more space on the page compared to the default article title.

Changed in v3.0 [2018/10/25]: The default title style was redesigned to improved spacing of the elements in all cases including multiline titles, author and/or date not specified, and presence or absence of thanks notes. Use `title=defaultv1` for old behavior.

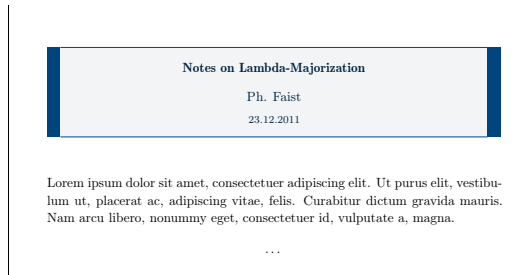
If you would like your document to appear exactly as with `phfnote` version 1.0, then you can set the special title style `title=defaultv1`.

```
title=pretty, title=pretty2
```

A prettier, fancier title style. The title is centered, with two side bars providing a visual guide. The `pretty` style looks like this:



And the pretty2 style looks like this:



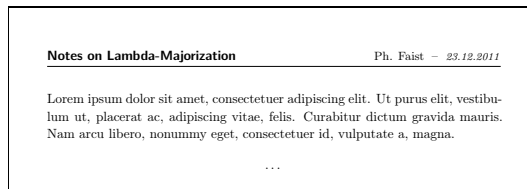
Changed in v3.0 [2018/10/25]: Added the pretty and pretty2 title styles.

This title style is highly customizable (see below), in fact the pretty2 style is an alias for the pretty style, with adjusted settings.

These styles require the xcolor package (it will be loaded automatically).

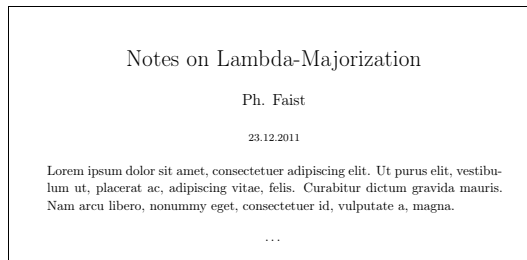
`title=small`

A smaller title style which displays all the relevant information on a single line. This is useful for when even the default title style appears too large. It looks like this:



`title=article`

Mimics the default title style from the article class, but saves a little more space. It looks like this:



Changed in v3.0 [2018/10/26]: The `article` title style was redesigned to use our new title engine, with improved spacing of the elements in all cases including multiline titles, author and/or date not specified, and presence or absence of thanks notes. Use `title=articlev1` for old behavior.

If you would like your document to appear exactly as with `phfnote` version 1.0, then you can set the special title style `title=articlev1`.

`notitle`

Also equivalently, `title=false`. Instructs `phfnote` not to override any title definition, thus preserving the default class title style.

Beware that some other title goodies, such as our more advanced `\thanks` notes, or spacing adjustments for the abstract, will probably not work.

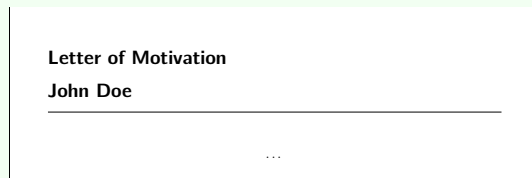
For compatibility with previous versions of `phfnote`, you may also specify an empty option value “`title=`”.

TIP

When using the `default` and `pretty*` title styles, the argument to `\title` may contain blank lines. In this case, each part is typeset on a separate line with an appropriate spacing. For instance:

```
\title{Letter of Motivation  
  
John Doe}
```

will be typeset as



Changed in v3.0 [2018/10/16]: Improved `title`, `notitle` package options syntax.

4.1.2 Customizing the style of the `default`, `pretty` and `small` title styles

You may customize the appearance of the `default` and `small` title styles by overriding some macros.

`\notetitlefont` The macros `\notetitlefont`, `\notetitleauthorfont`, and
`\notetitleauthorfont` `\notetitledatefont` set the default main font title, author text and
`\notetitledatefont` date text. You may override these settings with, for instance:

```
\renewcommand{\notetitlefont}[1]{\sffamily\bfseries #1}
```

```
\renewcommand{\notetitleauthorfont}[1]{\itshape #1}
\renewcommand{\notetitledatefont}[1]{\footnotesize #1}
```

In these macros, the parameter is expanded to the value provided by `\title`, `\author`, and `\date`, respectively.³

The spacing of the title may be adjusted with the macros `\notetitlebelowspace` and `\notetitletopspace`. Override these with e.g.:

```
\renewcommand{\notetitlebelowspace}{4mm}
\renewcommand{\notetitletopspace}{-1.2cm}
```

Finally, you may override the command `\notetitlehrule` which draws the rule below the title:

```
\renewcommand{\notetitlehrule}{\hrule height 0.8pt}
```

The commands `\notetitleusempfootnotestru` and `\notetitleusempfootnotesfalse` set respectively whether any `\thanks` commands in the title generate footnotes inside the title area (which is drawn within a minipage), i.e., all thanks notes are collected on an additional line below the date, or whether they appear as regular footnotes at the bottom of the page. Simply call the relevant command to set either setting (don't redefine these).

The small title style allows you to customize the separator between the author and the date:

```
\renewcommand\notetitlesmallauthordatesep{\hspace*{0.5em}\cdot\hspace*{0.5em}}
```

In addition to the above settings for the default title style, the `pretty` and `pretty2` styles provide a few macros that you can adjust some visual aspects to your needs:

```
\renewcommand\notetitlepretty\siderulewidth{10pt}
\renewcommand\notetitlepretty\sidespacewidth{10pt}
\renewcommand\notetitlepretty\rsiderulewidth{10pt}
\renewcommand\notetitlepretty\rsidespacewidth{10pt}
\renewcommand\notetitlepretty\topspace{10pt}
\renewcommand\notetitlepretty\bottomspace{10pt}
\renewcommand\notetitlepretty\tophrulewidth{0pt}
\renewcommand\notetitlepretty\bottomhrulewidth{0pt}
```

```
\colorlet{notetitlepretty\siderulecolor}{blue!40!black}
```

³While you can normally define `\notetitlefont`, `\notetitleauthorfont` and `\notetitledatefont` without an explicit parameter, this might produce some unexpected errors in some cases since some title styles (for technical details see implementation of the `article` title style).

```

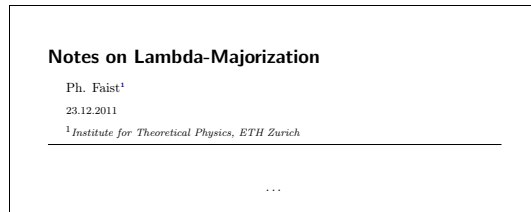
\colorlet{notetitleprettyrsiderulecolor}{notetitleprettylsiderulecolor}
\colorlet{notetitleprettytophrulecolor}{notetitleprettylsiderulecolor}
\colorlet{notetitleprettybottomhrulecolor}{notetitleprettylsiderulecolor}
\colorlet{notetitleprettytextcolor}{blue!20!black}
\colorlet{notetitleprettybgcolor}{white!95!blue}

```

4.1.3 Title notes: `\thanks` and `\thanksmark`

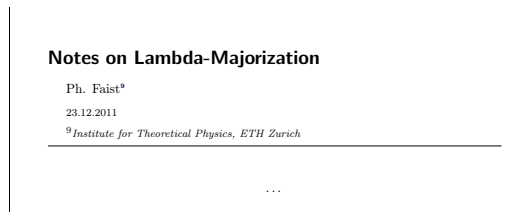
`\thanks` Notes in the title can be introduced with the `\thanks` macro. You may use this to specify an e-mail address, an affiliation, or any other more specific information. `\thanks` may appear in all three title, authors and date.

The appearance of this additional information depends on the title style. In the default note title style, such thanks-notes appear directly below the title. For example, with `\author{Ph. Faist\thanks{\itshape Institute for Theoretical Physics, ETH Zurich}}`, you get:

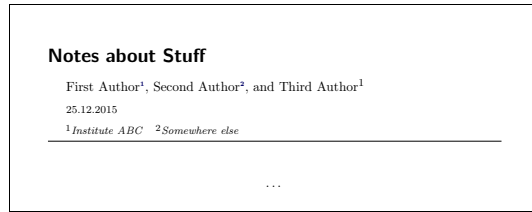


whereas with the other styles, this information is typeset as regular footnotes.

`\thanks[N]` You may specify an optional argument to `\thanks`, forcing the footnote to a specific number (it must be a number). For example, with `\author{Ph. Faist\thanks[9]{\itshape Institute for Theoretical Physics, ETH Zurich}}`, you get:



`\thanksmark` `\thanksmark[N]` works with `\thanks` as `\footnotemark` works with `\footnote`. It just displays the given number as a footnote mark. In this way, you can have for example several shared affiliations:



the author code was:

```
\author{First Author\thanks[1]{\itshape Institute ABC},
        Second Author\thanks[2]{\itshape Somewhere else},
        and Third Author\thanksmark[1]}
```

Unfortunately, you still have to provide the numbering manually. On the other hand, this package is not meant to replace REV_{TEX}, so if you're writing a complicated article with many authors and affiliations, you probably shouldn't be using phfnote in the first place.

WARNING

The optional argument to `\thanks`, as well as the command `\thanksmark`, are not made available if you don't use one of phfnote's title styles.

This behavior is such as to prevent interference with more advanced class mechanisms, such as REV_{TEX}'s.

TIP

For phfnote's title styles, you can issue the commands `\notetitleusempfootnotesttrue` or `\notetitleusempfootnotesfalse` (documentation in [subsubsection 4.1.2](#)) to decide whether the thanks notes are issued in a separate title line, or if they are displayed as regular footnotes at the bottom of the page.

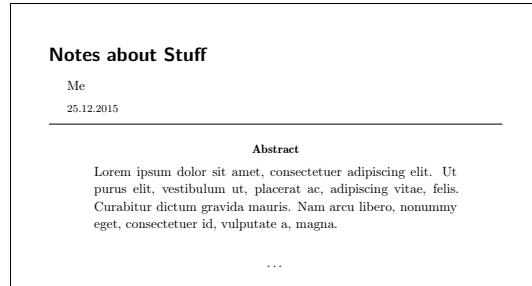
4.2 Abstract

`abstract` The `abstract` environment renders indented text aimed to provide a short summary of the document. We might use, for example, the following code:

```
\begin{abstract}
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus
elit, vestibulum ut, placerat ac, adipiscing vitae, felis.
Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget,
consectetur id, vulputate a, magna.
```

`\end{abstract}`

which would look like this:



The `abstract` environment should be given *after* the `\maketitle` command. (In contrast to, e.g., `REVTeX`.)

You may customize the appearance of the abstract via a list of attributes given as argument to a package option. When you combine arguments, make sure to put them in a braced group: `[abstract={wide,noname,it}]`.

`abstract={wide,...}`

The abstract should not be indented, and should instead be aligned to the rest of the text.

`abstract={narrow,...}`

The abstract should be indented narrower than by default.

`abstract={noname,...}`

The title “Abstract.” above the text will not be typeset. The abstract text is typeset directly instead.

`abstract={small,...}`

Use a smaller font for the abstract text (`\small` font).

`abstract={compact,...}`

Reduce spacing before and after the abstract. If the abstract is short, this might look slightly better.

`abstract={it,...}`

Typeset the abstract text using an italic typeface.

`noabstract`

Do not (re)define the `abstract` environment, do not execute abstract definitions. This leaves the original `abstract` environment definition of the underlying `LATEX` class. You can also equivalently say `abstract=false`.

The abstract environment's appearance can be customized more finely by redefining some macros. (In fact, this is what the package options `abstract=...` actually do.) The font used for the text of the abstract is set by `\noteabstracttextfont`. This macro should expand to font selection commands, such as `\itshape`, `\bfseries`, `\small`, etc. The title of the abstract (the word "Abstract.") is typeset in the font set by `\noteabstractnamefont`. The width of the whole abstract text is determined by `\noteabstracttextwidth`. Observe that `\noteabstracttextwidth` is a macro, and not a proper length, so that it can determine more dynamically the length. The spacing below (`\noteabstractafterspacing`) and above (`\noteabstractbeforespacing`) the abstract can further be specified, also as macros.

Obsolete options:

```
abstract={original,...}
```

Revert to the original class' default implementation of the abstract environment before `phfnote` was loaded. The original class' implementation is restored and no longer tampered with. This option is OBSOLETE, use `noabstract` instead.

Changed in v3.0 [2018/10/16]: Improved `abstract`, `noabstract` package options syntax.

4.3 Table of Contents

`\inlinetoc` The package `phfnote` also provides a table of contents typeset with reduced spacing to be more compact, and with horizontal rules before and after. You can insert the table of contents with the command `\inlinetoc`. It looks like this:

Notes about Stuff	
Me	
25.12.2015	
<hr/>	
Abstract	
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.	
<hr/>	
1	2
Introduction	
2	3
Basic Usage	
2.1 Loading the Package	3
2.2 Presets	3
<hr/>	
...	

4.4 Predefined Package Sets

The `phfnote` package also provides sets of standard \TeX packages to load. You may choose between a varying degree of “richness” of packages included.

```
pkgset=none
```

Do not include any package set.

```
pkgset=minimal
```

Include some basic minimal set useful for scientific notes: the $\mathcal{A}\mathcal{M}\mathcal{S}$ packages `amsmath`, `amssymb`, `amsfonts`, and `amsthm`. The `xcolor` package is also loaded.

```
pkgset=rich
```

Include a fair amount of packages which may be useful. On top of the `minimal` package set, this set includes the packages `enumitem`, `graphicx`, `microtype`, `caption`, `setspace`, as well as `inputenc` with the `utf8` option and `fontenc` with the `T1` option (the packages `fontenc` and `inputenc` are not loaded if running Xe(La)TeX or Lua(La)TeX, or if they are already loaded with possibly different options).

This package set is loaded by default.

Changed in v1.1 [2018/08/27]: If running XeTeX or LuaTeX, then do not load `inputenc` and `fontenc` as part of `rich` and `extended` package sets. Plus, do not load `inputenc` (resp. `fontenc`) if the package is already loaded.

```
pkgset=extended
```

Additionally, include packages `float`, `verbdef`, `csquotes`, `dsfont`, `bbm` and `mathtools`.

4.5 Page Geometry

Another important aspect of `phfnote` is the handling of page margins. Often the default page margins of the `article` class are quite narrow. While it is a good typographical practice to avoid long lines, on occasion we prefer to have notes typeset with wider text. The general answer is the `geometry` package, which allows to set all margins in full detail.

The `phfnote` package provides some standard choices of options for the `geometry` package, which are adjusted according to the document font size, and whether the document is typeset in two columns.

If you want anything more complicated than what is provided by a default setting here, just use the `nopagegeom` package option and invoke the `geometry` package directly with your preferred set of options.

The page geometry predefined settings are the following.

`pagegeom=default`

Default settings. Not too wide, not too narrow. Settings vary according to single or double column setting, and according to default font point size.

`nopagegeom`

Also, `pagegeom=false`. Do not change page geometry settings, do not load the geometry package.

`pagegeom=narrow`

Narrower style. For single-column documents, this is closer to the typographically-advertised-optimal of 50–80 characters per line, but it might look narrow to some.

`pagegeom=wide`

Wide, comfortable style. Wastes less paper.

`pagegeom=xwide`

Extra wide. Use if you pity trees.

`pagegeom=bigmargin`

Makes the margins asymmetric, so that a wide margin note can fit. This style is used in this package documentation, for example.

The following package options are OBSOLETE:

`pagegeomdefs=<true or false>`

Whether to care about page margins. `nopagegeomdefs` is synonym for `pagegeomdefs=false`. This option is OBSOLETE, please use `nopagegeom` or `pagegeom=false` instead of `pagegeomdefs=false` and `pagegeom` (or `pagegeom=...` with setting) instead of `pagegeomdefs=true`.

Changed in v3.0 [2018/10/16]: Changed how to turn on/off the page geometry settings by improving the `pagegeom` package options, deprecated `pagegeomdefs` option.

Changed in v3.0 [2018/11/30]: Changed the `xwide` page geometry for tighter vertical margin for single-column text (use `pagegeom=xwidev1` instead for old behavior).

4.6 Section Headers Styling

The `phfnote` package provides some limited styling of section headers. The font, size and “compactness” of the headers can be adjusted with title options. But really, these options are quite basic. You should use `titlesec` or `sectsty` directly if you want anything serious.

The section headings are customized using the `sectsty` package. If this conflicts in your document, then use the `nosecfmt` package option to indicate that section headings should NOT be styled by this package. Then you have the full freedom to take care of section styling manually.

Package options may be used to customize the appearance of the section headings by specifying a list of attributes. When you combine arguments, make sure to put them in a braced group: `[secfmt={section,compact}]`. Beware that attributes are not merged between different occurrences of the `secfmt` keyword in the package options; the last occurrence defines all set attributes. If the `secfmt` package option is not given, then by default only the `section` attribute is set.

