

The `hyperref-generic` module

A generic driver for `hyperref`

The L^AT_EX Project*

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This module generates a generic driver `hgeneric.def/hgeneric-testphase.def` for `hyperref` meant to be used with the new L^AT_EX PDF management code. It is loaded automatically if the PDF management code is active. The name of the driver will change after the testphase.

The generic driver can be used with `pdflatex`, `lualatex`, `xelatex`, `latex` with `dvipdfmx`, `latex` with `dvips+ps2pdf`. `latex` with `dvips+distiller` could work too but is untested. (x)dvipdfmx will probably soon support `dvilualatex`, then this combination should work too.

The driver *requires* the new PDF management code, so documents wanting to use it should start like this (this requires L^AT_EX-2022-06-01 or newer):

```
\RequirePackage{pdfmanagement} %loads the PDF management and activates it
\SetKeys[document/metadata]
{
  %% options, e.g., pdf version:
  pdfversion=1.7,
}
```

If a special backend is needed it can be passed as option:

```
\RequirePackage[backend=dvipdfmx]{pdfmanagement}
```

The `pdfmanagement` is also loaded if `\DocumentMetadata` is used e.g. for tagging

```
\DocumentMetadata %loads the PDF management and activates it
{
  %% options
  %% e.g. tagging, pdf version, backend:
  % tagging=on,
  % pdfversion=1.7,
  % backend = dvipdfmx
}
```

The new driver tries to be compatible with the standard `hyperref` drivers but there are nevertheless differences. Some of them due to the still experimental status of the driver, others are design decisions: one part of the project is to clean up and modernize the code. The following sections try to describe the differences but also to document some of the rationales of the changes, and to add some details and comments about the existing options and so to extend the `hyperref` manual.

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1 Avoiding transition problems

Some code will only work properly after other packages have been adapted to the new PDF management code and the changes in this driver. This will take some time. Until then it is recommended to follow the following rules

- Package options are processed at the end of the driver, Class options are ignored. But not every option already works as package options, in some cases `hyperref` interferes. So it is recommended for most options—with the exception of a few mentioned below in section 9—to set them in `\hypersetup`, not as package option.
- This driver uses the `l3color` module for the colors. All colors defined with `\color_set:nn` or `\color_set:nnn` will work. Colors defined with `xcolor` will work if they don't use one of the special color models not supported by `l3color` as `pdfmanagement-firstaid` contains a patch for `xcolor`. If the package `color` is used it is currently recommended to define colors after `hyperref`.
- Load a color package or `graphicx` to get the right page sizes.
- Report problems! Only known problem can be resolved.

2 Bookmarks / outlines

The new driver doesn't contain code to handle bookmarks/outlines. Instead it forces the loading of the `bookmark` package unless the package option `bookmarks=false` has been used. It is possible to disable bookmarks with `\hypersetup{bookmarks=false}`.

3 “Metadata”

“Metadata”, information about the document, are stored in a PDF in two places: The `/Info` dictionary and the XMP-metadata. `hyperref` only handles the `/Info` dictionary. The XMP-metadata are added by code from `l3pdfmeta`. (without the `pdfmanagement` the XMP-metadata can be added with packages like `pdfx` and `hyperxmp`).

The `/Info` dictionary can be filled with arbitrary keys, but the PDF viewer typically care only about a few, like `/Author`, `/Title` and `/Keywords`. A number of `/Info` keys, like dates and the producer, are added automatically by the engines and backends. Some of them can only be removed with special commands, some not at all. But—with the exception of `/Producer` when using the `dvips` backend—they can be overwritten.

The current handling of the metadata is problematic:

- External package like `hyperxmp` wants to access them too and for this had to patch an number of internal `hyperref` commands—which is a problem if the internal commands change (as happens with this new driver)
- `hyperref` (and also `hyperxmp`) tries to deduce some data from document commands like `\title` or `\author`—something that worked reasonably well when only some standard classes with well-known definitions of these command existed, but gets problematic with classes and packages which define more powerful commands knowing a variety of optional arguments to set authors and affiliations and title information.

To resolve some of this problem the driver will

- *Not* try deduce author and title from documents. They have to be set in `\hypersetup` with `pdfauthor` and `pdftitle`. It is recommended to separate more than one author by commas, and to hide commas inside braces if needed:

```
pdfauthor = {Bär, Peter Anteater, {Riley, the sloth}}
```

- It is possible to store titles in more than one language. If the value begins with an “optional argument” which represents a language tag, the value is taken as a comma list and split. The first value is used for the Info dictionary, the others are used in the XMP-metadata. Commas in a title must then be protected with braces:

```
pdftitle = {[en]English Title,[de] Deutscher Titel,[fr]{titre français, avec commes}}
```

- All values of relevant keys (including keys from the hyperxmp package) will be stored in a Metadata container, and can be retrieved with `\GetDocumentProperty`.

```
\edef\my@pdfauthor{\GetDocumentProperty{hyperref/pdfauthor}}
```

If the key hasn’t be set, the result is empty. This gives external packages a public and reliable access to the data.

- `pdflang` is deprecated. Instead it can be passed with `\DocumentMetadata` or the `document/metadata` key:

```
\DocumentMetadata{lang=de-DE}
```

or

```
\RequirePackage{pdfmanagement}
\SetKeys[document/metadata]{lang=de-DE}
```

The value can be retrieved as `document/lang`.

- The code supports two new keys now to set the reservation of rights relative to text & data mining (TDM): `pdftdmreservation` which should be either 0 or 1, and `pdftdmpolicy` which should be an url pointing to the policy, see <https://pdfa.org/resource/xmp-extension-schema-templates/#tdmrep>.

4 Dates

`hyperref` has a few keys to set dates. They typically expect the date in “PDF” format: `D:YYYYMMDDhhmmss+01'00'`.

5 PDF page size (mediabox)

The standard `hyperref` driver contain code to set the PDF page size. There is no real justification why this is done by `hyperref` apart from the fact that `LATEX` itself doesn’t do it and that the needed special code could be added to the backend drivers.

In the new driver this code is gone. The reason is not that it is difficult to set the `MediaBox`, actually it could be done with one line of code:

```
\pdfmanagement_add:nnn{Page}{MediaBox}
  {[0~0~\dim_to_decimal_in_bp:n{\paperwidth}~
    \dim_to_decimal_in_bp:n{\paperheight}}}
```

The problem is to know which value to use (with the memoir class e.g. `\stockwidth` should be used instead of `\paperwidth`), and detecting this not a `hyperref` task. Instead the packages which change these values should also set the PDF page size. Also there are too many actors here: `color/graphicx`, `geometry`, the KOMA-classes, memoir, ... all try to set this.

So if the PDF page size is wrong: load one of the other packages setting it e.g. the `color` or the `graphicx` package.

6 Commands to create “external” references

`hyperref` has three commands related to external references like URL and file: `\url`, `\nolinkurl` and `\href`. The first two take one argument, while the last has two: the url and some free text.

`\url` and `\href` create link annotations. `\url` creates always an URI type, `\href` creates URI, GoToR and Launch depending on the structure of the argument.

`\href` has to create a (in the PDF) valid url or file name from its first argument. `\url` has to create a (in the PDF) valid url from its only argument and has also to print this argument as url. `\nolinkurl` only prints the url.

For the printing `\url` and `\nolinkurl` rely on the `url` package and its `\Url` command.

(Expandable) commands are expanded and special chars can also be input by commands but beside this no conversion is done: for all input `hyperref` basically assumes that the input is already a valid percent encoded url or a valid file name. `hyperref` also doesn’t extend or add protocols.

As nowadays everyone is used to copy and paste links with all sorts of unicode into a browser and they work the `hyperref` input is clearly rather restricted.

So the new driver tries to extend the input and print options. Both `\href` and `\url` can now be told to accept non-ascii url’s and to convert them internally to percent encoding. It is possible to define a standard protocol and so to avoid to have to type it all the time.

But extending the *print* options for `\url` and `\nolinkurl` while still using the `url`-package is hard to impossible in pdfL^AT_EX due to the way the `url` package works. Some chars can be added with the help of `\UrlSpecial` (at the cost of warnings) but it doesn’t work for every input and documenting and explaining all the edge cases is no joy. So instead the new driver offers here the option to use different commands to format the printed output. It must be noted that this disable the special “hyphenation” method of url’s.

6.1 Special problem: links to files

When a file is linked with `\href` than normally it is added as URI link. The exceptions are PDF’s: for them PDF has the special type GoToR which allows also to link to a destination or a special page.

After a number of tests with various PDF viewer established that non-ascii files names don’t work at all with a simple file name specification GoToR links now use a full filespec dictionary. This works better, but still no every PDF viewer support this correctly. on various system.

The following can be used to test viewers. It assumes that a `test.pdf`, a `grüßpdf.pdf` and a `grüße.txt` are in the current folder.

```
test-ascii
test grüßpdf.pdf
test grüße.txt
```

6.2 Splits

`\href` tries to be clever and to detect from the argument if a url or a file link or a launch command should be created.

The rules are not trivial, and they make the code complicated. This detection also makes it more difficult to handle special cases like non-ascii input for the link types.

For this reason three new commands have been create:

- `\hrefurl` for standard urls (and non-pdf files)
- `\hrefpdf` for references to pdf files
- `\hrefrun` for launch links

The new commands don't use prefixes like `\href`. Their argument should be the real content.

6.3 Options

All `\href` commands and `\url` have an option argument for keyval syntax. It accepts the following keys. Not all keys make sense for all keys, but they don't error, they are silently ignored. The optional argument can currently not be used together with the `\urldef` command.

key	applicable commands	note
urlencode	<code>\hrefurl</code>	if set the code will convert the argument to percent encoding. This allows non-ascii input.
protocol	<code>\hrefurl</code> , <code>\url</code>	This sets a prefix/protocol that is added to the url, see below.
format	<code>\url</code>	a command used to format the printed text. It replaces the standard <code>\Url</code> . This can improve non-ascii typesetting at the cost of losing the special line breaking.
destination	<code>\href</code> , <code>\hrefpdf</code>	A destination name in the PDF
page	<code>\href</code> , <code>\hrefpdf</code>	destination page, default: 1
pdfremotestartview	<code>\href</code> , <code>\hrefpdf</code>	start view, default: Fit
ismap	<code>\href</code> , <code>\hrefurl</code>	see PDF reference
afrelationship	<code>\href</code> , <code>\hrefpdf</code>	Changes the <code>/AFRelationship</code> key of the filespec dictionary. The value should be a PDF name without the starting slash.
run-parameter	<code>\hreflaunch</code>	run parameter (see the PDF reference)
nextactionraw	various	puts a <code>/Next</code> entry in the action dictionary (see the PDF reference)

The first four keys can be set also in `\hypersetup` for all following commands in the current group through the keys `href/urlencode`, `href/protocol`, `href/destination`, `href/format`.

It is possible to define own url commands with specific options e.g. with

```
\NewDocumentCommand\myurl{0{}}{\url[protocol=https://,format=\textsc,#1]}
```

7 Link decorations: border, color, OCG-color, ...

Some main changes are

- The default colors have been changed.
- Citations have by default no special color, they are colored like other internal links. You can use `citecolor` and `citebordercolor` to assign them a special color. This color is not reset if you use `allcolors` or switch to another color scheme. If you want the colors to follow `linkcolor` again you should remove the label `hyp/cite` and/or `hyp/citeborder` from the hook `hyp/link/cite`.
- a number of color schemes have been predefined.

7.1 Background information

With the standard drivers `hyperref` allows either to color the link text, or to use a border around it. There is also a (rather unknown) option `frenchlinks` to use small caps for some links instead of colors.

The *link border* is a setting in the PDF annotation directory. It can be colored and styled (with the `<xxx>bordercolor`, `pdfborderstyle` and `pdfhighlight` keys), but the exact look depends on the PDF viewer. Such decorations are normally not printed.

The *link text* is colored with the standard color commands for text. Such a color is also printed, which is often not wanted. The printing can be avoided in PDF with so-called OCG-layers: They allow to add variants of a text along with instructions which variant should be used for viewing and which for printing. `hyperref` implements a rather simple version for links: The link text is put in a box and printed twice with different colors on different OCG layers. As boxes are used such links can't be broken. The package `ocgx2` implements a more sophisticated version which allows to use it for links broken over lines and pages.

`hyperref` has keys to set the color and border for `link`, `url`, `file`, `menu` and `run` types. They correspond to the PDF annotation types `GoTo`, `URI`, `GoToR`, `Named` and `Launch`. Beside this there is a `anchorcolor` which isn't used at all, and `citecolor` which is a semantical category and doesn't fit to the other types.

In the standard drivers the decoration options are more or less exclusive and global: One of the options (`colorlinks`, `ocgcolorlinks`, or `borders`) has to be chosen in the preamble and is then used for the whole document and all link types. Only colors and eventually the border style can be adjusted locally. But there is no technical reason for these restrictions: It is quite possible to change all these attributes at any time both by link type and locally. The restrictions of the current implementation can only be explained by the age of the code: `hyperref` has been created at a time when memory was small and the main drivers were html and postscript based.

While link colors have been traditionally more or less under the control of `hyperref`, the situation with other format options, like the font, is more complicated. The font

in `\url` is for example determined by `\Urlfont`, a command from the `url` package. In the case of internal (GoTo) references packages like `cleveref` or `biblatex` or `glossaries` offer formatting options too. Formatting here is often connected to semantics: an acronym should use a different font than a citation. While `hyperref` could offer options here, it would probably only clash with package formatting. It is more sensible not to interfere here. For this reason the `frenchlinks` option has been dropped.

7.2 New Keys

Some of the existing keys have been extended to allow individual setting for the link types `link`, `url`, `file` `menu` and `run`:

- Beside `pdfborder` there are also `linkborder`, `urlborder` etc
- Beside `pdfhighlight` there are also `linkhighlight`, `urlhighlight` etc
- Beside `pdfborderstyle` there are also `linkborderstyle`, `urlborderstyle` etc
- Beside `colorlinks` there are also `colorlink`, `colorurl` etc
- Beside `ocgcolorlinks` there are also `ocgcolorlink`, `ocgcolorurl`, etc TODO
- Beside `hidelinks` there are also `hidelink`, `hideurl`, etc
- `bordercolormodel` allows to set the model used in annotations, the allowed values are `rgb` or `cmyk`. `rgb` is the default. It does *not* change the model of text colors. Be aware that while the PDF format allows `cmyk` (4 numbers) in the `/C` key of an annotation, this is often ignored by pdf viewers and the colors can be wrong.
- The boolean keys `url`, `link`, `run`, `menu`, `file` allow to deactivate locally the link types.

`colorscheme` (*setup key*)

The new key `colorscheme` allows to switch the colors (both for text and borders) with a key word. It takes one of the values `primary-colors` (the colors as `hyperref` uses normally), `phelype`, `daleif`, `szabolcsA`, `szabolcsB`, `tivv`, `julian`, `henryford`. The names refer to the authors in answers and comments in <https://tex.stackexchange.com/questions/525261/better-default-colors-for-hyperref-links>. The default is `phelype`.

7.3 Public interfaces

```
\l_hyp_annot_colorlink_bool  
\l_hyp_annot_colorurl_bool  
\l_hyp_annot_colorfile_bool  
\l_hyp_annot_colorrurl_bool  
\l_hyp_annot_colormenu_bool  
\l_hyp_annot_ocgcolorlink_bool  
\l_hyp_annot_ocgcolorurl_bool  
\l_hyp_annot_ocgcolorfile_bool  
\l_hyp_annot_ocgcolorrurl_bool  
\l_hyp_annot_ocgcolormenu_bool
```

These boolean are used by the `colorlinks` and `ocgcolorlinks` and related keys. These keys insert hook code in the `pdfannot/link/<type>/begin` and `pdfannot/link/<type>/end` hooks. `<type>` is one of `GoTo`, `URI`, `GoToR`, `Named` or `Launch`.

`colorlinks` uses the label `hyp/color`, and `ocgcolorlinks` the label `hyp/ocg`.

They both use the same color names: `hyp/color/link`, `hyp/color/url`, `hyp/color/file`, `hyp/color/run`, `hyp/color/menu`.

The cite colors uses the names `hyp/color/cite` and `hyp/color/citeborder`.

The border colors aren't saved in color names currently, but if the need would arise it would possible to change this.

7.4 Changed behaviour

colorlinks `colorlinks` or `colorlinks=true` will as before disable the `pdfborder` (`colorlinks=false` will leave the `pdfborder` untouched), but it is possible to use the key in the document at any time, or to reenale the border if wanted. Internally `colorlinks` & friends will no longer define/undefine `\Hy@colorlink`, but instead use the hooks provided by the `l3pdfannot` package.

Color keys accept the following input syntax:

model based	<code>urlbordercolor = [rgb]{1,1,0}</code>
color expression	<code>urlbordercolor = red!50!blue</code>
command	<code>urlbordercolor = \mycolor</code>

where `\mycolor` should expand to one of the other two syntax variants.

frenchlinks The option `frenchlinks` does nothing at all.

cite colors As mentioned above the support for `citecolor` and `citebordercolor` has been reduced. A package like `hyperref` can't keep track of such semantic contexts like `cite`, `acronym`, `glossaries` and `special references` and maintain keys for them. The keys are not completely dropped as this would affect packages like `natbib`, but they have been separated and are no longer affected by group keys like `allcolors` but must be set individually instead.

link margin The driver sets a default link margin—this is identical to `pdftex` and `luatex` driver, but a change for the `xetex` and `dvips` driver. The (undocumented) command `\setpdflinkmargin` does nothing. Use either the key `pdflinkmargin` or `\pdfannot_link_margin:n` to change the margin. See also the description in section 14 and in the `hyperref` manual.

8 PDF strings

`hyperref` uses a command called `\pdfstringdef` to convert text input into something that makes sense and is valid in a PDF string, e.g. in the bookmarks or in the info dictionary or as form field values.

As the handling of the outlines are delegated to the `bookmark` package, they will for now still use `\pdfstringdef`, but all other strings produced by this driver will use a new method based on the `expl3` commands `\text_purify:n` and `\str_set_convert:Nnnn`. For normal text it shouldn't matter, but a variety of commands and math are handled differently. Like with `\pdfstringdef` they are a number of ways to adjust the outcome of `\text_purify:n`. These are described in the `expl3` documentation `interface3.pdf`.

The new method is under heavy development!

Important differences here are

- *This new method requires that files are utf8-encoded* (at least if non-ascii chars are used in for PDF strings).
- All robust commands are currently removed, unless an equivalent has been declared.
- Currently the new method is much more silent: it doesn't warn like `hyperref` if it removes commands.

9 Package options from `hyperref`

The driver will process the package options at the end. But normally options should better be set with `\hypersetup` after the package has been loaded. This is also the case for options which normally don't work in `\hypersetup`. One option that currently doesn't work correctly as package option is `ocgcolorlinks`

Options that still must be set as package options are

- `backref`
- `CJKbookmarks` this key should not be used anymore. At some time it will be removed.
- `destlabel` (destination names are taken from `\label` if possible)
- `encap`
- `hyperfigures` (according to the `hyperref` manual it makes figures hyper links, but actually is a no-op for most drivers, and it does nothing with this driver either.)
- `hyperfootnotes`
- `hyperindex`
- `implicit` (redefine `LATEX` internals)
- `nesting` unneeded key, see comment below in 14. At some time it will be either removed or extended (if some use can be found).
- `pagebackref`
- `pdfpagelabels` (set PDF page labels)

- `psdextra` this loads some extra definitions used by `\pdfstringdef`. The new driver uses `\pdfstringdef` only for the bookmarks, for other strings it is not relevant.

Options that can be without problems set as package options are

- `debug`, `verbose` (a boolean)
- `bookmarks` (a boolean)
- `plainpages`
- `draft`, `final`
- `hypertextnames`
- `naturalnames`
- `pageanchor`

Ignored options:

- All driver options like `pdftex`, `dvipdfmx`, ...
- `raiselinks` (only used in the `dviwind`, `textures` and `tex4ht` driver anyway)
- `frenchlinks`
- `setpagesize`
- `addtopdfcreator`

10 Disabling links

`hyperref` knows like many packages the options `draft` and `final`. With `hyperref` they can be used as package options or in the preamble in `\hypersetup` and disable links and anchors completely. The new driver passes the options also to the `bookmark` package if `bookmark` hasn't been loaded yet as bookmarks can't work properly if the anchors from `hyperref` are missing.

`link` (*setup key*) The `draft` option is a global option that can't be undone (at least not easily). So the new driver offers also boolean keys `link`, `url`, `file`, `run` and `menu` which allow to locally disable a link type. So e.g. `\hypersetup{link=false}\ref{abc}` will give a reference without link (this is naturally also possible with `\ref*{abc}`). This disables also all hooks of the link type, so the link is for example no longer colored. It also removes the implicit grouping of the content.

`nested-links` (*setup key*)

Links are sometimes nested. E.g. if a section heading contains a reference it can lead to nested links in the table of contents or if `\nameref` is used. That is not forbidden and normally work as expected: If the link area overlap normally the inner link is "on top" and chosen at a click. But it is not always actually wanted, so with the `nested-links` (a boolean key) it is possible to disable such nested links.

11 Draftmode

pdftex and other engines knows a draftmode which can be set with `\pdfdraftmode=1` and `hyperref` honors this in some places. The new driver ignores it, for example `pagelabels` are created in any case. With today's computer power there is not much to gain and it only complicates the code.

This should not be confused with the `draft` and `final` package options! They are still honored.

12 Dropped options

A number of options are ignored by this driver

pdfversion The pdfversion should be set in `\DocumentMetadata` or with `\SetKeys[document/metadata`

setpagesize The key is ignored and the PDF page size is not set. Load `color` or `graphicx` or use a class which sets the PDF page size.

breaklinks The option does nothing sensible anyway (apart from triggering a warning). Currently with latex+dvips links can't be broken. But there is work in progress to change this.

unicode This is always true.

pdfa If this option is set to true `hyperref` normally checks and sets a small number of requirements for the PDF standard PDF/A. The key is ignored with this driver. Instead the wanted standard should be declared in `\DocumentMetadata` or `\SetKeys[document/metadata]`:

```
\DocumentMetadata{pdfstandard=A-2b}
```

Currently A-1b, A-2b, A-3b can be set. The support for various requirements is still incomplete, but the parts that `hyperref` checked are implemented:

- The `/F` key is added to links and `Print` is activated, `Hidden`, `Invisible`, `NoView` are deactivated.
- `/NeedAppearances` is suppressed
- `PushButtons`, which use the action `/S/JavaScript` are suppressed.
- `ResetButtons`, which use the action `/S/ResetForm` are suppressed.
- In widget annotations, the `/AA` dictionary is suppressed.

13 Destinations

Destinations (sometimes call anchors in the `hyperref` documentation) are the places a link jumped too. Unlike the name may suggest they don't described an exact location in the PDF. Instead a destination contains a reference to a page along with an instruction how to display this page. The normally used "`XYZ top left zoom`" for example instructs the viewer to show the page with the given *zoom* and the top left corner at the *top left* coordinates—which then gives the impression that there is an anchor at this position.

From these instructions two (`Fit` and `FitB`) don't take an argument. All others take one (`FitH`, `FitV`, `FitBH`, `FitBV`) or more (`XYZ`, `FitR`) arguments. These arguments are normally coordinates, `XYZ` takes also a zoom factor. The coordinates are absolute coordinates in `bp` relative to the lower left corner of the PDF.

With the primitive command `\pdfdest` of `pdftex` almost all instructions are created with a keyword only: The needed coordinate is calculated automatically from the location the `\pdfdest` command is issued. So to get a specific coordinate one has to move the command to the right place. E.g.

```
\AddToHookNext{shipout/background}
{\put(0,-\pdfpageheight+100bp){\pdfdest name{destA} FitH\relax}}
```

Exceptions are the `XYZ` instruction, where `pdftex` accepts a keyword `zoom` followed by a zoom factor, and the `FitR` instruction which understands the keywords `width`, `height` and `depth` followed by a dimension, which is then used to calculate a rectangle relative to the current location. If no keywords are given the dimensions are taken from the surrounding box—which can also lead to zero sized areas.

The manual of `hyperref` gives a bit the impression as if this coordinates can be set manually by the user but as described above this is mostly wrong: It is for normal destination only possible with a dvi-backend like `dvips` which make use of `pdfmark.def`. `pdftex` and `luatex` can use manual coordinates only for `pdfstartview` and `pdfremotestartview`. As `dvips` was the first driver of `hyperref` the option `pdfview` was at first developed for it and then adapted to `pdftex`. But this had the effect that the handling of the option `pdfview` is inconsequent across the backend and engines: For example with `pdfview=FitH 100` `pdftex` ignores the number and calculates its own, while `dvips` sets the coordinate to the absolute 100. The zoom factor of `XYZ` is not supported by the `pdftex` driver at all, and `FitR` only partially.

The generic driver consolidate this but tries to stay compatible with the other drivers as far as possible. It also takes into account that `pdfview` and `pdfstartview` and `pdfremotestartview` have different requirements: While for the first relative coordinates are fine, for the two others absolute coordinates are more sensible.