NOTE

Don't forget to include the attribute 'section' and/or 'paragraph' depending on which type of heading you want your settings to apply to. For example, `secfmt={sffamily}` has no effect, you need to use e.g.

```
secfmt={section,sffamily}.
```

Available attributes are the following:

```
secfmt={section,...}
```

Use the `section` attribute to activate the styling of section-level headings, that is, `\section`, `\subsection` and `\subsubsection`.

```
secfmt={paragraph,...}
```

This attribute indicates that the styling should apply to paragraph-level headings as well (`\paragraph` and `\subparagraph`).

```
secfmt={compact,...}
```

Reduce the sizes of the section headings (if the section-level headings are styled, i.e. you need to specify the `section` attribute), giving the document a more "compact" appearance.

```
secfmt={larger,...}
```

Increase the sizes of the section headings. Suitable for longer documents or for small document font sizes.

```
secfmt={secsquares,...}
```

Display black squares on the left side of `\section`-level commands, making them stand out better. This is useful for documents (such as the present one) with several layers of sub-sections.

```
secfmt={secnummargin,...}
```

Display the section, subsection, and subsubsection numbering in the left margin and have the title occupy the full width of the text (such as for

this document). If you want both `secsquares` and `secnummargin`, you must specify them in that order, or the black square may end up overlapping with the number.

```
secfmt={rmfamily,...}
```

Typeset headings in the regular roman font of the document, instead of trying to apply the **Palatino font**. This applies to section-level and/or paragraph-level headings, depending on which of the attributes `section` and/or `paragraph` have been specified.

```
secfmt={sffamily,...}
```

Typeset headings in a sans-serif font. The default document sans serif font is used. This applies to section-level and/or paragraph-level headings, depending on which of the attributes `section` and/or `paragraph` have been specified.

```
secfmt={itpar,...}
```

Typeset paragraph-level headings in italic.

```
secfmt={blockpar,...}
```

Change the paragraph-level headings not to be in “run-in” style, but to be typeset on their own line like section headings.

```
nosecfmt
```

Keep the original class styling; nothing will be overridden and the `sectsty` package is not loaded. (Equivalently, you may specify `secfmt=false`.)

You can also directly modify the section heading style by redefining some macros. Note that these macros only affect those sectioning commands which we have decided to style, which is specified by the `section` and `paragraph` attributes to be specified in the `secfmt={...}` package option.

```
\notesectionallfont
```

The macro `\notesectionallfont` is invoked for every sectioning command (for those which are styled, see the `section` and `paragraph` attributes). The macro `\notesectionallfont` internally invokes

```
\notesectionallfontfamily
```

`\notesectionallfontfamily` to select which font family to use. The family should be given as the font code, e.g.: `pbk` = Bookman; `bch` = Charter; `ppl` = Palatino; `ptm` = Adobe Times; `phv` = Adobe Helvetica; `pcr` = Adobe Courier; `put` = Utopia; `cmr` = Computer Modern Roman; `cmss` = CM Sans Serif; `cmbr` = CM Bright; google many more or look directly into the source of corresponding \TeX packages.

You may customize these either via attributes or by redefining them directly. Beware that if you redefine `\notesectionallfont` then you are responsible for honoring, or ignoring, the value of `\notesectionallfontfamily`.

`\notesectionfont` These macros define the font commands to apply for the section heading corresponding to the given sectioning command. This macro is invoked after `\notesectionallfont`, which means that font definitions in these macros take precedence over those in `\notesectionallfont`.
`\notesubsectionfont`
`\notesubsubsectionfont`
`\noteparagraphfont`
`\notesubparagraphfont`
`\notesectionsetfonts` The macro `\notesectionsetfonts` is a shorthand to set all section font definitions for the section-level commands `\section`, `\subsection`, and `\subsubsection`. For example,

```
\notesectionsetfonts{\Large}{\large}{\normalsize}
```

will set the font sizes for `\section`, `\subsection` and `\subsubsection` in this order.

`\noteparagraphsetfonts` The macro `\noteparagraphsetfonts` is the corresponding shorthand for the paragraph-level commands. It takes two arguments, the font definitions to apply for headings of level `\paragraph` and `\subparagraph`.

Obsolete options:

```
secfmt={}
```

Leave the argument empty to keep the original class styling; nothing will be overridden and the `sectsty` package is not loaded. This option is OBSOLETE, use `nosecfmt` instead.

Changed in v3.0 [2018/10/16]: Improved `secfmt`, `nosecfmt` package options syntax.

4.7 Appearance of Paragraphs

Several presets may be set to define the appearance of paragraphs.

```
par=indent
```

Paragraphs are indented, bearing some similarity to the article class' default paragraph style.

```
par=skip
```

Paragraphs are separated by additional spacing, and not indented.

```
par=indentminiskip
```

Paragraphs are indented, but there is also a small space between each paragraph.

```
nopar
```

Do not modify the appearance of paragraphs, and leave the original class' default.

You may also use `par=false`.

Obsolete options:

`par=original`

OBSOLETE—use `nopar` instead.

Changed in v3.0 [2018/10/16]: Improved `par`, `nopar` package options syntax.

4.8 Adjusting Spacing of Lines and Words

The `phfnote` package also provides definitions to adjust spacing of lines and words.

This includes definitions to avoid overflowing words in the margin in case of long words.

`spacingdefs`

Apply adjustments to line and word spacing.

This feature is on by default. You can also use `spacingdefs=true`.

`nospacingdefs`

Do not attempt any adjustments of line or word spacing. You can also use the alias `spacingdefs=false`.

4.9 Adjustments for Fonts

The `phfnote` package provides as well some adjustments for fonts to make some fonts look nicer.

Concretely, the Computer Modern Bright font is used as sans serif font instead of \LaTeX 's default sans serif font, and the more universal T1 font encoding is used instead of the default OT1.

`fontdefs`

Apply adjustments to fonts. This is on by default, except on \XeTeX and \LuaTeX .

You can also use `fontdefs=true`.

`nofontdefs`

Do not apply adjustments to fonts. You can also set `fontdefs=false`.

4.10 Footnote Style

The footnotes' appearance can also be slightly enhanced.

`footnotedefs`

Changes the symbol appearance a little bit—the footnote number is smaller and typeset in boldface.

You can also use `footnotedefs=true`. This feature is on by default.

`nofootnotedefs`

Do not change the footnote appearance. You can also set `footnotedefs=false`.

4.11 Hyperref Loading

There are many options for setting up the hyperref package, and often, the defaults (with boxed links) are pretty ugly in my opinion. Enable the `hyperrefdefs` feature of phfnote to alter the defaults to something I personally like better (dark blue links as in this document).

`hyperrefdefs`

Load the hyperref package, and set some sensible default settings. Also ensures the `\email` and `\url` commands are made available.

You can also use `hyperrefdefs=true`. This feature is on by default.

`nohyperrefdefs`

Do not load the hyperref package. Do not set any settings. Do not care to provide `\email` or `\url`. Same as `hyperrefdefs=false`.

Depending on the situation, you might prefer to specify `hyperrefdefs=defer` or `hyperrefdefs=noload`, so that some basic setup (e.g. `\url/\email` commands) can still be provided. See below.

`hyperrefdefs={defer,...}`

Prepare the document for hyperlinks, schedule settings for hyperref, but do not actually load the hyperref package.

This is useful if you would like to load more packages that need to be loaded before loading hyperref. A lot of packages need to be loaded before hyperref so if you load several other packages, you're probably better off using this option and calling `\usepackage{hyperref}` at the end of your preamble, i.e. right before `\begin{document}`, rather than chasing mysterious errors.

When using this option it is the user's responsibility to load the load the package with `\usepackage{hyperref}` somewhere in the preamble. You will get an error if you don't do this.

`hyperrefdefs={noemail,...}`

Do not override any existing `\email` command. Use this for instance in RevTeX, where our implementation of `\email` clashes with RevTeX's `\email` command which is used to specify e-mail addresses for authors.

The version of this command by `phfnote` is still available as `\phfnoteEmail`.

`hyperrefdefs={noeqref,...}`

Do not redefine the `\eqref` command to include the parenthesis in the hyperlink.

Changed in v3.2 [2021/07/29]: We now redefine `\eqref` by default to include the parentheses inside the hyperlink. Use the `hyperrefdefs=noeqref` package option to disable this feature.

`hyperrefdefs={noload,...}`

Do not load the `hyperref` package, and don't bother to set any related settings. However, `url` package is loaded, and the commands `\url` and `\email` are provided (they output the same visual text but don't produce a clickable color link).

`hyperrefdefs={clearoptions,...}`

Do not attempt to set any options via `\hypersetup` (and don't schedule setting any such options later). You'll get `hyperref`'s default settings, so it's up to you to call `\hypersetup` with however you'd like to see your links look like.

Attributes may be combined, as in `hyperrefdefs={noemail,noload}`. In this case make sure you put them in a braced group. Also, beware that attributes are not merged between different occurrences of the `hyperrefdefs` keyword in the package options; the last occurrence defines all set attributes.

When the `hyperref` package is loaded, it is done so with the `unicode=true` package option. In case you need, you can specify your own package options with `hyperrefdefs=defer` and then calling `\usepackage[...]{hyperref}`. For most options though it's simpler to use `\hypersetup{...}`.

`\url` In order to typeset URLs, the `\url` command is made available from the package `url` (which is then linkified by `hyperref`). For example, you can type `\url{https://github.com/phfaist/}`.

`\email` A similar command allows to typeset e-mail addresses. The text is displayed as a
`\phfnoteEmail` hyperlink, which when clicked opens a e-mail composer to that address (via a `mailto:XXX` link). For example, try `\email{pulp_fiction@tarantino.com}`.

The command `\phfnoteEmail` is an alias for this, which is defined even if the `noemail` attribute is given.

The commands `\url` and `\email` (along with `\phfnoteEmail`) are defined unless `nohyperrefs` (or `hyperrefdefs=false`) is specified. If you would like to use these commands but not load the `hyperref` package, consider using `hyperrefdefs=noload`.

`\phfnotePdfLinkColor` The command `\phfnotePdfLinkColor` may be used to set the color of the links. It takes one argument, a color specification understood by the `xcolor` package. For example:

```
\phfnotePdfLinkColor{green!50!black}
```

NOTE

The package `xcolor` must be loaded for `\phfnotePdfLinkColor` to work. (The `xcolor` package is automatically loaded as part of a package set as long as you're not using the option `pkgset=none`; see [subsection 4.4](#).)

The internal name for the link color is `docnotelinkcolor`. (This name is historical, and I'm not really willing to change it.)

4.12 Bibliography Definitions

This package also provides some definitions for the bibliography.

It sets the `naturemagdoi` style by default, which is a hacked (by yours truly) version of the `naturemag` style to include the journal name as a hyperlink (as in APS bibliography styles).

The bibliography is also typeset in a smaller font.

Finally, an entry in the table of contents is generated.

`bibliographydefs`

Set some default bibliography settings.

This feature is on by default. You can also use `bibliographydefs=true`.

`nobibliographydefs`

Do not set some bibliography settings. You may also use `bibliographydefs=false`.

`\bibliography` The `\bibliographystyle` and `\bibliography` macros can be used as usual, for example:
`\bibliographystyle`

```
\bibliographystyle{apsrmp4-1} % optional
\bibliography{mybibfile}
```

bearing in mind that if the `\bibliographystyle` command is not present, our custom naturemagdoi bibliography style is used.

4.13 Inline Commenting in Documents

Inline commenting features (`\phfMakeCommentingCommand`) have been moved to the separate dedicated package `phfcc`. If you were using these features in your document, simply do

```
\usepackage{phfcc}
```

and everything should work as expected.

Changed in v3.0 [2018/10/03]: Added support for inline commenting using `\phfMakeCommentingCommand`.

Changed in v3.1 [2020/04/02]: Moved support for inline commenting to the separate dedicated package `phfcc`.

4.14 URL Styles

As a bonus, the `phfnote` package provides an alternative set of URL styles to use with the `\url` and `\email` commands (see [subsection 4.11](#)).

All the styles described below typeset the URL in a slightly smaller size, so as to avoid a common issue with URLs that they tend to appear too large. Also, the tilde character is fixed so that it appears nicely, as in:

<https://people.phys.ethz.ch/~pfaist/>.

The URL style can be set with the command `\urlstyle{<name of style>}`.

<code>notett</code>	typewriter font
<code>notesf</code>	default sans serif font
<code>notesfss</code>	Computer Modern Sans Serif font
<code>noteitsf</code>	italic using default sans serif font
<code>noterm</code>	normal roman typeface
<code>noteit</code>	just italic typeface
<code>notesml</code>	just smaller than surrounding text

4.15 A `\notesmaller` Command

This general-purpose command is handy to typeset text smaller than its surrounding text, for when you don't know what size the surrounding text is typeset at. In some sense, this is a very very lightweight analogue of what the `relsize` package does. (This is used, for example, in our implementation of URL styles introduced in [subsection 4.14](#).)

<code>\notesmaller</code>	Set the font size to a fraction of the surrounding font size. The fraction may be specified as an optional argument. A fraction of 0.8 makes the text size 0.8 times that of the surrounding text, that is, smaller than the surrounding text. A value of 1 does not change the font size. If the fraction is not specified, the value stored in <code>\notesmallerfrac</code> is used.
<code>\notesmaller[0.8]</code>	
<code>\notesmallerfrac</code>	The fraction by which <code>\notesmaller</code> typesets smaller text when no optional argument is given. You may redefine this command to set the default “smaller” size fraction.

4.16 Tools Mostly for Hackers

<code>\phfnoteHackSectionStarWithTOC</code>	The <code>phfnote</code> package also provides some small hacks. They are documented further in subsection 5.12 . These are: a macro <code>\phfnoteHackSectionStarWithTOC</code> to hack into a command which generates a <code>\section*</code> , in order for that command to also generate a corresponding entry in the table of contents; and a pair of commands to save and restore \LaTeX definitions.
<code>\phfnoteSaveDefs</code>	
<code>\phfnoteRestoreDefs</code>	

■ 5 Implementation

Here comes the gory code.

Let's start by loading the `kvoptions` package, which we need to parse the package options. It's better to use `xkeyval` as backend, because the `\setkeys` by `keyval` is a little fragile: for example, it gets confused if, within a preset, we include a package or run a command which itself parses key-vals.

```
1 \RequirePackage{xkeyval}
2 \RequirePackage{kvoptions}
```

Also load `etoolbox`, for various utilities and `xparse` (for parsing optional arguments with recursive matching open/close brackets).

```
3 \RequirePackage{etoolbox}
4 \RequirePackage{xparse}
```

5.1 Internal Generic Code

`\phfnote@internal@execattrib-`
`bs` An internal general-purpose macro to execute all definitions given in list of attributes.

Often, a list of attributes are given via a package option (e.g. for the abstract), and these attributes need to be executed, or implemented, in the order they are given. This macro takes care of that. Each possible attribute must be defined as a macro with a common prefix, to which the attribute is appended.

The arguments are:

- #1 = prefix to look for attributes (e.g. `noteabstract@attr@`);
- #2 = a human-readable name of what #1 represents, which is used in an error message in case the required attribute is not found (e.g. `{abstract attribute}`);
- #3 = the list of attributes specified by the user.

For example, `\phfnote@internal@execattribs{noteabstract@attr@}{abstract attribute}{noname,small}` causes the commands `\noteabstract@attr@noname` and `\noteabstract@attr@small` to be invoked, in this order.

```
5 \def\phfnote@internal@execattribs#1#2#3{%
6   \@for\next:=#3\do{%
7     \ifcsname #1\next\endcsname%
8       \csname #1\next\endcsname%
9     \else%
10      \PackageError{phfnote}{Unknown #2: '\next'. Ignoring.}{The given #2 '\next'
11        is invalid. Consult the package documentation for information about
12        valid attributes.}
13    \fi
14  }
15 }
```

5.2 Title Styling

See [subsection 4.1.1](#) for a description of the styles and which features are available.

5.2.1 First, some common simple definitions for our different styles

`\notetitlefont` These may be redefined to adapt the font of the title, author and date.

`\notetitleauthorfont`

`\notetitledatefont` 16 `\newcommand{\notetitlefont}[1]{\sffamily\bfseries #1}`
 17 `\newcommand{\notetitleauthorfont}[1]{#1}`
 18 `\newcommand{\notetitledatefont}[1]{\footnotesize #1}`

`\notetitlebelowspace` These macros may be redefined to adjust spacing above and after the title. They
`\notetitletopspace` are macros, not lengths, so they can be adjusted dynamically on the spot.

19 `\newcommand{\notetitlebelowspace}{4mm}`
 20 `\newcommand{\notetitletopspace}{-1.2cm}`

`\notetitlehrule` Allow customization of the horizontal rule below the title. The macro
`\notetitlehrule` expands to commands which generate the rule, such as
 “`\hrule height 1pt`”.

21 `\newcommand{\notetitlehrule}{\hrule}`

`\notetitle@title` Provide a “long” definition for `\title`, so that the title can have several para-
 graphs. Our style handles this by putting the title on several lines, and it can be
 useful depending on how you want to format the title.

This macro will replace `\title` when a title style is actually selected in
`\phfnote@do@notetitle`.

22 `\long\def\notetitle@title#1{\long\gdef\@title{#1}}`

5.2.2 Implementation of `\thanks` and `\thanksmark`

Here we provide a few fixes for the implementation of `\thanks`, both for our main ‘default’ title style as well as for other simpler styles. Our implementation supports `\thanks [N] { . . . }` and `\thanksmark [N]` as for footnotes.

These newer implementations are only applied if one of our title styles is set. Otherwise, the class defaults are left untouched (which may be needed, e.g., for REVTeX).

Implementation of `\thanks` and friends for our main ‘default’ title style

`\phfnote@setupthanksmppfootnote` Internal—called at the beginning of a minipage environment, it sets up necessary stuff to support `\thanks` notes within the minipage, in a single paragraph.

Some of this code was taken or really inspired directly from `latex.ltx`.

23 `\def\phfnote@setupthanksmppfootnote{%`

The `\thanks` macro is implemented as a `\footnote` in a minipage. So we hack into the ‘mpfootnote’ mechanism.

```

24 \def\thempfootnote{\arabic{mpfootnote}}%
25 \let\footnoterule\relax%
26 \let\thanks\footnote%

```

All footnote material is stored in a macro `\phfnote@mpfootmaterial`, initially empty:⁴

```

27 \def\phfnote@mpfootmaterial{}%

```

and locally define `\@mpfootnotetext` to store the footnote content into that buffer,

```

28 \long\def\@mpfootnotetext##1{%
29   \protected@edef\@currentlabel%
30     {\csname p@mpfootnote\endcsname\@thefnmark}%
31   \protected@edef\@tmpa{\protect\phfnote@mymppfootnotemark{\@thefnmark}{##1}%
32     \protect\phfnote@mpfootnoteglue}%
33   \expandafter\g@addto@macro\expandafter\phfnote@mpfootmaterial%
34   \expandafter{\@tmpa}%
35 }%

```

Also provide `\thanksmark`, so that we can refer to other thanks/footnote-marks.

```

36 \def\thanksmark[##1]{\phfnote@mymppfootnotemark{##1}}%
37 }

```

`\phfnote@finalizempfootnotes` Macro to call at the end of a minipage environment, to ensure that all `\footnote`’s (and thus `\thanks`’s) are properly formatted.

This simply takes all the tokens collected in `\phfnote@mpfootmaterial` (see just above), and typesets it in the `\@mpfootins` box. The latter is automatically typeset by the minipage in `\end{minipage}`.

The argument #1 is the skip length between the text and the footnotes.

```

38 \def\phfnote@finalizempfootnotes#1{%
39   \if\relax\detokenize\expandafter{\phfnote@mpfootmaterial}\relax
40   \else
41     \global\skip\@mpfootins=#1\relax
42     \global\setbox\@mpfootins=\vbox{%
43       \parskip=\z@\relax
44       \parindent=\z@\relax
45       \phfnote@mpfootnotes@fontparsetup
46       \noindent\leavevmode%
47       \reset@font\footnotesize%
48       \phfnote@fmt@titlefootnotes%

```

⁴NOTE: this differs from how footnotes are usually treated (directly typeset into a vbox I think). Not sure what the side-effects might be. Because this is just for simple email/institute info/etc. in the title, hopefully this shouldn’t have any serious consequences.

```

49     \phfnote@mpfootmaterial}%
50     \fi
51 }

```

`\phfnote@fmt@titlefootnotes` Some formatting utilities which can be overridden if you know what you're doing.
`\phfnote@mymtfootnotemark` `\phfnote@fmt@titlefootnotes` allows you to override the font in which the
`\phfnote@mpfootnoteglue` title-footnotes/thanks are typeset. `\phfnote@mymtfootnotemark` is responsible for formatting its argument as a footnote mark, usually in superscript. `\phfnote@mpfootnoteglue` is the glue which is used between two footnote texts (as they are typeset in a single paragraph).

```

52 \def\phfnote@mpfootnotes@fontparsetup{%
53   \parshape 1 0.04\textwidth 0.96\textwidth\relax}
54 \def\phfnote@fmt@titlefootnotes{}
55 \def\phfnote@mymtfootnotemark#1{\@textsuperscript{\normalfont#1}}
56 \def\phfnote@mpfootnoteglue{\hskip 1.2em plus 2em minus 0.5em\relax}

```

For those not using the main ‘default’ title style

We use \LaTeX 's own `\thanks` mechanism, however we patch on the possibility for using `\thanks [N] {text}` and `\thanksmark [N]` for overriding the number which is used.

`\notetitle@thanksmark` The `\thanksmark` is trivially implemented by `\footnotemark`. Very handy indeed.

Again, this macro is only made available as `\thanksmark` when a title style is set in `\phfnote@do@notetitle`.

```

57 \def\notetitle@thanksmark{\footnotemark}

```

Start by saving the old `\thanks` macro, just in case.

```

58 \let\phfnote@old@thanks\thanks

```

`\notetitle@thanks` Now, we need to extend \LaTeX 's `\thanks` to allow an optional argument as for footnotes. This macro will be renamed `\thanks` in `\phfnote@do@notetitle`.

Check whether there is an optional argument; if there is none we execute \LaTeX 's original `thanks` code (replicated here), otherwise, we specify the optional argument explicitly at the relevant location in \LaTeX 's implementation:

```

59 \def\notetitle@thanks{\@ifnextchar [\phfnote@thanks{\phfnote@thanks []}]%
60 \long\def\phfnote@thanks [#1]#2{%
61   \if\relax\detokenize{#1}\relax%

```

The optional argument is empty—just execute \LaTeX 's original `\thanks` code, replicated here:

```

62 \footnotemark%
63 \protected@xdef\@thanks{\@thanks\protect\footnotetext[\the\c@footnote]{#2}}%

```

Otherwise, execute L^AT_EX's original `\thanks` code, but with the optional argument inserted wherever needed:

```

64 \else% argument, pass on to sub-commands:
65 \footnotemark[#1]%
66 \protected@xdef\@thanks{\@thanks\protect\footnotetext[#1]{#2}}%
67 \fi%
68 }

```

5.2.3 Title Styles Definition

The title styles are documented in [subsection 4.1.1](#).

Title style: 'default'

Implementation our main 'default' title style. See [subsection 4.1.1](#).

`\notetitleinnervsep` Controls the vertical spacing between individual elements of the title.

```
69 \newcommand\notetitleinnervsep{1.15ex}
```

`\notetitlewidth` Controls the width of the area in which the title content is typeset. For more complex titles (e.g., pretty style, the title is typeset in a smaller width than the text width to allow room for decorations).

```
70 \def\notetitlewidth{\textwidth}
```

`\notetitleparskip` The paragraph skip that is used if the title contains multiple paragraphs.

```
71 \def\notetitleparskip{1.4ex}% parskip for multiple pars in main title
```

`\notetitlefontparsetup` `\notetitlefontparsetup` sets up any necessary L^AT_EX commands to typeset the main title. This should set the font size, and then maybe `\centering`, a `\parshape`, or a text color.

```
72 \def\notetitlefontparsetup{\raggedright\setstretch{1.05}\Large}
```

`\notetitleaftertitleskip` generates the spacing after the main title. The default implementation behaves differently whether the title was multi-paragraph or not.

```

73 \def\notetitleaftertitleskip{%
74 \ifnotetitle@default@ismultipar
75 \vspace{\parskip}%
76 %\gdef\phfnote@tmp@nextskip{\z@}%

```

```

77   \gdef\phfnote@tmp@nextskip{0.5\dimexpr\notetitleinnervsep\relax}%
78   \else
79   \gdef\phfnote@tmp@nextskip{\notetitleinnervsep}%
80   \fi
81 }

```

`\notetitleauthorfontparsetup` `\notetitledatefontparsetup` These macros set up any necessary L^AT_EX commands to typeset the author and the date. This should set the font size, and then maybe `\centering`, a `\parshape`, or a text color. These should use calls to `\notetitledontextvskip` to adjust vertical spacing between the title items.

```

82 \def\notetitleauthorfontparsetup{%
83   \notetitledonextvskip[2]%
84   \parshape 1 0.04\textwidth 0.96\textwidth\relax
85   \strut
86 }
87 \def\notetitledatefontparsetup{%
88   \notetitledonextvskip
89   \parshape 1 0.04\textwidth 0.96\textwidth\relax
90   \strut
91 }

```

`\notetitledonextvskip` This helper macro is not meant to be redefined, but rather invoked from `\notetitleauthorfontparsetup` and `\notetitledatefontparsetup`. It adds the vertical space that was stored in `\phfnote@tmp@nextskip`.

```

92 \newcommand\notetitledonextvskip[1] []{%
93   \vspace{#1\dimexpr\phfnote@tmp@nextskip\relax}%
94   \gdef\phfnote@tmp@nextskip{\notetitleinnervsep}%
95 }

```

`\notetitlemakecontents` Helper command that produces the content of the title. The default implementation uses the set `\title`, `\author`, and `\date` to render everything nicely. Note that if you redefine this, then it's up to you to honor what to do with `\notetitlefontparsetup`, `\notetitlefont`, `\notetitleauthorfont`, etc.

The default implementation of `\notetitlemakecontents` allows `\notetitle*fontparsetup` to take a single argument, the whole title/author/date including necessary formatting. In that case make sure to enclose that argument in a group.

```

96 \newcommand\notetitlemakecontents{
97   \notetitlemakecontentstop
98   {\par
99     \let\phfnote@old@par\par
100    \notetitle@titledefault@preparetitle
101    \expandafter\notetitlefontparsetup\expandafter{%
102      \expandafter\notetitlefont\expandafter{\@title}}%
103    \phfnote@old@par

```

```

104   \notetitleaftertitleskip
105 }%
106 \if\relax\detokenize\expandafter{\@author}\relax\else
107   \expandafter\notetitleauthorfontparsetup\expandafter{%
108     \expandafter\notetitleauthorfont\expandafter{\@author}}\par
109 \fi
110 \if\relax\detokenize\expandafter{\@date}\relax\else
111   \expandafter\notetitledatefontparsetup\expandafter{%
112     \expandafter\notetitledatefont\expandafter{\@date}}\par
113 \fi
114 \notetitlemakecontentsbottom
115 }

```

`\notetitlemakecontentstop` `\notetitlemakecontentsbottom` If you just want to insert stuff before/after in the title box, then you don't have to redefine all of `\notetitlemakecontents`, you can simply redefine these macros to whatever you like.

```

116 \def\notetitlemakecontentstop{}
117 \def\notetitlemakecontentsbottom{}

```

`\notetitlebeginrender` `\notetitleendrender` The title is rendered enclosed by calls to these macros. By default, render the title in a minipage.

WARNING: An important thing to note is that if you use `\notetitle@default@usesavebox`, then the saved box is an `\hbox`, not a `\vbox` (more flexibility). That means that the `\notetitlebeginrender` and `\notetitleendrender` commands must open and close some environment (or a `\vbox` or something like that) so that the whole `\notetitlebeginrender... \notetitleendrender` construction results in something that can be placed in an `\hbox`.

```

118 \def\notetitlebeginrender{\begin{minipage}{\notetitlewidth}}
119 \def\notetitleendrender{\end{minipage}}

```

`\notetitleusemainbox` This macro is the main formatting command for the title's global appearance. After the title is typeset in a \TeX box register, this macro is invoked to actually display it. The default title style simply displays it with a rule below, but the pretty title style does fancier things. Note this is only used if `\ifnotetitle@default@usesavebox` is true.

```

120 \newcommand\notetitleusemainbox[1]{%
121   \par
122   \box#1%
123   \vspace*{\notetitleinnervsep}%
124   \notetitlehrule\relax
125 }

```

`\notetitle@default@mainbox` The main box register in which the title contents is saved.

```

126 \newsavebox\notetitle@default@mainbox

```


`\ifnotetitle@default@usesavebox` This if controls whether or not we set up the title in a temporary TeX box register first, before displaying it. This allows to play around with the box, measure its height/width, place it into graphics, etc. But if we want a simple title, this is not necessary, and it might break some more fragile constructions (footnotes, etc).

If this is true, then the macro `\notetitleusemainbox` is called to render the box. Otherwise, `\notetitleusemainbox` is not called and the title is rendered directly.

```
127 \newif\ifnotetitle@default@usesavebox
128 \notetitle@default@usesaveboxtrue
```

`\ifnotetitleusempfootnotes` Whether any `\thanks` commands in the title generate footnotes inside the minipage (i.e., a line at the bottom with e.g. affiliations), or whether they appear as regular footnotes at the bottom of the page.

This conditional may only be set to true if the rendering happens in a minipage. The minipage must be opened in `\notetitlebeginrender` and closed in `\notetitleendrender`.

```
129 \newif\ifnotetitleusempfootnotes
130 \notetitleusempfootnotestru
```

`\notetitle@default@setup` Any additional setup to be done at the beginning.

```
131 \def\notetitle@default@setup{%
132   \notetitle@default@ismultiparfalse
133   \gdef\phfnote@tmp@nextskip{\z@}%
134   \par\raggedright}
```

Now we have the main implementation of the default title style.

`\notetitle@style@default` A default title style, providing a flexible engine with powerful customization features (the same engine is used for the pretty title style).

The strategy goes like this: First typeset everything in a minipage enclosed in a box register, and then display that box register using `\notetitleusemainbox`.

```
135 \newcommand{\notetitle@style@default}{%
136   \begingroup
137     \parskip=\z@\relax
138     \parindent=\z@\relax
139     \providecommand\singlespace{}%
140     \notetitle@default@setup
141     \ifnotetitleusempfootnotes
142       \phfnote@setupthankssmpfootnote
143     \fi
144     \vspace*{\notetitletopspace}%
145     \def\x{}%
```

Now, draw the title (either in a box, or directly). If we save in a box, use an `\hbox`, not a `\vbox`, because we get size problems otherwise. See `\notetitlebeginrender` and `\notetitleendrender`.

```

146 \ifnotetitle@default@usesavebox
147   \def\x{\setbox\notetitle@default@mainbox=\hbox\bgroup}
148   \fi
149   \x\notetitlebeginrender
150   \begingroup
151     \singlespace%
152     \notetitlemakecontents\par
153     \ifnotetitleusempfootnotes
154       \expandafter\ifstrequal\expandafter{\@mpfn}{mpfootnote}{}{%
155         \PackageError{phfnote}{phfnote title: can only have
156           'usempfootnotes' in a minipage}{Make sure you open a
157           \string\begin{minipage} in the definition of
158           \string\notetitlebeginrender \space and correspondingly close
159           it with \string\end{minipage} in \string\notetitleendrender}%
160       }
161       \global\let\@thanks\@empty
162       \phfnote@finalizempfootnotes{\phfnote@tmp@nextskip}%
163     \fi
164   \endgroup
165   \notetitleendrender
166   \def\x{}%
167   \ifnotetitle@default@usesavebox
168     \def\x{\egroup
169       \notetitleusemainbox{\notetitle@default@mainbox}}%
170   \fi
171   \x
172   \par
173 \endgroup
174 \vskip\notetitlebelowspace\relax% don't change this, abstract needs to \removelastskip
175 }

```

Some helpers for the default title style.

`\ifnotetitle@default@ismultipar` This flag registers whether or not the title has multiple paragraphs (and thus renders on several spaced lines). It is set to true by redefining the `\par` command in the title (see `\notetitle@titledefault@preparetitle` below).

```
176 \newif\ifnotetitle@default@ismultipar
```

`\notetitle@titledefault@preparetitle` This helper sets everything up to display the title. It redefines `\par` to register that the title has several paragraphs. Also, note that `\parskip` is inserted in `\leavevmode`, so that setting `\parskip` as below only affects subsequent paragraphs.

To change the parskip amount, you may simply patch this command, e.g., as
`\appto\notetitle@titledefault@preparetitle{\parskip=1.2ex\relax}`.

```
177 \newcommand\notetitle@titledefault@preparetitle{%
178   \def\par{\phfnote@old@par\global\notetitle@default@ismultipartrue}%
179   \leavevmode\parskip=\notetitleparskip\relax}
```

Title style: 'defaultv1'

`\notetitle@style@defaultv1` The default title style, copied from phfnote v1.0. DO NOT CHANGE. Kept only for backwards compatibility, in case someone had spent lots of time fine-tuning their title and patching the v1 of this package, or if they want the document to appear exactly as the v1 of the package.

[We need to use `\csdef` because of the “1” in the title name, which is not valid in an \TeX usual escape sequence (!)]

```
180 \csdef{notetitle@style@defaultv1}{%
181   \begingroup\par\raggedright%
182   \phfnote@setupthanksmppfootnote%
183   \vspace*{\notetitletopspace}%
184   \phfnote@title@checksetspace{defaultv1}%
185   \begin{minipage}{\textwidth}%
186     \begin{singlinspace}%
187       \parskip=0pt\parindent=0pt\relax%
188       {\let\phfnote@old@par\par%
189        \def\par{\phfnote@old@par%
190          \parskip=1.5ex\relax\parshape 1 0pt \textwidth\relax%
191          \noindent}%
192        \par%
193        \Large {\notetitlefont \@title}\par}%
194       \vskip 2mm\relax
195       \if\relax\detokenize\expandafter{\@author}\relax\else%
196         \par\parshape 1 0.04\textwidth 0.96\textwidth\relax%
197         {\notetitleauthorfont \@author}%
198         \vskip 2mm\relax%
199       \fi
200       \if\relax\detokenize\expandafter{\@date}\relax\else%
201         \par\parshape 1 0.04\textwidth 0.96\textwidth\relax%
202         {\notetitledatefont \@date}
203         \vskip 2mm\relax%
204       \fi
205       \global\let\@thanks\@empty%
206       \csname phfnote@finalizempfootnotes@v1\endcsname%
207     \end{singlinspace}%
208   \end{minipage}\par%
209   \vspace*{2mm}%
210   \notetitlehrule\relax%
211   \par%
212 \endgroup%
```

```

213 \vskip\notetitlebelowspace\relax% don't change this, abstract needs to \removelastskip
214 }
215 \csdef{phfnote@finalizempfootnotes@v1}{%
216   \global\setbox\@mpfootins=\vbox{%
217     \parskip=0pt\parindent=0pt\parshape 1 0.04\textwidth 0.96\textwidth\relax%
218     \noindent\leavevmode%
219     \reset@font\footnotesize%
220     \phfnote@fmt@titlefootnotes%
221     \phfnote@mpfootmaterial}%
222 }
223 \def\phfnote@title@checksetospace#1{%
224   \ifdefined\singlespace\else%
225     \PackageError{phfnote}{Note title style '#1' requires the
226       'setspace' package to be loaded! Please load it, or use a
227       pkgset which loads it automatically}{}%
228   \fi%
229 }

```

Title style: 'pretty' and 'pretty2'

The pretty & pretty2 styles uses the same engine as the default, with different settings.