`pdfview` (*setup key*) So with this driver the options `pdfview`, `pdfstartview` and `pdfremotestartview`
`pdfstartview` (*setup key*) take the following options:
`pdfremotestartview` (*setup key*)

- `Fit`, `FitB`, `FitH`, `FitV`, `FitBH`, `FitBV` which can be followed by a positive integer (separated by a space) or the keyword `null`. The number can be gives as a *<dimension expression>* surrounded with `\hypercalcbp`. The driver redefines this command to use `\dim_to_decimal_in_bp:n`.
 - `pdfview` will ignore the integer and any other arguments and calculate the expected coordinates as described above for `pdftex` with all supported engines and backends.
 - `pdfstartview` and `pdfremotestartview` will pass the optional number or keyword after expansion as absolute coordinate. Missing numbers will be filled up with `null`.
- `XYZ`. This can be followed (separated by spaces) by up to three positive integers or keywords `null` which are then taken as *top left zoom* in this order. *zoom* is a factor, so e.g. 0.5 will give a scaling of 50%.

- `pdfview` will use the last value as *zoom*, ignore all other values and calculate the expected coordinates as described above for `pdftex` with all supported engines and backends (this means it is possible to use `XYZ 2` to set a zoom of 200%, it is not necessary to fill in dummy values.)
- `pdfstartview` and `pdfremotestartview` will pass the optional numbers or keyword after expansion as absolute coordinates and zoom. Missing numbers will be filled up with `null`.

This new behaviour is in part incompatible with previous handling with the dvips driver.

- **FitR.** If no argument (separated by spaces) follows then `pdfview` will use with `pdftex` and `luatex` the automatic calculation of the coordinates from the encompassing box. With dvips and (x)dvipdfmx it will fall back to `Fit`. `pdfstartview` and `pdfremotestartview` will fallback to `Fit` too.

If arguments (separated by spaces) follow they should be four numbers representing `left bottom right top`.

- `pdfview` will use the values to calculate coordinates relative to the current location. So `0 -100 200 400` will give a “box” of width 200bp, height 400bp and depth 100dp that the destination should encompass. Missing numbers will be set to 0. But one should be aware that it is quite unpredictable how viewers which support `FitR` handles zero sizes.
- `pdfstartview` and `pdfremotestartview` will pass the values as absolute coordinates.

13.1 Names of destinations

`hyperref` creates two types of destination names: For numbered structures (so when the anchor is set by `\refstepcounter`) it builds the name from the counter name and the `\theH...` representation: `<counter name>.\theH<counter name>`.

For unnumbered structures, e.g. starred chapters or anchors created with `\phantomsection` it uses names like `section*.<number>` and `chapter*.<number>`.

Typically the name of destination can be retrieved by setting a label, this works also with unnumbered sections. The anchor and also the page can be retrieve in an expandable way with the help of commands from the `refcount` package which is loaded by `hyperref`. For example with the following commands it is possible to use the label to create a bookmark:

```
\bookmark[dest=\getrefbykeydefault{label}{anchor}{Doc-Start}]{my bookmark}
\bookmark[dest=page.\getrefbykeydefault{label}{page}{Doc-Start}]{my bookmark}
```

If a `\HyperDestNameFilter` is defined, this must be added around the definition, so actually the full code has to look like this

```
\bookmark[dest=
\HyperDestNameFilter{\getrefbykeydefault{label}{anchor}{Doc-Start}}]{mysection}
```

To simplify this `hyperref` provides `\hyperget{anchor}{label}` and `\hyperget{pageanchor}{label}`

14 Assorted key descriptions

The following gives a few details to some keys that are perhaps not completely described in the manual, or are a bit different in this driver. The list is alphabetic.

- bookmarkstyle** (*setup key*) This key takes as value the extension of a list like `toc` or `lof`. If this list uses `\addcontentsline` the content will be added to the bookmarks. The key can be use in `\hypersetup` and also in the middle of the document to switch the list.
- bordercolormodel** (*setup key*) With `bordercolormodel` the colormodel used in the `/C` key of the annotation array and in similar keys is set. It does not affect the text and graphics colors in the page stream. Possible choices are `rgb` (three numbers in the array) and `cmk` (four numbers). While the PDF reference allows four numbers, PDF readers don't necessarily handle this correctly, so the value can be wrong.
- destlabel** (*setup key*) This is a boolean key. Currently it must be set as package option. If set to true, the name of a destination is taken from a following `\label`, if there is one before the next destination command. This requires two compilations to get the correct coordinates in the destination. In the first compilation the alias name is recorded in the aux-file:
- ```
\hyper@newdestlabel{section.1.2}{sec:sec2}
```
- The next compilation can then make use of it. The two-pass could be avoided in the future with a better labeling system, where the name if set earlier.
- extension** (*setup key*) This key sets an variable that has two purposes: It is used if file name has not extension, and it decides if the annotation is a URI or GoToR annotation. So
- ```
\hypersetup{extension=dvi}
\href{mwe1.pdf}{pdf}
\href{mwe2.dvi}{dvi}
\href{mwe3}{no ext}
```
- will create
- ```
/Subtype/Link/A<</S/URI /URI(mwe1.pdf)>>
/Subtype/Link/A<</S/GoToR /F (mwe2.dvi)>>
/Subtype/Link/A<</S/GoToR /F (mwe3.dvi)>>
```
- Typically PDF viewer can handle only GoToR annotations pointing to a PDF. So normally the default value `pdf` of this key should not be changed. This key is useless in PDF context. The boolean is only used in the code for anchors/destination where nesting doesn't make sense. It should not be changed.
- nesting** (*setup key*) This key set accept as value three numbers or three numbers and an array describing a dash pattern, examples are `0 0 1` or `0 0 1 [3 2]`. The first two numbers should according to the reference set round corners, but PDF viewer seem to ignore it. The third number is the line width of the border. Settings done with `pdfborderstyle` should take precedence.
- pdfborder** (*setup key*) This key set accept as value three numbers or three numbers and an array describing a dash pattern, examples are `0 0 1` or `0 0 1 [3 2]`. The first two numbers should according to the reference set round corners, but PDF viewer seem to ignore it. The third number is the line width of the border. Settings done with `pdfborderstyle` should take precedence.
- linkborder** (*setup key*) The value of this key is the content of the BS dictionary. As an example
- urlborder** (*setup key*) `/Type/Border /W 1 /S/U /D[3 2]`
- runborder** (*setup key*)
- menuborder** (*setup key*)
- pdfborderstyle** (*setup key*)
- linkborderstyle** (*setup key*)
- urlborderstyle** (*setup key*)
- fileborderstyle** (*setup key*)
- runborderstyle** (*setup key*)
- menuborderstyle** (*setup key*)

|                                      | Key                                                                                                                                                                                                                                            | Values                          | comment / example                       |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------|
|                                      | /Type                                                                                                                                                                                                                                          | /Border                         | optional                                |
|                                      | /W                                                                                                                                                                                                                                             | <i>&lt;number&gt;</i>           | Width of border line                    |
|                                      | /S                                                                                                                                                                                                                                             | /S                              | solid (default)                         |
|                                      |                                                                                                                                                                                                                                                | /D                              | dash pattern can be set with /D         |
|                                      |                                                                                                                                                                                                                                                | /B                              | beveled                                 |
|                                      |                                                                                                                                                                                                                                                | /I                              | inset                                   |
|                                      |                                                                                                                                                                                                                                                | /U                              | underline                               |
|                                      | /D                                                                                                                                                                                                                                             | <i>&lt;array of numbers&gt;</i> | dash pattern (lines/gaps) (default [3]) |
| pdfcreationdate ( <i>setup key</i> ) | Setting these keys is normally not needed. If they are used the values of the first                                                                                                                                                            |                                 |                                         |
| pdfmoddate ( <i>setup key</i> )      | two keys are stored directly in the Info dictionary for /Creationdate and /ModDate.                                                                                                                                                            |                                 |                                         |
| pdfmetadate ( <i>setup key</i> )     | All three keys are used in XMP-metadata. The values are converted to strings but not processed further, so they should have the correct PDF format without the enclosing parentheses, e.g. D:20200202111111+01'00'.                            |                                 |                                         |
| pdflinkmargin ( <i>setup key</i> )   | As described in the hyperref manual the behaviour differs between the backends: with dvips it is possible to change links locally, pdflatex and luatex work by page, with dvipdfmx the setting is global (and has to be done in the preamble). |                                 |                                         |
| pdflang ( <i>setup key</i> )         | The key will work, but it is recommended to the set the language in \DocumentMetadata or \SetKeys[document/metadata] instead.                                                                                                                  |                                 |                                         |

## File I

# hyperref-generic driver implementation

```

1 <@@=hyp>

2 <*headertestphase>
3 \ProvidesFile{hgeneric-testphase.def}[2026-05-26 v0.97c %
4 generic Hyperref driver for the LaTeX PDF management bundle]
5 </headertestphase>

6 <*header>
7 \ProvidesFile{hgeneric.def}[2026-05-26 v0.97c %
8 generic Hyperref driver for the LaTeX PDF management bundle]
9 </header>

10 <*package>
11 \RequirePackage{etoolbox} %why?

Temporary command definition, can be remove when hyperref is update too.
12 \long\def\Hy@ReturnAfterFi#1\fi{\fi#1}

13 \ExplSyntaxOn
14 \file_input:n {hyperref-colorschemes.def}
15 \ExplSyntaxOff

```

## 1 messages

Redirect the message name:

```
16 \ExplSyntaxOn
17 \prop_gput:Nnn \g_msg_module_name_prop { hyp }{ hyperref }
```

At first a message for the testing of the resource management

```
18 \msg_new:nnnn
19 { hyp }
20 { missing-resource-management }
21 { The~PDF~resource~management~is~required~for~this~hyperref~driver! }
22 {
23 Activate-it-with \\
24 \tl_to_str:n{\DocumentMetadata{<options>}}\\
25 before~\tl_to_str:n{\documentclass} or \\
26 \RequirePackage{pdfmanagement}
27 }
```

The pdfversion should be set in \DocumentMetadata or \SetKeys[document/metadata]

```
28 \msg_new:nnnn
29 { hyp }
30 { pdfversion-disabled }
31 {
32 This~hyperref~driver~ignores~the~pdfversion~key!\\
33 Set~the~pdfversion~in~\token_to_str:N \DocumentMetadata\\or
34 with \tl_to_str:n{\SetKeys[document/metadata]}
35 }
36 {
37 For example:\\
38 \tl_to_str:n
39 {
40 \DocumentMetadata { pdfversion=1.7 }
41 }
42 }
```

A generic message for ignored keys.

```
43 \msg_new:nnn
44 { hyp }
45 { key-dropped }
46 {
47 This~hyperref~driver~ignores~the~key~#1!\\
48 Please~check~the~documentation.
49 }
```

pdf/A messages for fields, this will probably be moved to an external package

```
50 \msg_new:nnn
51 { hyp }
52 { pdfa-no-push-button }
53 { PDF/A:~Push~button~with~JavaScript~is~prohibited }
54
55 \msg_new:nnn
56 { hyp }
57 { pdfa-no-reset-button }
58 { PDF/A:~Reset~action~is~prohibited }
```



pdf/A message for not allowed Named actions

```
59 \msg_new:nnn
60 { hyp }
61 { pdfa-no-named-action }
62 { PDF/A:~Named~action~#1~is~prohibited }
```

A message if the destination name is empty.

```
63 \msg_new:nnn
64 { hyp }
65 { empty-destination-name }
66 {
67 Empty~destination~name,\\
68 using~'#1'
69 }
```

A message if the destination check fails

```
70 \msg_new:nnn
71 { hyp }
72 { invalid-destination-value }
73 {
74 Invalid~value~'#1'~of~'#2' \\
75 is~replaced~by~'Fit'~\msg_line_context:.
76 }
```

Some options or values should not be used in older pdf versions

```
77 \msg_new:nnn
78 { hyp }
79 { ignore-deprecated-or-unknown-option-in-pdf-version }
80 {
81 Option~'#1'~is~unknown~or~deprecated~in\\
82 pdf~version~#2.~Ignored.
83 }
84 \msg_new:nnn
85 { hyp }
86 { ignore-deprecated-or-unknown-value-in-pdf-version }
87 {
88 Value~'#1'~is~unknown~or~deprecated~in\\
89 pdf~version~#2.~Ignored.
90 }
91 \msg_new:nnn
92 { hyp }
93 { replace-deprecated-or-unknown-value-in-pdf-version }
94 {
95 Value~'#1'~is~unknown~or~deprecated~in\\
96 pdf~version~#2. Value~'#3'~is used instead.
97 }
```

During development not all standard hyperref keys are known and the Hyp-handler needs to process some new keys unknown to him. This issues warnings for now:

```
98 \msg_new:nnn
99 { hyp }
100 { unknown-key }
101 {
102 unknown~key~#2~of~module~'#1'~set~to~'#3'.
```

```

103 }
104 \msg_new:nnn
105 { hyp }
106 { unknown-key-to-Hyp }
107 {
108 ignored-in-family-Hyp-unknown-key-#1.
109 }

```

There are a lot choice keys. This defines messages which shows the valid choices if a faulty one has been used:

```

110 \cs_new:Npn __hyp_clist_display:n #1 {*~#1\\}
111 \msg_new:nnn
112 { hyp }
113 { unknown-choice }
114 {
115 Value-#3'-is-invalid-for-key-#1'.\\
116 The-key-accepts-only-the-choices\\
117 \clist_map_function:nN { #2 } __hyp_clist_display:n
118 }
119
120 \msg_new:nnn
121 { hyp }
122 { unknown-choice+empty }
123 {
124 Value-#3'-is-invalid-for-key-#1'.\\
125 The-key-accepts-only-the-choices\\
126 \clist_map_function:nN { #2 } __hyp_clist_display:n
127 An-empty-value-removes-the-setting.
128 }
129
130 \msg_new:nnn
131 { hyp }
132 { no-bool }
133 {
134 Value-#2'-is-invalid-for-key-#1'.\\
135 The-key-accepts-only-the-choices\\
136 *~true\\
137 *~false \\
138 *~and-an-empty-value-which-removes-the-setting.\\
139 No-value-is-equivalent-to-using-'true'.
140 }

```

A message for creator and producer which can't be removed.

```

141 \msg_new:nnn
142 { hyp }
143 { empty-info-value }
144 {
145 Empty-value-for-key-#1.\\
146 This-isn't-honored-by-all-backends.
147 }

```

## 2 Variants

```

148 \cs_generate_variant:Nn\pdf_destination:nn {nf}

```

```

149 \cs_generate_variant:Nn\pdf_object_ref:n {e}
150 \cs_generate_variant:Nn\pdf_pageobject_ref:n {e}

```

### 3 Overwriting/providing commands from hyperref

hyperref checks driver version, we need to suppress this during the development

```

151 \chardef\Hy@VersionChecked=1 %don't check the version!

152 %\cs_set_protected:Npn \PDF@SetupDoc{}
153 %\PDF@FinishDoc{}% dummy needed for hyperref ...

```

---

\hypercalcbp We define a better (expandable) version of \hypercalcbp

**\hypercalcbp**

```

154 \cs_set_eq:NN \hypercalcbp \dim_to_decimal_in_bp:n

```

*(End of definition for \hypercalcbp. This function is documented on page 19.)*

This command must be provided for now, but they are unused by the driver:

```

155 \providecommand\@pdfborder{}
156 \providecommand\@pdfborderstyle{}
157 \newcommand\OBJ@OCG@view {} % needed in hyperref
158 \def\Hy@numberline#1{#1\c_space_tl} %needed by bookmark

```

The pdfversion should be set in \DocumentMetadata or \SetKeys[document/metadata] but we must copy it to the hyperref command:

```

159 \cs_set_eq:NN \Hy@pdfminorversion \pdf_version_minor:
160 \cs_set_eq:NN \Hy@pdfmajorversion \pdf_version_major:

161 \legacy_if:nT { Hy@setpdfversion }
162 {
163 \msg_warning:nn { hyp }{ pdfversion-disabled }
164 }
165 \Hy@DisableOption{pdfversion}

```

\Acrobatmenu should use the new internal link command

```

166 \RenewDocumentCommand \Acrobatmenu { m m }
167 {
168 \hyper@linknamed {#1} {#2}
169 }

```

\hypersetup should set the new keys. We can't also execute \kvsetkeys{Hyp} as this errors for example with colors. This means the driver has to provide new code for every key!

```

170 % TODO should go at some time ...
171 % \kv@set@family@handler{Hyp}
172 % { \msg_warning:nne {hyp}{unknown-key-to-Hyp}{#1} }
173 \cs_set_protected:Npn \hypersetup #1
174 {
175 %\kvsetkeys{Hyp} {#1}
176 \keys_set:nn { hyp }{ #1 }

```

```

177 }
178 % TODO for now unknown keys should only give warnings.
179 \keys_define:nn { hyp }
180 {
181 unknown .code:n =
182 {
183 \msg_warning:nneee { hyp } { unknown-key }
184 { hyp }{ \l_keys_key_str } { #1 }
185 }
186 }

```

Hyperref creates a number of destinations automatically. E.g. in unnumbered chapters and sections and with `\phantomsection`. The following key allows to force a specific name for the destination so that it can be used by bookmarks.

```

187 \keys_define:nn { hyp }
188 {
189 next-anchor .code:n =
190 {
191 \AddToHookNext{__hyp/dest/make}
192 {\Hy@MakeCurrentHref{#1}}
193 }
194 }

```

Allow non-ascii in href, and add more href versions. We add a few new keys: `urlencode` to force percent encoding (`\hrefurl`, `\href`) `protocol` to add a protocol (`\hrefurl`, `\href` doesn't work here as it needs the colon for the split and the guessing.) `destination` to add a destination (`\hrefpdf`)

```

195 \bool_new:N \l__hyp_href_url_encode_bool
196 \bool_new:N \l__hyp_href_url_ismap_bool
197 \tl_new:N \l__hyp_href_url_protocol_tl
198 \tl_new:N \l__hyp_href_pdf_destination_tl
199 \tl_new:N \l__hyp_href_pdf_page_tl
200 \tl_new:N \l__hyp_href_run_parameter_tl
201 \cs_new_protected:Npn __hyp_href_url_format: {\begingroup\Url}
202
203
204 \keys_define:nn { hyp / href }
205 {
206 ,urlencode .bool_set:N = \l__hyp_href_url_encode_bool
207 ,format .code:n = { \cs_set:Nn __hyp_href_url_format: {#1} },
208 ,protocol .tl_set:N = \l__hyp_href_url_protocol_tl
209 ,destination .tl_set:N = \l__hyp_href_pdf_destination_tl
210 ,pdfremotestartview .code:n =
211 {
212 \keys_set:nn { hyp }
213 { pdfremotestartview = #1 }
214 }
215 ,page .code:n =
216 {
217 \tl_set:Nn \l__hyp_href_pdf_page_tl {#1}
218 \tl_set:Nn \Hy@href@page {#1}
219 }
220 ,ismap .bool_set:N = \l__hyp_href_url_ismap_bool

```

```

221 ,run-parameter .tl_set:N = \l__hyp_href_run_parameter_tl
222 ,nextactionraw .code:n =
223 { %perhaps some safety match later, see hyperref code
224 \tl_if_empty:nTF {#1}
225 {
226 \pdfdict_remove:nn{l_hyp/annot/A}{Next}
227 }
228 {
229 \pdfdict_put:nnn{l_hyp/annot/A}{Next}{#1}
230 \tl_set:Nn \Hy@href@nextactionraw {/Next~#1}
231 \keys_set:nn {hyp }{ pdfnewwindow = true}
232 }
233 }
234 ,afrelationship .code:n =
235 {
236 \pdfdict_put:nne
237 { l_pdffile/Filespec}{AFRelationship}{ \pdf_name_from_unicode_e:n {#1}}
238 }
239
240 }
241
242 \keys_define:nn { hyp }
243 {
244 ,href / urlencode .bool_set:N = \l__hyp_href_url_encode_bool
245 ,href / urlencode .default:n = {true}
246 ,href / urlencode .initial:n = {false}
247 ,href / protocol .tl_set:N = \l__hyp_href_url_protocol_tl
248 ,href / destination .tl_set:N = \l__hyp_href_pdf_destination_tl
249 ,href / format .code:n = { \cs_set:Nn __hyp_href_url_format:{#1} }
250 }
251
252 \hook_new_pair:nn{cmd/href/before}{cmd/href/after}
253
254 \DeclareRobustCommand*{\href}[1][]{%
255 \mode_leave_vertical:
256 \hook_use:n{cmd/href/before}
257 \group_begin:
258 \keys_set:nn { hyp / href } {#1}
259 \bool_if:NTF \l__hyp_href_url_encode_bool
260 {
261 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
262 }
263 {
264 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
265 }
266 \@ifnextchar\bgrouph{Hy@href{\hyper@normalise\href@}}%
267 }
268
269 \begingroup
270 \catcode`\$=6 %
271 \catcode`\#=12 %
272 \gdef\href@\$1{\expandafter\href@split$1##\}%
273 \gdef\href@split$1#$2#$3\\$4{%
274 \hyper@@link{$1}{$2}{$4}%<---__hyp-docstrip doubling!

```

```

275 \endgroup
276 \hook_use:n{cmd/href/after}
277 }%
278 \endgroup
279
280 \hook_new_pair:nn{cmd/hrefurl/before}{cmd/hrefurl/after}
281
282 \DeclareRobustCommand*{\hrefurl}[1] []
283 {
284 \mode_leave_vertical:
285 \hook_use:n{cmd/href/before}
286 \group_begin:
287 \keys_set:nn { hyp / href } {#1}
288 \bool_if:NTF \l__hyp_href_url_encode_bool
289 {
290 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
291 }
292 {
293 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
294 }
295 \hyper@normalise__hyp_href_url_aux:nn}
296
297 \cs_new_protected:Npn __hyp_href_url_aux:nn #1 #2
298 {
299 \exp_args:Nno\hyper@linkurl{#2}{\l__hyp_href_url_protocol_tl#1}
300 \group_end:
301 \hook_use:n{cmd/href/after}
302 }
303
304 \hook_new_pair:nn{cmd/hrefpdf/before}{cmd/hrefpdf/after}
305 \DeclareRobustCommand*{\hrefpdf}[1] []
306 {
307 \mode_leave_vertical:
308 \hook_use:n{cmd/hrefpdf/before}
309 \group_begin:
310 \keys_set:nn { hyp / href } {#1}
311 \hyper@normalise__hyp_href_pdf_aux:nn
312 }
313
314 \cs_new_protected:Npn __hyp_href_pdf_aux:nn #1 #2
315 {
316 \exp_args:Nno\hyper@linkfile{#2}{#1}{\l__hyp_href_pdf_destination_tl}
317 \group_end:
318 \hook_use:n{cmd/hrefpdf/after}
319 }
320
321 \hook_new_pair:nn{cmd/hrefrun/before}{cmd/hrefrun/after}
322 \DeclareRobustCommand*{\hrefrun}[1] []
323 {
324 \mode_leave_vertical:
325 \hook_use:n{cmd/hrefrun/before}
326 \group_begin:
327 \keys_set:nn { hyp / href } {#1}
328 \hyper@normalise__hyp_href_run_aux:nn

```

```

329 }
330
331 \cs_new_protected:Npn __hyp_href_run_aux:nn #1 #2
332 {
333 \exp_args:Nno\hyper@linklaunch{#1}{#2}{\l__hyp_href_run_parameter_tl}
334 \group_end:
335 \hook_use:n{cmd/hrefrun/after}
336 }
337
338
339 \hook_new_pair:nn{cmd/url/before}{cmd/url/after}
340
341 \DeclareRobustCommand*\url}[1] []
342 {
343 \mode_leave_vertical:
344 \hook_use:n{cmd/url/before}
345 \group_begin:
346 \keys_set:nn {hyp / href } {#1}
347 \bool_if:NTF \l__hyp_href_url_encode_bool
348 {
349 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
350 }
351 {
352 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
353 }
354 \hyper@normalise__hyp_href_url_aux:n
355 }
356
357 \cs_new_protected:Npn __hyp_href_url_aux:n #1
358 {
359 \exp_args:Nno
360 \hyper@linkurl{__hyp_href_url_format: {#1}}
361 {\l__hyp_href_url_protocol_tl#1}
362 \group_end:
363 \hook_use:n{cmd/url/after}
364 }
365

```

the `\urldef` command doesn't like the optional argument, so we overwrite locally the `\url` command here:

```

366 \def\urldef#1#2{\begingroup\def\url{\hyper@normalise\url@}\setbox\z@\hbox\bgroup
367 \def\Url@HyperHook##1\endgroup{\Url@def{#1}{#2}}%
368 % Because hyperref breaks \urldef and does not define its own (Grrrr!)...
369 \def\url@##1{\egroup\endgroup\DeclareRobustCommand#1{#2{##1}}}%
370 #2}
371

```

make the new commands compatible with `\pdfstringdef`:

```

372 \NewExpandableDocumentCommand__hyp_secondoftwowithopt:wnn {omm}{#3}
373 \pdfstringdefDisableCommands{\let\hrefurl__hyp_secondoftwowithopt:wnn}
374 \pdfstringdefDisableCommands{\let\hrefpdf__hyp_secondoftwowithopt:wnn}
375 \pdfstringdefDisableCommands{\let\hrefrun__hyp_secondoftwowithopt:wnn}

```

## 4 Compatibility commands

### 4.1 Metadata

A number of values should be accessible from other packages. Until now packages like `hyperxmp` used variables like `\pdfauthor`. As they are gone we need to provide some other access.

```
376 \cs_new_protected:Npn __hyp_store_metadata:nn #1 #2 %#1 key, #2 value.
377 {
378 %\tl_set:cn {@#1}{#2}
379 \AddToDocumentProperties[hyperref]{#1}{#2}
380 }
381 \cs_generate_variant:Nn __hyp_store_metadata:nn {en,ne,ee,no,eo}
```

### 4.2 citecolor

`cite` is a link context. So we define a hook, and the keys in terms of this hook.

```
382 \hook_new:n{hyp/link/cite}
383 %\color_set:nnn {hyp/color/cite}{HTML}{2E7E2A}
384 %\color_set:nn {hyp/color/citeborder}{hyp/color/cite!60!white}
385 \keys_define:nn { hyp }
386 {
387 ,citecolor .code:n = {__hyp_color_set:ne {hyp/color/cite}{#1}__hyp_citecolor_hook_init:
388 ,citebordercolor
389 .code:n = {__hyp_color_set:ne {hyp/color/citeborder}{#1}__hyp_citebordercolor_hook_i
390 }
391 \cs_new_protected:Npn __hyp_citecolor_hook_init:
392 {
393 \hook_gput_code:nnn { hyp/link/cite }{hyp/cite}
394 {
395 \keys_set:nn { hyp }
396 {
397 linkcolor = hyp/color/cite
398 }
399 }
400 \cs_gset_eq:NN __hyp_citecolor_hook_init: \prg_do_nothing:
401 }
402 \cs_new_protected:Npn __hyp_citebordercolor_hook_init:
403 {
404 \hook_gput_code:nnn { hyp/link/cite }{hyp/citeborder}
405 {
406 \keys_set:nn { hyp }
407 {
408 linkbordercolor = hyp/color/citeborder
409 }
410 }
411 \cs_gset_eq:NN __hyp_citebordercolor_hook_init: \prg_do_nothing:
412 }
413
```



## 5 Checks

The driver can not work properly if the pdfmanagement is not active, as keys need to write to the catalog and to info. But annotations and outlines should work. So should this be a fatal error? Should there be a difference between missing and inactive management? TODO

```
414 \bool_lazy_and:nnF
415 { \cs_if_exist_p:N \pdfmanagement_if_active_p: }{ \pdfmanagement_if_active_p: }
416 { \msg_error:nn { hyp}{ missing-resource-management } }
```

## 6 bookmarks

Outlines/bookmarks require the bookmark package. TODO check pdfpagemode if bookmarks are suppressed. TODO We overwrite the color key here for now, but this should be moved to bookmark

```
417 \AddToHook { package/bookmark/after }
418 {
419 \define@key{BKM}{color}
420 {
421 \tl_if_blank:nTF {#1}
422 { \cs_set_eq:NN\BKM@color\@empty }
423 {
424 __hyp_color_set:ne {__hyp/tmpa}{#1}
425 \color_export:nVN
426 {__hyp/tmpa}
427 \g__hyp_bordercolormodel_str
428 \BKM@color
429 }
430 }
431 }

432 \legacy_if:nTF { Hy@bookmarks }
433 {
434 \legacy_if:nT {Hy@draft}
435 {
436 \PassOptionsToPackage{draft}{bookmark}
437 }
438 \RequirePackage{bookmark}
439 }
```

Some of the bookmark keys make use of `\bookmarksetup`. So we provide the command so that the keys do not error if `bookmark` is not loaded. In case someone loads `bookmarks` afterwards we undefine it before the file:

```
440 {
441 \providecommand\bookmarksetup[1]{}
442 \AddToHook{file/bookmark.sty/before}{\let\bookmarksetup\undefined}
443 }
```

## 7 Reference and label commands

This uses the in-built property module.

```
__hyp_property_record:nn
```

```
444 %
```

A label command which adds the space commands from LaTeX:

```
445 \cs_new_protected:Npn __hyp_property_record:nn #1 #2 %label/attributes
446 {
447 \@bsphack
448 \property_record:nn{#1}{#2}
449 \@esphack
450 }
```

we generate a few variants. We use ee-variants as they already exist in the module and once this is there it can go here.

```
451 \cs_generate_variant:Nn __hyp_property_record:nn {ee}
```

*(End of definition for \\_\_hyp\_property\_record:nn.)*

## 8 Variables

### 8.1 Private temporary variables

At first a few generic tmp variables

```
\l__hyp_tmpa_tl
\l__hyp_tmpb_tl
\l__hyp_tmpa_seq
\l__hyp_tmpa_int
\l__hyp_tmpa_box
\l__hyp_tmpa_str
452 \box_new:N \l__hyp_tmpa_box
453 \tl_new:N \l__hyp_tmpa_tl
454 \tl_new:N \l__hyp_tmpb_tl
455 \seq_new:N \l__hyp_tmpa_seq
456 \int_new:N \l__hyp_tmpa_int
457 \str_new:N \l__hyp_tmpa_str
```

*(End of definition for \l\_\_hyp\_tmpa\_tl and others.)*

A number of more specific tmp variables. These will perhaps disappear or change.

```
\l__hyp_dest_name_tmpa_tl
\l__hyp_uri_tmpa_tl
\l__hyp_filename_tmpa_tl
__hyp_text_tmpa_str \g__hyp_text_tmpa_str
458 \tl_new:N \l__hyp_dest_name_tmpa_tl
459 \tl_new:N \l__hyp_uri_tmpa_tl
460 \tl_new:N \l__hyp_filename_tmpa_tl
461 \tl_new:N \l__hyp_para_tmpa_tl
462 \str_new:N \l__hyp_text_tmpa_str
463 \str_new:N \g__hyp_text_tmpa_str
```

TODO: document and check use!

*(End of definition for \l\_\_hyp\_dest\_name\_tmpa\_tl and others.)*

## 8.2 Constants

`\c__hyp_dest_undefined_tl` This variable is used if a destination name is empty.

```
464 \tl_const:Nn \c__hyp_dest_undefined_tl {UNDEFINED}
```

(End of definition for `\c__hyp_dest_undefined_tl`.)

`\c__hyp_annot_types_seq` This constants holds the link types managed by hyperref along with a mapping from  
`\c__hyp_map_annot_hyp_prop` annot names to hyperref names and back.  
`\c__hyp_map_hyp_annot_prop`

```
465 \seq_const_from_clist:Nn \c__hyp_annot_types_seq
466 {url,link,file,menu,run}
467 \prop_const_from_keyval:Nn \c__hyp_map_annot_hyp_prop
468 {
469 URI = url,
470 GoTo = link,
471 GoToR = file,
472 Named = menu,
473 Launch = run
474 }
475 \prop_const_from_keyval:Nn \c__hyp_map_hyp_annot_prop
476 {
477 url = URI,
478 link = GoTo,
479 file = GoToR,
480 menu = Named,
481 run = Launch
482 }
483
```

(End of definition for `\c__hyp_annot_types_seq`, `\c__hyp_map_annot_hyp_prop`, and `\c__hyp_map_hyp_annot_prop`.)

## 8.3 Variables

`\g__hyp_dest_pdfstartpage_tl` The first holds the (absolute) start page number, the other the startview instruction for  
`\g__hyp_dest_pdfstartview_tl` the current and remote files. The instruction is in “PDF format” but without the leading  
`\l__hyp_dest_pdfremotestartview_tl` slash!

```
484 \tl_new:N \g__hyp_dest_pdfstartpage_tl
485 \tl_new:N \g__hyp_dest_pdfstartview_tl
486 \tl_new:N \l__hyp_dest_pdfremotestartview_tl
```

(End of definition for `\g__hyp_dest_pdfstartpage_tl`, `\g__hyp_dest_pdfstartview_tl`, and `\l__hyp_dest_pdfremotestartview_tl`.)

It is still unclear which str convert option is the best in the various places, so we use a variable to allow tests and perhaps external configuration. The “print” type should always have the delimiters.

```
\l__hyp_text_enc_uri_print_tl
\l__hyp_text_enc_info_print_tl
\l__hyp_text_enc_dest_tl
\l__hyp_text_enc_dest_print_tl
\l__hyp_text_enc_file_print_tl
\l__hyp_text_enc_para_print_tl
487 \tl_new:N \l__hyp_text_enc_uri_print_tl
488 \tl_new:N \l__hyp_text_enc_info_print_tl
489 \tl_new:N \l__hyp_text_enc_dest_tl
490 \tl_new:N \l__hyp_text_enc_dest_print_tl
491 \tl_new:N \l__hyp_text_enc_file_print_tl
492 \tl_new:N \l__hyp_text_enc_para_print_tl
```

```

493
494 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
495 \tl_set:Nn \l__hyp_text_enc_info_print_tl {utf16/hex}
496 \tl_set:Nn \l__hyp_text_enc_dest_tl {utf8/string-raw}
497 \tl_set:Nn \l__hyp_text_enc_dest_print_tl {utf8/string}
498 \tl_set:Nn \l__hyp_text_enc_file_print_tl {utf8/string}
499 \tl_set:Nn \l__hyp_text_enc_para_print_tl {utf8/string}

```

(End of definition for \l\_\_hyp\_text\_enc\_uri\_print\_tl and others.)

It is also unclear how the /Contents entry would look at best. So we use sockets. The first argument is the target (url or destination), For GoTo we also pass the text as argument. The sockets should eat their arguments and put something into the relevant annotation dictionaries.

```

500 \tl_new:N\l__hyp_link_Contents_tl
501 \socket_new:nn {hyp/link/GoTo/Contents}{2}
502 \socket_new:nn {hyp/link/URI/Contents}{1}
503 \socket_new:nn {hyp/link/GoToR/Contents}{1}
504 \socket_assign_plug:nn{hyp/link/GoTo/Contents}{noop}
505 \socket_assign_plug:nn{hyp/link/GoToR/Contents}{noop}
506 \socket_assign_plug:nn{hyp/link/URI/Contents}{noop}
507 \socket_new_plug:nnn {hyp/link/GoTo/Contents}{default}
508 {
509 __hyp_text_pdfstring:noN
510 { Go~to~destination~#1 }
511 { \l__hyp_text_enc_info_print_tl }
512 \l__hyp_link_Contents_tl
513 \pdfannot_dict_put:nne {link/GoTo}{Contents}
514 {\l__hyp_link_Contents_tl}
515 }
516 \socket_new_plug:nnn {hyp/link/GoToR/Contents}{default}
517 {
518 __hyp_text_pdfstring:noN
519 { Open~file~#1 }
520 { \l__hyp_text_enc_info_print_tl }
521 \l__hyp_link_Contents_tl
522 \pdfannot_dict_put:nne {link/GoToR}{Contents}
523 {\l__hyp_link_Contents_tl}
524 }
525 \socket_new_plug:nnn {hyp/link/URI/Contents}{default}
526 {
527 __hyp_text_pdfstring:noN
528 { #1 }
529 { \l__hyp_text_enc_info_print_tl }
530 \l__hyp_link_Contents_tl
531 \pdfannot_dict_put:nne {link/URI}{Contents}
532 {\l__hyp_link_Contents_tl}
533 }
534 \pdfmeta_standard_family:nn{UA}
535 {
536 \pdfmeta_standard_verify:nF{link_Contents}
537 {
538 \socket_assign_plug:nn{hyp/link/GoTo/Contents}{default}
539 \socket_assign_plug:nn{hyp/link/GoToR/Contents}{default}

```

```

540 \socket_assign_plug:nn{hyp/link/URI/Contents}{default}
541 }
542 }

```

`\l__hyp_dest_pdfview_tl` This hold the destination instructions in a format suitable for `\pdf_destination:nn`. The special value `fitrbox` indicates a boxed destination.

```

543 \tl_new:N \l__hyp_dest_pdfview_tl
(End of definition for \l__hyp_dest_pdfview_tl.)

```

`hyp/annot/link` (*color name*) These color names are used for the annotations (colorlinks). They are initialized at the end when the color scheme is used

`hyp/annot/url` (*color name*)

`hyp/annot/file` (*color name*)

`hyp/annot/run` (*color name*)

`hyp/annot/menu` (*color name*)

This holds the export model for border color etc. It is currently either `space-sep-cmyk` or `space-sep-rgb`. The default is the second. It can be change by the key `bordercolormodel`

```

544 \str_new:N \g__hyp_bordercolormodel_str
(End of definition for \g__hyp_bordercolormodel_str.)

```

## 8.4 Booleans

`\l_hyp_annot_colorlink_bool` These booleans are needed to control the colors. They are public so that other packages can query the state too.

`\l_hyp_annot_colorurl_bool`

`\l_hyp_annot_colorfile_bool`

`\l_hyp_annot_colorrerun_bool`

`\l_hyp_annot_colormenu_bool`

```

545 \seq_map_inline:Nn \c__hyp_annot_types_seq
546 {
547 \bool_new:c {l_hyp_annot_color#1_bool}
548 }

```

(End of definition for `\l_hyp_annot_colorlink_bool` and others. These variables are documented on page 8.)

`\l_hyp_annot_ocgcolorlink_bool`

`\l_hyp_annot_ocgcolorurl_bool`

`\l_hyp_annot_ocgcolorfile_bool`

`\l_hyp_annot_ocgcolorrerun_bool`

`\l_hyp_annot_ocgcolormenu_bool`

These booleans are needed to control the ocgcolors. They are public so that other packages can query the state too.

```

549 \seq_map_inline:Nn \c__hyp_annot_types_seq
550 {
551 \bool_new:c {l_hyp_annot_ocgcolor#1_bool}
552 }

```

(End of definition for `\l_hyp_annot_ocgcolorlink_bool` and others. These variables are documented on page 8.)

`not_Named_bool` `\l_hyp_annot_Launch_bool`

This booleans are used to disable some link types while keeping others.

```

553 \seq_map_inline:Nn \c_pdfannot_link_types_seq
554 {
555 \bool_new:c {l__hyp_annot_#1_bool}
556 \bool_set_true:c {l__hyp_annot_#1_bool}
557 }

```

(End of definition for `\l__hyp_annot_GoTo_bool` `\l__hyp_annot_URI_bool` `\l__hyp_annot_GoToR_bool` `\l__hyp_annot_Named_bool` `\l__hyp_annot_Launch_bool`.)

## 8.5 Boxes

`\l__hyp_dest_box` This holds an (empty) box which is used to get the width for FitR destinations.

```
558 \box_new:N \l__hyp_dest_box
```

*(End of definition for \l\_\_hyp\_dest\_box.)*

## 8.6 Regex

`\c__hyp_dest_startview_regex` This regex is used to extract the right arguments pdfstartview and pdfremotestartview. Their values is filled up with null and then the start extracted.

```
559 \regex_const:Nn \c__hyp_dest_startview_regex
560 {
561 \A\ *
562 (?:
563 (?XYZ (?:\ +(?:\d+|\d*\.\d+)|null)){3}\)
564 |
565 (?:Fit\b|FitB\b)
566 |
567 (?:FitH|FitV|FitBH|FitBV)(?:\ +(?:\d+|\d*\.\d+)|\ +null){1})
568 |
569 (?:FitR (?:\ +\d+|\ +\d*\.\d+){4}\)
570)
571 }
```

*(End of definition for \c\_\_hyp\_dest\_startview\_regex.)*

## 8.7 PDF dictionaries

`l__hyp_page/Trans` This dictionary is used for page transitions.

```
572 \pdfdict_new:n {l__hyp_page/Trans}
573 \pdfdict_put:nnn {l__hyp_page/Trans}{Type}{/Trans}
```

*(End of definition for l\_\_hyp\_page/Trans.)*

## 9 PDF string conversion

This is now done with `\pdf_purify:nN` which is defined and documented in `l3pdfutils`.

After the content is purified the last step has to convert the string to a PDF encoding. This should be done with `cspdf_string_from_unicode:nnN` in `l3pdfutils` and typically uses one of these methods:

|                               |                                      |
|-------------------------------|--------------------------------------|
| <code>utf8/string</code>      | <code>(lit) (utf8/string)</code>     |
| <code>utf8/string-raw</code>  | <code>lit (utf8/string)</code>       |
| <code>utf8/URI</code>         | <code>(percent encoded url)</code>   |
| <code>utf8/URI-raw</code>     | <code>percent encoded url</code>     |
| <code>utf16/hex</code>        | <code>&lt;HEX&gt; (utf16/hex)</code> |
| <code>utf16/hex-raw</code>    | <code>HEX (utf16/hex)</code>         |
| <code>utf16/string</code>     | <code>(lit) (utf16/string)</code>    |
| <code>utf16/string-raw</code> | <code>lit (utf16/string)</code>      |

`\__hyp_text_string_from_unicode:nN` As normally we have to duplicate the argument we define a helper command:

```

574 \cs_new_protected:Npn __hyp_text_string_from_unicode:nN #1 #2
575 {
576 \pdf_string_from_unicode:nVN { #1 } #2 #2
577 }

```

*(End of definition for \\_\_hyp\_text\_string\_from\_unicode:nN.)*

This command combines the two parts: #1=input, #2= handler shortcut #3= output str variable

`\__hyp_text_pdfstring:nnN`

```

578 \cs_new_protected:Npn __hyp_text_pdfstring:nnN #1 #2 #3
579 {
580 \pdf_purify:nN {#1}#3
581 \pdf_string_from_unicode:nVN { #2 } #3 #3
582 }
583 \cs_generate_variant:Nn __hyp_text_pdfstring:nnN {noN,eoN}
584

```

*(End of definition for \\_\_hyp\_text\_pdfstring:nnN.)*

!!! temporary until all instances are gone

```

585 \cs_new_protected:Npn \Hy@pstringdef #1 #2
586 { __hyp_text_pdfstring:nnN {#2} {utf8/string-raw}#1 }

```

This is a special version for info keys:

`\__hyp_text_pdfstring_info:nN`

```

587 \cs_new_protected:Npn __hyp_text_pdfstring_info:nN #1 #2
588 {
589 __hyp_text_pdfstring:nnN { #1 } { \l__hyp_text_enc_info_print_tl } #2
590 }
591 \cs_generate_variant:Nn __hyp_text_pdfstring_info:nN {eN,oN}

```

*(End of definition for \\_\_hyp\_text\_pdfstring\_info:nN.)*

## 10 Pagelabels

Page labels are representations of the page numbers in the PDF viewer. If the `hyperref` options `pdfpagelabels` is true (the default) roman numbers are e.g. shown as “ii (2/58)”. To do this the page ranges must be collected, if possible a prefix and the numbering of the counter must be identified and then written to the catalog.

The current implementation in `hyperref/hyperref drivers`:

**xetex:** `hxdetex.def`, line 80-110

`\HyPL@StorePageLabel` writes to the aux-file at begin document (after reading the aux) `\HyPL@SetPageLabels` is called (defined in `hyperref.sty` after the driver loading) which calls `\Hy@PutCatalog{/PageLabels<</Nums[\HyPL@Labels]>>}`

**dvips:** identical to `xetex`, line 60 to 90 in `pdfmark.def`

**dvipdfm:** identical to `xetex`

**pdf<sub>tex</sub>**: `\HyPL@StorePageLabel` stores in `\HyPL@Labels` in the first compilation. In `\AtVeryEndDocument` `\HyPL@SetPageLabels` is called.

**lua<sub>tex</sub>** identical to pdf<sub>tex</sub>

The code in `hyperref` inspects `\thepage` and tries to figure out the numbering system and the prefix. E.g. A-31 is correctly split. If the counter can not be identified `hyperref` generates only /P entries with the whole content.

The new implementation makes use of the pdf management: The relevant entry in the catalog is continuously updated and pushed out at the end of the document. This works (hopefully ...) with all drivers.

We do not try to avoid the (in `hyperref`’s wording) “useless” pagelabel entry `/PageLabels <</Nums[0<</S/D>>]>>` (but it would be possible), we also don’t test for empty `\thepage`, `hyperref` seems to handle this fine and the pdf is valid.

The code has to define `\Hy@PutCatalog` as we can’t yet change code in `hyperref`. The switch for draftmode has been removed.

```

__hyp_PageLabels_gpush:
 \Hy@PutCatalog
 \HyPL@StorePageLabel
592 \cs_new_protected:Npn __hyp_PageLabels_gpush:
593 {
594 \pdfmanagement_add:nne {Catalog} {PageLabels}{<</Nums[\HyPL@Labels]>>}
595 }
596
597 \def\Hy@PutCatalog #1 {}
598
599
600 \legacy_if:nT { Hy@pdfpagelabels }
601 {
602 \cs_set_protected:Npn \HyPL@StorePageLabel #1
603 {
604 \tl_gput_right:Ne \HyPL@Labels { \the\Hy@abspage<<#1>> }
605 __hyp_PageLabels_gpush:
606 }
607 }

```

*(End of definition for `\__hyp_PageLabels_gpush:`, `\Hy@PutCatalog`, and `\HyPL@StorePageLabel`.)*

## 11 Core Hyperref Commands

Every `hyperref` has to define eight core command:

```

\hyper@anchor
\hyper@anchorstart
\hyper@anchorend
\hyper@link %GoTo
\hyper@linkstart %GoTo
\hyper@linkend %GoTo
\hyper@linkfile %GoToR
\hyper@linkurl %URI

```

This driver defines for consistency also `\hyper@linklaunch` for Launch and `\hyper@linknamed` for Named.



## 11.1 Link level

Links can be nested. Inner links need perhaps special handling, e.g. to deactivate the link, or to change the border, or in the case of tagging to add some additional structure to handle the parent-child rules. We therefore add a global counter which is increased at the begin of link and decreased at the end.

`g__hyp_linknestlevel_int`

```

608 \int_new:N \g__hyp_linknestlevel_int
(End of definition for g__hyp_linknestlevel_int.)

609 \prg_new_conditional:Npnn __hyp_if_outer_link: {TF}
610 {
611 \int_compare:nNnTF { \g__hyp_linknestlevel_int } > {1}
612 { \prg_return_false: }
613 { \prg_return_true: }
614 }

615 \cs_new:Npn __hyp_check_link_nesting:TF #1 #2
616 {
617 \use_i:nn {#1}{#2}
618 }

619 \keys_define:nn { hyp }
620 {
621 nested-links .choice:,
622 nested-links / true .code:n =
623 { \cs_set_eq:NN __hyp_check_link_nesting:TF \use_i:nn },
624 nested-links / false .code:n =
625 { \cs_set_eq:NN __hyp_check_link_nesting:TF __hyp_if_outer_link:TF },
626 nested-links .default:n = {true}
627 }
```

## 11.2 Anchors / destinations

The first three commands are needed for “anchors”. At first the internal commands to create a destination. It uses `\Hy@WrapperDef` to make it babel safe, it is not clear if this is still needed, but we leave it for now.

---

`\__hyp_destination:nn` `\__hyp_destination:nn {<destination name>} {<location>}`

---

The `<destination name>` is encoded with the method stored in `\l__hyp_text_enc_dest_tl`. The location should be one of `fit`, `fith`, `fitv`, `fitbv`, `fitbh`, `fitr`, `xyz`, `fitrbx`. The last will make use of `\l__hyp_dest_box`

`\__hyp_destination:nn`

```

628 \Hy@WrapperDef __hyp_destination:nn #1 #2
629 {
630 \mode_if_horizontal:T { \@savs\spacefactor }
631 \Hy@SaveLastskip %defined in hyperref
632 \Hy@VerboseAnchor{#1} %defined in hyperref, for debugging
633 __hyp_text_pdfstring:noN
634 { \HyperDestNameFilter{#1} }
635 { \l__hyp_text_enc_dest_tl }
```

```

636 \l__hyp_tmpa_tl
637 \str_if_eq:nnTF {#2} {fitrbox}
638 {
639 \exp_args:NV
640 \pdf_destination:nnnn \l__hyp_tmpa_tl
641 { \box_wd:N \l__hyp_dest_box }
642 { \box_ht:N \l__hyp_dest_box }
643 { \box_dp:N \l__hyp_dest_box }
644 }
645 {
646 \exp_args:NV
647 \pdf_destination:nf
648 { \l__hyp_tmpa_tl }
649 { #2 }
650 }
651 \Hy@RestoreLastskip %defined in hyperref
652 \mode_if_horizontal:T { \spacefactor\@savs }
653 }

```

(End of definition for \\_\_hyp\_destination:nn.)

This are the three destinations commands. They are modelled along the xetex version. It is not quite clear if really all three are needed for the backends supported by this driver, but changing the hyperref code would be difficult. We add a hook. This allows e.g. the tagging code to create also a structured destination. We don't use the cmd hook, as we want the same hook for both start commands. We make the current dest name available so that the hook code can use it.

```

\hyper@anchor
\hyper@anchorstart
\hyper@anchorend
hyp/anchor
\l_hyp_current_dest_name_tl
654 \tl_new:N\l_hyp_current_dest_name_tl
655 \hook_new:n{hyp/anchor}
656 \cs_new_protected:Npn \hyper@anchor #1
657 {
658 \exp_args:NnV
659 __hyp_destination:nn {#1} \l__hyp_dest_pdfview_tl
660 \tl_set:Nn \l_hyp_current_dest_name_tl {#1}
661 \hook_use:n{hyp/anchor}
662 }
663
664 \cs_new_protected:Npn \hyper@anchorstart #1
665 {
666 \Hy@activeanchortrue
667 \exp_args:NnV
668 __hyp_destination:nn {#1} \l__hyp_dest_pdfview_tl
669 \tl_set:Nn \l_hyp_current_dest_name_tl {#1}
670 \hook_use:n{hyp/anchor}
671 }
672
673 \cs_new_protected:Npn \hyper@anchorend
674 {
675 \Hy@activeanchorfalse
676 }

```

(End of definition for \hyper@anchor and others.)

### 11.3 GoTo Links

The next three commands are for links inside the document, to destinations (GoTo links). The definition in `hyperref` have a first argument which can be used to pass a semantical context. Currently this argument is only used for `\cite` and only to change the color. The new implementation uses it for a real hook.