`\notetitle@style@pretty` Alias the main maketitle engine to the default one.

`\notetitle@style@pretty2`

```

230 \let\notetitle@style@pretty\notetitle@style@default
231 \cslet{notetitle@style@pretty2}\notetitle@style@default

```

`\notetitle@style@setup@pretty`

Setup macro that makes everything nice. Do all these defs in the macro definition, and not directly in the global space, to avoid polluting the \LaTeX environment with useless definitions if we don't use this title style.

```

232 \def\notetitle@style@setup@pretty{%
233   \RequirePackage{xcolor}
234   \long\def\notetitlefont##1{\bfseries ##1}
235   \def\notetitlefontparsetup{%
236     \color{notetitleprettytextcolor}\centering}
237   \def\notetitleauthorfontparsetup{%
238     \notetitledonextvskip[2]%
239     \color{notetitleprettytextcolor}\centering}
240   \def\notetitledatefontparsetup{%
241     \notetitledonextvskip
242     \color{notetitleprettytextcolor}\centering}
243   \def\phfnote@mpfootnotes@fontparsetup{\color{notetitleprettytextcolor}}
244   %
245   \def\notetitlewidth{\dimexpr\textwidth
246     -\notetitleprettylsiderulewidth
247     -\notetitleprettyrsiderulewidth
248     -\notetitleprettylsidespacewidth
249     -\notetitleprettyrsidespacewidth\relax}

```

```

250 \let\notetitleusemainbox\notetitle@pretty@usemainbox
251 %
252 \def\notetitleprettylsiderulewidth{10pt}
253 \def\notetitleprettylsidespacewidth{10pt}
254 \def\notetitleprettyrsiderulewidth{10pt}
255 \def\notetitleprettyrsidespacewidth{10pt}
256 \def\notetitleprettytopspace{10pt}
257 \def\notetitleprettybottomspace{10pt}
258 \def\notetitleprettytophrulewidth{0pt}
259 \def\notetitleprettybottomhrulewidth{0pt}
260 %
261 \definecolor{notetitleprettylsiderulecolor}{RGB}{0,68,126}
262 \colorlet{notetitleprettyrsiderulecolor}{notetitleprettylsiderulecolor}
263 \colorlet{notetitleprettytophrulecolor}{notetitleprettylsiderulecolor}
264 \colorlet{notetitleprettybottomhrulecolor}{notetitleprettylsiderulecolor}
265 \definecolor{notetitleprettytextcolor}{RGB}{25,25,38}
266 \colorlet{notetitleprettybgcolor}{white}
267 }
268 \newlength\notetitle@pretty@tmplenht
269 \newlength\notetitle@pretty@tmplendp
270 \def\notetitle@pretty@usemainbox#1{%
271   \parskip=\z@\relax
272   \parindent=\z@\relax
273   \notetitle@pretty@tmplenht=\ht#1\relax%
274   \notetitle@pretty@tmplendp=\dp#1\relax%
275   \edef\tmp@dorule##1##2{%
276     {\noexpand\color{notetitlepretty##1siderulecolor}}%
277     \noexpand\rule{##2}{%
278       \dimexpr \notetitleprettytopspace+
279         \notetitleprettybottomspace+
280         \notetitleprettytophrulewidth+
281         \notetitleprettybottomhrulewidth+
282         \notetitle@pretty@tmplendp+
283         \notetitle@pretty@tmplenht\relax}}}%
284   \fboxsep=0pt% for \colorbox
285   \par\hbox to \textwidth{%
286     \hskip 0pt plus 0.1fil minus 0.1fil\relax%
287     \tmp@dorule{1}{\notetitleprettylsiderulewidth}%
288     \colorbox{notetitleprettybgcolor}{%
289       \vbox{%
290         {\color{notetitleprettytophrulecolor}}%
291         \hrule height \notetitleprettytophrulewidth\relax}%
292       \hbox{%
293         \hskip \notetitleprettylsidespacewidth\relax
294         % \fbox% DEBUG
295         {\vbox{\vskip \notetitleprettytopspace\relax
296           \box#1%
297           \vskip \notetitleprettybottomspace\relax}}}%
298         \hskip \notetitleprettyrsidespacewidth\relax
299       }%

```

```

300         {\color{notetitleprettybottomhrulecolor}%
301          \hrule height \notetitleprettybottomhrulewidth\relax}%
302     }}%
303     \tmp@dorule{r}{\notetitleprettyrsiderulewidth}%
304     \hskip 0pt plus 0.1fil minus 0.1fil\relax}%
305     \par%
306 }

```

`\notetitle@stylesetup@pretty2` The pretty2 style simply loads the pretty style, and adjusts some settings.

```

307 \csdef{notetitle@stylesetup@pretty2}{%
308   \notetitle@stylesetup@pretty
309   %
310   \definecolor{notetitleprettylsiderulecolor}{RGB}{0,68,126}
311   \colorlet{notetitleprettyrsiderulecolor}{notetitleprettylsiderulecolor}
312   \colorlet{notetitleprettytophrulecolor}{notetitleprettylsiderulecolor}
313   \colorlet{notetitleprettybottomhrulecolor}{notetitleprettylsiderulecolor}
314   \colorlet{notetitleprettytextcolor}{notetitleprettylsiderulecolor!50!black}
315   \colorlet{notetitleprettybgcolor}{white!95!notetitleprettytextcolor}
316   %
317   \def\notetitleprettytophrulewidth{.4pt}
318   \def\notetitleprettybottomhrulewidth{.4pt}
319 }

```

Title style: 'small'

Implementation an alternate 'small' title style.

`\notetitle@style@small` The small title style. Again, use the main title engine, but customize the settings.

```

320 \let\notetitle@style@small\notetitle@style@default
321 \newcommand\notetitle@stylesetup@small{%
322   \notetitleusempfootnotesfalse
323   %
324   \def\notetitlemakecontents{%
325     {\expandafter\notetitlefont\expandafter{\@title}}%
326     \hfill\makebox{\fontsize{9pt}{10pt}\selectfont
327       \notetitle@small@renderauthordate}%
328   }
329   %\notetitle@default@usesaveboxfalse
330   %\def\notetitlebeginrender{\par}
331   %\def\notetitleendrender{%
332     % \vspace*{\notetitleinnervsep}\notetitlehrule\relax\vspace*{\notetitleinnervsep}}
333   \def\notetitleusemainbox##1{%
334     \par\box##1%
335     \vspace*{\notetitleinnervsep}\notetitlehrule\relax\vspace*{\notetitleinnervsep}}
336   \def\notetitle@small@renderauthordate{%
337     \expandafter\notblank\expandafter{\@author}%
338     \expandafter\notblank\expandafter{\@date}{% both not blank
339       {\expandafter\notetitleauthorfont\expandafter{\@author}}}%

```

```

340     \notetitlesmallauthordatesep
341     {\emph{\expandafter\notetitledatefont\expandafter{\@date}}}%
342     }{% only author
343     {\expandafter\notetitleauthorfont\expandafter{\@author}}%
344     }%
345     }{% only date
346     {\emph{\expandafter\notetitledatefont\expandafter{\@date}}}%
347     }}
348 %
349 \def\notetitleinnervsep{1mm}
350 \def\notetitlesmallauthordatesep{\hspace*{2mm}--\hspace*{2mm}}
351 }

```

Style `smallv1` provided for backwards compatibility, to make sure that all spacing and formatting is exactly the same as for `phfnote` version 1.0.

```

352 \csdef{notetitle@style@smallv1}{%
353 \begingroup\par\raggedright%
354 \let\footnote\thanks%
355 \vspace*{\notetitletopspace}%
356 {\expandafter\notetitlefont\expandafter{\@title}}%
357 \hfill\makebox{\fontsize{9pt}{10pt}\selectfont
358 {\expandafter\notetitleauthorfont\expandafter{\@author}}%
359 \hspace*{2mm}--\hspace*{2mm}{\emph{\expandafter\notetitledatefont\expandafter{\@date}}}%
360 \vspace*{1mm}\notetitlehrule\relax\vspace*{1mm}%
361 \par%
362 \endgroup%
363 \vskip\notetitlebelowspace\relax% don't change this, abstract needs to \removelastskip
364 }

```

Title style: 'article'

Implementation the 'article' title style.

`\notetitle@style@article` Technical note. Here, by using a tabular environment for authors, we need `\notetitle@style@article` to assume that the macro `\notetitleauthorfont` takes one argument and does not leave the author contents surrounded with full braces. This would cause `'\'` tokens enclosed in the protective braces to cause errors in the tabular environment.

```

365 \let\notetitle@style@article\notetitle@style@default
366 \newcommand{\notetitle@style@article}{
367 %\def\notetitletopspace{-3em}
368 \def\notetitlebottomspace{2.5em}
369 \def\notetitleinnervsep{1.5em}
370 \def\notetitlefont{}
371 \def\notetitlefontparsetup{%
372 \LARGE\centering}
373 \long\def\notetitleauthorfontparsetup##1{%

```

```

374 \notetitledonextvskip%
375 {\large\centering
376 \lineskip .5em\relax%
377 \begin{tabular}[t]{c}%
378 ##1%
379 \end{tabular}\par}}
380 \long\def\notetitleauthorfont##1{\large ##1}
381 \def\notetitledatefontparsetup{%
382 \notetitledonextvskip
383 \centering}
384 \def\phfnote@mpfootnotes@fontparsetup{}
385 \def\notetitleusemainbox##1{%
386 \par
387 \box##1%
388 }
389 \appto\notetitle@default@setup{%
390 %\def\singlespace{}}
391 }
392 %
393 \notetitleusempfootnotesfalse
394 }

```

`\notetitle@style@articlelev1` Backwards compatibility style `articlelev1`.

```

395 \csdef{notetitle@style@articlelev1}{%
396 \vspace*{-3em}%
397 \begingroup
398 \centering
399 \let\footnote\thanks%
400 {\LARGE \@title \par}%
401 \vskip 1.5em%
402 {\large%
403 \lineskip .5em%
404 \begin{tabular}[t]{c}%
405 \@author%
406 \end{tabular}\par}%
407 \vskip 1.5em%
408 {\large \@date}%
409 \par%
410 \endgroup%
411 \par%
412 \vskip 2.5em\relax%
413 }

```

5.2.4 Plugging into `\maketitle`

Actually perform the definitions to make `\maketitle` produce the title with the given style. Specifically, we override `\@maketitle`. The latter is called internally by `\maketitle`, and the advantage of overriding `\@maketitle` only is that we

inherit the mechanism provided by the original class (e.g., `article`) to deal with two-column layouts.

`\phfnote@do@notetitle` This macro takes care of installing the correct title into the document, by overriding `\@maketitle`.

This macro is called later after processing the package options. Its argument #1 is the style name, e.g., `default`.

```
414 \def\phfnote@do@notetitle#1{
```

If we have the title style `false`, or an empty title style, then we leave default title provided by the class.

```
415 \ifstrequal{#1}{false}{}{%
416   \if\relax\detokenize\expandafter{#1}\relax
417   \else
```

Otherwise, we have a title style to set. Do some checks that the given style is indeed defined.

```
418   \ifcsname notetitle@style@#1\endcsname
419   \def\phfnote@tmp@titsty{#1}%
420   \else
421   \PackageError{phfnote}{Unknown title style: '#1'.}{Unknown title
422     style: '#1'. Please consult the package documentation for available
423     styles.}
424   \def\phfnote@tmp@titsty{default}%
425   \fi
```

Apply new (default) definitions of `\thanks`, `\thanksmark` and `\title`. Do this here only, because this can clash with more complicated versions from, e.g., REVTeX.

```
426   \let\title\notetitle@title
427   \let\thanks\notetitle@thanks
428   \let\thanksmark\notetitle@thanksmark
```

Also, LaTeX initializes `\@author` with code that generates a warning that no author is given. We don't want that. It's perfectly fine not to have an author, and in this case this must be empty so that our title routines can properly handle this case.

```
429   \def\@author{}%
```

Now, actually overload the title style by redefining `\@maketitle`. Also, if the style defines a “setup” macro `\notetitle@stylesetup@. . .`, then we invoke it.

```
430   \ifcsname notetitle@stylesetup@\phfnote@tmp@titsty\endcsname
431   \csname notetitle@stylesetup@\phfnote@tmp@titsty\endcsname
```

```

432     \fi
433     \def\@maketitle{\csname notetitle@style@\phfnote@tmp@titsty\endcsname}%
434     \fi
435 }%
436 }

```

5.3 Abstract

Now we can take care of the abstract. Unlike the title styles, the abstract has a base implementation. Then, we may have attributes which change some parameters.

`notedefaultabstract` First, save the old environment `\begin{abstract}... \end{abstract}` provided by the class (if any).

```

437 \let\notedefaultabstract\abstract
438 \let\endnotedefaultabstract\endabstract

```

`\noteabstracttextfont` Macros which can be overridden to customize the abstract. See [subsection 4.2](#).

```

\noteabstractnamefont
\noteabstracttextwidth
\noteabstractafterspacing
\noteabstractbeforepacing
439 \newcommand{\noteabstracttextfont}{}
440 \newcommand{\noteabstractnamefont}{\bfseries\small}
441 \if@twocolumn
442   \newcommand\noteabstracttextwidth{\hspace}
443 \else
444   \newcommand{\noteabstracttextwidth}{0.9\hspace}
445 \fi
446 \newcommand\noteabstractafterspacing{1.5em}
447 \newcommand\noteabstractbeforepacing{1.5em}

```

`\noteabstract@nameline` Create the line which contains the title of the abstract, that is, the word “Abstract.” This can be overloaded, of course, for customization.

```

448 \def\noteabstract@nameline{
449   {\parskip=0pt\relax\par\centering\noteabstractnamefont%
450     \abstractname%
451     \par}\vskip 1ex\relax%
452 }

```

`noteabstract` The proper `noteabstract` environment.

```

453 \newenvironment{noteabstract}{%
454   \removelastskip%
455   \vspace{\noteabstractbeforepacing}%
456   \begingroup%
457     \par\noindent\centering%
458     \begin{minipage}{\noteabstracttextwidth}%
459       \noteabstract@nameline%

```

```

460     \noteabstracttextfont%
461   }%
462   {%
463   \end{minipage}%
464   \par%
465 \endgroup%
466 \vspace{\noteabstractafterspacing}%
467 }

```

The abstract can be customized by the attributes. Here we define them:

```

468 \def\noteabstract@attr@wide{%
469   \def\noteabstracttextwidth{\textwidth}%
470 }
471 \def\noteabstract@attr@narrow{%
472   \if@twocolumn
473   \else
474     \def\noteabstracttextwidth{0.8\textwidth}%
475   \fi
476 }
477 \def\noteabstract@attr@noname{%
478   \def\noteabstract@nameline{}%\vspace*{1ex}}%
479 }
480 \def\noteabstract@attr@original{%
481   \let\abstract\notedefaultabstract
482   \let\endabstract\endnotedefaultabstract
483 }
484 \def\noteabstract@attr@small{%
485   \g@addto@macro\noteabstracttextfont{\small}%
486 }
487 \def\noteabstract@attr@compact{%
488   \renewcommand\noteabstractafterspacing{1ex}%
489   \renewcommand\noteabstractbeforespacing{1ex}%
490 }
491 \def\noteabstract@attr@it{%
492   \g@addto@macro\noteabstracttextfont{\itshape}%
493 }

```

`\phfnote@do@noteabstract` This helper both defines the abstract environment, and also sets the abstract attributes. This macro will be called according to the package options.

`#1` = a comma-separated list of attributes, or the string `false`.

```

494 \def\phfnote@do@noteabstract#1{%
495   \ifstrequal{#1}{false}{-}{%
496     \let\abstract\noteabstract
497     \let\endabstract\endnoteabstract
498     \phfnote@internal@execattribs{noteabstract@attr@}{abstract attribute}{#1}
499   }%
500 }

```

5.4 Page Geometry Settings

For the page geometry settings, we just have a bunch of styles which we define as macros. The macros just set up `\PassOptionsToPackage` for the geometry package. Then the correct macro will be selected according to the current phfnote package options.

The description of these settings are given in [subsection 4.5](#).