At first the internal link commands:

```

677 \cs_new_protected:Npn __hyp_link_goto_begin:nw #1
678 {
679 \mode_leave_vertical:
680 \protected@edef \l__hyp_dest_name_tmpa_tl { #1 }
681 \tl_if_empty:NTF \l__hyp_dest_name_tmpa_tl
682 {
683 \msg_warning:nne
684 { hyp }
685 { empty-destination-name }
686 { \c__hyp_dest_undefined_tl }
687 \tl_set_eq:NN \l__hyp_dest_name_tmpa_tl \c__hyp_dest_undefined_tl
688 }
689 {
690 __hyp_text_pdfstring:eoN
691 { \exp_args:No \HyperDestNameFilter { \l__hyp_dest_name_tmpa_tl } }
692 { \l__hyp_text_enc_dest_tl }
693 \l__hyp_dest_name_tmpa_tl
694 }
695 \exp_args:No
696 \pdfannot_link_goto_begin:nw { \l__hyp_dest_name_tmpa_tl }
697 }
698
699 \cs_new_protected:Npn __hyp_link_goto_end:
700 {
701 \pdfannot_link_goto_end:
702 }
```

Now the three `hyperref` commands. The split commands `\hyper@linkstart` and `\hyper@linkend` are used for footnotemarks, toc and natbib-cites.

---

`\hyper@link` `\hyper@link{<context>}{<destination name>}{<link text>}`

---

This creates a complete GoTo link around the `<link text>` pointing to `<destination name>`. The hook `hyp/link/<context>` is executed at the begin if it exists.

The only `<context>` for which a hook is predefined is `cite`. Packages which want to use another `<context>` should initialize the hook like this:

```

\IfHookExistsTF{hyp/link/context}{ }
{ \NewHook{hyp/link/context} }
```

The hook code is executed in a group but before all the pdfannot hooks.

---

|                                                              |                                                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <code>\hyper@linkstart</code><br><code>\hyper@linkend</code> | <code>\hyper@linkstart{&lt;context&gt;}{&lt;destination name&gt;}</code><br><code>\hyper@linkend</code> |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|

---

This creates the start and end commands for a GoTo link around the text between both pointing to `<destination name>`. The hook `hyp/link/<context>` is executed at the begin if it exists as with `\hyper@link`

The commands open and close a group, so should be placed carefully. .

`hyperref` adds a group with `\Hy@colorlink`, we move this outside the link so that it groups the context hook too. We store again the destination name in the public `tl \l_hyp_current_dest_name_tl` so that the hook code can make use of it

```

703 \cs_set_protected:Npn \hyper@link #1 #2 #3 %#1 context, #2=destination name, #3 content
704 {
705 \bool_if:NTF \l__hyp_annot_GoTo_bool
706 {
707 \int_gincr:N\g__hyp_linknestlevel_int
708 __hyp_check_link_nesting:TF
709 {
710 \Hy@VerboseLinkStart{#1}{#2}
711 \group_begin:
712 \tl_set:Nn \l_hyp_current_dest_name_tl {#2}

```

this socket adds something to the `/Contents` key.

```

713 \socket_use:nnn{hyp/link/GoTo/Contents}{#2}{#3}
714 \hook_use:n {hyp/link/#1}
715 __hyp_link_goto_begin:nw {#2}#3\Hy@xspace@end
716 __hyp_link_goto_end:
717 \group_end:
718 \Hy@VerboseLinkStop
719 }
720 {
721 \group_begin: #3\group_end:
722 }
723 \int_gdecr:N\g__hyp_linknestlevel_int
724 }
725 {\let\protect\relax#3}}
726 }
727 \cs_set_protected:Npn \hyper@linkstart #1 #2 %#1 context, #2=destination name
728 {
729 \bool_if:NT \l__hyp_annot_GoTo_bool
730 {
731 \int_gincr:N\g__hyp_linknestlevel_int
732 __hyp_check_link_nesting:TF
733 {
734 \Hy@VerboseLinkStart{#1}{#2}% only for debug
735 \group_begin:
736 \tl_set:Nn \l_hyp_current_dest_name_tl {#2}
737 \socket_use:nnn{hyp/link/GoTo/Contents}{#2}{#3}
738 \hook_use:n {hyp/link/#1}
739 __hyp_link_goto_begin:nw {#2}
740 }
741 {
742 \group_begin:
743 }
744 }

```

```

745 }
746 \cs_set_protected:Npn \hyper@linkend
747 {
748 \bool_if:NT \l__hyp_annot_GoTo_bool
749 {
750 __hyp_check_link_nesting:TF
751 {
752 __hyp_link_goto_end:
753 \group_end:
754 \Hy@VerboseLinkStop
755 }
756 {
757 \group_end:
758 }
759 \int_gdecr:N\g__hyp_linknestlevel_int
760 }
761 }

```

## 11.4 URI links

We define a dictionary for the action dictionary. For now it is public.

```

762 \pdfdict_new:n {l_hyp/annot/A/URI}
763 \pdfdict_put:nnn {l_hyp/annot/A/URI}{Type}{/Action}
764 \pdfdict_put:nnn {l_hyp/annot/A/URI}{S}{/URI}
765
766 \cs_new_protected:Npn \hyper@linkurl #1 #2 %#1:link text #2: URI,
767 {
768 \bool_if:NTF \l__hyp_annot_URI_bool
769 {
770 \int_gincr:N\g__hyp_linknestlevel_int
771 __hyp_check_link_nesting:TF
772 {
773 \group_begin:
774 __hyp_text_pdfstring:noN {#2}{ \l__hyp_text_enc_uri_print_tl } \l__hyp_uri_tmpa_tl
775 \pdfdict_put:nno{l_hyp/annot/A/URI}{URI}{ \l__hyp_uri_tmpa_tl}
776 \bool_if:NT \l__hyp_href_url_ismap_bool
777 {
778 \pdfdict_put:nnn{l_hyp/annot/A/URI}{IsMap}{true}
779 }

```

This socket adds something to the /Contents key.

```

780 \socket_use:nn{hyp/link/URI/Contents}{#2}
781 \cs_set_eq:NN \# \c_hash_str
782 \cs_set_eq:NN \% \c_percent_str
783 \Hy@safe@activetrue
784 \mode_leave_vertical:
785 \pdfannot_dict_put:nne {link/URI}{A}{<<\pdfdict_use:n {l_hyp/annot/A/URI}>>}
786 \pdfannot_link:nen { URI }
787 {
788 }
789 {
790 \let\protect\relax
791 #1
792 \Hy@xspace@end

```

```

793 \Hy@VerboseLinkStop %where is the start??
794 }
795 \group_end:
796 }
797 {
798 \group_begin: #1 \group_end:
799 }
800 \int_gdecr:N\g__hyp_linknestlevel_int
801 }
802 {\let\protect\relax#1}}
803 }
804

```

## 11.5 GoToR Links files

```

805 \pdfdict_new:n {l_hyp/annot/A/GoToR}
806 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{Type}{/Action}
807 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{S}{/GoToR}
808
809 \cs_generate_variant:Nn \pdffile_embed_file:nnn {noe}
810 \cs_new_protected:Npn \hyper@linkfile #1 #2 #3 % link text, filename, destname
811 {
812 \bool_if:NTF \l__hyp_annot_GoToR_bool
813 {
814 \int_gincr:N\g__hyp_linknestlevel_int
815 __hyp_check_link_nesting:TF
816 {
817 \group_begin:
818 \tl_set:Nx \l__hyp_filename_tmpa_tl { \text_expand:n { #2 } }
819 \exp_args:Nx
820 \pdf_object_if_exist:nF { __hyp_file__tl_to_str:N \l__hyp_filename_tmpa_tl }
821 {
822 \pdfdict_put:nne { l_pdffile/Filespec}{Subtype}{\pdf_name_from_unicode_e:n
823 \pdffile_embed_file:noe
824 {}
825 {\l__hyp_filename_tmpa_tl }
826 {__hyp_file__tl_to_str:N \l__hyp_filename_tmpa_tl }
827 }
828 \pdfdict_put:nne
829 {l_hyp/annot/A/GoToR}
830 {F}
831 {\pdf_object_ref:e {__hyp_file__tl_to_str:N \l__hyp_filename_tmpa_tl}}
832 __hyp_text_pdfstring:non
833 { #3 }
834 { \l__hyp_text_enc_dest_print_tl }
835 \l__hyp_dest_name_tmpa_tl

```

This socket adds something to the /Contents key.

```

836 \socket_use:nn{hyp/link/GoToR/Contents}{#2}
837 \tl_if_blank:eTF {#3}
838 {
839 \pdfdict_put:nne {l_hyp/annot/A/GoToR}{D}
840 {
841 [

```

```

842 \int_eval:n
843 { \int_max:nn {0}{ 0\l__hyp_href_pdf_page_tl - 1 }}
844 /\l__hyp_dest_pdfremotestartview_tl
845]
846 }
847
848 {
849 \pdfdict_put:nno {l_hyp/annot/A/GoToR}{D}{\l__hyp_dest_name_tmpa_tl}
850 }
851 \mode_leave_vertical:

```

We use an extra object here, as ghostscript doesn't like the object reference in the dict  
<https://chat.stackexchange.com/transcript/message/57361080#57361080>

```

852 \pdf_object_unnamed_write:ne{dict}{\pdfdict_use:n {l_hyp/annot/A/GoToR}}
853 \pdfannot_dict_put:nne {link/GoToR}{A}{\pdf_object_ref_last:}
854 \pdfannot_link:nnn %expansion??
855 { GoToR }
856 {
857 }
858 {
859 \let\protect\relax
860 #1\Hy@xspace@end
861 \Hy@VerboseLinkStop %where is the start??
862 }
863 \group_end:
864 }
865 {
866 \group_begin: #1 \group_end:
867 }
868 \int_gdecr:N\g__hyp_linknestlevel_int
869 }
870 {{\let\protect\relax#1}}
871 }

```

## 11.6 Launch links

We define `\hyper@linklaunch` for naming consistency

```

872 \pdfdict_new:n {l_hyp/annot/A/Launch}
873 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{Type}{/Action}
874 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{S}{/Launch}
875
876 \cs_new_protected:Npn \hyper@linklaunch #1 #2 #3 % filename, link text, Parameters
877 {
878 \bool_if:NTF \l__hyp_annot_Launch_bool
879 {
880 \int_gincr:N\g__hyp_linknestlevel_int
881 __hyp_check_link_nesting:TF
882 {
883 \group_begin:
884 __hyp_text_pdfstring:noN
885 { #1 }
886 { \l__hyp_text_enc_file_print_tl }
887 \l__hyp_filename_tmpa_tl

```

```

888 \pdfdict_put:nno {l_hyp/annot/A/Launch}{F}{\l__hyp_filename_tmpa_tl}
889 __hyp_text_pdfstring:noN
890 { #3 }
891 { \l__hyp_text_enc_para_print_tl }
892 \l__hyp_para_tmpa_tl
893 \bool_if:nTF
894 {
895 \str_if_eq_p:Vn \l__hyp_para_tmpa_tl {()}
896 ||
897 \pdf_version_compare_p:Nn > {1.9}
898 }
899 {
900 \pdfdict_remove:nn {l_hyp/annot/A/Launch}{Win}
901 }
902 {
903 \pdfdict_put:nne
904 {l_hyp/annot/A/Launch}
905 {Win}
906 {<</P \l__hyp_para_tmpa_tl /F \l__hyp_filename_tmpa_tl >>}
907 }
908 \mode_leave_vertical:
909 \pdfannot_dict_put:nne {link/Launch}{A}{<<\pdfdict_use:n {l_hyp/annot/A/Launch}
910 \pdfannot_link:nen
911 { Launch }
912 {
913 % /A
914 % <<
915 % \pdfdict_use:n {l_hyp/annot/A/Launch}
916 % >>
917 }
918 {
919 \let\protect\relax
920 #2\Hy@xspace@end
921 \Hy@VerboseLinkStop %where is the start??
922 }
923 \group_end:
924 }
925 { \group_begin: #2 \group_end: }
926 \int_gdecr:N\g__hyp_linknestlevel_int
927 }
928 {{\let\protect\relax#2}}
929 }

```

The actually command used by hyperref is `\@hyper@launch` which uses a delimited argument, because of the color the definition is a bit convoluted.

```

930 \use:e
931 { % filename, anchor text, linkname
932 \cs_set_protected:Npn \exp_not:N \@hyper@launch run \c_colon_str #1 \exp_not:N \ \ #2 #3
933 }
934 {
935 \hyper@linklaunch {#1}{#2}{#3}
936 }

```



## 11.7 Named links (menu)

We also define \hyper@linknamed for consistency.

```

937 \pdfdict_new:n {l_hyp/annot/A/Named}
938 \pdfdict_put:nnn {l_hyp/annot/A/Named}{Type}{/Action}
939 \pdfdict_put:nnn {l_hyp/annot/A/Named}{S}{/Named}
940
941 \cs_new_protected:Npn \hyper@linknamed #1 #2 %#1 action, #2 link text
942 {
943 \bool_if:NTF \l__hyp_annot_Named_bool
944 {
945 \int_gincr:N\g__hyp_linknestlevel_int
946 __hyp_check_link_nesting:TF
947 {
948 \group_begin:
949 \pdfmeta_standard_verify:nnTF {named_actions}{#1}
950 {
951 \mode_leave_vertical:
952 \pdfdict_put:nne {l_hyp/annot/A/Named}{N}
953 {\pdf_name_from_unicode_e:n{#1}}
954 \pdfannot_dict_put:nne {link/Named}{A}{<<\pdfdict_use:n {l_hyp/annot/A/Named}
955 \pdfannot_link:nnn { Named }
956 {
957 % /A
958 % <<
959 % \pdfdict_use:n { l_hyp/annot/A/Named }
960 % >>
961 }
962 {
963 #2
964 \Hy@xspace@end
965 \Hy@VerboseLinkStop
966 }
967 }
968 {
969 \msg_warning:nnn { hyp } { pdfa-no-named-action }{#1}
970 #2
971 }
972 \group_end:
973 }
974 { \group_begin: #2 \group_end: }
975 \int_gdecr:N\g__hyp_linknestlevel_int
976 }
977 {\let\protect\relax#2}}
978 }
979

```

## 12 Link decorations

### 12.1 Functions to export and select colors

We support two input syntax: color expressions and model with values. Exporting can be done by first setting the color with \\_\_hyp\_color\_set:nn (if needed to a temporary

color name) and then using `\color_export:nnN`. But we need a variant as the export format `space-sep-cmyk` or `space-sep-rgb` is stored in a tl.

```
980 \cs_generate_variant:Nn \color_export:nnN {nVN}
```

---

```
__hyp_color_select:n __hyp_color_select:n {<color>}
```

---

These commands select a (text) color. `{<color>}` should have either the format `[model]{value}` or be a color expression. For examples: `[rgb]{1,0,.5}` or `red!50!blue`

```
__hyp_color_select:n __hyp_color_select:n {<color>}
__hyp_color_select_aux:wn
```

Color keys need to parse color expressions. Two input types are supported: `color=[rgb]{1,0,.5}` and `color=red!50!blue`.

```
981 \cs_new_protected:Npn __hyp_color_select:n #1
982 {
983 \tl_if_head_eq_charcode:nNTF {#1}[%]
984 {
985 __hyp_color_select_aux:wn #1
986 }
987 {
988 \color_select:n {#1}
989 }
990 }
991
992 \cs_new_protected:Npn __hyp_color_select_aux:wn [#1] #2
993 {
994 \color_select:nn {#1}{#2}
995 }
996
997 \cs_generate_variant:Nn __hyp_color_select:n {e}
```

*(End of definition for `\__hyp_color_select:n` and `\__hyp_color_select_aux:wn`.)*

---

```
__hyp_color_set:nn __hyp_color_set:nn {< name >} {<color>}
```

---

These commands store the color in `{<name>}`. `{<color>}` should have either the format `[model]{value}` or be a color expression. For examples: `[rgb]{1,0,.5}` or `red!50!blue`

```
__hyp_color_set:nn __hyp_color_set:nn {<name>} {<color>}
__hyp_color_set_aux:nwn
```

Color keys need to parse color expressions. Two input types are supported: `color=[rgb]{1,0,.5}` and `color=red!50!blue`.

```
998 \cs_new_protected:Npn __hyp_color_set:nn #1 #2
999 {
1000 \tl_if_head_eq_charcode:nNTF {#2}[%]
1001 {
1002 __hyp_color_set_aux:nwn { #1 } #2
1003 }
1004 {
1005 \color_set:nn {#1} {#2}
1006 }
1007 }
1008
1009 \cs_new_protected:Npn __hyp_color_set_aux:nwn #1 [#2] #3
1010 {
1011 \color_set:nnn {#1}{#2}{#3}
```

```

1012 }
1013
1014 \cs_generate_variant:Nn __hyp_color_set:nn {ne}
(End of definition for __hyp_color_set:nn and __hyp_color_set_aux:nwn.)

```

## 12.2 Textcolor of links

colors are added in the hooks. This means that they can also be removed if needed. They add a group—this isn’t needed with `hyperref` code, but could be relevant with low-level annotations.

```

1015 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1016 {
1017 \hook_gput_code:nnn
1018 {pdfannot/link/#2/begin}
1019 {hyp/color}
1020 {
1021 \bool_if:cT { l_hyp_annot_color#1_bool }
1022 {
1023 \group_begin:
1024 \color_select:n { hyp/color/#1}
1025 }
1026 }
1027 \hook_gput_code:nnn
1028 {pdfannot/link/#2/end}
1029 {hyp/color}
1030 {
1031 \bool_if:cT { l_hyp_annot_color#1_bool }
1032 {
1033 \group_end:
1034 }
1035 }
1036 }

```

`colorlinks` (*setup key*) This key also resets the border and borderstyle.

```

1037 \keys_define:nn { hyp }
1038 {
1039 ,colorlinks .choice:
1040 ,colorlinks / true .meta:n =
1041 {
1042 ,pdfborder={0~0~0}
1043 ,pdfborderstyle=
1044 ,colorurl =#1
1045 ,colorlink =#1
1046 ,colorrun =#1
1047 ,colormenu =#1
1048 ,colorfile =#1
1049 }
1050 ,colorlinks / false .meta:n =
1051 {
1052 ,colorurl =#1
1053 ,colorlink =#1
1054 ,colorrun =#1
1055 ,colormenu =#1

```

```

1056 ,colorfile =#1
1057 }
1058 ,colorlinks .default:n = {true}
1059 }

colorurl (setup key)
colorlink (setup key) 1060 \seq_map_inline:Nn \c__hyp_annot_types_seq
colorrun (setup key) 1061 {
colormenu (setup key) 1062 \keys_define:nn { hyp }
colorfile (setup key) 1063 {
 urlcolor (setup key) 1064 ,color#1 .bool_set:c = { l_hyp_annot_color#1_bool }
 linkcolor (setup key) 1065 ,#1color .code:n = { __hyp_color_set:ne {hyp/color/#1}{##1} }
 runcolor (setup key) 1066 }
 menucolor (setup key) 1067 }
 filecolor (setup key) 1068
allcolors (setup key) 1069 \keys_define:nn { hyp }
1070 {
1071 ,allcolors .meta:n =
1072 {
1073 ,urlcolor=#1
1074 ,linkcolor=#1
1075 ,runcolor=#1
1076 ,filecolor=#1
1077 ,menucolor=#1
1078 }
1079 ,allcolors .value_required:n = true
1080 }

```

## 12.3 Style and color of borders

### 12.3.1 Border color

The border color is set by link type. The color can be set as rgb (default) or cmyk (unusual). This can be set with the `bordercolormodel` key:

```

bordercolormodel (setup key)

1081 \keys_define:nn { hyp }
1082 {
1083 ,bordercolormodel .choices:nn =
1084 {rgb,cmyk}
1085 { \str_gset:Nn \g__hyp_bordercolormodel_str {space-sep-#1}}
1086 ,bordercolormodel .initial:n = {rgb}
1087 }

1088 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1089 {
1090 \keys_define:nn { hyp }
1091 {
1092 #1bordercolor .code:n =
1093 {
1094 \tl_if_empty:nTF { ##1 }
1095 {
1096 \pdfannot_dict_remove:nn
1097 {link/#2}

```

```

1098 { C }
1099 }
1100 {
1101 __hyp_color_set:ne {hyp/color/#1border}{##1}
1102 \color_export:nVN
1103 {hyp/color/#1border}
1104 \g__hyp_bordercolormodel_str
1105 \l__hyp_tmpa_tl
1106 \pdfannot_dict_put:nne
1107 {link/#2}
1108 { C }
1109 { [\l__hyp_tmpa_tl] }
1110 }
1111 }
1112 }
1113 }
1114
1115 \keys_define:nn { hyp }
1116 {
1117 ,allbordercolors .meta:n =
1118 {
1119 ,linkbordercolor=#1
1120 ,urlbordercolor =#1
1121 ,filebordercolor=#1
1122 ,menubordercolor=#1
1123 ,runbordercolor =#1
1124 }
1125 ,allbordercolors .value_required:n = true
1126 }
1127

```

### 12.3.2 Borderwidth and -arc

```

1128 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1129 {
1130 \keys_define:nn { hyp }
1131 {
1132 #1border .code:n =
1133 {
1134 \tl_if_empty:nTF { ##1 }
1135 {
1136 \pdfannot_dict_remove:nn
1137 {link/#2}
1138 { Border }
1139 }
1140 {
1141 \pdfannot_dict_put:nnn
1142 {link/#2}
1143 { Border }
1144 { [##1] }
1145 }
1146 }
1147 }
1148 }

```

```

1149 \keys_define:nn { hyp }
1150 {
1151 ,pdfborder .code:n =
1152 {
1153 \tl_if_empty:nTF { #1 }
1154 {
1155 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1156 {
1157 \pdfannot_dict_remove:nn
1158 {link/##2}
1159 { Border }
1160 }
1161 }
1162 {
1163 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1164 {
1165 \pdfannot_dict_put:nnn
1166 {link/##2}
1167 { Border }
1168 { [#1] }
1169 }
1170 }
1171 }
1172 ,pdfborder .initial:n = {0~0~1},
1173 }

```

### 12.3.3 Borderstyle

This keys fill the extended /BS entry (a dictionary).

```

pdfborderstyle (setup key)
urlborderstyle (setup key) 1174 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
linkborderstyle (setup key) 1175 {
runborderstyle (setup key) 1176 \keys_define:nn { hyp }
fileborderstyle (setup key) 1177 {
menuborderstyle (setup key) 1178 #1borderstyle .code:n =
1179 {
1180 \tl_if_empty:nTF { ##1 }
1181 {
1182 \pdfannot_dict_remove:nn
1183 {link/#2}
1184 { BS }
1185 }
1186 {
1187 \pdfannot_dict_put:nnn
1188 {link/#2}
1189 { BS }
1190 { <<##1>> }
1191 }
1192 }
1193 }
1194 }
1195 \keys_define:nn { hyp }
1196 {

```

```

1197 ,pdfborderstyle .code:n =
1198 {
1199 \tl_if_empty:nTF { #1 }
1200 {
1201 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1202 {
1203 \pdfannot_dict_remove:nn
1204 {link/##2}
1205 { BS }
1206 }
1207 }
1208 {
1209 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1210 {
1211 \pdfannot_dict_put:nnn
1212 {link/##2}
1213 { BS }
1214 { <<#1>> }
1215 }
1216 }
1217 }
1218 ,pdfborderstyle .initial:n = {},
1219 }

```

## 12.4 ocolorlinks

OCG colorlinks need objects and an entry in the catalog. Perhaps the objects need public names to avoid that ocolor2 has to create duplicates? TODO

`\__hyp_ocg_init:` This commands write the objects as needed if ocg links are used. The initialization should happens only once.

```

1220 \cs_new_protected:Npn __hyp_ocg_init:
1221 {
1222 \pdf_object_new:n { __hyp/OCG/View }
1223 \pdf_object_new:n { __hyp/OCG/Print }
1224 \pdf_object_new:n { __hyp/OCG/config }
1225 \pdf_object_new:n { __hyp/OCG/refarray }
1226 \pdf_object_write:nne { __hyp/OCG/refarray } { array }
1227 {
1228 \pdf_object_ref:n { __hyp/OCG/View }
1229 \c_space_tl
1230 \pdf_object_ref:n { __hyp/OCG/Print }
1231 }
1232 \pdf_object_write:nnn { __hyp/OCG/View } { dict }
1233 {
1234 /Type/OCG
1235 /Name(View)
1236 /Usage
1237 <<
1238 /Print <</PrintState/OFF>>~
1239 /View <</ViewState/ON >>~
1240 >>
1241 }
1242 \pdf_object_write:nnn { __hyp/OCG/Print } { dict }

```

```

1243 {
1244 /Type/OCG
1245 /Name(Print)
1246 /Usage
1247 <<
1248 /Print <</PrintState/ON>>~
1249 /View <</ViewState/OFF>>~
1250 >>
1251 }
1252 \pdfmanagement_add:nne { Catalog / OCGProperties }{OCGs }{ \pdf_object_ref:n {__hyp/OCG
1253 \pdfmanagement_add:nne { Catalog / OCGProperties }{OCGs }{ \pdf_object_ref:n {__hyp/OCG
1254 \pdf_object_write:nne { __hyp/OCG/config } { dict }
1255 {
1256 /OFF[\pdf_object_ref:n { __hyp/OCG/Print }]
1257 /AS[
1258 <<
1259 /Event/View
1260 /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1261 /Category[/View]
1262 >>
1263 <<
1264 /Event/Print
1265 /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1266 /Category[/Print]
1267 >>
1268 <<
1269 /Event/Export
1270 /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1271 /Category[/Print]
1272 >>
1273]
1274 }
1275 \pdfmanagement_add:nne { Catalog / OCGProperties }{ D }{ \pdf_object_ref:n { __hyp/OCG
1276 \cs_gset:Npn __hyp_ocg_init: { }
1277 }

```

(End of definition for \\_\_hyp\_ocg\_init:.)

We use like with colors a hook, this allows ocgx to replace it. The implementation is rather simple and uses a box.

```

1278 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1279 {
1280 \hook_gput_code:nnn
1281 {pdfannot/link/#2/begin}
1282 {hyp/ocg}
1283 {
1284 \bool_if:cT { l_hyp_annot_ocgcolor#1_bool }
1285 {
1286 __hyp_ocg_init:
1287 \group_begin:
1288 \hbox_set:Nw \l__hyp_tmpa_box
1289 }
1290 }
1291 \hook_gput_code:nnn
1292 {pdfannot/link/#2/end}

```



```

1293 {hyp/ocg}
1294 {
1295 \bool_if:cT { l_hyp_annot_ocgcolor#1_bool }
1296 {
1297 \hbox_set_end:
1298 \mbox
1299 {
1300 \pdf_bdcobject:nn {OC}{__hyp/OCG/Print}
1301 \hbox_overlap_right:n { \box_use:N \l__hyp_tmpa_box }
1302 \pdf_emc:
1303 \pdf_bdcobject:nn {OC}{__hyp/OCG/View}
1304 \group_begin:
1305 \color_select:n { hyp/color/#1 }
1306 \box_use_drop:N \l__hyp_tmpa_box
1307 \group_end:
1308 \pdf_emc:
1309 }
1310 \group_end:
1311 }
1312 }
1313 }

```

ocgcolorlinks (setup key) These are the keys for ocgcolors. We try to disable it for pdf version below 1.5

```

1314 \bool_lazy_or:nnTF
1315 { \pdf_version_compare_p:Nn > {1.4} }
1316 { \str_if_eq_p:ee{\pdf_version_major:}{-1} }
1317 {
1318 \keys_define:nn { hyp }
1319 {
1320 ,_ocgcolorlinks .meta:n =
1321 {
1322 ocgcolorlink=#1,
1323 ocgcolorurl=#1,
1324 ocgcolorfile=#1,
1325 ocgcolorrun=#1,
1326 ocgcolormenu=#1
1327 }
1328 ,_ocgcolorlinks .default:n = true
1329 }
1330 }
1331 {
1332 \keys_define:nn { hyp }
1333 {
1334 ,_ocgcolorlinks .code:n =
1335 {
1336 \msg_warning:nnee
1337 { hyp }
1338 { ignore-deprecated-or-unknown-option-in-pdf-version }
1339 { ocgcolorlinks } { \pdf_version_major:.\pdf_version_minor: }
1340 }
1341 }
1342 }
1343
1344 \keys_define:nn { hyp }

```

```

1345 {
1346 ,ocgcolorlinks .choice:
1347 ,ocgcolorlinks / true .meta:n =
1348 {
1349 pdfborder ={0~0~0},
1350 pdfborderstyle ={},
1351 colorlinks = false,
1352 _ocgcolorlinks = true
1353 }
1354 ,ocgcolorlinks / false .meta:n =
1355 {
1356 _ocgcolorlinks = false
1357 }
1358 ,ocgcolorlinks .default:n = {true}
1359 }
1360
1361 \seq_map_inline:Nn \c__hyp_annot_types_seq
1362 {
1363 \bool_lazy_or:nnTF
1364 { \pdf_version_compare_p:Nn > {1.4} }
1365 { \str_if_eq_p:ee{\pdf_version_major:}{-1} }
1366 {
1367 \keys_define:nn { hyp }
1368 {
1369 ,ocgcolor#1 .bool_set:c = { l_hyp_annot_ocgcolor#1_bool }
1370 }
1371 }
1372 {
1373 \keys_define:nn { hyp }
1374 {
1375 ,ocgcolor#1 .code:n=
1376 {
1377 \msg_warning:nnee
1378 { hyp }
1379 { ignore-deprecated-or-unknown-option-in-pdf-version }
1380 { ocgcolor#1 }
1381 { \pdf_version_major:.\pdf_version_minor: }
1382 }
1383 }
1384 }
1385 }

```

## 12.5 Highlighting

This keys set what happens if you click on a link

```

1386 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1387 {
1388 \keys_define:nn { hyp }
1389 {
1390 ,#1highlight .choices:nn =
1391 { /I, /N, /O, /P}
1392 {
1393 \pdfannot_dict_put:nnn
1394 {link/#2}

```

```

1395 { H }
1396 { ##1 }
1397
1398 }
1399 ,#1highlight / .code:n =
1400 {
1401 \pdfannot_dict_remove:nn
1402 {link/#2}
1403 { H }
1404
1405 }
1406 ,#1highlight / unknown .code:n =
1407 {
1408 \msg_warning:nneee { hyp } { unknown-choice+empty }
1409 { #1highlight }
1410 { /I~(inverse), /N~(no effect), /O~(outline), /P~(inset) }
1411 { \exp_not:n {##1} }
1412 }
1413 }
1414 }
1415
1416 \keys_define:nn { hyp }
1417 {
1418 ,pdfhighlight .choices:nn =
1419 { /I, /N, /O, /P}
1420 {
1421 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1422 {
1423 \pdfannot_dict_put:nnn
1424 {link/####2}
1425 { H }
1426 { #1 }
1427 }
1428 }
1429 ,pdfhighlight / .code:n =
1430 {
1431 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1432 {
1433 \pdfannot_dict_remove:nn
1434 {link/##2}
1435 { H }
1436 }
1437 }
1438 ,pdfhighlight .initial:n = {/I},
1439 ,pdfhighlight / unknown .code:n =
1440 {
1441 \msg_warning:nneee { hyp } { unknown-choice+empty }
1442 { pdfhighlight }
1443 { /I~(inverse), /N~(no effect), /O~(outline), /P~(inset) }
1444 { \exp_not:n {#1} }
1445 }
1446 }
1447 }

```

## 12.6 Hiding links

This key disable all appearance keys. The link themselves are still there.

```
hidelinks (setup key)
hidelink (setup key) 1448 \keys_define:nn { hyp }
hideurl (setup key) 1449 {
hidefile (setup key) 1450 hidelinks .meta:n =
hiderun (setup key) 1451 {
hidemenu (setup key) 1452 ,colorlinks = false
1453 ,ocgcolorlinks = false
1454 ,pdfborder = { 0~0~0 }
1455 ,pdfborderstyle=
1456 }
1457 }
1458
1459 \seq_map_inline:Nn \c__hyp_annot_types_seq
1460 {
1461 \keys_define:nn { hyp }
1462 {
1463 hide#1 .meta:n =
1464 {
1465 ,color#1 = false
1466 ,ocgcolor#1 = false
1467 ,#1border = { 0~0~0 }
1468 ,#1borderstyle =
1469 }
1470 }
1471 }
```

## 12.7 color schemes and settings

This define the key for the color schemes and sets the default colors.

```
colorscheme (setup key)
1472 \keys_define:nn { hyp }
1473 {
1474 colorscheme .code:n =
1475 {
1476 \prop_map_inline:cn { c__hyp_colorscheme_#1_prop }
1477 {
1478 \keys_set:nn { hyp }
1479 {
1480 ##1 = ##2
1481 }
1482 }
1483 }
1484 }
1485 \keys_set:nn { hyp } {colorscheme=phetype}
```

## 13 Keys

## 13.1 Ignored keys

The following are ignored (with or without warnings)

```
unicode (setup key)
pdfencoding (setup key) 1486 \keys_define:nn { hyp }
pdfversion (setup key) 1487 {
1488 ,unicode .code:n = {}
1489 ,pdfencoding .code:n = {}
1490 ,pdfversion .code:n =
1491 {
1492 \msg_warning:nn { hyp }{ pdfversion-disabled }
1493 }
1494 }
1495 %
```

## 13.2 Various keys for the pdf and linking behaviour

This keys are typically set only once.

```
verbose (setup key)
debug (setup key) 1496 \keys_define:nn { hyp }
draft (setup key) 1497 {
final (setup key) 1498 ,verbose .legacy_if_set:n = {Hy@verbose}
1499 ,debug .legacy_if_set:n = {Hy@verbose}
1500 }
1501 \keys_define:nn { hyp }
1502 {
1503 ,draft .code:n =
1504 {
1505 \Hy@drafttrue
1506 \PassOptionsToPackage{draft}{bookmark}
1507 }
1508 ,final .code:n =
1509 {
1510 \Hy@finaltrue
1511 \PassOptionsToPackage{final}{bookmark}
1512 }
1513 }

extension (setup key)
hypertextnames (setup key) 1514 \keys_define:nn { hyp }
naturalnames (setup key) 1515 {
1516 ,extension .tl_set:N = \XR@ext
1517 ,extension .initial:n= pdf
1518 ,hypertextnames .legacy_if_set:n = {Hy@hypertextnames}
1519 ,linkfileprefix .tl_set:N = \Hy@linkfileprefix
1520 ,localanchorname .legacy_if_set:n = {Hy@localanchorname}
1521 ,naturalnames .legacy_if_set:n = {Hy@naturalnames}
1522 ,pageanchor .legacy_if_set:n = {Hy@pageanchor}
1523 ,plainpages .legacy_if_set:n = {Hy@plainpages}
1524 }
1525
1526 \keys_define:nn { hyp }
```

```

1527 {
1528 ,linktoc .choices:nn = { none, section, all, page }
1529 {
1530 \cs_set_eq:Nc \Hy@linktoc { Hy@linktoc@#1 }
1531 }
1532 ,linktoc / unknown .code:n =
1533 {
1534 \msg_warning:nneee { hyp } { unknown-choice }
1535 { linktoc }
1536 { none, section, all, page }
1537 { \exp_not:n {#1} }
1538 }
1539 ,linktocpage .choice:
1540 ,linktocpage / true .meta:n = {linktoc=page}
1541 ,linktocpage / false .meta:n = {linktoc=section}
1542 ,linktocpage .default:n = true
1543 }
1544

```

`link (setup key)` This booleans allow to disable the link types.

```

url (setup key) 1545 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
file (setup key) 1546 {
menu (setup key) 1547 \keys_define:nn { hyp }
run (setup key) 1548 {
1549 ,#1 .bool_set:c = {l__hyp_annot_#2_bool}
1550 }
1551 }

```

```

1552 \keys_define:nn { hyp }
1553 {
1554 ,baseurl .code:n =
1555 {
1556 __hyp_text_pdfstring:noN { #1 } {\l__hyp_text_enc_uri_print_tl} \l__hyp_tmpa_tl
1557 \tl_if_empty:NTF \l__hyp_tmpa_tl
1558 {
1559 \pdfmanagement_remove:nn {Catalog} { URI }
1560 }
1561 {
1562 \pdfmanagement_add:nne {Catalog} { URI }{ <</Base \l__hyp_tmpa_tl>> }
1563 }
1564 __hyp_store_metadata:nn {baseurl}{#1}
1565 }
1566 ,bookmarks .choice:
1567 ,bookmarks / false .code:n = {\Hy@bookmarksfalse}
1568 ,bookmarks / true .code:n = {\Hy@bookmarkstrue}
1569 ,bookmarks .default:n = {true}
1570 ,bookmarksnumbered .code:n = {\bookmarksetup{numbered=#1}}
1571 ,bookmarksnumbered .default:n = true
1572 ,bookmarksopen .code:n = {\bookmarksetup{open=#1}}
1573 ,bookmarksopen .default:n = true
1574 ,bookmarksdepth .code:n = {\bookmarksetup{depth=#1}}
1575 ,bookmarksopenlevel .code:n = {\bookmarksetup{openlevel=#1}}
1576 ,bookmarkstype .tl_set:N = \Hy@bookmarkstype
1577 ,pdfcenterwindow .choice:

```

```

1578 ,pdfcenterwindow / false .code:n =
1579 {
1580 \pdfmanagement_remove:nn {Catalog / ViewerPreferences }{ CenterWindow }
1581 }
1582 ,pdfcenterwindow / true .code:n =
1583 {
1584 \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { CenterWindow }{ true }
1585 }
1586 ,pdfcenterwindow / .code:n =
1587 {
1588 \pdfmanagement_remove:nn {Catalog / ViewerPreferences }{ CenterWindow }
1589 }
1590 ,pdfcenterwindow / unknown .code:n =
1591 {
1592 \msg_warning:nnee { hyp } { no-bool }
1593 { pdfcenterwindow }
1594 { \exp_not:n {#1} }
1595 }
1596 ,pdfcenterwindow .default:n = true
1597 ,pdfdirection .choice:
1598 ,pdfdirection / L2R .code:n =
1599 {
1600 \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { Direction }{ /L2R }
1601 }
1602 ,pdfdirection / R2L .code:n =
1603 {
1604 \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { Direction }{ /R2L }
1605 }
1606 ,pdfdirection / .code:n =
1607 {
1608 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { Direction }
1609 }
1610 ,pdfdirection / unknown .code:n =
1611 {
1612 \msg_warning:nneee { hyp } { unknown-choice+empty }
1613 { pdfdirection }
1614 { L2R , R2L }
1615 { \exp_not:n {#1} }
1616 }
1617 ,pdfdisplaydoctitle .choice:
1618 ,pdfdisplaydoctitle / false .code:n =
1619 {
1620 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { DisplayDocTitle }
1621 }
1622 ,pdfdisplaydoctitle / true .code:n =
1623 {
1624 \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { DisplayDocTitle } { true }
1625 }
1626 ,pdfdisplaydoctitle .default:n = true
1627 ,pdfduplex .choices:nn =
1628 {Simplex, DuplexFlipShortEdge, DuplexFlipLongEdge}
1629 {
1630 \pdf_version_compare:NnTF > {1.6}
1631 {

```

```

1632 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1633 { Duplex } { /#1 }
1634 }
1635 {
1636 \msg_warning:nnee
1637 {hyp}
1638 {ignore-deprecated-or-unknown-option-in-pdf-version}
1639 {pdfduplex}
1640 {\pdf_version:}
1641 }
1642 }%
1643 ,pdfduplex / .code:n =
1644 {
1645 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { Duplex }
1646 }
1647 ,pdfduplex / unknown .code:n =
1648 {
1649 \msg_warning:nneee { hyp } { unknown-choice+empty }
1650 { pdfduplex }
1651 { Simplex, DuplexFlipShortEdge, DuplexFlipLongEdge }
1652 { \exp_not:n {#1} }
1653 }
1654 ,pdffitwindow .choice:
1655 ,pdffitwindow / false .code:n =
1656 {
1657 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { FitWindow }
1658 }
1659 ,pdffitwindow / true .code:n =
1660 {
1661 \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { FitWindow } { true }
1662 }
1663 ,pdffitwindow / .code:n =
1664 {
1665 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { FitWindow }
1666 }
1667 ,pdffitwindow .default:n = true
1668 ,pdffitwindow / unknown .code:n =
1669 {
1670 \msg_warning:nnee { hyp } { no-bool }
1671 { pdffitwindow }
1672 { \exp_not:n {#1} }
1673 }
1674 ,pdflinkmargin .code:n = { \pdfannot_link_margin:n { #1 } }
1675 ,pdflinkmargin .initial:n = {1pt}
1676 ,pdfmenubar .choice:
1677 ,pdfmenubar / true .code:n =
1678 {
1679 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideMenubar }
1680 }
1681 ,pdfmenubar / false .code:n =
1682 {
1683 \pdfmanagement_add:nn {Catalog / ViewerPreferences }
1684 { HideMenubar } { true }
1685 }

```



```

1686 ,pdfmenubar / .code:n =
1687 {
1688 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideMenubar }
1689 }
1690 ,pdfmenubar .default:n = true
1691 ,pdfmenubar / unknown .code:n =
1692 {
1693 \msg_warning:nnee { hyp } { no-bool }
1694 { pdfmenubar }
1695 { \exp_not:n {#1} }
1696 }
1697 ,pdfnewwindow .choice:
1698 ,pdfnewwindow / true .code:n =
1699 {
1700 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{/NewWindow}{true}
1701 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{/NewWindow}{true}
1702 }
1703 ,pdfnewwindow / false .code:n =
1704 {
1705 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{/NewWindow}{false}
1706 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{/NewWindow}{false}
1707 }
1708 ,pdfnewwindow / .code:n =
1709 {
1710 \pdfdict_remove:nn {l_hyp/annot/A/GoToR}{/NewWindow}
1711 \pdfdict_remove:nn {l_hyp/annot/A/Launch}{/NewWindow}
1712 }
1713 ,pdfnonfullscreenpagemode .choices:nn =
1714 { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC } %pdf 1.5
1715 {
1716 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1717 { NonFullScreenPageMode } {/#1}
1718 }
1719 ,pdfnonfullscreenpagemode / UseAttachments .code:n =
1720 {
1721 \pdf_version_compare:NnTF < {1.6}
1722 {
1723 %message
1724 }
1725 {
1726 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1727 {NonFullScreenPageMode}{/UseAttachments}
1728 }
1729 }
1730 ,pdfnonfullscreenpagemode / .code:n =
1731 {
1732 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { NonFullScreenPageMode }
1733 }
1734 ,pdfnonfullscreenpagemode / unknown .code:n =
1735 {
1736 \msg_warning:nneee { hyp } { unknown-choice+empty }
1737 { pdfnonfullscreenpagemode }
1738 { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC, UseAttachments (PDF 1.6) }
1739 { \exp_not:n {#1} }

```

```

1740 }
1741 ,pdfnumcopies .code:n =
1742 {
1743 \pdf_version_compare:NnTF > {1.6}
1744 {
1745 \tl_if_empty:nTF {#1}
1746 {
1747 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { NumCopies }
1748 }
1749 {
1750 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1751 {NumCopies}{#1}
1752 }
1753 }
1754 {
1755 \msg_warning:nnee
1756 {hyp}
1757 {ignore-deprecated-or-unknown-option-in-pdf-version}
1758 {pdfnumcopies}
1759 {\pdf_version:}
1760 }
1761 }
1762 ,pdfpagelayout .choices:nn =
1763 { SinglePage, OneColumn, TwoColumnLeft, TwoColumnRight, TwoPageLeft, TwoPageRight}
1764 { \pdfmanagement_add:nne {Catalog} { PageLayout }{ /#1 } }
1765 ,pdfpagelayout / .code:n =
1766 { \pdfmanagement_remove:nn {Catalog} { PageLayout } }
1767 ,pdfpagelayout / unknown .code:n =
1768 {
1769 \msg_warning:nneee { hyp } { unknown-choice+empty }
1770 { pdfpagelayout }
1771 { SinglePage, OneColumn, TwoColumnLeft, TwoColumnRight, TwoPageLeft, TwoPageRight }
1772 { \exp_not:n {#1} }
1773 }
1774 ,pdfpagemode .choices:nn =
1775 { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC } %pdf 1.5
1776 { \pdfmanagement_add:nne {Catalog} { PageMode }{ /#1 } }
1777 ,pdfpagemode / UseAttachments .code:n =
1778 {
1779 \pdf_version_compare:NnTF > {1.5}
1780 {
1781 \pdfmanagement_add:nne {Catalog} { PageMode }{ /UseAttachments }
1782 }
1783 {
1784 \msg_warning:nnee
1785 {hyp}
1786 {ignore-deprecated-or-unknown-value-in-pdf-version}
1787 {UseAttachments}
1788 {\pdf_version:}
1789 }
1790 }
1791 ,pdfpagemode .initial:n = { UseOutlines } %for now ...
1792 ,pdfpagemode / unknown .code:n =
1793 {

```

```

1794 \msg_warning:nneee { hyp } { unknown-choice+empty }
1795 { pdfpagemode }
1796 { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC, UseAttachments (PDF 1.6) }
1797 { \exp_not:n {#1} }
1798 }
1799 ,pdfpagescrop .code:n =
1800 {
1801 \tl_if_empty:nTF {#1} %or blank?
1802 {
1803 \pdfmanagement_remove:nn {Pages} { CropBox }
1804 }
1805 {
1806 \pdfmanagement_add:nne {Pages} { CropBox } { [#1] }
1807 }
1808 }
1809 ,pdfpicktraybypdfsize .choice:
1810 ,pdfpicktraybypdfsize / true .code:n =
1811 {
1812 \pdf_version_compare:NnTF > {1.6}
1813 {
1814 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1815 { PickTrayByPDFSize } { true }
1816 }
1817 {
1818 \msg_warning:nnee
1819 {hyp}
1820 {ignore-deprecated-or-unknown-option-in-pdf-version}
1821 {pdfpicktraybypdfsize}
1822 {\pdf_version:}
1823 }
1824 }
1825 ,pdfpicktraybypdfsize / false .code:n =
1826 {
1827 \pdf_version_compare:NnTF > {1.6}
1828 {
1829 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1830 { PickTrayByPDFSize } { false }
1831 }
1832 {
1833 \msg_warning:nnee
1834 {hyp}
1835 {ignore-deprecated-or-unknown-option-in-pdf-version}
1836 {pdfpicktraybypdfsize}
1837 {\pdf_version:}
1838 }
1839 }
1840 ,pdfpicktraybypdfsize / .code:n =
1841 {
1842 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PickTrayByPDFSize }
1843 }
1844 ,pdfpicktraybypdfsize / unknown .code:n =
1845 {
1846 \msg_warning:nnee { hyp } { no-bool }
1847 { picktraybypdfsize }

```

```

1848 { \exp_not:n {#1} }
1849 }
1850 ,pdfprintarea .choices:nn =
1851 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1852 {
1853 \pdf_version_compare:NnTF < {2.0}
1854 {
1855 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1856 { PrintArea } { /#1 }
1857 }
1858 {
1859 \msg_warning:nnee
1860 {hyp}
1861 {ignore-deprecated-or-unknown-option-in-pdf-version}
1862 {pdfprintarea}
1863 {\pdf_version:}
1864 }
1865 }%
1866 ,pdfprintarea / .code:n =
1867 { \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PrintArea } }
1868 ,pdfprintarea / unknown .code:n =
1869 {
1870 \msg_warning:nnee { hyp } { unknown-choice+empty }
1871 { pdfprintarea }
1872 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1873 { \exp_not:n {#1} }
1874 }
1875 ,pdfprintclip .choices:nn =
1876 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1877 {
1878 \pdf_version_compare:NnTF < {2.0}
1879 {
1880 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1881 { PrintClip } { /#1 }
1882 }
1883 {
1884 \msg_warning:nnee
1885 {hyp}
1886 {ignore-deprecated-or-unknown-option-in-pdf-version}
1887 {pdfprintclip}
1888 {\pdf_version:}
1889 }
1890 }%
1891 ,pdfprintclip / .code:n =
1892 {
1893 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PrintClip }
1894 }
1895 ,pdfprintclip / unknown .code:n =
1896 {
1897 \msg_warning:nnee
1898 { hyp }
1899 { unknown-choice+empty }
1900 { pdfprintclip }
1901 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }

```

```

1902 { \exp_not:n {#1} }
1903 }
1904 ,pdfprintpagerange .code:n =
1905 {
1906 \pdf_version_compare:NnTF > {1.6}
1907 {
1908 \tl_if_empty:nTF { #1}
1909 {
1910 \pdfmanagement_remove:nn {Catalog / ViewerPreferences }
1911 { PrintPageRange }
1912 }
1913 {
1914 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1915 {PrintPageRange}{[#1]}
1916 }
1917 }
1918 {
1919 \msg_warning:nnee
1920 {hyp}
1921 {ignore-deprecated-or-unknown-option-in-pdf-version}
1922 {pdfprintpagerange}
1923 {\pdf_version:}
1924 }
1925 }
1926 ,pdfprintscaling .choices:nn =
1927 { None, AppDefault }
1928 {
1929 \pdf_version_compare:NnTF > {1.5}
1930 {
1931 \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1932 { PrintScaling } { /#1 }
1933 }
1934 {
1935 \msg_warning:nnee
1936 {hyp}
1937 {ignore-deprecated-or-unknown-option-in-pdf-version}
1938 {pdfprintscaling}
1939 {\pdf_version:}
1940 }
1941 }%
1942 ,pdfprintscaling / .code:n =
1943 {
1944 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } {PrintScaling }
1945 }
1946 ,pdfprintscaling / unknown .code:n =
1947 {
1948 \msg_warning:nneee { hyp } { unknown-choice+empty }
1949 { pdfprintarea }
1950 { None, AppDefault }
1951 { \exp_not:n {#1} }
1952 }
1953 ,pdfremotestartview .code:n =
1954 {
1955 \tl_set:Ne \l__hyp_tmpa_tl {#1~null~null~null~}