`\phfnote@pagegeomstyle@default` Default setting.

```
501 \def\phfnote@pagegeomstyle@default{
502   \if@twocolumn
503     \PassOptionsToPackage{hmargin=1in,vmargin=0.75in,includeheadfoot}{geometry}%
504   \else
505     % fix the margins a bit to make text wider
506     \ifcase\@ptsize% mods for 10 pt
507       \PassOptionsToPackage{hmargin=1.5in,vmargin=1.25in}{geometry}%
508     \or% mods for 11 pt
509       \PassOptionsToPackage{hmargin=1.5in,vmargin=1.25in}{geometry}%
510     \or% mods for 12 pt
511       \PassOptionsToPackage{hmargin=1.25in,vmargin=1.25in}{geometry}%
512     \fi%
513   \fi
514 }
```

`\phfnote@pagegeomstyle@narrow` Narrow style.

```
515 \def\phfnote@pagegeomstyle@narrow{
516   \if@twocolumn
517     \PassOptionsToPackage{hmargin=1.25in,vmargin=0.75in,includeheadfoot}{geometry}%
518   \else
519     % fix the margins a bit to make text wider
520     \ifcase\@ptsize% mods for 10 pt
521       \PassOptionsToPackage{hmargin=1.75in,vmargin=1.5in}{geometry}%
522     \or% mods for 11 pt
523       \PassOptionsToPackage{hmargin=1.75in,vmargin=1.5in}{geometry}%
524     \or% mods for 12 pt
525       \PassOptionsToPackage{hmargin=1.5in,vmargin=1.5in}{geometry}%
526     \fi%
527   \fi
528 }
```

`\phfnote@pagegeomstyle@wide` Wide style.

```
529 \def\phfnote@pagegeomstyle@wide{
530   \if@twocolumn
531     \PassOptionsToPackage{hmargin=0.75in,vmargin=0.75in,includeheadfoot}{geometry}%
532   \else
533     % fix the margins a bit to make text wider
```

```

534 \ifcase\@ptsize% mods for 10 pt
535 \PassOptionsToPackage{hmargin=1.25in,vmargin=1.25in}{geometry}%
536 \or% mods for 11 pt
537 \PassOptionsToPackage{hmargin=1.25in,vmargin=1.25in}{geometry}%
538 \or% mods for 12 pt
539 \PassOptionsToPackage{hmargin=1in,vmargin=1.25in}{geometry}%
540 \fi%
541 \fi
542 }

```

`\phfnote@pagegeomstyle@xwide` Extra wide.

Changed in v3.0 [2018/11/30]: Changed the xwide page geometry for tighter vertical margin for single-column text (use `pagegeom=xwidev1` instead for old behavior).

```

543 \def\phfnote@pagegeomstyle@xwide{
544 \if@twocolumn
545 \PassOptionsToPackage{hmargin=0.5in,vmargin=0.5in,includeheadfoot}{geometry}%
546 \else
547 % fix the margins a bit to make text wider
548 \ifcase\@ptsize% mods for 10 pt
549 \PassOptionsToPackage{hmargin=1in,vmargin=1in}{geometry}%
550 \or% mods for 11 pt
551 \PassOptionsToPackage{hmargin=1in,vmargin=1in}{geometry}%
552 \or% mods for 12 pt
553 \PassOptionsToPackage{hmargin=0.75in,vmargin=1in}{geometry}%
554 \fi%
555 \fi
556 }
557 \csdef{phfnote@pagegeomstyle@xwidev1}{
558 \if@twocolumn
559 \PassOptionsToPackage{hmargin=0.5in,vmargin=0.5in,includeheadfoot}{geometry}%
560 \else
561 % fix the margins a bit to make text wider
562 \ifcase\@ptsize% mods for 10 pt
563 \PassOptionsToPackage{hmargin=1in,vmargin=1.25in}{geometry}%
564 \or% mods for 11 pt
565 \PassOptionsToPackage{hmargin=1in,vmargin=1.25in}{geometry}%
566 \or% mods for 12 pt
567 \PassOptionsToPackage{hmargin=0.75in,vmargin=1.25in}{geometry}%
568 \fi%
569 \fi
570 }

```

`\phfnote@pagegeomstyle@bigmargin` bigmargin style.

```

571 \def\phfnote@pagegeomstyle@bigmargin{
572 \if@twocolumn
573 \PassOptionsToPackage{hmargin=1.5in,vmargin=0.75in,includeheadfoot}{geometry}%

```

```

574 \else
575   % fix the margins a bit to make text wider
576   \ifcase\@ptsize% mods for 10 pt
577     \PassOptionsToPackage{hmargin={2.25in,1.75in},vmargin=1.25in}{geometry}%
578   \or% mods for 11 pt
579     \PassOptionsToPackage{hmargin={2.25in,1.75in},vmargin=1.25in}{geometry}%
580   \or% mods for 12 pt
581     \PassOptionsToPackage{hmargin={2in,1.5in},vmargin=1.25in}{geometry}%
582   \fi%
583 \fi
584 }

```

`\phfnote@do@pagegeom` Finally, provide a helper to set the page geometry. Just call the right macro. If the argument is false, don't do anything.

```

585 \newcommand{\phfnote@do@pagegeom}[1]{
586   \ifstrequal{#1}{false}{}{%
587     \message{phfnote: Setting page geometry style #1}%
588     \ifcsname phfnote@pagegeomstyle@#1\endcsname
589       \csname phfnote@pagegeomstyle@#1\endcsname
590   \else
591     \PackageWarning{phfnote}{Unknown page geometry style: '#1'!}%
592   \fi
593   %
594   \RequirePackage{geometry}%
595 }%
596 }

```

5.5 Text, Paragraph and Line Spacing

Text & Line Spacing

`\phfnote@do@spacing` Some cosmetic definitions to adjust line spacing. The line spacing is slightly adjusted according to font size to make the document more readable. Depending on whether the `setspace` package is loaded, we use it or go low-level with a redefinition of \LaTeX ' `\baselinestretch`. If the `captions` package is loaded, the figure captions' line spacing is also adjusted.

Also set an `\emergencystretch` so that lines get spaced out for underfull boxes, rather than overflowing far into the margin.

```

597 \def\phfnote@do@spacingdefs#1{
598   \ifstrequal{#1}{false}{}{%
599     \@ifpackageloaded{setspace}{
600       \def\phfnote@dostretch##1{%
601         \setstretch{##1}\phfnote@docaptionstretch{##1}}
602     }{
603       \def\phfnote@dostretch##1{%
604         \renewcommand\baselinestretch{##1}\phfnote@docaptionstretch{##1}}

```

```

605 }
606 \@ifpackageloaded{caption}{
607   \def\phfnote@docaptionstretch##1{\captionsetup{font={stretch=##1}}}
608 }{
609   \def\phfnote@docaptionstretch##1{\PackageWarning{phfnote}{Can't
610     set line spacing for captions, because the package 'caption'
611     is not loaded. Please load it before 'phfnote', or use an
612     appropriate pkgset (e.g. 'rich') which loads this package
613     automatically.}}
614 }
615 \if@twocolumn
616   \phfnote@dostretch{1.0} % leave default
617   \emergencystretch=3em\relax
618 \else
619   \ifcase\@ptsize% 10pt
620     \phfnote@dostretch{1.1}
621   \or% 11pt
622     \phfnote@dostretch{1.0} % 1.05? better 1.0...
623   \or% 12pt
624     \phfnote@dostretch{1.0} % 1.03? not really noticeable...
625   \fi
626   \emergencystretch=6em\relax
627 \fi
628 }
629 }

```

Paragraph Spacing Presets

Here again, we define several possibilities for paragraph settings as individual macros (see [subsection 4.7](#)). Depending on the package option, we execute the corresponding macro.

```

630 \def\phfnote@par@original{%
631 }
632 \def\phfnote@par@indent{%
633   \parindent=1.5em\relax
634   \parskip=0pt\relax
635 }
636 \def\phfnote@par@indentminiskip{%
637   \parindent=1.5em\relax
638   \parskip=0.3em plus 0.1em\relax
639 }
640 \def\phfnote@par@skip{%
641   \parindent=0pt\relax
642   \parskip=0.8em plus 0.2em minus 0.1em\relax
643 }

```

`\phfnote@do@par` Execute the given paragraph setting. The argument #1 is the setting, for example, `skip`.

```

644 \def\phfnote@do@par#1{%
645   \ifstrequal{#1}{false}{}{%
646     \ifcsname phfnote@par@#1\endcsname
647     \csname phfnote@par@#1\endcsname
648   \else
649     \PackageWarning{phfnote}{Bad paragraph setting: #1. Leaving original}
650   \fi
651 }
652 }

```

5.6 Section Styling

Very limited support for styling section and paragraph headers ([subsection 4.6](#)). If you want anything serious, use `sectsty` or `titlesec` directly.

`\notesectionallfont` Define the `\notesectionallfont` and `\notesectionallfontfamily`, which
`\notesectionallfontfamily` control the general font used in section headings.

```

653 \newcommand{\notesectionallfont}{%
654   \fontfamily{\notesectionallfontfamily}\fontseries{bx}\selectfont}
655 \newcommand{\notesectionallfontfamily}{ppl}

```

`\notesectionfont` These macros are called for their respective sectioning command, after
`\notesubsectionfont` `\notesectionallfont` has been invoked. (Again, only for those sectioning
`\notesubsubsectionfont` commands which are styled by us.)

```

\noteparagraphfont
\notesubparagraphfont
656 \newcommand{\notesectionfont}{\large}
657 \newcommand{\notesubsectionfont}{\normalsize}
658 \newcommand{\notesubsubsectionfont}{\small}
659 \newcommand{\noteparagraphfont}{\normalsize}
660 \newcommand{\notesubparagraphfont}{\normalsize}

```

`\notesectionsetfonts` Helpers to directly set the font commands for `\section`, `\subsection` and
`\noteparagraphsetfonts` `\subsubsection` (with `\notesectionsetfonts`), and for `\paragraph` and
`\subparagraph` (with `\noteparagraphsetfonts`).

```

661 \newcommand{\notesectionsetfonts}[3]{%
662   \renewcommand{\notesectionfont}{#1}%
663   \renewcommand{\notesubsectionfont}{#2}%
664   \renewcommand{\notesubsubsectionfont}{#3}%
665 }
666 \newcommand{\noteparagraphsetfonts}[2]{%
667   \renewcommand{\noteparagraphfont}{#1}%
668   \renewcommand{\notesubparagraphfont}{#2}%
669 }

```

Define the attributes which the user can set. See [subsection 4.6](#).


```

670 \def\phfnote@do@secfmt@section{
671   \RequirePackage{sectsty}
672   \sectionfont{\notesectionallfont\notesectionfont}
673   \subsectionfont{\notesectionallfont\notesubsectionfont}
674   \subsubsectionfont{\notesectionallfont\notesubsubsectionfont}
675 }
676 \def\phfnote@do@secfmt@paragraph{
677   \RequirePackage{sectsty}
678   \paragraphfont{\notesectionallfont\noteparagraphfont}
679   \subparagraphfont{\notesectionallfont\notesubparagraphfont}
680 }
681 \def\phfnote@do@secfmt@compact{
682   \notesectionsetfonts{\normalsize}{\small}{\small}
683 }
684 \def\phfnote@do@secfmt@larger{
685   \notesectionsetfonts{\Large}{\large}{\normalsize}
686 }
687
688 \def\phfnote@do@secfmt@secsquares{
689   \RequirePackage{amssymb}
690   \let\phfnote@secsquares@old@seccntformat@seccntformat
691   \def@seccntformat##1{%
692     \expandafter\ifx\csname ##1\endcsname\section\relax%
693     \unexpanded{\makebox[0pt][r]{\raisebox{0.15ex}{\{
694       \notesmaller[0.6]\ensuremath{\blacksquare}\}}}%
695       \hspace*{1.2ex}}}%
696     \fi%
697     \phfnote@secsquares@old@seccntformat{##1}}
698 }
699 \def\phfnote@do@secfmt@secnummargin{
700   \let\phfnote@secnummargin@old@seccntformat@seccntformat
701   \def@seccntformat##1{%
702     \protect\makebox[0pt][r]{\phfnote@secnummargin@old@seccntformat{##1}}}
703 }
704
705 \def\phfnote@do@secfmt@rmfamily{
706   \renewcommand\notesectionallfontfamily{\rmdefault}
707 }
708 \def\phfnote@do@secfmt@sffamily{
709   \renewcommand\notesectionallfontfamily{\sfdefault}
710 }
711 \def\phfnote@do@secfmt@itpar{
712   \def\noteparagraphfont{\normalfont\normalsize\itshape}
713   \def\notesubparagraphfont{\normalfont\normalsize\itshape}
714 }
715 \def\phfnote@do@secfmt@blockpar{
716   \let\phfnote@old@paragraph\paragraph
717   \def\paragraph##1{%
718     \phfnote@old@paragraph{##1}%
719     \hspace*{0pt}\par\nopagebreak% ugly hack!!

```

```
720 }
721 }
```

`\phfnote@do@secfmt` Actually perform the required styling, according to the package options given as argument. The argument is a comma-separated list of attributes specified by the user, or the string `false`.

```
722 \def\phfnote@do@secfmt#1{%
723   \ifstrequal{#1}{false}{-}{%
724     \phfnote@internal@execattribs{phfnote@do@secfmt@}{section formatting preset}{#1}%
725   }
726 }
```

5.7 L^AT_EX Package Sets

Define the package sets as macros. Depending on the user-specified options we load the corresponding one(s) (several may be specified).

See [subsection 4.4](#) for a description of what these package sets do.

`\phfnote@do@pkgset@none` Macros which implement the package sets. Each macro invokes `\RequirePackage` for the appropriate packages.

`\phfnote@do@pkgset@rich`
`\phfnote@do@pkgset@extended`

```
727 \def\phfnote@do@pkgset@none{
728 }
729
730 \def\phfnote@do@pkgset@minimal{
731
732   \RequirePackage{amsmath}
733   \RequirePackage{amsfonts}
734   \RequirePackage{amssymb}
735   \RequirePackage{amsthm}
736
737   \RequirePackage{xcolor}
738
739 }
740
741
742 \def\phfnote@internal@setifxeorlua#1#2{%
743   \ifXeTeX\let#1#2\fi
744   \ifLuaTeX\let#1#2\fi
745 }
746
747 \def\phfnote@do@pkgset@rich{
748
749   \phfnote@do@pkgset@minimal
750
751   \RequirePackage{setspace}
752   \RequirePackage{caption}
```

```

753
754 \PassOptionsToPackage{shortlabels}{enumitem}
755 \RequirePackage{enumitem}
756
757 \RequirePackage{graphicx}
758

```

For this bit, use the `iftex` package to determine if we're running XeTeX or LuaTeX; if that's the case then we inhibit the loading of `inputenc` and `fontenc`. The `\IfFileExists` is to ensure the package runs on older LaTeX distributions without `iftex`.

Plus, load `inputenc`, resp. `fontenc`, only if it isn't already loaded.

Changed in v1.1 [2018/08/27]: If running XeTeX or LuaTeX, then do not load `inputenc` and `fontenc` as part of `rich` and `extended` package sets. Plus, do not load `inputenc` (resp. `fontenc`) if the package is already loaded.

```

759 \def\phfnote@tmp@requireinputencfontenc{
760   \@ifpackageloaded{fontenc}{}{
761     \PassOptionsToPackage{T1}{fontenc}
762     \RequirePackage{fontenc}
763   }
764   \@ifpackageloaded{inputenc}{}{
765     \PassOptionsToPackage{utf8}{inputenc}
766     \RequirePackage{inputenc}
767   }
768 }
769 \IfFileExists{iftex.sty}{
770   \RequirePackage{iftex}
771   \phfnote@internal@setifxeorlua\phfnote@tmp@requireinputencfontenc\relax
772 }{}
773 \phfnote@tmp@requireinputencfontenc
774

```

Load `microtype` after `fontenc` (just in case).

```

775 \RequirePackage{microtype}
776 }
777
778 \def\phfnote@do@pkgset@extended{
779
780   \phfnote@do@pkgset@rich
781
782   \RequirePackage{float}
783
784   \RequirePackage{verbdef}
785
786   \PassOptionsToPackage{autostyle,autopunct=true}{csquotes}
787   \RequirePackage{csquotes}
788

```

```

789 \RequirePackage{dsfont}
790 \RequirePackage{bbm}
791 \RequirePackage{mathtools}
792
793 }

```

`\phfnote@do@pkgset` Finally, define the helper which will load the required package sets.

```

794 \def\phfnote@do@pkgset#1{
795 \phfnote@internal@execattribs{\phfnote@do@pkgset@}{package set}{#1}
796 }

```

5.8 Hyperref Support and Hyperlinks

NOTE

The name ‘docnotelinkcolor’ is historical and hard-coded in many other files I’ve used, so I’m DEFINITELY NOT changing it.