```

```

1956 \exp_args:NNV
1957 \regex_extract_once:NnNTF \c__hyp_dest_startview_regex \l__hyp_tmpa_tl \l__hyp_tmpa_
1958 {
1959 \tl_set:Ne \l__hyp_dest_pdfremotestartview_tl {\seq_item:Nn \l__hyp_tmpa_seq {1}}
1960 }
1961 {
1962 \msg_warning:nnnn {hyp}{invalid-destination-value}{#1}{pdfremotestartview}
1963 \tl_set:Nn \l__hyp_dest_pdfremotestartview_tl {Fit}
1964 }
1965 }
1966 ,pdfremotestartview .initial:n = {Fit}
1967 % pdfstartpage is special as it shares code with pdfstartview
1968 ,pdfstartpage .code:n =
1969 {
1970 \tl_gset:Ne \g__hyp_dest_pdfstartpage_tl { #1 }
1971 \bool_if:nTF
1972 { \tl_if_empty_p:N \g__hyp_dest_pdfstartpage_tl || \tl_if_empty_p:N \g__hyp_dest_pd
1973 {
1974 \pdfmanagement_remove:nn {Catalog} { OpenAction }
1975 }
1976 {
1977 \pdfmanagement_add:nne {Catalog} { OpenAction }
1978 {
1979 [\pdf_pageobject_ref:n {\g__hyp_dest_pdfstartpage_tl}~/\g__hyp_dest_pdfstartv
1980 }
1981 }
1982 }
1983 ,pdfstartpage .initial:n =1
1984 ,pdfstartview .code:n =
1985 {
1986 \tl_set:Ne \l__hyp_tmpa_tl {#1~null~null~null~}
1987 \exp_args:NNV
1988 \regex_extract_once:NnNTF \c__hyp_dest_startview_regex \l__hyp_tmpa_tl \l__hyp_tmpa_
1989 {
1990 \tl_gset:Ne \g__hyp_dest_pdfstartview_tl {\seq_item:Nn \l__hyp_tmpa_seq {1}}
1991 }
1992 {
1993 \msg_warning:nnnn {hyp}{invalid-destination-value}{#1}{pdfstartview}
1994 \tl_gset:Nn \g__hyp_dest_pdfstartview_tl {Fit}
1995 }
1996 \bool_if:nTF
1997 { \tl_if_empty_p:N \g__hyp_dest_pdfstartpage_tl || \tl_if_empty_p:N \g__hyp_dest_pd
1998 {
1999 \pdfmanagement_remove:nn {Catalog} { OpenAction }
2000 }
2001 {
2002 \pdfmanagement_add:nne {Catalog} { OpenAction }
2003 {
2004 [\pdf_pageobject_ref:n {\g__hyp_dest_pdfstartpage_tl}~/\g__hyp_dest_pdfstartv
2005 }
2006 }
2007 }
2008 ,pdfstartview .initial:n = Fit
2009 ,pdftoolbar .choice:

```

```

2010 ,pdftoolbar / true .code:n =
2011 {
2012 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideToolbar }
2013 }
2014 ,pdftoolbar / false .code:n =
2015 {
2016 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2017 { HideToolbar } { true }
2018 }
2019 ,pdftoolbar / true .code:n =
2020 {
2021 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideToolbar }
2022 }
2023 ,pdftoolbar .default:n = true
2024 ,pdftoolbar / unknown .code:n =
2025 {
2026 \msg_warning:nnee { hyp } { no-bool }
2027 { pdftoolbar }
2028 { \exp_not:n {#1} }
2029 }
2030 % pdfview see below.
2031 ,pdfviewarea .choices:nn =
2032 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2033 {
2034 \pdf_version_compare:NnTF < {2.0}
2035 {
2036 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2037 { ViewArea } { /#1 }
2038 }
2039 {
2040 \msg_warning:nnee
2041 {hyp}
2042 {ignore-deprecated-or-unknown-option-in-pdf-version}
2043 {pdfviewarea}
2044 {\pdf_version:}
2045 }
2046 }%
2047 ,pdfviewarea / .code:n =
2048 {
2049 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { ViewArea }
2050 }
2051 ,pdfviewarea / unknown .code:n =
2052 {
2053 \msg_warning:nneee { hyp } { unknown-choice+empty }
2054 { pdfviewarea }
2055 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2056 { \exp_not:n {#1} }
2057 }
2058 ,pdfviewclip .choices:nn =
2059 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2060 {
2061 \pdf_version_compare:NnTF < {2.0}
2062 {
2063 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }

```

```

2064 { ViewClip } { /#1 }
2065 }
2066 {
2067 \msg_warning:nnee
2068 {hyp}
2069 {ignore-deprecated-or-unknown-option-in-pdf-version}
2070 {pdfviewclip}
2071 {\pdf_version:}
2072 }
2073 }%
2074 ,pdfviewclip / .code:n =
2075 {
2076 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { ViewClip }
2077 }
2078 ,pdfviewclip / unknown .code:n =
2079 {
2080 \msg_warning:nneee { hyp } { unknown-choice+empty }
2081 { pdfviewclip }
2082 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2083 { \exp_not:n {#1} }
2084 }
2085 ,pdfwindowui .choice:
2086 ,pdfwindowui / true .code:n =
2087 {
2088 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideWindowUI }
2089 }
2090 ,pdfwindowui / false .code:n =
2091 {
2092 \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2093 { HideWindowUI } { true }
2094 }
2095 ,pdfwindowui / .code:n =
2096 {
2097 \pdfmanagement_remove:nn {Catalog / ViewerPreferences } {HideWindowUI }
2098 }
2099 ,pdfwindowui / unknown .code:n =
2100 {
2101 \msg_warning:nnee { hyp } { no-bool }
2102 { pdfwindowui }
2103 { \exp_not:n {#1} }
2104 }
2105 ,pdfwindowui .default:n = true
2106 }

```

**pdfview** (*setup key*) Destination keys. pdfview is a bit more complicated so extra.

```

2107 \keys_define:nn { hyp }
2108 {
2109 ,pdfview .code:n =
2110 {
2111 \seq_set_split:Nnn \l__hyp_tmpa_seq {~}{#1}
2112 \str_case_e:nnF { \str_lowercase:f{ \seq_item:Nn \l__hyp_tmpa_seq {1} } }
2113 {
2114 { xyz }
2115 {

```



```

2116 \int_compare:nNnTF {\seq_count:N \l__hyp_tmpa_seq } > { 1 }
2117 {
2118 \seq_get_right:Nn \l__hyp_tmpa_seq \l__hyp_tmpa_tl
2119 \tl_if_eq:NnTF \l__hyp_tmpa_tl {null}
2120 {
2121 \tl_set:Nn \l__hyp_dest_pdfview_tl {xyz}
2122 }
2123 {
2124 \tl_set:Nn \l__hyp_dest_pdfview_tl
2125 {
2126 \fp_eval:n { \l__hyp_tmpa_tl * 100 }
2127 }
2128 }
2129 }
2130 {
2131 \tl_set:Nn \l__hyp_dest_pdfview_tl {xyz}
2132 }
2133 }
2134 { fit } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fit} }
2135 { fitb } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitb} }
2136 { fitbh } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitbh} }
2137 { fitbv } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitbv} }
2138 { fith } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fith} }
2139 { fitv } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitv} }
2140 { fitr }
2141 {
2142 \int_compare:nNnTF {\seq_count:N \l__hyp_tmpa_seq } = {1}
2143 {
2144 \tl_set:Nn \l__hyp_dest_pdfview_tl {fitr}
2145 }
2146 {
2147 %ensure 4 values ...
2148 \tl_set:Nn \l__hyp_dest_pdfview_tl {fitrbox}
2149 \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2150 \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2151 \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2152 \hbox_set_to_wd:Nnn \l__hyp_dest_box
2153 {
2154 \fp_eval:n
2155 {
2156 round
2157 (
2158 abs
2159 (
2160 \seq_item:Nn\l__hyp_tmpa_seq{4}
2161 -
2162 (\seq_item:Nn\l__hyp_tmpa_seq{2})
2163),
2164 3
2165)
2166 }bp
2167 }{}
2168 \box_set_dp:Nn \l__hyp_dest_box
2169 {

```

```

2170 \fp_eval:n
2171 {
2172 round(0 - (\seq_item:Nn\l__hyp_tmpa_seq{3}),3)
2173 }bp
2174 }
2175 \box_set_ht:Nn \l__hyp_dest_box
2176 {
2177 \seq_item:Nn\l__hyp_tmpa_seq{5}bp
2178 }
2179 }
2180 }
2181 }
2182 {
2183 \msg_warning:nnnn {hyp}{invalid-destination-value}{#1}{pdfview}
2184 \tl_set:Nn \l__hyp_dest_pdfview_tl {fit}
2185 }
2186 }
2187 ,pdfview .initial:n = {xyz}
2188 }

```

### 13.3 “MetaData keys”

The following keys are relevant for the metadata: the info dictionary and the xmp-metadata.

**pdflang** (*setup key*) **pdflang** should be deprecated.

```

2189 \keys_define:nn { hyp }
2190 {
2191 ,pdflang .code:n =
2192 {
2193 \tl_if_empty:nF { #1 }
2194 {
2195 \pdfmanagement_add:nne {Catalog} { Lang } { { (#1) }
2196 \AddToDocumentProperties[document]{lang}{#1}
2197 }
2198 }
2199 }

```

#### 13.3.1 “info keys”

**pdfauthor** (*setup key*) The keys store their value also in the metadata container, so that hyperxmp can use them.  
**pdftitle** (*setup key*) Creator and Producer can’t be removed with the pdfmanagement, but we allow to set an  
**pdfcreator** (*setup key*) empty value. If the value begin with an optional argument, we assume a multilanguage  
**pdfsubject** (*setup key*) clist and use only the first value. The values are expanded with `\text_expand:n`  
**pdfproducer** (*setup key*)

```

2200 \regex_new:N\l__hyp_optlang_regex
2201 \regex_set:Nn\l__hyp_optlang_regex {\A\[([A-Za-z\-\-]+)\](.*)}
2202 \cs_generate_variant:Nn\clist_item:nn{on}
2203 \cs_new_protected:Npn __hyp_setup_info_key:nn #1 #2
2204 {
2205 \keys_define:nn { hyp }
2206 {
2207 pdf#1 .code:n =
2208 {

```

```

2209 \tl_set:Ne\l__hyp_tmpa_tl {\text_expand:n{##1}}
2210 __hyp_store_metadata:no {pdf#1}{\l__hyp_tmpa_tl}
2211 \tl_if_empty:NTF \l__hyp_tmpa_tl
2212 {
2213 \str_case:nnF { #1 }
2214 {
2215 {creator}
2216 {
2217 \msg_info:nnn { hyp }{ empty-info-value } { pdfcreator }
2218 \pdfmanagement_add:nne {Info}{Creator}{()}
2219 }
2220 {producer}
2221 {
2222 \msg_info:nnn { hyp }{ empty-info-value } { pdfproducer }
2223 \pdfmanagement_add:nne {Info}{Producer}{()}
2224 }
2225 }
2226 {
2227 \pdfmanagement_remove:nn {Info}{#2}
2228 }
2229 }
2230 {
2231 \tl_set:Ne\l__hyp_tmpb_tl {\clist_item:on{\l__hyp_tmpa_tl}{1}}
2232 \exp_args:NNV
2233 \regex_extract_once:NnN \l__hyp_optlang_regex \l__hyp_tmpb_tl\l__hyp_tmpa_s
2234 \seq_if_empty:NTF\l__hyp_tmpa_seq
2235 {
2236 __hyp_text_pdfstring_info:oN {\l__hyp_tmpa_tl}\l__hyp_tmpa_str
2237 }
2238 {
2239 __hyp_text_pdfstring_info:eN {\seq_item:Nn \l__hyp_tmpa_seq{3}}\l__hyp_t
2240 }
2241 \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}
2242 {
2243 \pdfmanagement_add:nne {Info}{#2}{\l__hyp_tmpa_str}
2244 }
2245 }
2246 }
2247 }
2248 \keys_define:nn { hyp / info }
2249 {
2250 #2 .code:n =
2251 {
2252 \tl_set:Ne\l__hyp_tmpa_tl {\text_expand:n{##1}}
2253 __hyp_store_metadata:eo {pdf\str_lowercase:n{#1}}{\l__hyp_tmpa_tl}
2254 \tl_if_blank:NTF {##1}
2255 {
2256 \pdfmanagement_remove:nn {Info}{#2}
2257 }
2258 {
2259 __hyp_text_pdfstring_info:oN {\l__hyp_tmpa_tl}\l__hyp_tmpa_str
2260 \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}
2261 {
2262 \pdfmanagement_add:nne {Info}{#2}{\l__hyp_tmpa_str}

```

```

2263 }
2264 }
2265 }
2266 ,unknown .code:n =
2267 {
2268 __hyp_text_pdfstring_info:eN {##1}\l__hyp_tmpa_str
2269 \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}
2270 {
2271 \exp_args:Nno
2272 \pdfmanagement_add:nne {Info}
2273 { \l_keys_key_str } {\l__hyp_tmpa_str}
2274 }
2275 }
2276 }
2277 }
2278 __hyp_setup_info_key:nn {author} {Author}
2279 __hyp_setup_info_key:nn {title} {Title}
2280 __hyp_setup_info_key:nn {producer} {Producer}
2281 __hyp_setup_info_key:nn {creator} {Creator}
2282 % ignored key: addtopdfcreator
2283 __hyp_setup_info_key:nn {subject} {Subject}
2284 __hyp_setup_info_key:nn {keywords} {Keywords}

```

pdfcreationdate (*setup key*) These keys are not really needed. We store them too in the container. CreationDate  
pdfmoddate (*setup key*) and ModDate should not use the hex encoding.

```

pdfmetadate (setup key)
2285 \cs_new_protected:Npn __hyp_setup_info_date_key:nn #1 #2
2286 {
2287 \keys_define:nn { hyp }
2288 {
2289 pdf#1 .code:n =
2290 {
2291 \tl_if_blank:nTF {##1}
2292 {
2293 \pdfmanagement_remove:nn {Info}{#2}
2294 }
2295 {
2296 \pdfmanagement_add:nne {Info}{#2}{(##1)}
2297 }
2298 __hyp_store_metadata:nn {pdf#1}{##1}
2299 \AddToDocumentProperties[document]{#1}{##1}
2300 }
2301 }
2302 \keys_define:nn { hyp / info }
2303 {
2304 #2 .code:n =
2305 {
2306 \tl_if_blank:nTF {##1}
2307 {
2308 \pdfmanagement_remove:nn {Info}{#2}
2309 }
2310 {
2311 \pdfmanagement_add:nne {Info}{#2}{(##1)}
2312 }
2313 \exp_args:Ne __hyp_store_metadata:nn {pdf\str_lowercase:n{#1}}{##1}

```

```

2314 }
2315 }
2316 }
2317
2318 __hyp_setup_info_date_key:nn {creationdate} {CreationDate}
2319 __hyp_setup_info_date_key:nn {moddate} {ModDate}
2320 \keys_define:nn { hyp }
2321 {
2322 pdfmetadate .code:n = { __hyp_store_metadata:nn {pdfmetadate}{#1} }
2323 }

```

**pdftrapped** (*setup key*) Trapped is a bit curious, it has an value unknown, and one can't suppress it ...

```

2324 \keys_define:nn { hyp }
2325 {
2326 ,pdftrapped .code:n =
2327 {
2328 \exp_args:Nne
2329 \keys_set:nn { hyp } { _pdftrapped = \str_uppercase:n { #1 } }
2330 }
2331 ,_pdftrapped .choices:nn = {TRUE,FALSE,UNKNOWN}
2332 {
2333 \pdfmanagement_add:nne {Info}{Trapped}
2334 {/
2335 \str_uppercase:f { \str_head:n { #1 } }
2336 \str_lowercase:f { \str_tail:n { #1 } }
2337 }
2338 __hyp_store_metadata:ne {pdftrapped}
2339 {
2340 \str_uppercase:f { \str_head:n { #1 } }
2341 \str_lowercase:f { \str_tail:n { #1 } }
2342 }
2343 }
2344 ,_pdftrapped / unknown .code:n =
2345 {
2346 \msg_warning:nnee { hyp } { unknown-choice }
2347 { pdftrapped }
2348 { true~(case-insensitive), false~(case-insensitive), unknown~(case-insensitive) }
2349 { \exp_not:n {#1} }
2350 }
2351 }

```

**pdfinfo** (*setup key*) pdfinfo allows to set the info keys with keyval ...

```

2352 \keys_define:nn { hyp }
2353 {
2354 pdfinfo .code:n =
2355 {
2356 \keys_set:nn { hyp / info } { #1 }
2357 }
2358 }

```

Now we set some default values

```

2359 \keys_set:nn { hyp } {pdfcreator = LaTeX~with~hyperref}
2360 \keys_set:nn { hyp } {pdfauthor = }
2361 \keys_set:nn { hyp } {pdftitle = }
2362 \keys_set:nn { hyp } {pdfsubject = }

```

## 13.4 hyperxmp keys

hyperxmp defines lots of keys for \hypersetup. They now longer work with this driver. So we provide most of them, but they are only stored as metadata:

```
2363 \clist_map_inline:nn
2364 {
2365 ,pdfcopyright
2366 ,pdftype
2367 ,pdflicenseurl
2368 ,pdfauthortitle
2369 ,pdfcaptionwriter
2370 ,pdfmetalang
2371 ,pdfsource
2372 ,pdfdocumentid
2373 ,pdfinstanceid
2374 ,pdfversionid
2375 ,pdfrendition
2376 ,pdfpublication
2377 ,pdfpubtype
2378 ,pdfbytes
2379 ,pdfnumpages
2380 ,pdfissn
2381 ,pdfeissn
2382 ,pdfisbn
2383 ,pdfbookedition
2384 ,pdfpublisher
2385 ,pdfvolumenum
2386 ,pdfissuenum
2387 ,pdfpagerange
2388 ,pdfdoi
2389 ,pdfurl
2390 ,pdfidentifier
2391 ,pdfsubtitle
2392 ,pdfpubstatus
2393 ,pdfcontactaddress
2394 ,pdfcontactcity
2395 ,pdfcontactregion
2396 ,pdfcontactpostcode
2397 ,pdfcontactcountry
2398 ,pdfcontactphone
2399 ,pdfcontactemail
2400 ,pdfcontacturl
2401 ,pdfdate
```

these are not hyperxmp but new keys

```
2402 ,pdftdmreservation
2403 ,pdftdmpolicy
2404 }
2405 {
2406 \keys_define:nn { hyp }
2407 {
2408 #1 .code:n= { __hyp_store_metadata:nn {#1}{##1}}
2409 }
2410 }
```

## 13.5 Transitions

`pdfpageduration` sets the duration a page is shown in full screen mode.

```

2412 \keys_define:nn { hyp }
2413 {
2414 pdfpageduration .code:n =
2415 {
2416 \tl_if_blank:nTF { #1 }
2417 {
2418 \pdfmanagement_remove:nn {Page}{Dur}
2419 }
2420 {
2421 \pdfmanagement_add:nnn {Page}{Dur}{#1}
2422 }
2423 }
2424 }
```

Transition settings are used by (some) pdf viewers when presenting a pdf in full screen mode. They are added to the page settings and describe the transition from the previous page to current page. Transition setting can be set in the preamble for all pages or in the document for the current and the following pages. Due to the asynchronous page breaking one has to be careful to set it on the right page, e.g. only after a `\newpage`. The generic driver uses a different syntax than the other `hyperref` drivers: various transition options can be set by a keyval syntax in the value of `pdfpagetransition`. A typical setting looks e.g. like this

```
\hypersetup{pdfpagetransition={style=Fly,duration=2,direction=90,opaque=false}}
```

The keys allowed in the argument of `pdfpagetransition` are

|           |                                                                                                                                                                                                                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| style     | one of Split, Blinds, Box, Wipe,<br>Dissolve, Glitter, R, Fly, Push, Cover,<br>Uncover, Fade                                                                                                                                                                                                                                                     |
| duration  | a number, describes the duration of<br>the transition                                                                                                                                                                                                                                                                                            |
| direction | H (horizontal, only Split, Blinds)<br>V (vertical, only Split, Blinds)<br>0 (left to right, only Wipe, Glitter, Fly, Cover, Uncover, Push)<br>90 (bottom to top, only Wipe)<br>180 (right to left, only Wipe)<br>270 (top to bottom, only Wipe, Glitter, Fly, Cover, Uncover, Push)<br>315 (top left to bottom, only Glitter)<br>None (only Fly) |
| motion    | one of I, O, only relevant for Split, Box<br>and Fly                                                                                                                                                                                                                                                                                             |
| scale     | a number, only relevant for Fly style                                                                                                                                                                                                                                                                                                            |
| opaque    | true or false, only relevant for Fly style                                                                                                                                                                                                                                                                                                       |

```

2425 \keys_define:nn { hyp }
2426 {
2427 pdfpagetransition .code:n =
2428 {
2429 \tl_if_blank:nTF {#1}
```

```

2430 {
2431 \pdfmanagement_remove:nn {Page}{Trans}
2432 }
2433 {
2434 \group_begin:
2435 \keys_set:nn { hyp / trans }{style=R,#1}
2436 \pdf_object_unnamed_write:ne { dict }
2437 {
2438 \pdfdict_use:n {l__hyp_page/Trans}
2439 }
2440 \pdfmanagement_add:nne {Page}{Trans}{\pdf_object_ref_last:}
2441 \group_end:
2442 }
2443 }
2444 }
2445 \keys_define:nn { hyp / trans }
2446 {
2447 ,style .choices:nn =
2448 {Split,Blinds,Box,Wipe,Dissolve,Glitter,R,Fly,Push,Cover,Uncover,Fade}
2449 { \pdfdict_put:nnn {l__hyp_page/Trans}{ S }{/#1} }
2450 ,style / unknown .code:n =
2451 {
2452 \msg_warning:nneee { hyp } { unknown-choice }
2453 { trans / style }
2454 { Split,Blinds,Box,Wipe,Dissolve,Glitter,R,Fly,Push,Cover,Uncover,Fade }
2455 { \exp_not:n {#1} }
2456 }
2457 ,duration .code:n =
2458 {
2459 \pdfdict_put:nnn {l__hyp_page/Trans}{ D }{/#1}
2460 }
2461 ,direction .choices:nn =
2462 {H,V}
2463 { \pdfdict_put:nnn {l__hyp_page/Trans}{ Dm }{/#1} }
2464 ,direction .choices:nn =
2465 {0,90,180,270,315}
2466 { \pdfdict_put:nnn {l__hyp_page/Trans}{ Di }{ #1 } }
2467 ,direction / None .code:n =
2468 { \pdfdict_put:nnn {l__hyp_page/Trans}{ Di }{ /None } }
2469 ,direction / unknown .code:n =
2470 {
2471 \msg_warning:nneee { hyp } { unknown-choice }
2472 { trans / direction }
2473 {
2474 H~(horizontal,~only~Split,~Blinds),
2475 V~(vertical,~only~Split,~Blinds),
2476 0~(left~to~right,~only~Wipe,~Glitter,~Fly,~Cover,~Uncover,~Push),
2477 90~(bottom~to~top,~only~Wipe),
2478 180~(right~to~left,~only~Wipe),
2479 270~(top~to~bottom,~only~Wipe,~Glitter,~Fly,~Cover,~Uncover,~Push),
2480 315~(top~left~to~bottom,~only~Glitter),
2481 None~(only~Fly)
2482 }
2483 { \exp_not:n {#1} }

```



```

2484 }
2485 ,motion .choices:nn =
2486 {I,0}
2487 { \pdfdict_put:nnn {l__hyp_page/Trans}{ M }{/#1} }
2488 ,motion / unknown .code:n =
2489 {
2490 \msg_warning:nneee { hyp } { unknown-choice }
2491 { trans / motion }
2492 { I~(inwards) , 0~(outwards) }
2493 { \exp_not:n {#1} }
2494 }
2495 ,scale .code:n =
2496 { \pdfdict_put:nnn { l__hyp_page/Trans }{ SS }{ #1 } }
2497 ,opaque .choices:nn = {true,false}
2498 { \pdfdict_put:nnn { l__hyp_page/Trans }{ B }{ #1 } }
2499 ,opaque / unknown .code:n =
2500 {
2501 \msg_warning:nneee { hyp } { unknown-choice }
2502 { trans / B }
2503 { true~(opaque~back,~only~Fly), false~(opaque~back,~only~Fly) }
2504 { \exp_not:n {#1} }
2505 }
2506 % try to set unknown keys as style
2507 ,unknown .code:n =
2508 {
2509 % warning ...
2510 \exp_args:Nne\keys_set:nn {hyp/trans}{ style=\l_keys_key_str }
2511 }
2512 }

```

Finally we process the package option list, to get most keys working

```

2513 \keys_set:known:nv{ hyp }{opt@hyperref.sty}

```

Unfinished, from here on @@ notation is disabled Form field code

```

2514 <@@=>
2515 \NewDocumentCommand \MakeFieldObject { m m }
2516 {
2517 \pdfxform_new:nnn { #2 }{ } { #1 }
2518 }
2519
2520
2521 \prop_new:N \g__hyp_AcroForm_CoFields_prop
2522 \prop_new:N \g__hyp_AcroForm_Fields_prop
2523
2524 \let\HyField@afields\@empty
2525 \let\HyField@cofields\@empty
2526 \def\HyField@AfterAuxOpen{\Hy@AtBeginDocument}%
2527
2528 % the value doesn't matter, but with a prop we avoid duplicates and it is
2529 % clearly faster than removing them from a sequence
2530 \def\HyField@AuxAddToFields#1
2531 {
2532 \prop_gput:Nnn \g__hyp_AcroForm_Fields_prop {#1}{F}
2533 }%

```

```

2534
2535 %fields with empty key get a value too -- lets hope that
2536 %this give the expected behaviour
2537 \def\HyField@AuxAddToCoFields #1 #2
2538 {
2539 \prop_gput:Nnn \g__hyp_AcroForm_CoFields_prop {a#1}{#2}
2540 }
2541
2542 \Hy@AtBeginDocument
2543 {
2544 \if@files
2545 \immediate\write\@mainaux{%
2546 \string\providecommand\string\HyField@AuxAddToFields[1]{}%
2547 }%
2548 \immediate\write\@mainaux{%
2549 \string\providecommand\string\HyField@AuxAddToCoFields[2]{}%
2550 }%
2551 \fi
2552 \let\HyField@AfterAuxOpen\@firstofone
2553 }%
2554
2555 \def\HyField@AddToFields
2556 {
2557 \exp_args:N\HyField@@AddToFields
2558 {
2559 \pdfannot_box_ref_last:
2560 }
2561 \ifx\Fld@calculate@code\@empty
2562 \else
2563 \begingroup
2564 \Hy@safe@activetrue
2565 \edef\Hy@temp{%
2566 \endgroup
2567 \if@files
2568 \write\@mainaux
2569 {
2570 \string\HyField@AuxAddToCoFields
2571 {
2572 \Fld@calculate@sortkey
2573 }
2574 {
2575 \pdfannot_box_ref_last:
2576 }
2577 }
2578 \fi
2579 }%
2580 \Hy@temp
2581 \fi
2582 }%
2583
2584 \def\HyField@@AddToFields#1{
2585 \HyField@AfterAuxOpen{%
2586 \if@files
2587 \write\@mainaux{%

```

```

2588 \string\HyField@AuxAddToFields{#1}%
2589 }%
2590 \fi
2591 }%
2592 }%
2593
2594 \ExplSyntaxOff
2595 \ExplSyntaxOn
2596
2597 \def\@Form[#1]
2598 {
2599 \kvsetkeys{Form}{#1}
2600 \pdf@ifdraftmode{}
2601 {
2602 \Hy@FormObjects
2603 \prop_map_inline:Nn \g__hyp_AcroForm_Fields_prop
2604 {
2605 \pdfmanagement_add:nne { Catalog / AcroForm } { Fields }{##1}
2606 %\pdfmanagement_show:n { Catalog / AcroForm }
2607 }
2608 \prop_if_empty:NF \g__hyp_AcroForm_CoFields_prop
2609 {
2610 \prop_map_inline:Nn \g__hyp_AcroForm_CoFields_prop
2611 {
2612 \seq_put_right:Nn \l__hyp_tmpa_seq {##1}
2613 }
2614 \seq_sort:Nn \l__hyp_tmpa_seq
2615 {
2616 \str_compare:nNnTF {##1} > {##2}
2617 { \sort_return_swapped: }
2618 { \sort_return_same: }
2619 }
2620 \seq_map_inline:Nn \l__hyp_tmpa_seq
2621 {
2622 \pdfmanagement_add:nne { Catalog / AcroForm }
2623 { CO }
2624 {
2625 \prop_item:Nn \g__hyp_AcroForm_CoFields_prop {##1}
2626 }
2627 }
2628 }
2629 \pdfmanagement_add:nne {Catalog / AcroForm/DR/Font }
2630 {ZaDb} {\pdf_object_ref:n {__hyp/Font/ZaDb} }
2631 \pdfmanagement_add:nne {Catalog / AcroForm/DR/Font }
2632 {Helv} {\pdf_object_ref:n {__hyp/Font/Helv} }
2633 \pdfmanagement_add:nne {Catalog /AcroForm}
2634 {DA}{(/Helv~10~Tf~0~g)}
2635 \pdfmeta_standard_verify:nTF {form_no_NeedAppearances}
2636 {
2637 \legacy_if:nT { HyField@NeedAppearances }
2638 {
2639 \pdfmanagement_add:nnn {Catalog / AcroForm }{NeedAppearances}{true}
2640 }
2641 }

```

```

2642 {
2643 \pdfmanagement_remove:nn {Catalog / AcroForm }{NeedAppearances}
2644 }
2645 }
2646 }
2647 \ExplSyntaxOff
2648 \let\@endForm\@empty
2649 \let\HyAnn@AbsPageLabel\@empty
2650 \let\Fld@pageobjref\@empty
2651
2652 \ExplSyntaxOn
2653 \newcount\HyAnn@Count
2654 \HyAnn@Count=\z@
2655 \def\HyAnn@AbsPageLabel
2656 {
2657 \global\advance\HyAnn@Count by\@ne
2658 __hyp_property_record:ee {HyAnn@\the\HyAnn@Count}{abspage}
2659 \property_ref_undefined_warn:ee {HyAnn@\the\HyAnn@Count}{abspage}
2660 }%
2661 \prg_generate_conditional_variant:Nnn \property_if_recorded:nn {ee} {T}
2662 \def\Fld@pageobjref
2663 {
2664 \property_if_recorded:eeT {HyAnn@\the\HyAnn@Count}{abspage}
2665 {
2666 /P~\pdf_pageobject_ref:e
2667 {
2668 \property_ref:ee{HyAnn@\the\HyAnn@Count}{abspage}
2669 }
2670 }
2671 }
2672 %% check if the attr should be set through
2673 %% hooks.
2674 %% check if options are missing.
2675 \def\@TextField[#1]#2{% parameters, label
2676 \def\Fld@name{#2}%
2677 \let\Fld@default\@empty
2678 \let\Fld@value\@empty
2679 \def\Fld@width{\DefaultWidthofText}%
2680 \def\Fld@height{%
2681 \ifFld@multiline
2682 \DefaultHeightofTextMultiline
2683 \else
2684 \DefaultHeightofText
2685 \fi
2686 }%
2687 \begingroup
2688 \expandafter\HyField@SetKeys\expandafter{%
2689 \DefaultOptionsofText,#1%
2690 }%
2691 \PDFForm@Name
2692 \HyField@FlagsText
2693 \ifFld@hidden\def\Fld@width{1sp}\fi
2694 \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
2695 \LayoutTextField{#2}{%

```

```

2696 \leavevmode
2697 \HyAnn@AbsPageLabel
2698 \Hy@escapeform\PDFForm@Text
2699 \pdfannot_box:nnnn
2700 {\Fld@width}
2701 {\Fld@height}
2702 {Opt} %is this correct?
2703 {\PDFForm@Text}
2704 \MakeTextField{\Fld@width}{\Fld@height}
2705 \HyField@AddToFields
2706 }%
2707 \endgroup
2708 }
2709 \providecommand\@curropt{}
2710 \def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
2711 \def\Fld@name{#2}
2712 \let\Fld@default\relax
2713 \let\Fld@value\relax
2714 \def\Fld@width{\DefaultWidthofChoiceMenu}
2715 \def\Fld@height{\DefaultHeightofChoiceMenu}
2716 \begingroup
2717 \Fld@menulength=0 %
2718 \@tempdima\z@
2719 \clist_map_variable:nNn { #3 } \@curropt
2720 %\@for\@curropt:=#3\do
2721 {%
2722 \expandafter\Fld@checkequals\@curropt==\\%
2723 \Hy@StepCount\Fld@menulength
2724 \settowidth{\@tempdimb}{\@currDisplay}%
2725 \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
2726 }%
2727 \advance\@tempdima by~15\p@
2728 \begingroup
2729 \HyField@SetKeys{#1}
2730 \edef\x{\endgroup
2731 \noexpand\expandafter
2732 \noexpand\HyField@SetKeys
2733 \noexpand\expandafter{%
2734 \expandafter\noexpand\csname DefaultOptionsof%
2735 \ifFld@radio
2736 Radio%
2737 \else
2738 \ifFld@combo
2739 \ifFld@popdown
2740 PopdownBox%
2741 \else
2742 ComboBox%
2743 \fi
2744 \else
2745 ListBox%
2746 \fi
2747 \fi
2748 \endcsname
2749 }%

```

```

2750 } \x
2751 \HyField@SetKeys{#1}%
2752 \PDFForm@Name
2753 \ifFld@hidden\def\Fld@width{1sp}\fi
2754 \ifx\Fld@value\relax
2755 \let\Fld@value\Fld@default
2756 \fi
2757 \LayoutChoiceField{#2}{%
2758 \ifFld@radio
2759 \HyField@FlagsRadioButton
2760 \@@Radio{#3}%
2761 \else
2762 \beginngroup
2763 \HyField@FlagsChoice
2764 \ifdim\Fld@width<\@tempdima
2765 \ifdim\@tempdima<1cm\@tempdima1cm\fi
2766 \edef\Fld@width{\the\@tempdima}%
2767 \fi
2768 \ifFld@combo
2769 \else
2770 \@tempdima=\the\Fld@menulength\Fld@charsize
2771 \advance\@tempdima by~\Fld@borderwidth bp %
2772 \advance\@tempdima by~\Fld@borderwidth bp %
2773 \edef\Fld@height{\the\@tempdima}%
2774 \fi
2775 \@@ListBox{#3}%
2776 \endgroup
2777 \fi
2778 }%
2779 \endgroup
2780 }
2781
2782 \def\@@Radio#1{%
2783 \Fld@listcount=0-%
2784 \EdefEscapeName\Fld@default{\Fld@default}%
2785 \clist_map_variable:nNn { #1 } \@curropt
2786 {%
2787 \expandafter\Fld@checkequals\@curropt==\%
2788 \EdefEscapeName\@currValue{\@currValue}%
2789 \Hy@StepCount\Fld@listcount
2790 \@currDisplay\space
2791 \leavevmode
2792 \HyAnn@AbsPageLabel
2793 \Hy@escapeform\PDFForm@Radio
2794 \pdfxform_if_exist:nF { __hyp_xform_Ding }
2795 {
2796 \pdfxform_new:nnn { __hyp_xform_Ding } {}
2797 {
2798 \group_begin:
2799 \fontfamily{pzd}
2800 \fontencoding{U}
2801 \fontseries{m}
2802 \fontshape{n}
2803 \selectfont

```

```

2804 \char123
2805 \group_end:
2806 }
2807 }
2808 \pdfannot_box:nnne
2809 {\Fld@width}
2810 {\Fld@height}
2811 {0pt} %is this correct?
2812 {
2813 \PDFForm@Radio
2814 /AP
2815 <<
2816 /N
2817 <<
2818 /\currValue\c_space_tl \pdfxform_ref:n {__hyp_xform_Ding}
2819 %/Off \c_space_tl \pdfxform_ref:n {__hyp_xform_DingOff} %hm
2820 >>
2821 >>
2822 }
2823 {\fbox{ \MakeRadioField{\Fld@width}{\Fld@height}}} }
2824 \int_compare:nNnT { \Fld@listcount } = { 1 }
2825 { \HyField@AddToFields }
2826 \c_space_tl % deliberate space between radio buttons
2827 % to do: --> should be configurable
2828 }%
2829 }
2830
2831 \newcount\Fld@listcount
2832 \def\@@Listbox#1
2833 {
2834 \HyField@PDFChoices{#1}
2835 \mode_leave_vertical:
2836 \HyAnn@AbsPageLabel
2837 \Hy@escapeform\PDFForm@List
2838 \pdfannot_box:nnnn
2839 {\Fld@width}{\Fld@height}{0pt}
2840 {\PDFForm@List}
2841 \MakeChoiceField{\Fld@width}{\Fld@height}
2842 \HyField@AddToFields
2843 }
2844
2845
2846 \def\@PushButton[#1]#2{% parameters, label
2847 \def\Fld@name{#2}%
2848 \group_begin:
2849 \exp_args:No\HyField@SetKeys
2850 {
2851 \DefaultOptionsofPushButton,#1
2852 }
2853 \PDFForm@Name
2854 \pdfmeta_standard_verify:nnTF {annot_action_A}{JavaScript}
2855 {
2856 \HyField@FlagsPushButton
2857 \legacy_if:nT {Fld@hidden}

```

```

2858 {
2859 \def\Fld@width{1sp}
2860 }
2861 \LayoutPushButtonField
2862 {
2863 \mode_leave_vertical:
2864 \HyAnn@AbsPageLabel
2865 \Hy@escapeform\PDFForm@Push
2866 \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2867 \pdfannot_box:nnnn
2868 {\box_wd:N\l_tmpa_box}
2869 {\box_ht:N\l_tmpa_box}
2870 {\box_dp:N\l_tmpa_box} %is this correct?
2871 {\PDFForm@Push}
2872 {\box_use:N\l_tmpa_box}
2873 \HyField@AddToFields
2874 }
2875 }
2876 {
2877 \msg_error:nn { hyp }{ pdfa-no-push-button }
2878 \LayoutPushButtonField
2879 {
2880 \mode_leave_vertical:
2881 \MakeButtonField{#2}
2882 }
2883 }
2884 \group_end:
2885 }
2886
2887 \def\@Submit[#1]#2
2888 {
2889 \def\Fld@width {\DefaultWidthofSubmit}
2890 \def\Fld@height{\DefaultHeightofSubmit}
2891 \group_begin:
2892 \exp_args:No\HyField@SetKeys
2893 {
2894 \DefaultOptionsofSubmit,#1
2895 }
2896 \HyField@FlagsPushButton
2897 \HyField@FlagsSubmit
2898 \legacy_if:nT { Fld@hidden }
2899 {
2900 \def\Fld@width{1sp}
2901 }
2902 \mode_leave_vertical:
2903 \HyAnn@AbsPageLabel
2904 \Hy@escapeform\PDFForm@Submit
2905 \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2906 \pdfxform_if_exist:nF
2907 { __hyp_xform_Submit }
2908 {
2909 \pdfxform_new:nnn { __hyp_xform_Submit }{}
2910 {
2911 \fbox{\color_select:n{yellow}\textsf{Submit}}

```



```

2912 }
2913 \pdfxform_new:nnn { __hyp_xform_SubmitP }{}
2914 {
2915 \fbox{\color_select:n{yellow}\textsf{SubmitP}}
2916 }
2917 }
2918 \pdfannot_box:nnnn
2919 {\box_wd:N\l_tmpa_box}
2920 {\box_ht:N\l_tmpa_box}
2921 {\box_dp:N\l_tmpa_box} %is this correct?
2922 {
2923 \PDFForm@Submit
2924 /AP<<
2925 /N~\pdfxform_ref:n {__hyp_xform_Submit}~
2926 /D~\pdfxform_ref:n {__hyp_xform_SubmitP}
2927 >>
2928 }
2929 \HyField@AddToFields
2930 \box_use:N\l_tmpa_box
2931
2932 \group_end:
2933 }
2934
2935 \def\@Reset[#1]#2
2936 {
2937 \def\Fld@width {\DefaultWidthofReset}
2938 \def\Fld@height{\DefaultHeightofReset}
2939 \group_begin:
2940 \exp_args:No\HyField@SetKeys
2941 {
2942 \DefaultOptionsofReset,#1
2943 }
2944 \mode_leave_vertical:
2945 \pdfmeta_standard_verify:nnTF {annot_action_A}{ResetForm}
2946 {
2947 \HyField@FlagsPushButton
2948 \legacy_if:nT { Fld@hidden }
2949 { \def\Fld@width{1sp} }
2950 \HyAnn@AbsPageLabel
2951 \Hy@escapeform\PDFForm@Reset
2952 \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2953 \pdfannot_box:nnnn
2954 {\box_wd:N\l_tmpa_box}
2955 {\box_ht:N\l_tmpa_box}
2956 {\box_dp:N\l_tmpa_box} %is this correct?
2957 { \PDFForm@Reset }
2958 \HyField@AddToFields
2959 \box_use:N \l_tmpa_box
2960 }
2961 {
2962 \msg_error:nn { hyp }{ pdfa-no-reset-button }
2963 \MakeButtonField{#2}
2964 }
2965 \group_end:

```

```

2966 }
2967
2968 \def\@CheckBox[#1]#2
2969 {% parameters, label
2970 \def\Fld@name{#2}
2971 \def\Fld@default{0}
2972 \group_begin:
2973 \def\Fld@width {\DefaultWidthofCheckBox}
2974 \def\Fld@height{\DefaultHeightofCheckBox}
2975 \exp_args:No\HyField@SetKeys
2976 {
2977 \DefaultOptionsofCheckBox,#1
2978 }
2979 \PDFForm@Name
2980 \HyField@FlagsCheckBox
2981 \legacy_if:nT { Fld@hidden }
2982 {
2983 \def\Fld@width{1sp}
2984 }
2985 \LayoutCheckField{#2}
2986 {
2987 \mode_leave_vertical:
2988 \HyAnn@AbsPageLabel
2989 \Hy@escapeform\PDFForm@Check
2990 \pdfxform_if_exist:nF { __hyp_xform_CheckMarkYes }
2991 {
2992 \pdfxform_new:nnn
2993 {__hyp_xform_CheckMarkYes}{ }
2994 {
2995 \group_begin:
2996 \fontfamily{pzd}
2997 \fontencoding{U}
2998 \fontseries{m}
2999 \fontshape{n}
3000 \selectfont
3001 \char51
3002 \group_end:
3003 }
3004 \pdfxform_new:nnn
3005 {__hyp_xform_CheckMarkOff}{ }
3006 {
3007 \group_begin:
3008 \fontfamily{pzd}
3009 \fontencoding{U}
3010 \fontseries{m}
3011 \fontshape{n}
3012 \selectfont
3013 %perhaps xetex needs some small glyph ..
3014 \group_end:
3015 }
3016 }
3017 \pdfannot_box:nnnn
3018 {\Fld@width}
3019 {\Fld@height}

```

```

3020 {Opt} %is this correct?
3021 {\PDFForm@Check}
3022 \HyField@AddToFields %check if this works with xelatex ...
3023 }
3024 \group_end:
3025 }
3026 %hm. Should a luatex driver use type1 fonts in fields????
3027 \def\Hy@FormObjects
3028 {
3029 \pdf_object_new:n {__hyp/Encoding/pdfdoc }
3030 \pdf_object_new:n {__hyp/Font/ZaDb }
3031 \pdf_object_new:n {__hyp/Font/Helv }
3032 \pdf_object_write:nne {__hyp/Encoding/pdfdoc } { dict }
3033 {
3034 /Type/Encoding
3035 /Differences[
3036 24/breve/caron/circumflex/dotaccent/hungarumlaut/ogonek
3037 /ring/tilde
3038 \c_space_tl
3039 39/quotesingle
3040 \c_space_tl
3041 96/grave %
3042 \iow_newline:
3043 128/bullet/dagger/daggerdbl/ellipsis/emdash/endash/florin
3044 /fraction/guilsinglleft/guilsinglright/minus/perthousand
3045 /quotedblbase/quotedblleft/quotedblright/quoteleft
3046 /quoteright/quotesinglbase/trademark/fi/fl/Lslash/OE
3047 /Scaron/Ydieresis/Zcaron/dotlessi/lslash/oe/scaron/zcaron
3048 \iow_newline:
3049 164/currency
3050 \c_space_tl
3051 166/brokenbar
3052 \c_space_tl
3053 168/dieresis/copyright/ordfeminine
3054 \c_space_tl
3055 172/logicalnot/.notdef/registered/macron/degree/plusminus
3056 /twosuperior/threesuperior/acute/mu
3057 \c_space_tl
3058 183/periodcentered/cedilla/onesuperior/ordmasculine
3059 \c_space_tl
3060 188/onequarter/onehalf/threequarters
3061 \iow_newline:
3062 192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE
3063 /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave
3064 /Iacute/Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute
3065 /Ocircumflex/Otilde/Odieresis/multiply/Oslash/Ugrave
3066 /Uacute/Ucircumflex/Udieresis/Yacute/Thorn/germandbls
3067 /agrave/aacute/acircumflex/atilde/adieresis/aring/ae
3068 /ccedilla/egrave/eacute/ecircumflex/edieresis/igrave
3069 /iacute/icircumflex/idieresis/eth/ntilde/ograve/oacute
3070 /ocircumflex/otilde/odieresis/divide/oshlash/ugrave
3071 /uacute/ucircumflex/udieresis/yacute/thorn/ydieresis
3072]
3073 }

```

```

3074 \pdf_object_write:nnn {__hyp/Font/ZaDb } { dict }
3075 {
3076 /Type/Font
3077 /Subtype/Type1
3078 /Name/ZaDb
3079 /BaseFont/ZapfDingbats
3080 }
3081 \pdf_object_write:nne {__hyp/Font/Helv } { dict }
3082 {
3083 /Type/Font
3084 /Subtype/Type1
3085 /Name/Helv
3086 /BaseFont/Helvetica
3087 /Encoding~\pdf_object_ref:n { __hyp/Encoding/pdfdoc }
3088 }
3089 \global\let\Hy@FormObjects\relax
3090 }
3091 \ExplSyntaxOff
3092 \providecommand*{\Fld@pageobjref}{\}
3093 \ifcsname pdf@escapestring\endcsname
3094 \def\Hy@escapeform#1{%
3095 \ifHy@pdfescapeform
3096 \let\Hy@escapestring\pdfescapestring
3097 \else
3098 \let\Hy@escapestring\@firstofone
3099 \fi
3100 }%
3101 \Hy@escapeform{\}%
3102 \else
3103 \let\Hy@escapestring\@firstofone
3104 \def\Hy@escapeform#1{%
3105 \ifHy@pdfescapeform
3106 \def\Hy@escapestring##1{%
3107 \noexpand\Hy@escapestring{\noexpand##1}%
3108 }%
3109 \edef\Hy@temp{#1}%
3110 \expandafter\Hy@@escapeform\Hy@temp\Hy@escapestring{\}\@nil
3111 \def\Hy@escapestring##1{%
3112 \@ifundefined{Hy@esc@\string##1}{%
3113 ##1%
3114 \ThisShouldNotHappen
3115 }{%
3116 \csname Hy@esc@\string##1\endcsname
3117 }%
3118 }%
3119 \else
3120 \let\Hy@escapestring\@firstofone
3121 \fi
3122 }%
3123 \def\Hy@@escapeform#1\Hy@escapestring#2#3\@nil{%
3124 \ifx\#3\%
3125 \else
3126 \expandafter
3127 \Hy@pstringdef\csname Hy@esc@\string#2\endcsname{#2}% probably string-hex

```

```

3128 \Hy@ReturnAfterFi{%
3129 \Hy@@escapeform#3\@nil
3130 }%
3131 \fi
3132 }%
3133 \fi
3134 \def\PDFForm@Name{%
3135 \PDFForm@@Name\Fld@name
3136 \ifx\Fld@altname\relax
3137 \else
3138 \PDFForm@@Name\Fld@altname
3139 \fi
3140 \ifx\Fld@mappingname\relax
3141 \else
3142 \PDFForm@@Name\Fld@mappingname
3143 \fi
3144 }
3145 \def\PDFForm@@Name#1{%
3146 \begingroup
3147 \ifnum\Hy@pdfversion<5 % implementation note 117, PDF spec 1.7
3148 \ifHy@unicode
3149 \Hy@unicodedefalse
3150 \fi
3151 \fi
3152 \pdfstringdef\Hy@gtemp#1%
3153 \endgroup
3154 \let#1\Hy@gtemp
3155 }
3156 \def\Fld@X@additionalactions{%
3157 \ifx\Fld@keystroke@code\@empty
3158 \else
3159 /K<</S/JavaScript/JS(\Hy@escapestring{\Fld@keystroke@code})>>%
3160 \fi
3161 \ifx\Fld@format@code\@empty
3162 \else
3163 /F<</S/JavaScript/JS(\Hy@escapestring{\Fld@format@code})>>%
3164 \fi
3165 \ifx\Fld@validate@code\@empty
3166 \else
3167 /V<</S/JavaScript/JS(\Hy@escapestring{\Fld@validate@code})>>%
3168 \fi
3169 \ifx\Fld@calculate@code\@empty
3170 \else
3171 /C<</S/JavaScript/JS(\Hy@escapestring{\Fld@calculate@code})>>%
3172 \fi
3173 \ifx\Fld@onfocus@code\@empty
3174 \else
3175 /Fo<</S/JavaScript/JS(\Hy@escapestring{\Fld@onfocus@code})>>%
3176 \fi
3177 \ifx\Fld@onblur@code\@empty
3178 \else
3179 /Bl<</S/JavaScript/JS(\Hy@escapestring{\Fld@onblur@code})>>%
3180 \fi
3181 \ifx\Fld@onmousedown@code\@empty

```

```

3182 \else
3183 /D<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmousedown@code})>>%
3184 \fi
3185 \ifx\Fld@onmouseup@code\@empty
3186 \else
3187 /U<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmouseup@code})>>%
3188 \fi
3189 \ifx\Fld@onenter@code\@empty
3190 \else
3191 /E<</S/JavaScript/JS(\Hy@escapestring{\Fld@onenter@code})>>%
3192 \fi
3193 \ifx\Fld@onexit@code\@empty
3194 \else
3195 /X<</S/JavaScript/JS(\Hy@escapestring{\Fld@onexit@code})>>%
3196 \fi
3197 }
3198 \ExplSyntaxOn
3199 \def\Fld@additionalactions
3200 {%
3201 \exp_args:Ne\str_if_eq:nnF {\Fld@X@additionalactions}{}
3202 {
3203 \pdfmeta_standard_verify:nT {annot_widget_no_AA}
3204 {/AA<<\Fld@X@additionalactions>>}
3205 }
3206 }
3207 \def\Fld@annotnames{%
3208 /T(\Fld@name)%
3209 \ifx\Fld@altname\relax
3210 \else
3211 /TU(\Fld@altname)%
3212 \fi
3213 \ifx\Fld@mappingname\relax
3214 \else
3215 /TM(\Fld@mappingname)%
3216 \fi
3217 }
3218
3219 \def\PDFForm@Check
3220 {
3221 /Subtype/Widget
3222 ~\Fld@annotflags
3223 ~\Fld@pageobjref
3224 ~\Fld@annotnames
3225 /FT/Btn
3226 \Fld@flags
3227 /Q~\Fld@align
3228 /BS<</W~\Fld@borderwidth /S/\Fld@borderstyle>>
3229 /AP
3230 <<
3231 /N
3232 <<
3233 /Yes~\pdfxform_ref:n{__hyp_xform_CheckMarkYes}
3234 /Off~\pdfxform_ref:n{__hyp_xform_CheckMarkOff}
3235 >>