Helpers—default set of hyperref options, and other helper macros.

```

797 \def\phfnote@hyperrefdefs@val@options{%
798 bookmarksnumbered=false,bookmarksopen=false,bookmarksopenlevel=1,%
799 breaklinks=true,pdfborder={0 0 0},colorlinks=true,%
800 anchorcolor=docnotelinkcolor,citecolor=docnotelinkcolor,%
801 filecolor=docnotelinkcolor,linkcolor=docnotelinkcolor,%
802 menucolor=docnotelinkcolor,runcolor=docnotelinkcolor,%
803 urlcolor=docnotelinkcolor%
804 }%
805 \def\phfnote@hyperrefdefs@deferredhypersetup#1{%
806 \AtBeginDocument{%
807 \ifpackageloaded{hyperref}{%
808 \hypersetup{#1}%
809 }{%
810 \PackageWarning{phfnote}{\MessageBreak\MessageBreak
811 *** package ‘hyperref’ was not loaded ***\MessageBreak
812 Since you specified ‘hyperrefdefs=defer’, I was expecting you would call
813 ‘\string\usepackage{hyperref}’ at some point later in your preamble, but
814 it does not appear you did so. Your document might look weird.}%
815 }%
816 }%
817 }
818 \providecommand\phfnote@hyperrefdefs@dopkgoptions{%
819 \PassOptionsToPackage{unicode=true}{hyperref}
820 }
821 \def\phfnote@hyperrefdefs@loadhyperref{%
822 \phfnote@hyperrefdefs@dopkgoptions
823 \RequirePackage{hyperref}}

```

```

824 \def\phfnote@hyperrefdefs@provideemail{\let\email\phfnote@email}
825 \def\phfnote@eqref#1{%
826   \hyperref [{#1}]{\textup{\tagform@{\ref*{#1}}}}}%
827 }
828 \def\phfnote@hyperrefdefs@redefeqref{%
829   \let\eqref\phfnote@eqref
830 }
831 \def\phfnote@hyperrefdefs@afterhook{}

```

Define the attributes that can be set for hyperref-related options. See [subsection 4.11](#).

```

832 \def\phfnote@do@hyperrefdefs@attr@true{}% for explicit value "hyperrefdefs=true"
833 \def\phfnote@do@hyperrefdefs@attr@defer{
834   \def\phfnote@hyperrefdefs@loadhyperref{%
835     \phfnote@hyperrefdefs@dopkgoptions
836     \let\hypersetup\phfnote@hyperrefdefs@deferredhypersetup}
837 }
838 \def\phfnote@do@hyperrefdefs@attr@clearoptions{
839   \def\phfnote@hyperrefdefs@val@options{}
840 }
841 \def\phfnote@do@hyperrefdefs@attr@noemail{
842   \def\phfnote@hyperrefdefs@provideemail{}
843 }
844 \def\phfnote@do@hyperrefdefs@attr@noeqref{
845   \def\phfnote@hyperrefdefs@redefeqref{}
846 }
847 \def\phfnote@do@hyperrefdefs@attr@noload{
848   \def\phfnote@hyperrefdefs@loadhyperref{}
849   \def\phfnote@hyperrefdefs@redefeqref{}
850   \let\hypersetup@gobble
851 }

```

`\phfnote@do@hyperrefdefs` Do all stuff related to hyperref.

```

\email
\url 852 \def\phfnote@do@hyperrefdefs#1{%
853   \ifstrequal{#1}{false}{}{}%

```

Make sure a color-managing package is loaded, color or xcolor, and define our default link color:

```

854   \phfnote@requirecolorpackage%
855   \definecolor{docnotelinkcolor}{rgb}{0,0,0.4}%

```

Load the url package, and save a version of `\url` which is not patched by hyperref to format URLs, and provide `\phfnoteEmail` for emails (not `\email` right away because it might conflict with RevTeX. Provide `\email` later after parsing attribs):

```

856   \RequirePackage{url}%
857   \DeclareUrlCommand\phfnote@format@url{%
858   \let\phfnoteEmail\phfnote@email

```

Set up everything according to the user's selected attributes.

```
859 \phfnote@internal@execattribs{\phfnote@do@hyperrefdefs@attr}{-%  
860   phfnote hyperref-related option}{#1}%
```

And now, load the hyperref package (or don't, if it's deferred), and set some options.

```
861 \phfnote@hyperrefdefs@loadhyperref  
862 \expandafter\hypersetup\expandafter{\phfnote@hyperrefdefs@val@options}  
863 \phfnote@hyperrefdefs@provideemail  
864 \phfnote@hyperrefdefs@redefeqref  
865 \urlstyle{notesf}  
866 \phfnote@hyperrefdefs@afterhook  
867 }  
868 }
```

`\phfnotePdfLinkColor` Set links color. Use as `\phfnotePdfLinkColor{<color>}`. Color may be any color name or specification recognized by the xcolor package.

```
869 \newcommand{\phfnotePdfLinkColor}[1]{-%  
870   \@ifpackageloaded{xcolor}{-%  
871     \colorlet{docnotelinkcolor}{#1}%  
872   }{-% else:  
873     \PackageError{phfnote}{\protect\phfnotePdfLinkColor may only be  
874       used if the package xcolor is loaded.}{}%  
875   }%  
876 }
```

`\phfnote@sanitize@url` Provide base macros to be able to build up `\email` command for emails and other URL-like commands which should sanitize their arguments.

`\phfnote@format@url`

`\phfnote@email`

Also prepare the command `\phfnoteEmail` which will be renamed `\email` in our hyperref package setup (see above).

NOTE: The commands `\phfnote@email` and `\phfnote@format@url` will only work if you don't have `hyperrefdefs=false`. They will work with `hyperrefdefs=noload` if you don't want to load the hyperref package.

```
877 \def\phfnote@sanitize@url{-%  
878   \catcode'\$12%  
879   \catcode'\&12%  
880   \catcode'\#12%  
881   \catcode'\^12%  
882   \catcode'\_12%  
883   \catcode'\%12%  
884   % \catcode'\^^J10%  newline = space  
885   % \catcode'\^^M10%  newline = space  
886   \relax%  
887 }%
```

```

888 \def\phfnote@email{\begingroup\phfnote@sanitize@url\phfnote@impl@email}%
889 \def\phfnote@impl@email#1{\endgroup\href{mailto:#1}{\phfnote@format@url{#1}}}%

```

`\phfnote@requirecolorpackage` And finally define an internal utility to make sure that a color package (either color or xcolor) is loaded. If none are loaded, the xcolor package is loaded.

```

890 \def\phfnote@requirecolorpackage{%
891   \ifpackageloaded{color}{%
892     }{%
893     \ifpackageloaded{xcolor}{%
894       }{%
895         \RequirePackage{xcolor}%
896       }%
897     }%
898 }

```

5.9 Cosmetic Font Definitions

`\phfnote@do@fontdefs` Minimalist cosmetic definition for fonts: load the T1 font encoding which is better. Also, use Computer Modern Bright as sans-serif font by default instead of Computer Modern Sans Serif.

If on XeTeX or LuaTeX, don't do anything.

```

899 \def\phfnote@do@fontdefs#1{
900   \ifstrequal{#1}{false}{}{%
901     \let\phfnote@tmp@do\@firstofone
902     \IfFileExists{iftex.sty}{%
903       \RequirePackage{iftex}%
904       \phfnote@internal@setifxeorlua\phfnote@tmp@do\@gobble
905     }{}
906     \phfnote@tmp@do{
907       \PassOptionsToPackage{T1}{fontenc}
908       \RequirePackage{fontenc}
909       \renewcommand\sfddefault{cmbr}
910     }
911   }
912 }

```

5.10 Bibliography Stuff

Provide some fixes for the bibliography.

`\phfnote@bibstyle` Our default bibliography style is stored in `\phfnote@bibstyle`. By default, it's
`\phfnote@bibfont` our own hacked version of the naturemag style. The font in which to typeset the bibliography is stored in `\phfnote@bibfont`. By default, it's a little smaller than the main text.

```

913 \newcommand{\phfnote@bibstyle}{naturemagdoi}
914 \newcommand{\phfnote@bibfont}{\fontsize{9}{11}\selectfont}

```

`\phfnote@bibliography` These are a tentative implementation for `\bibliography`. The latter will be set to this implementation according to the user's package options.

```

915 \let\phfnote@old@bibliography\bibliography
916 \let\phfnote@old@bibliographystyle\bibliographystyle
917 \newcommand{\phfnote@bibliography}[1]{%
918   \begingroup%
919     \phfnote@bibfont%
920     \phfnote@old@bibliographystyle{\phfnote@bibstyle}%

```

Our hack: make sure that the next instance of `\section*` will generate a TOC entry. (See `\phfnoteHackSectionStarWithTOC`.)

```

921   \phfnoteHackSectionStarWithTOC%

```

Some special chars may appear in output of some ill-advised bibliography managers. Mostly the `&` symbol, such as in Taylor & Francis. We won't be needing a \TeX alignment operator here, so just make `&` a normal printable character ("other" catcode).

```

922   \catcode'\&=12\relax% normal char

```

Adjust the appearance of e-prints. We assume e-prints refer to the arXiv; here we generate a hyperlink and format them better.

```

923   \providecommand\epprint[2] []{\href{http://arxiv.org/abs/##2}{arXiv:##2}}

```

Fix for RevTeX styles that use `\doibase` with a newline following them —

```

924   \providecommand\doibase{\phfnote@doibasefix}

```

Relay the call to the "old" `\bibliography` command to actually implement the bibliography.

```

925   \phfnote@old@bibliography{#1}%
926   \endgroup%
927 }
928 \def\phfnote@doibasefix#110.{https://doi.org/10.}

```

`\phfnote@bibliographystyle` Tentative implementation of `\bibliographystyle`. Just register the new style in an internal variable, so that the style is actually loaded in `\phfnote@bibliography`.

This will be renamed to replace `\bibliographystyle` later, according to package options.

```

929 \newcommand{\phfnote@bibliographystyle}[1]{%
930   \renewcommand{\phfnote@bibstyle}{#1}%
931 }

```


`\phfnote@do@bibliographydefs` Make our changes live. Will be called later according to package options.

```
932 \def\phfnote@do@bibliographydefs#1{%
933   \ifstrequal{#1}{false}{}{%
934     \let\bibliographystyle\phfnote@bibliographystyle%
935     \let\bibliography\phfnote@bibliography%
936   }
937 }
```

5.11 Better Footnote Style

`\phfnote@do@footnotedefs` Adjust the formatting of footnotes so they look better. Again, this is called later according to the package options.

```
938 \def\phfnote@do@footnotedefs#1{
939   \ifstrequal{#1}{false}{}{%
940     \let\phfnote@orig@makefnmark\@makefnmark
941     %% \def\@makefnmark{\hbox{\@textsuperscript{%
942       \normalfont\tiny\fontseries{sb}\selectfont\@thefnmark}}}
943     \def\@makefnmark{\hbox{\@textsuperscript{%
944       \normalfont\tiny\bfseries\@thefnmark}}}
945     %% \def\@makefnmark{\hbox{\@textsuperscript{%
946       \normalfont\scriptsize\bfseries\@thefnmark}}}% too large
947   }
948 }
```

5.12 Other Stand-Alone Definitions and Helpers

5.12.1 A `\notesmaller` command

`\notesmaller` Relative font size command. Makes the text a fraction smaller than its surroundings. The fraction is either given explicitly as optional argument (1.0=same size) or is by default set by `\notesmallerfrac`.

To impalement this, we exploit the fact that \TeX saves the current font size in the macro `\f@size`.

```
949 \newcommand\notesmaller[1][\notesmallerfrac]{%
950   \fontsize{#1\dimexpr\f@size pt\relax}{#1\dimexpr\f@baselineskip pt\relax}%
951   \selectfont\ignorespaces%
952 }
```

`\notesmallerfrac` Default fraction by which `\notesmaller` acts. Redefine to change defaults.

```
953 \def\notesmallerfrac{0.9}
```

5.12.2 Customized, “Inline,” Table of Contents

`\inlinetoc` Just a customized table of contents. Horizontal rules before and after, and spacing is adjusted, and no “Contents” title. The table of contents looks just like at the [top of this document](#). The command is described in [subsection 4.3](#).

We call `\starttoc` directly, bypassing the `\section*` included by `\tableofcontents` (see definition `\tableofcontents` in latex sources).

```
954 \newcommand{\inlinetoc}{%
955   \begingroup%
956     \vspace*{2mm}%
957     \hrule%
958     \vspace*{2mm}%
959     \parskip=1pt\relax%
960     \@starttoc{toc}%
961     \vspace*{4mm}%
962     \hrule%
963     \vspace*{6mm}%
964   \endgroup%
965 }
```

5.12.3 Inline commenting in documents

The code that was initially here was moved into a separate package: `phfcc`.

5.12.4 URL Styles

```
\url@notettstyle We also provide some URL styles. These can directly set with
\url@notesfstyle \urlstyle{<style-name>}.
\url@notesfssstyle
\url@noteitsfstyle 966 \def\url@notettstyle{%
\url@notermstyle 967   \def\UrlFont{\ttfamily\notesmaller}%
\url@noteitstyle 968   \phfnote@urlstyle@common%
\url@notesmlstyle 969 }
970 \def\url@notesfstyle{%
971   \def\UrlFont{\sffamily\notesmaller}%
972   \phfnote@urlstyle@common%
973 }
974 \def\url@notesfssstyle{%
975   \def\UrlFont{\fontfamily{cmss}\selectfont\notesmaller}%
976   \phfnote@urlstyle@common%
977 }
978 \def\url@noteitsfstyle{%
979   \def\UrlFont{\sffamily\itshape\notesmaller}%
980   \phfnote@urlstyle@common%
981 }
982 \def\url@notermstyle{%
983   \def\UrlFont{\rmfamily\notesmaller}%
```

```

984 \phfnote@urlstyle@common%
985 }
986 \def\url@noteitstyle{%
987 \def\UrlFont{\itshape\notesmaller}%
988 \phfnote@urlstyle@common%
989 }
990 \def\url@notesmlstyle{%
991 \def\UrlFont{\notesmaller}%
992 \phfnote@urlstyle@common%
993 }

```

`\phfnote@urlstyle@common` The following code is common to all our styles. We do an ugly hack in which the tilde character ('~') is fixed to the tilde char in the Adobe Times font (ptm code), so that it looks nicer and its alignment is correct.

```

994 \def\phfnote@url@tilde{\hbox{\fontfamily{ptm}\selectfont\textasciitilde}}
995 %%\def\phfnote@url@tilde{\raise-0.8ex\hbox{%
996 %% \kern-0.2ex\fontfamily{cmbr}\selectfont\textasciitilde}}
997 \def\phfnote@urlstyle@common{%
998 \def\UrlTildeSpecial{\do\~{\phfnote@url@tilde}}%
999 \let\Url@force@Tilde\UrlTildeSpecial%
1000 }

```

5.12.5 Utility to Add TOC Entry For Starred Section

Here we provide an ugly hack which introduces an entry in the table of contents for `\section*` commands.

[Note: An existing way of adding the toc entry in these cases is to issue a `\addcontentsline` command before the relevant command (say `\bibliography`). However this is unreliable, because on page boundaries the `\addcontentsline` will pick up the previous page. This is why `\addcontentsline` should be issued right *after* the `\section*` command.]

WARNING

This command is truly a hack, don't apply it globally! It forces (locally) the `\section` command to be followed by a '*'! Do this within a group, just before a command which you are sure is invoking `\section*` (such as `\bibliography` in the article class).

`\phfnoteHackSectionStarWithTOC` Locally force `\section` to be followed by * and introduce an entry in the table of contents.

```

1001 \def\phfnoteHackSectionStarWithTOC{%
1002 \let\phfnote@old@section\section%
1003 \def\section###{\phfnote@old@section*{##1}\addcontentsline{toc}{section}{##1}}%
1004 }

```

`\phfnoteHackSectionStarWithTOCInCommand` Patches the given command (#1), which is known to invoke `\section*`, to locally first invoke `\phfnoteHackSectionStarWithTOC` and thus generate a TOC entry.

```

1005 \def\phfnoteHackSectionStarWithTOCInCommand#1{%
1006   \expandafter\let\csname phfnote@old@\string#1\endcsname#1%
1007   \gdef#1{%
1008     \begingroup%
1009     \phfnoteHackSectionStarWithTOC%
1010     \csname phfnote@old@\string#1\endcsname%
1011     \endgroup%
1012   }%
1013 }

```

5.12.6 Hack to save & restore a set of commands

Exactly what it sounds like. You can store a set of commands, specified by their name, by specifying an identifier. The commands corresponding to a given identifier can then later be restored.

`\phfnoteSaveDefs` The command `\phfnoteSaveDefs{<identifier>}{<list of macro names>}` saves the current definitions of the given list of macro and associates them to the given identifier. The list of macros is specified as a comma-separated list of macro names.

```

1014 \def\phfnoteSaveDefs#1#2{%

```

The macro `\phfnote@restoredefs@<identifier>` will store the code necessary to restore the macros.

```

1015   \csgdef{phfnote@restoredefs@#1}{}%

```

Iterate over the macros we are supposed to store.

```

1016   \def\@tmpa{#2}%
1017   \@for\next:=\@tmpa\do{%

```

For each macro we are supposed to store (whose name is given in `\next`), we `\let \phfnote@restoredefs@<identifier>@<macro-name>` store the current value of the macro.

```

1018     \global\csletcs{phfnote@restoredefs@#1@\next}{\next}%

```

Then, we append to `\phfnote@restoredefs@<identifier>` the code necessary to restore this macro. That code is simply a `\cslet` instruction.

Recall that `\xappto` expands its second argument (as `\xdef` does), allowing us to expand the value of `\next`.

```

1019 \expandafter\xappto\csname phfnote@restoredefs@#1\endcsname{%
1020 \noexpand\csletcs{\next}{phfnote@restoredefs@#1@next}%
1021 }%
1022 }%
1023 }

```

`\phfnoteRestoreDefs` Restores the macro saved by `\phfnoteSaveDefs`. We simply execute the macro `\phfnote@restoredefs@<identifier>`, in which we duly stored the code necessary to restore all the saved macros.

```

1024 \def\phfnoteRestoreDefs#1{%
1025 \ifcsname phfnote@restoredefs@#1\endcsname%
1026 \csname phfnote@restoredefs@#1\endcsname%
1027 \else%
1028 \PackageError{phfnote}{\string\phfnoteRestoreDefs: no such
1029 definitions stored (#1)}{}
1030 \fi%
1031 }

```

5.12.7 A utility for verbatim stuff in arguments of other macros

FIXME: DOCUMENT ME!

A utility for using verbatim stuff in arguments of other macros—exploit `\detokenize`

```

1032 \def\phfverb#1{%
1033 \ifx\protect\relax%
1034 \phfverbfmt{\detokenize{#1}\unskip}%
1035 \else%
1036 \noexpand\phfverb{\unexpanded{#1}}%
1037 \fi%
1038 }
1039 \def\phfverbfmt#1{{\normalfont\texttt{#1}}}

```

5.13 Handle Package Options

5.13.1 Define and Parse Package Options

Initialization code for `kvoptions` for our package options. See [section 3](#).

```

1040 \SetupKeyvalOptions{
1041 family=phfnote,
1042 prefix=phfnote@opt@
1043 }

```

[title=...] The title style to use. See [subsection 4.1.1](#).

```

1044 \DeclareStringOption[default]{title}
1045 \DeclareVoidOption{notitle}{\def\phfnote@opt@title{false}}

[abstract=...] Option for abstract attributes (subsection 4.2).

1046 \DeclareStringOption[] {abstract}
1047 \DeclareVoidOption{noabstract}{\def\phfnote@opt@abstract{false}}

[pkgset=...] Option for Package sets (subsection 4.4)

1048 \DeclareStringOption[rich]{pkgset}

[pagegeomdefs=...] Define the page geometry. See subsection 4.5.
[pagegeom=...]
1049 \DeclareStringOption[default]{pagegeom}
1050 \DeclareVoidOption{nopagegeom}{\def\phfnote@opt@pagegeom{false}}

Obsolete options—

1051 \DeclareBoolOption[true]{pagegeomdefs}
1052 \DeclareComplementaryOption{nopagegeomdefs}{pagegeomdefs}

—we handle these as follows. By default, \ifphfnote@opt@pagegeomdefs is
true. If it isn't, that means it was overridden and we need to respect that.

[secfmt=...] Styling of section headings. See subsection 4.6.

1053 \DeclareStringOption[section]{secfmt}
1054 \DeclareVoidOption{nosecfmt}{\def\phfnote@opt@secfmt{false}}

[par=...] How to treat paragraphs. See subsection 4.7.

1055 \DeclareStringOption[skip]{par}
1056 \DeclareVoidOption{nopar}{\def\phfnote@opt@par{false}}

[spacingdefs=...] Add definitions to adjust spacing of lines and words. See subsection 4.8.

1057 \DeclareStringOption[true]{spacingdefs}[true]
1058 \DeclareVoidOption{nospaceingdefs}{\def\phfnote@opt@spacingdefs{false}}

[fontdefs=...] Do some adjustments to the fonts. See subsection 4.9.

1059 \DeclareStringOption[true]{fontdefs}[true]
1060 \DeclareVoidOption{nofontdefs}{\def\phfnote@opt@fontdefs{false}}

[footnotedefs=...] Adjustments for footnotes. See subsection 4.10.

1061 \DeclareStringOption[true]{footnotedefs}[true]
1062 \DeclareVoidOption{nofootnotedefs}{\def\phfnote@opt@footnotedefs{false}}

[hyperrefdefs=...] Load hyperref and corresponding definitions. See subsection 4.11.

1063 \DeclareStringOption[] {hyperrefdefs}[]
1064 \DeclareVoidOption{nohyperrefdefs}{\def\phfnote@opt@hyperrefdefs{false}}

```

[bibliographydefs=...] Adjustments for bibliography, including default style. See [subsection 4.12](#).

```
1065 \DeclareStringOption[true]{bibliographydefs}[true]
1066 \DeclareVoidOption{nobibliographydefs}{\def\phfnote@opt@bibliographydefs{false}}
```

\phfnote@loadpreset A helper macro to load presets. Can be used by presets that want to extend other presets.

```
1067 \def\phfnote@loadpreset#1{%
1068   \IfFileExists{phfnotepreset-#1.def}{%
1069     \input{phfnotepreset-#1.def}%
1070   }{%
1071     \ifcsname phfnote@preset@#1\endcsname%
1072     \csname phfnote@preset@#1\endcsname%
1073   \else%
1074     \PackageError{phfnote}{Unknown preset: '#1!'}{You specified the
1075       option 'preset=...' with an invalid value. Please look up the
1076       package documentation corresponding to your version of phfnote
1077       for possible values. Additionally, no file named 'phfnotepreset-#1.def'
1078       was found.}%
1079   \fi%
1080 }%
1081 }
```

[preset=...] Preset option. See [subsection 2.2](#).

```
1082 \define@key{phfnote}{preset}{%
1083   \phfnote@loadpreset{#1}%
1084 }
```

Provide the standard error message for unknown options.

```
1085 \DeclareDefaultOption{%
1086   \@unknownoptionerror
1087 }
```

Small utility to deal with obsolete XXXdefs=true/false options. If the (obsolete) bool option #1 is set to false (which means it was set explicitly, so this must be respected), then emit a package warning and set option #2 (the regular option) to the string value false.

```
1088 \def\phfnote@ifpkgoptfalsestfalse#1#2{%
1089   \edef\x{%
1090     \expandafter\noexpand\csname ifphfnote@opt@#1\endcsname\noexpand\else
1091     \noexpand\PackageWarning{phfnote}{Option #1 is obsolete. Please use "#2=false'" instead
1092     \noexpand\csgdef{phfnote@opt@#2}{false}\noexpand\fi}%
1093   \x
1094 }
```

5.13.2 Define Global Presets

Define the global presets here. See [subsection 2.2](#) for a description of what these presets do.

Some of the presets whose definitions are short are defined here directly here, in the `sty` file. Other presets are placed in a separate `phfnotepreset-XXX.def` file to avoid bloating the main style file.

Changed in v4.0 [2021/10/08]: Moved some presets to external `.def` files.

`\phfnote@hook@atendload` A hook for presets to do stuff at the end of package load.

```
1095 \def\phfnote@hook@atendload{}
```

`\phfnote@preset@article` Article preset.

```
1096 \def\phfnote@preset@article{
1097   \def\phfnote@opt@title{article}
1098   \def\phfnote@opt@par{indent}
1099   \def\phfnote@opt@pagegeom{default}
1100 }
```

`\phfnote@presetcommon@xnote` Specify some common definitions for all our `*note` preset styles. The optional argument is the URL style to set.

```
1101 \newcommand\phfnote@presetcommon@xnote[1][noteitsf]{
1102   \def\phfnote@opt@title{default}
1103   \def\phfnote@opt@par{skip}
1104   %\phfnote@opt@pagegeomdefstrue
1105   \def\phfnote@opt@pagegeom{wide}
1106   \setlength{\footnotesep}{5pt}
1107   \g@addto@macro\phfnote@hook@atendload{
1108     \ifdefined\urlstyle
1109       \urlstyle{#1}
1110     \fi
1111   }
1112 }
```

`\phfnote@preset@sfnote` Define the different `*note` styles.

```
\phfnote@preset@sfssnote
\phfnote@preset@opensansnote 1113 \def\phfnote@preset@sfnote{
\phfnote@preset@utopianote 1114   \phfnote@presetcommon@xnote
\phfnote@preset@mnmynote 1115   \def\phfnote@opt@footnotedefs{true}
1116   \def\phfnote@opt@fontdefs{true}
1117   \renewcommand\familydefault{\sfdefault}
1118   \renewcommand{\notesectionallfontfamily}{\sfdefault}
1119 }
1120 \def\phfnote@preset@sfssnote{
```


set up all the settings as for sfnote ...

```
1121 \phfnote@loadpreset{sfnote}%
```

...but override:

```
1122 \def\phfnote@opt@fontdefs{false}
1123 \PassOptionsToPackage{T1}{fontenc}
1124 \RequirePackage{fontenc}
1125 \renewcommand\sfdefault{cmss}
1126 }
1127 \def\phfnote@preset@opensansnote{
```

set up all the settings as for sfnote ...

```
1128 \phfnote@loadpreset{sfnote}%
```

...but override:

```
1129 \def\phfnote@opt@fontdefs{false}
1130 \PassOptionsToPackage{T1}{fontenc}
1131 \RequirePackage{fontenc}
1132 \PassOptionsToPackage{default,scale=0.9}{opensans}
1133 \RequirePackage{opensans}
1134 }
1135 \def\phfnote@preset@utopianote{
1136 \phfnote@presetcommon@xnote[noteit]
1137 \def\phfnote@opt@fontdefs{false}
1138 \PassOptionsToPackage{T1}{fontenc}
1139 \RequirePackage{fontenc}
1140 \RequirePackage{fourier}
1141 \renewcommand{\notesectionallfontfamily}{put}
1142 \renewcommand{\notetitlefont}{\bfseries}
1143 \renewcommand{\sfdefault}{phv}
1144 }
1145 \def\phfnote@preset@mmynote{
1146 \phfnote@presetcommon@xnote[noteit]
1147 \def\phfnote@opt@footnotedefs{false}
1148 \def\phfnote@opt@fontdefs{false}
1149 \PassOptionsToPackage{T1}{fontenc}
1150 \RequirePackage{fontenc}
1151 \renewcommand{\notesectionallfontfamily}{\sfdefault}
```

Require these packages AFTER the default package set, because some symbols may be defined in package sets, and I've had problems with re-definitions etc... anyway this seems to work this way:

```
1152 \g@addto@macro\phfnote@hook@atendload{
1153 \RequirePackage{MnSymbol}
1154 \PassOptionsToPackage{medfamily,textosf,mathlf,minionint,footnotefigures}{MinionPro}
1155 \RequirePackage{MinionPro}
1156 \PassOptionsToPackage{medfamily}{MyriadPro}
```

```

1157 \RequirePackage{MyriadPro}
1158 }
1159 }

```

`\phfnote@preset@pkgdoc` Preset for a package documentation.

Start by setting the same settings as for other Xnote presets.

```

1160 \def\phfnote@preset@pkgdoc{
1161 \phfnote@presetcommon@xnote[noteit]
1162 \def\phfnote@opt@fontdefs{false}

```

Then set up the font, which is done in a separate macro `\phfnote@pkgdoc@setupfont` in case individual documents would like more specific settings. (For example, some packages may want a different math font.)

```

1163 \phfnote@pkgdoc@setupfont

```

Finally, set up general appearance.

```

1164 \def\phfnote@opt@secfmt{section,paragraph,itpar,blockpar,larger,secsquares,secnummargin}
1165 \def\phfnote@opt@pagegeom{bigmargin}
1166 \def\phfnote@opt@abstract{noname}
1167 }

```

Also provide a helper macro which is to load the font packages we want. By default, we use Utopia fonts via the `fourier` package, but some package documentations may want a different math font. Override `\phfnote@pkgdoc@setupfont` to adjust the whole font set-up, or `\phfnote@pkgdoc@setupmainfont` to adjust only the main document font.

Changed in v3.1 [2020/05/25]: Fixes for more recent versions of the `opensans` package..

```

1168 \providecommand\phfnote@pkgdoc@setupfont{
1169 \PassOptionsToPackage{T1}{fontenc}
1170 \RequirePackage{fontenc}
1171 \phfnote@pkgdoc@setupmainfont
1172 \renewcommand{\notesectionallfontfamily}{put}
1173 \renewcommand{\notetitlefont}{\bfseries}
1174 \IfFileExists{opensans.sty}{\PackageError{phfnote}{Font OpenSans is not
1175     available (need ‘opensans’ package)}{Please install the opensans
1176     package, which provides the OpenSans font.}}
1177 \PassOptionsToPackage{scale=0.85,defaultsans}{opensans}
1178 \RequirePackage{opensans}
1179 }
1180 \providecommand\phfnote@pkgdoc@setupmainfont{\RequirePackage{fourier}}

```

`\phfnote@preset@reset` Finally, the reset preset:

```

1181 \def\phfnote@preset@reset{
1182   \def\phfnote@opt@pkgset{none}
1183   \def\phfnote@opt@title{false}
1184   \def\phfnote@opt@pagegeom{false}
1185   \def\phfnote@opt@spacingdefs{false}
1186   \def\phfnote@opt@par{false}
1187   \def\phfnote@opt@abstract{false}
1188   \def\phfnote@opt@hyperrefdefs{false}
1189   \def\phfnote@opt@fontdefs{false}
1190   \def\phfnote@opt@secfmt{false}
1191   \def\phfnote@opt@bibliographydefs{false}
1192   \def\phfnote@opt@footnotedefs{false}

```

WARNING

NOTE TO SELF: DO NOT FORGET TO ADD HERE RESET COMMANDS FOR ANY NEW OPTION THAT WE PROVIDE IN THE FUTURE.

```

1193 }

```

5.13.3 Finally, Process and Execute the Package Options

Process the options:

```

1194 \ProcessKeyvalOptions*

```

Take action according to the user options.

For the `pkgset` option.

```

1195 \expandafter\phfnote@do@pkgset\expandafter{\phfnote@opt@pkgset}

```

For the `title` option.

```

1196 \expandafter\phfnote@do@notetitle\expandafter{\phfnote@opt@title}

```

For the `abstract` option.

```

1197 \expandafter\phfnote@do@noteabstract\expandafter{\phfnote@opt@abstract}

```

For the `secfmt` option.

```

1198 \expandafter\phfnote@do@secfmt\expandafter{\phfnote@opt@secfmt}

```

For the `pagegeomdefs` option. Here, the first line is needed to deal with the obsolete option ‘`pagegeom`’.

```

1199 \phfnote@ifpkgoptfalsefalse{pagegeomdefs}{pagegeom}
1200 \expandafter\phfnote@do@pagegeom\expandafter{\phfnote@opt@pagegeom}

```

For the spacingdefs option.

```
1201 \expandafter\phfnote@do@spacingdefs\expandafter{\phfnote@opt@spacingdefs}
```

For the par option.

```
1202 \expandafter\phfnote@do@par\expandafter{\phfnote@opt@par}
```

For the hyperrefdefs option.

```
1203 \expandafter\phfnote@do@hyperrefdefs\expandafter{\phfnote@opt@hyperrefdefs}
```

For the fontdefs option.

```
1204 \expandafter\phfnote@do@fontdefs\expandafter{\phfnote@opt@fontdefs}
```

For the bibliographydefs option.

```
1205 \expandafter\phfnote@do@bibliographydefs\expandafter{\phfnote@opt@bibliographydefs}
```

For the footnotedefs option.

```
1206 \expandafter\phfnote@do@footnotedefs\expandafter{\phfnote@opt@footnotedefs}
```

Finally, execute the hook we set up for definitions at the end of the package loading:

```
1207 \phfnote@hook@atendload
```

5.14 Helper files

Now we write some code to some external `.def` files for large chunks of code that are only needed in specific situations, in order to avoid bloating the main style file.