```

```

3236 >>
3237 /MK<<
3238 \int_compare:nNnF {\Fld@rotation}={0}
3239 {
3240 /R~\Fld@rotation
3241 }
3242 \tl_if_empty:NF\Fld@bordercolor
3243 {
3244 /BC[\Fld@bordercolor]
3245 }
3246 \tl_if_empty:NF\Fld@bcolor
3247 {
3248 /BG[\Fld@bcolor]
3249 }
3250 /CA(\Hy@escapestring{\Fld@cbsymbol})%
3251 >>
3252 /DA
3253 (
3254 /ZaDb~\strip@pt\Fld@charsize\c_space_tl Tf
3255 \tl_if_empty:NF \Fld@color
3256 {
3257 \c_space_tl \Fld@color
3258 }
3259)
3260 /H/P
3261 \legacy_if:nTF {\Fld@checked}
3262 {
3263 /V/Yes /AS/Yes
3264 }
3265 {
3266 /V/Off /AS/Off
3267 }
3268 \Fld@additionalactions
3269 }
3270
3271 \def\PDFForm@Push
3272 {
3273 /Subtype/Widget
3274 ~\Fld@annotflags
3275 ~\Fld@pageobjref
3276 ~\Fld@annotnames
3277 /FT/Btn
3278 ~\Fld@flags
3279 /H/P
3280 /BS<</W~\Fld@borderwidth/S/\Fld@borderstyle>>
3281 \bool_if:nT
3282 {
3283 !\int_compare_p:nNn {\Fld@rotation} = {0}
3284 ||
3285 \tl_if_exist_p:N \Fld@bordercolor
3286 }
3287 {
3288 /MK
3289 <<

```

```

3290 \int_compare:nNf {\Fld@rotation} = {0}
3291 {
3292 /R~\Fld@rotation
3293 }
3294 \tl_if_exist:NT \Fld@bordercolor
3295 {
3296 /BC[\Fld@bordercolor]
3297 }
3298 >>
3299 }
3300 /A<</S/JavaScript/JS(\Hy@escapestring{\Fld@onclick@code})>>
3301 \Fld@additionalactions
3302 }
3303
3304 \ExplSyntaxOff
3305 \def\PDFForm@List{%
3306 /Subtype/Widget%
3307 \Fld@annotflags
3308 \Fld@pageobjref
3309 \Fld@annotnames
3310 /FT/Ch%
3311 \Fld@flags
3312 /Q \Fld@align
3313 /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3314 \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3315 \ifx\Fld@bordercolor\relax\else 1\fi
3316 \ifx\Fld@bcolor\relax \else 1\fi
3317 \space
3318 \else
3319 /MK<<%
3320 \ifnum\Fld@rotation=\z@
3321 \else
3322 /R \Fld@rotation
3323 \fi
3324 \ifx\Fld@bordercolor\relax
3325 \else
3326 /BC[\Fld@bordercolor]%
3327 \fi
3328 \ifx\Fld@bcolor\relax
3329 \else
3330 /BG[\Fld@bcolor]%
3331 \fi
3332 >>%
3333 \fi
3334 /DA(/Helv \strip@pt\Fld@charsize\space Tf%
3335 \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
3336 \Fld@choices
3337 \Fld@additionalactions
3338 }
3339 \ExplSyntaxOn
3340 \def\PDFForm@Radio
3341 {
3342 /Subtype/Widget
3343 ~\Fld@annotflags

```



```

3344 ~\Fld@pageobjref
3345 ~\Fld@annotnames
3346 /FT/Btn
3347 \Fld@flags
3348 /H/P
3349 /BS<</W~\Fld@borderwidth/S/\Fld@borderstyle>>
3350 /MK<<
3351 \ifnum\Fld@rotation=\z@
3352 \else
3353 /R~\Fld@rotation
3354 \fi
3355 \ifx\Fld@bordercolor\relax
3356 \else
3357 /BC[\Fld@bordercolor]%
3358 \fi
3359 \ifx\Fld@bcolor\relax
3360 \else
3361 /BG[\Fld@bcolor]%
3362 \fi
3363 /CA(\Hy@escapestring{\Fld@radiosymbol})%
3364 >>
3365 /DA(/ZaDb~\strip@pt\Fld@charsize\space Tf%
3366 \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
3367 \ifx\Fld@default\@empty
3368 /V/Off%
3369 /DV/Off%
3370 \else
3371 /V/\Fld@default
3372 /DV/\Fld@default
3373 \fi
3374 \Fld@additionalactions
3375 }
3376
3377 % Does an appearance dict make sense here?
3378 \def\PDFForm@Text
3379 {
3380 /Subtype/Widget
3381 ~\Fld@annotflags
3382 ~\Fld@pageobjref
3383 ~\Fld@annotnames
3384 /FT/Tx
3385 ~\Fld@flags
3386 /Q~\Fld@align
3387 /BS<</W~\Fld@borderwidth\c_space_tl /S /\Fld@borderstyle>>
3388 \bool_if:nT
3389 {
3390 !\int_compare_p:nNn {\Fld@rotation} = {0}
3391 ||
3392 \tl_if_exist_p:N \Fld@bordercolor
3393 ||
3394 \tl_if_exist_p:N \Fld@bcolor
3395 }
3396 {
3397 /MK

```

```

3398 <<
3399 \int_compare:nNfF {\Fld@rotation} = {0}
3400 {
3401 /R~\Fld@rotation
3402 }
3403 \tl_if_exist:NT \Fld@bordercolor
3404 {
3405 /BC[\Fld@bordercolor]
3406 }
3407 \tl_if_exist:NT \Fld@bcolor
3408 {
3409 /BG[\Fld@bcolor]
3410 }
3411 >>
3412 }
3413 /DA
3414 (
3415 /Helv~\strip@pt\Fld@charsize\c_space_tl Tf
3416 \tl_if_empty:NF {\c_space_tl\Fld@color}
3417)
3418 /DV(\Hy@escapestring{\Fld@default})
3419 /V(\Hy@escapestring{\Fld@value})
3420 ~\Fld@additionalactions
3421 \int_compare:nNtT { \Fld@maxlen}>{0}
3422 {
3423 /MaxLen~\Fld@maxlen
3424 }
3425 }
3426 \ExplSyntaxOff
3427
3428 \def\PDFForm@Submit{%
3429 /Subtype/Widget%
3430 \Fld@annotflags
3431 \Fld@pageobjref
3432 \Fld@annotnames
3433 /FT/Btn%
3434 \Fld@flags
3435 /H/P%
3436 /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3437 \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3438 \ifx\Fld@bordercolor\relax\else 1\fi
3439 \space
3440 \else
3441 /MK<<%
3442 \ifnum\Fld@rotation=\z@
3443 \else
3444 /R \Fld@rotation
3445 \fi
3446 \ifx\Fld@bordercolor\relax
3447 \else
3448 /BC[\Fld@bordercolor]%
3449 \fi
3450 >>%
3451 \fi

```

```

3452 /A<<%
3453 /S/SubmitForm%
3454 /F<<%
3455 /FS/URL%
3456 /F(\Hy@escapestring{\Form@action})%
3457 >>%
3458 \Fld@submitflags
3459 >>%
3460 \Fld@additionalactions
3461 }
3462 \ExplSyntaxOn
3463 \def\PDFForm@Reset{%
3464 /Subtype/Widget%
3465 \Fld@annotflags
3466 \Fld@pageobjref
3467 \Fld@annotnames
3468 /FT/Btn%
3469 \Fld@flags
3470 /H/P%
3471 /DA(/Helv~\strip@pt\Fld@charsize\space Tf~0~0~1~rg)%
3472 \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3473 \ifx\Fld@bordercolor\relax\else 1\fi
3474 \space
3475 \else
3476 /MK<<%
3477 \ifnum\Fld@rotation=\z@
3478 \else
3479 /R~\Fld@rotation
3480 \fi
3481 \ifx\Fld@bordercolor\relax
3482 \else
3483 /BC[\Fld@bordercolor]%
3484 \fi
3485 >>%
3486 \fi
3487 /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3488 /A<</S/ResetForm>>%
3489 \Fld@additionalactions
3490 }%
3491
3492
3493 %these patterns are used in hyperref checks.
3494 %it is unclear if they are really useful and if a backend support is
3495 %needed.
3496 \str_case:VnF \c_sys_backend_str
3497 {
3498 { pdfmode }
3499 {
3500 \def\HyPat@ObjRef
3501 {
3502 [0-9]*[1-9][0-9]*~0~R
3503 }
3504 }
3505 { dvipdfmx }

```

```

3506 {
3507 \def\HyPat@ObjRef
3508 {
3509 @[\~]+
3510 }
3511 }
3512 { xdvipdfmx }
3513 {
3514 \def\HyPat@ObjRef
3515 {
3516 @[\~]+
3517 }
3518 }
3519 }
3520 { %also set in hyperref sty, so probably not needed.
3521 \def\HyPat@ObjRef/{.+}
3522 }
3523
3524
3525 \ExplSyntaxOff
3526 % UF: removed Hy@writebookmark
3527 % \Hy@currentbookmarklevel{0}
3528 % \Hy@numberline
3529 % \@@writetorep
3530 % counter{bookmark@seq@number}
3531 % removed \HyPsd@SanitizeForOutFile, not needed
3532 % removed \currentpdfbookmark, defined by bookmark,
3533 % should use \newcommand there
3534 % removed \subpdfbookmark, defined by bookmark,
3535 % should use \newcommand there
3536 % removed \belowpdfbookmark, defined by bookmark,
3537 % should use \newcommand there
3538 % removed \pdfbookmark, defined by bookmark,
3539 % \BOOKMARK
3540 % \@BOOKMARK
3541 %% \RequirePackage{rerunfilecheck}[2009/12/10]
3542 %% removed \Hy@OutlineRerunCheck, unneeded with bookmark
3543 %% removed \ReadBookmarks / unneeded with bookmark.
3544 %% removed \Hy@OutlineName
3545 %% removed \check@bm@number
3546 %% removed \calc@bm@number
3547
3548 \ifHy@implicit
3549 \else
3550 \expandafter\endinput
3551 \fi
3552 \newlength\Hy@SectionHShift
3553 \def\Hy@SectionAnchorHref#1{%
3554 \ifx\protect\@typeset@protect
3555 \Hy@@SectionAnchor{#1}%
3556 \fi
3557 }
3558 \DeclareRobustCommand*{\Hy@@SectionAnchor}[1]{%
3559 \leavevmode

```

```

3560 \hbox to Opt{%
3561 \kern-\Hy@SectionHShift
3562 \Hy@raisedlink{%
3563 \hyper@anchorstart{#1}\hyper@anchorend
3564 }%
3565 \hss
3566 }%
3567 }
3568 \@ifundefined{hyper@nopatch@sectioning}
3569 {
3570 \let\H@old@ssect\@ssect
3571 \def\@ssect#1#2#3#4#5{%
3572 \Hy@MakeCurrentHrefAuto{section*}%
3573 \setlength{\Hy@SectionHShift}{#1}%
3574 \begingroup
3575 \toks@{\H@old@ssect{#1}{#2}{#3}{#4}}%
3576 \toks\tw@\expandafter{%
3577 \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
3578 #5%
3579 }%
3580 \edef\x{\endgroup
3581 \the\toks@{\the\toks\tw@}}%
3582 }\x
3583 }
3584 \let\H@old@schapter\@schapter
3585 \def\@schapter#1{%
3586 \begingroup
3587 \let\@mkboth\@gobbletwo
3588 \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
3589 \Hy@raisedlink{%
3590 \hyper@anchorstart{\@currentHref}\hyper@anchorend
3591 }%
3592 \endgroup
3593 \H@old@schapter{#1}%
3594 }
3595 \@ifundefined{@chapter}{-}{%
3596 \let\Hy@org@chapter\@chapter
3597 \def\@chapter{%
3598 \def\Hy@next{%
3599 \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
3600 \Hy@raisedlink{%
3601 \hyper@anchorstart{\@currentHref}\hyper@anchorend
3602 }%
3603 }%
3604 \ifnum\c@secnumdepth>\m@ne
3605 \@ifundefined{if@mainmatter}{%
3606 \iftrue{\csname if@mainmatter\endcsname}%
3607 \let\Hy@next\relax
3608 }%
3609 \fi
3610 \Hy@next
3611 \Hy@org@chapter
3612 }%
3613 }

```

```

3614 \let\H@old@part\@part
3615 \begingroup\expandafter\expandafter\expandafter\endgroup
3616 \expandafter\ifx\csname chapter\endcsname\relax
3617 \let\Hy@secnum@part\z@
3618 \else
3619 \let\Hy@secnum@part\m@ne
3620 \fi
3621 \def\@part{%
3622 \ifnum\Hy@secnum@part>\c@secnumdepth
3623 \phantomsection
3624 \fi
3625 \H@old@part
3626 }
3627 \let\H@old@spart\@spart
3628 \def\@spart#1{%
3629 \Hy@MakeCurrentHrefAuto{part*}%
3630 \Hy@raisedlink{%
3631 \hyper@anchorstart{\@currentHref}\hyper@anchorend
3632 }%
3633 \H@old@spart{#1}%
3634 }
3635 \let\H@old@sect\@sect
3636 \def\@sect#1#2#3#4#5#6[#7]#8{%
3637 \ifnum #2>\c@secnumdepth
3638 \expandafter\@firstoftwo
3639 \else
3640 \expandafter\@secondoftwo
3641 \fi
3642 {%
3643 \Hy@MakeCurrentHrefAuto{section*}%
3644 \setlength{\Hy@SectionHShift}{#3}%
3645 \begingroup
3646 \toks@{\H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]]}%
3647 \toks\tw@\expandafter{%
3648 \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
3649 #8%
3650 }%
3651 \edef\x{\endgroup
3652 \the\toks@{\the\toks\tw@}%
3653 }\x
3654 }{%
3655 \H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]]{#8}%
3656 }%
3657 }
3658 {}
3659 \expandafter\def\csname Parent-4\endcsname{}
3660 \expandafter\def\csname Parent-3\endcsname{}
3661 \expandafter\def\csname Parent-2\endcsname{}
3662 \expandafter\def\csname Parent-1\endcsname{}
3663 \expandafter\def\csname Parent0\endcsname{}
3664 \expandafter\def\csname Parent1\endcsname{}
3665 \expandafter\def\csname Parent2\endcsname{}
3666 \expandafter\def\csname Parent3\endcsname{}
3667 \expandafter\def\csname Parent4\endcsname{}

```

```

3668 %%
3669 </package>
3670 <@@=hyp>
3671 <*colorscheme>
3672 % collected from https://tex.stackexchange.com/questions/525261/better-default-
 colors-for-hyperref-links
3673 % cite color ignored, as it doesn't fit ... should be done by cite packages ?
3674 % linkcolor=
3675 %,filecolor=
3676 %,urlcolor=
3677 %,menucolor=
3678 %,runcolor=
3679 %,linkbordercolor=
3680 %,filebordercolor=
3681 %,urlbordercolor=
3682 %,menubordercolor=
3683 %,runbordercolor=
3684
3685 \prop_const_from_keyval:cn { c__hyp_colorscheme_primary-colors_prop }
3686 {
3687 linkcolor = [rgb]{1,0,0}, %red
3688 filecolor = [rgb]{0,1,1}, %cyan
3689 urlcolor = [rgb]{1,0,1}, %magenta
3690 menucolor = [rgb]{1, 0, 0}, %red
3691 runcolor = [rgb]{0,1,1}, %cyan
3692 %-----
3693 linkbordercolor = [rgb]{1, 0 ,0 },
3694 filebordercolor = [rgb]{0, .5, .5},
3695 urlbordercolor = [rgb]{0, 1, 1},
3696 menubordercolor = [rgb]{1, 0, 0},
3697 runbordercolor = [rgb]{0, .7, .7}
3698 }
3699
3700 \prop_const_from_keyval:Nn \c__hyp_colorscheme_daleif_prop
3701 {
3702 linkcolor = [rgb]{0,0.2,0.6},
3703 filecolor = [rgb]{0.8,0,0.8},
3704 urlcolor = [rgb]{0.8,0,0.8},
3705 menucolor = [rgb]{0,0.2,0.6},
3706 runcolor = [rgb]{0.8,0,0.8},
3707 %----- %-----
3708 linkbordercolor = [rgb]{0,0.2,0.6},
3709 filebordercolor = [rgb]{0.8,0,0.8},
3710 urlbordercolor = [rgb]{0.8,0,0.8},
3711 menubordercolor = [rgb]{0,0.2,0.6},
3712 runbordercolor = [rgb]{0.8,0,0.8}
3713 }
3714
3715 \prop_const_from_keyval:Nn \c__hyp_colorscheme_julian_prop
3716 { %two colors: intern/extern
3717 linkcolor = [rgb]{0.79216, 0, 0.12549},
3718 filecolor = [rgb]{0.01961, 0.44314, 0.6902},
3719 urlcolor = [rgb]{0.01961, 0.44314, 0.6902},
3720 menucolor = [rgb]{0.79216, 0, 0.12549 },

```

```

3721 runcolor = [rgb]{0.01961, 0.44314, 0.6902 },
3722 %----- %-----
3723 linkbordercolor = [rgb]{0.79216, 0, 0.12549},
3724 filebordercolor = [rgb]{0.01961, 0.44314, 0.6902},
3725 urlbordercolor = [rgb]{0.01961, 0.44314, 0.6902},
3726 menubordercolor = [rgb]{0.79216, 0, 0.12549 },
3727 runbordercolor = [rgb]{0.01961, 0.44314, 0.6902 }
3728 }
3729
3730 \prop_const_from_keyval:Nn \c__hyp_colorscheme_tivv_prop
3731 { %all darkgray
3732 linkcolor = [rgb]{0.4 ,0.4 ,0.4 },
3733 filecolor = [rgb]{0.4 ,0.4 ,0.4 },
3734 urlcolor = [rgb]{0.4 ,0.4 ,0.4 },
3735 menucolor = [rgb]{0.4 ,0.4 ,0.4 },
3736 runcolor = [rgb]{0.4 ,0.4 ,0.4 },
3737 %----- %-----
3738 linkbordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3739 filebordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3740 urlbordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3741 menubordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3742 runbordercolor = [rgb]{0.4 ,0.4 ,0.4 }
3743 }
3744
3745 \prop_const_from_keyval:Nn \c__hyp_colorscheme_szabolcsA_prop
3746 { %dvipsnam.def
3747 linkcolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3748 filecolor = [rgb]{1, 0, 0}, %Red
3749 urlcolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3750 menucolor = [rgb]{1, 0, 0}, %Red
3751 runcolor = [rgb]{1, 0, 0}, %Red
3752 %----- %-----
3753 linkbordercolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3754 filebordercolor = [rgb]{1, 0, 0}, %Red
3755 urlbordercolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3756 menubordercolor = [rgb]{1, 0, 0}, %Red
3757 runbordercolor = [rgb]{1, 0, 0} %Red
3758 }
3759
3760 \prop_const_from_keyval:Nn \c__hyp_colorscheme_szabolcsB_prop
3761 { %dvipsnam.def
3762 linkcolor = [rgb]{0.72, 0, 0}, %BrickRed
3763 filecolor = [rgb]{0, 1, 0}, %Green
3764 urlcolor = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3765 menucolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3766 runcolor = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3767 %----- %-----
3768 linkbordercolor = [rgb]{0.72, 0, 0}, %BrickRed
3769 filebordercolor = [rgb]{0, 1, 0}, %Green
3770 urlbordercolor = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3771 menubordercolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3772 runbordercolor = [rgb]{0.64, 0.08, 0.98} %Mulberry
3773 }
3774

```



```

3775
3776 \prop_const_from_keyval:Nn \c__hyp_colorscheme_phelype_prop
3777 {
3778 linkcolor = [rgb]{0.50196, 0, 0.02353},
3779 filecolor = [rgb]{0.07451, 0.09412, 0.46667},
3780 urlcolor = [rgb]{0.54118, 0, 0.52941},
3781 menucolor = [rgb]{0.44706, 0.45882, 0},
3782 runcolor = [rgb]{0.07451, 0.46667, 0.46275},
3783 %----- %-----
3784 linkbordercolor = [rgb]{0.701176, 0.4, 0.414118},
3785 filebordercolor = [rgb]{0.444706, 0.456472, 0.680002},
3786 urlbordercolor = [rgb]{0.724708, 0.4, 0.717646},
3787 menubordercolor = [rgb]{0.668236, 0.675292, 0.4},
3788 runbordercolor = [rgb]{0.444706, 0.680002, 0.67765}
3789 }
3790
3791 \prop_const_from_keyval:Nn \c__hyp_colorscheme_henryford_prop
3792 {
3793 linkcolor = [rgb]{0,0,0},
3794 filecolor = [rgb]{0,0,0},
3795 urlcolor = [rgb]{0,0,0},
3796 menucolor = [rgb]{0,0,0},
3797 runcolor = [rgb]{0,0,0},
3798 %----- %-----
3799 linkbordercolor = [rgb]{0,0,0},
3800 filebordercolor = [rgb]{0,0,0},
3801 urlbordercolor = [rgb]{0,0,0},
3802 menubordercolor = [rgb]{0,0,0},
3803 runbordercolor = [rgb]{0,0,0}
3804 }
3805 </colorscheme>

```

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| 2692                                     | \strip@pt 3254, 3334, 3365, 3415, 3471  |
| \HyField@PDFChoices .....                | \toks@ .....                            |
| 2834                                     | 3575, 3581, 3646, 3652                  |
|                                          | \tw@ .....                              |
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| <code>\z@</code> . . . . .                          | 366, 2654, 2718, 3314, 3320,<br>3351, 3437, 3442, 3472, 3477, 3617                                                                                                                                                                          |
| text commands:                                      |                                                                                                                                                                                                                                             |
| <code>\text_expand:n</code> . . . . .               | 66, 818, 2209, 2252                                                                                                                                                                                                                         |
| <code>\text_purify:n</code> . . . . .               | 9                                                                                                                                                                                                                                           |
| <code>\textsf</code> . . . . .                      | 2911, 2915                                                                                                                                                                                                                                  |
| <code>\the</code> . . . . .                         | 604, 2658, 2659, 2664,<br>2668, 2766, 2770, 2773, 3581, 3652                                                                                                                                                                                |
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| <code>\title</code> . . . . .                       | 2                                                                                                                                                                                                                                           |
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| <code>\c_space_tl</code> . . . . .                  | 158, 1229,<br>1260, 1265, 1270, 2818, 2819, 2826,<br>3038, 3040, 3050, 3052, 3054, 3057,<br>3059, 3254, 3257, 3387, 3415, 3416                                                                                                              |
| <code>\tl_const:Nn</code> . . . . .                 | 464                                                                                                                                                                                                                                         |
| <code>\tl_gput_right:Nn</code> . . . . .            | 604                                                                                                                                                                                                                                         |
| <code>\tl_gset:Nn</code> . . . . .                  | 1970, 1990, 1994                                                                                                                                                                                                                            |
| <code>\tl_if_blank:nTF</code> . . . . .             | 421, 837, 2254, 2291, 2306, 2416, 2429                                                                                                                                                                                                      |
| <code>\tl_if_empty:NTF</code> . . . . .             | 681, 1557, 2211, 3242, 3246, 3255, 3416                                                                                                                                                                                                     |
| <code>\tl_if_empty:nTF</code> . . . . .             | 224, 1094, 1134, 1153,<br>1180, 1199, 1745, 1801, 1908, 2193                                                                                                                                                                                |
| <code>\tl_if_empty_p:N</code> . . . . .             | 1972, 1997                                                                                                                                                                                                                                  |
| <code>\tl_if_eq:NnTF</code> . . . . .               | 2119                                                                                                                                                                                                                                        |
| <code>\tl_if_exist:NTF</code> . . . . .             | 3294, 3403, 3407                                                                                                                                                                                                                            |
| <code>\tl_if_exist_p:N</code> . . . . .             | 3285, 3392, 3394                                                                                                                                                                                                                            |
| <code>\tl_if_head_eq_charcode:nNTF</code> . . . . . | 983, 1000                                                                                                                                                                                                                                   |
| <code>\tl_new:N</code> . . . . .                    | 197, 198, 199, 200, 453, 454, 458,<br>459, 460, 461, 484, 485, 486, 487,<br>488, 489, 490, 491, 492, 500, 543, 654                                                                                                                          |
| <code>\tl_set:Nn</code> . . . . .                   | 217,<br>218, 230, 261, 264, 290, 293, 349,<br>352, 378, 494, 495, 496, 497, 498,<br>499, 660, 669, 712, 736, 818, 1955,<br>1959, 1963, 1986, 2121, 2124, 2131,<br>2134, 2135, 2136, 2137, 2138, 2139,<br>2144, 2148, 2184, 2209, 2231, 2252 |
| <code>\tl_set_eq:NN</code> . . . . .                | 687                                                                                                                                                                                                                                         |
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| <code>\tl_to_str:n</code> . . . . .                 | 24, 25, 34, 38                                                                                                                                                                                                                              |
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| <code>\token_to_str:N</code> . . . . .              | 33                                                                                                                                                                                                                                          |
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