5.14.1 The *xpkgdoc* preset

The `xpkgdoc` preset is based on the `pkgdoc` preset. It introduces multiple pretty involved tools and definitions on top of `pkgdoc`; these are not needed unless this preset is loaded. Let's write all of the corresponding definitions into a separate `.def` file.

```
<*phfnotepreset-xpkgdoc>
```

Load the `pkgdoc` preset before anything else:

```
1208 \phfnote@loadpreset{pkgdoc}
```

Include the `verbatim` package, because it's always useful.

```
1209 \RequirePackage{verbatim}
```

Some patching first: Patch up `\PrintChanges` and `\PrintIndex`, if they are defined (for if we are using the `ltxdoc` package for latex package documentation). We want these to generate an entry in the table of contents. Also provide the utility `\PrintChangesAndIndex`, which calls both `\PrintChanges` and `\PrintIndex` with some additional spacing.

```
1210 \ifdefined\PrintChanges
1211   \phfnoteHackSectionStarWithTOCInCommand\PrintChanges
1212 \fi
1213 \ifdefined\PrintIndex
1214   \phfnoteHackSectionStarWithTOCInCommand\PrintIndex
1215 \fi
1216 \def\PrintChangesAndIndexSpacing{\vspace{3cm plus 2cm minus 2cm}}
1217 \def\PrintChangesAndIndex{\PrintChangesAndIndexSpacing\PrintChanges
1218   \PrintChangesAndIndexSpacing\PrintIndex}
```

Set the index to TWO columns only (three is too tight).

```
1219 \ifdefined\c@IndexColumns
1220   \setcounter{IndexColumns}{2}
1221 \fi
```

And set the glossary, that is, the list of changes history to single-column. For this, renew the environment completely to remove the `multicols` environment.

```
1222 \let\phfnote@xpkgdoc@old@theglossary\theglossary
1223 \let\phfnote@xpkgdoc@old@endtheglossary\endtheglossary
1224 \renewenvironment{theglossary}{%
1225   \glossary@prologue%
1226   \GlossaryParms \let\item\@idxitem \ignorespaces}
1227 {}
```

Tools to condense the macro names in the margins, and make them break at the margin width (at arbitrary points in the macro name) instead of overflowing on the documentation text.

```
1228 \def\phf@fillwithdiscretionaries#1#2#3{%
1229   \def\phf@fillwithdescretionaries@a{#1}%
1230   \def\phf@fillwithdescretionaries@b{#2}%
1231   \edef\x{#3}%
1232   \expandafter \phf@fillwithdiscretionaries@ \x \@nil
1233 }
1234 \def\phf@fillwithdiscretionaries@#1#2\@nil{%
1235   \if\relax\detokenize{#1}\relax\else
1236     #1%
1237     \if\relax\detokenize{#2}\relax\else
1238       \discretionary{\phf@fillwithdescretionaries@a}{%
```

```

1239     \phf@fillwithdiscretionaries@b}{}%
1240     \phf@fillwithdiscretionaries@#2\@nil
1241     \fi
1242     \fi
1243 }
1244 \definecolor{phfxpkgdocmacronamehyphencolor}{rgb}{0.6,0.6,0.7}
1245 \def\phf@xpkgdoc@macrobreakhyphen{%
1246   \hbox{\textcolor{phfxpkgdocmacronamehyphencolor}{-}}}
1247 \def\ScaleHorizontallyAndHyphenateAnywhere#1#2{% {hscale-factor}{text}
1248   \scalebox{#1}[1.0]{%
1249     \parbox{% compute inverse of #1 ...
1250       \dimexpr \marginparwidth*65536 /
1251       \number\dimexpr #1\p@ \relax \relax
1252     }{\raggedleft\phf@fillwithdiscretionaries{%
1253       \phf@xpkgdoc@macrobreakhyphen}{#2}\hfill}%
1254   }%
1255 }
1256 \def\phf@xpkgdoc@marginmacronamecompressfactor{0.85}
1257 \def\phf@xpkgdoc@macrofont{\small\bfseries}% \footnotesize ?
1258 \def\PrintMarginLabelContents#1{%
1259   \strut\MacroFont\phf@xpkgdoc@macrofont
1260   \ScaleHorizontallyAndHyphenateAnywhere{%
1261     \phf@xpkgdoc@marginmacronamecompressfactor}{#1}%
1262   \par
1263 }
1264 \def\PrintMarginLabel#1{\marginpar{\PrintMarginLabelContents{#1}}}
1265 \def\PrintDescribeMacro#1{\PrintMarginLabelContents{\string#1}}
1266 \let\PrintMacroName\PrintDescribeMacro
1267 \let\PrintDescribeEnv\PrintMarginLabelContents
1268 \let\PrintEnvName\PrintMarginLabelContents

```

Hyperref: Request default hyperref definitions with `hyperrefdefs=defer`, but we'll load `hyperdoc` instead of `hyperref`.

```

1269 \def\phfnote@opt@hyperrefdefs{defer}
1270 \g@addto@macro\phfnote@hook@atendload{
1271   \RequirePackage{hypdoc}
1272   \urlstyle{noteit}
1273 }

```

Provide Macro: `\pkgname{<package name>}` to format a package name. Also place it in the general index. This command is robust and can be used in section titles etc.

```

1274 \def\pkgname#1{%
1275   \pkgnamefmt{#1}%
1276   \index{#1=\pkgnamefmt{#1}|hyperpage}%
1277   \index{packages:>#1=\pkgnamefmt{#1}|hyperpage}%
1278 }
1279 \robustify\pkgname
1280 \def\pkgnamefmt#1{\textsf{#1}}

```

```
1281 \robustify\pkgnamefmt
```

Provide Macros: `\changed` and `\changedreftext`, with more advanced support for displaying changes in package functionality or API.

First, we need a counter for the x-ref system.

```
1282 \newcounter{phfnotechanged}
```

Mark changes in the implementation section of the package documentation with the command `\changed[<label name>]{<v1.0>}{<2016/05/22>}{<description>}`. This command automatically adds the change to the package's change history list, and allows you to refer to this change anywhere else in the package doc with `\changedreftext`.

```
1283 \newcommand*\changed[4] [] {%
```

First, if no label is given as optional argument, then just display the change and add it to the package changes list.

```
1284 \if\relax\detokenize{#1}\relax%
1285   \changedtextfmt{#2}{#3}{#4}%
1286   \changes{#2}{#3}{#4}%
1287 \else%
```

If a label name is provided as optional argument, then we need to write some stuff to the `.aux` file to make the change visible in the whole document.

```
1288   \protected@edef\phfnotechanged@tmpa{{#2}{#3}{#4}}%
1289   \immediate\write\@auxout{\string\phfnote@changed@set%
1290     {#1}{\expandonce\phfnotechanged@tmpa}}%
1291   \par\hspace*{0pt}\refstepcounter{phfnotechanged}\label{phfnotechanged:#1}%
1292   \begingroup\let\phfnote@changedreftext@par\relax
1293   \changedreftext[\@secondoftwo]{#1}%
1294   \endgroup
1295   \changes{#2}{#3}{\hyperref[phfnotechanged:#1]{#4}}%
1296 \fi
1297 }
1298 \def\phfnote@changed@set#1{%
1299 \expandafter\gdef\csname phfnote@changed@lbl@#1\endcsname%
1300 }
```

When you document changes with the help of `\changed`, you may refer to any specific change from anywhere else in the package doc with the help of `\changedreftext{<label name>}`.

```
1301 \def\phfnote@changedreftext@par{\par}
1302 \newcommand*\changedreftext[2] [\phfnote@changedrefto] {%
1303 \phfnote@changedreftext@par%
1304 \ifcsname phfnote@changed@lbl@#2\endcsname
1305   #1{#2}{%
1306     \expandafter\expandafter\expandafter\changedtextfmt%
```

```

1307     \csname phfnote@changed@lbl@#2\endcsname
1308   }
1309 \else
1310   \hyperref [phfnotechanged:#2] {%
1311     \changedtextfmt{???}{???}{[\textbf{missing ref}]}%
1312   }%
1313 \fi
1314 \par
1315 }
1316 \def\phfnote@changedrefcto#1{\hyperref [phfnotechanged:#1]}

```

The macro `\changedtextfmt{<v1.0>}{<2016/05/22>}{<description>}` takes care of formatting the change on the spot.

```

1317 \newcommand*\changedtextfmt [3] {%
1318   \textit{Changed in {#1}\kern 0.3ex\relax[#2]}:} #3.
1319 }

```

Provide environment `pkgoptions`: Set up an elaborate environment (based on a description environment) to describe package options.

```

1320 \RequirePackage{enumitem}
1321 \newlist{pkgoptions}{description}{1}
1322 \setlist [pkgoptions] {font=\pkgoptionfmt@many [{\vspace*{5pt}}] ,style=nextline}

```

But patch the `pkgoptions`' `\item` command, so that it puts an additional pair of braces around its argument. In this way, the `font=` attribute for the list sees the full label as its next token, and can be used as a macro argument. (This is not needed for newer versions of `enumitem`.)

```

1323 \def\pkgoptions@item{\@ifnextchar [\pkgoptions@item@\pkgoptions@item@{}]}
1324 \def\pkgoptions@item@#1{\pkgoptions@old@item[{{#1}}]}%
1325 \def\pkgoptions@item@{\PackageWarning{phfnote}{{\pkgoptions}: you must
1326   specify label to \string\item as \string\item[label].}%
1327   \pkgoptions@old@item}%
1328 \apptocmd\pkgoptions{%
1329   \let\pkgoptions@old@item\item
1330   \let\item\pkgoptions@item
1331 }{\PackageWarning{phfnote}{preset xpkgdoc: Failed to patch command
1332   \string\pkgoptions}}

```

For convenience, also provide a `\meta`-like command for boolean arguments (true or false). '`\metatruefalsearg`' typesets as '`<true | false>`'.

```

1333 \def\metatruefalsearg{\meta{\phfverb{true} $\mid$ \phfverb{false}}}

```

Include also a command to format a package option. Puts the option in a box in typewriter text style, and indexes it. The optional argument is meant to be internal—it adds commands after the displayed text (use it to add, e.g. spacing).

When indexing the packages, make sure to remove the protective braces if any.


```

1334 \newcommand\pkgoptionfmt [2] [] {%
1335   \begingroup\let\meta\pkgoptfmt@meta\pkgopt@fbox{\normalfont\ttfamily #2}\endgroup%
1336   \expandafter\phfnote@pkgdoc@index\expandafter{\@firstofone #2}%
1337   #1}
1338 \newcommand\pkgoptionfmt@many [2] [] {%
1339   \def\pkgoptionfmt@tmp@addcomma{}
1340   \def\do##1{\pkgoptionfmt@tmp@addcomma\pkgoptionfmt{\vphantom{#2}##1}%
1341     \def\pkgoptionfmt@tmp@addcomma{\hskip0.25em\relax,\hskip0.8em\relax}}%
1342   \expandafter\docsvlist\expandafter{\@firstofone #2}%
1343   #1}
1344 \let\pkgopt@save@meta\meta
1345 \def\pkgopt@fbox{\fbox}
1346 \def\pkgoptfmt@meta#1{\begingroup\normalfont\itshape\pkgopt@save@meta{#1}\endgroup}

```

Whenever a package option is formatted with `\pkgoptionfmt`, it is placed in the index. Because package options may be of the form `key=val`, we want to split keys from values and put them independently in the index. This is done by entering a \TeX group, and using an `\lccode` trick: the code is prepared to iterate over a list of comma-separated stuff, but then the “lowercase” version of that code is executed instead, where the `=`'s have been replaced by `,`'s.

```

1347 \def\phfnote@pkgdoc@index#1{%
1348   \begingroup\lccode'\ = '\,\relax%
1349   \def\x{\lowercase{\def\@tmpa{#1}}}%
1350   \x%
1351   \let\meta@gobble%
1352   \let\marg@gobble%
1353   \let\oarg@gobble%
1354   \let\parg@gobble%
1355   \let\vphantom@gobble%
1356   \let\hphantom@gobble%
1357   \let\pkgoptattrib\@firstofone%
1358   \let\pkgoptattribnodots\@firstofone%
1359   \let\pkgoptattribempty\@empty%
1360   \def\handleitemindex##1{%
1361     \edef\@tmpc{##1}%
1362     \if\relax\detokenize\expandafter{\@tmpc}\relax\else%
1363       \edef\@tmpb{\expandonce\@tmpc=\string\verb!*\expandonce\@tmpc+ (\pkgoptname)|hyper%
1364         \expandafter\index\@tmpb%
1365       \edef\@tmpb{\packageoptionsname:>\expandonce\@tmpc=\string\verb!*\expandonce\@tmpc+
1366         \expandafter\index\@tmpb%
1367       \fi%
1368     }%
1369     \def\@tmpc{\forcsvlist{\handleitemindex}}%
1370     \expandafter\@tmpc\expandafter{\@tmpa}%
1371   \endgroup%
1372 }
1373 \def\pkgoptname{pkg. opt.}
1374 \def\packageoptionsname{package options}

```

Provide environment `cmdoptions`: hijack the `pkgoptions` environment to do

the same thing, except we place the items in the index under “command options” instead of “package options.”

```

1375 \def\cmdoptions{\begingroup\setcmdnotpkgoptions
1376   \pkgoptions}
1377 \def\endcmdoptions{\endpkgoptions\endgroup}
1378 \newcommand\cmdoptionfmt [2] [] {\begingroup\setcmdnotpkgoptions
1379   \pkgoptionfmt [{#1}] {#2}\endgroup}
1380 \def\cmdoptname{cmd. opt.}
1381 \def\commandoptionsname{command options}
1382 \def\setcmdnotpkgoptions{\let\pkgoptname\cmdoptname
1383   \let\packageoptionsname\commandoptionsname
1384   \let\pkgopt@fbox\cmdoptionsfbox}
1385 \def\cmdoptionsfbox#1{\ensuremath{\underline{\{\text{#1}}}}}

```

Provide the `\pkgoptattrib` command, which typesets its argument as `\{arg, ... \}`—useful to typeset attributes such as in [subsection 4.2](#). The variant `\pkgoptattribnodots{arg}` typesets `\{arg\}` while `\pkgoptattribempty` expands to `{}`.

```

1386 \def\pkgoptattrib#1{\{#1, ... \}}
1387 \def\pkgoptattribnodots#1{\{#1\}}
1388 \def\pkgoptattribempty{\{\}}

```

Colorful boxes: environments `pkgnote`, `pkgwarning`, and `pkgtip`. Now, load the `tcolorbox` package to provide visual “Note,” “Warning,” and “Tip” boxes. Because `tcolorbox` includes the `verbatim` package which messes up the `verbatim` environment in latex dtx files (for which source lines all start with a % which needs to be stripped), we save the `verbatim`-related commands, and restore them after the interfering packages have been loaded.

```

1389 \phfnoteSaveDefs{verbatimstuff}{%
1390   verbatim,@verbatim,@xverbatim,@sxverbatim,endverbatim}
1391 \usepackage{tcolorbox}
1392 \newtcolorbox{pkgnote}{
1393   colback=blue!5!white,
1394   colframe=blue!5!white,
1395   coltitle=blue!50!black,
1396   toptitle=1.5ex,
1397   fonttitle=\bfseries,
1398   title={NOTE}
1399 }
1400 \newtcolorbox{pkgwarning}{
1401   colback=red!5!white,
1402   colframe=red!5!white,
1403   coltitle=red!50!black,
1404   toptitle=1.5ex,
1405   fonttitle=\bfseries,
1406   title={WARNING}
1407 }
1408 \newtcolorbox{pkgtip}{

```

```

1409 colback=green!5!white,
1410 colframe=green!5!white,
1411 coltitle=green!50!black,
1412 toptitle=1.5ex,
1413 fonttitle=\bfseries,
1414 title={TIP}
1415 }
1416 \phfnoteRestoreDefs{verbatimstuff}

```

Patch the `verbatim` environment to remove extraneous space after the environment caused by I don't know what weird cause:

```
1417 \appto\endverbatim{\vspace{-\baselineskip}}
```

Common title stuff:

```

1418 \def\phfqitltxPkgTitle#1{The \pkgname{#1} package\thanks{\itshape
1419 This document corresponds to \pkgname{#1}~\fileversion, dated \filedate. It
1420 is part of the
1421 \href{https://github.com/phfaist/phfqitltx/}{\pkgname{phfqitltx}} package
1422 suite, see \url{https://github.com/phfaist/phfqitltx}.}}

```

Utility to parse package file date into “\today”-style date: invoke as `\date{\pkgfmtdate\filedate}`.

```

1423 \def\pkgfmtdate#1{%
1424 \edef\pkgfmtdate@thedata{#1}%
1425 \expandafter\pkgfmtdate@next\pkgfmtdate@thedata\@nil%
1426 }
1427 \def\pkgfmtdate@next#1/#2/#3\@nil{% YYYY/MM/DD
1428 \ifcase #2 \or January\or February\or March\or April\or May%
1429 \or June\or July\or August\or September\or October%
1430 \or November\or December\fi\space #3,%
1431 \space #1}
1432 \robustify\pkgfmtdate@next

```

```
</phfnotepreset-xpkgdoc>
```

Change History

v1.0	
General: Initial version	1
v1.1	
General: If running XeTeX or LuaTeX, then do not load inputenc and fontenc as part of rich and extended package sets. Plus, do not load inputenc (resp. fontenc) if the package is already loaded	15
v3.0	
General: Added support for inline commenting using	
<code>\phfMakeCommentingCommand</code>	24
Improved <code>abstract, noabstract</code> package options syntax	14
Changed how to turn on/off the page geometry settings by improving the <code>pagegeom</code> package options, deprecated <code>pagegeomdefs</code> option	16
Changed the <code>xwide</code> page geometry for tighter vertical margin for single-column text (use <code>pagegeom=xwidev1</code> instead for old behavior)	16
Improved <code>par, nopar</code> package options syntax	20
Improved <code>secfmt, noseclmt</code> package options syntax	19
Added the <code>pretty</code> and <code>pretty2</code> title styles	8
The <code>article</code> title style was redesigned to use our new title engine, with improved spacing of the elements in all cases including multiline titles, author and/or date not specified, and presence or absence of thanks notes. Use <code>title=articlev1</code> for old behavior	9
The default title style was redesigned to improved spacing of the elements in all cases including multiline titles, author and/or date not specified, and presence or absence of thanks notes. Use <code>title=defaultv1</code> for old behavior	7
Improved <code>title, notitle</code> package options syntax	9
v3.1	
<code>\phfnote@preset@pkgdoc</code> : Fixes for more recent versions of the <code>opensans</code> package.	66
General: Moved support for inline commenting to the separate dedicated package <code>phfcc</code>	24
v3.2	
General: We now redefine <code>\eqref</code> by default to include the parentheses inside the hyperlink. Use the <code>hyperrefdefs=noeqref</code> package option to disable this feature	22
v4.0	
General: Moved some presets to external <code>.def</code> files	64

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