

**CROSSREFTOOLS**

**Expandable extraction of cleveref and other label  
data**

**Documentation**

**Version 0.3**

**2017/10/31**

**Autor: Christian Hupfer<sup>†</sup>**

---








<sup>†</sup>[typography.with.latex@gmail.com](mailto:typography.with.latex@gmail.com)

# Contents

<b>Contents</b>	<b>2</b>
<b>I Introduction</b>	<b>4</b>
<b>1 Requirements, loading and incompatibilities</b>	<b>4</b>
1.1 Required packages and T <sub>E</sub> X engine . . . . .	4
1.2 Loading of the package . . . . .	4
1.3 Incompatibilities . . . . .	4
<b>II Macro descriptions</b>	<b>5</b>
<b>2 Extracting information from regular labels</b>	<b>5</b>
<b>3 Extracting information from cleveref</b>	<b>6</b>
<b>4 Additional macros and utilities</b>	<b>8</b>
4.1 Expandable Commands . . . . .	8
4.2 Nonexpandable Commands . . . . .	9
<b>III Examples</b>	<b>10</b>
<b>5 Driver example</b>	<b>10</b>
<b>6 Version history</b>	<b>14</b>
<b>Index</b>	<b>15</b>

## Typographical conventions

Throughout this documentation following symbols and conventions are used:

-  **foo** means a the class `foo`
-  **foo** names a package `foo`
-  **foo** indicates a counter named `foo`
-  `foo` will indicate either a file named `foo` or a file extension `foo`
-  `foo` will indicate some files
-  **foo** names a special feature or tag `foo`
-  **foo** deals with a command or package option named `foo`

---

## Part I





# Introduction


---


<b>1</b>	<b>Requirements, loading and incompatibilities</b>	<b>4</b>
1.1	Required packages and T <sub>E</sub> X engine . . . . .	4
1.2	Loading of the package . . . . .	4
1.3	Incompatibilities . . . . .	4

---

## Preface

This package provides expandable extraction of information stored in labels generated with  **cleveref** and regular labels written by the usual `\label` macro, regardless whether  **hyperref** is loaded or not. For those regular cross-reference information  **crossreftools** works in a  **refcount** - like manner.




Whereas  **cleveref** provides `\labelcref` and other commands or `\ref` from standard L<sup>A</sup>T<sub>E</sub>X2<sub>ε</sub> kernel none of those are expandable and can not be used in an `\edef` - approach.

 Most times class and package authors will benefit of this package, but there might be usual documents that need the features of `|crossreftools|`

## 1 Requirements, loading and incompatibilities

### 1.1 Required packages and T<sub>E</sub>X engine

The package does not require features from XeL<sup>A</sup>T<sub>E</sub>X or LuaL<sup>A</sup>T<sub>E</sub>X but can be run with those features as well as with L<sup>A</sup>T<sub>E</sub>X or pdfL<sup>A</sup>T<sub>E</sub>X. The compilation documentation requires however pdfL<sup>A</sup>T<sub>E</sub>X as of version 0.3.


No packages are loaded by  **crossreftools** , this package does neither load  **hyperref** nor  **cleveref** itself.

### 1.2 Loading of the package

Loading is done with

```
\label{foo}
```

As of version 0.3  **crossreftools** does not have options.

There is no loading order required. The macros expand to [UNDEFINED] if  **cleveref** is not loaded.

### 1.3 Incompatibilities

As of 0.3 this package cannot be used with plain T<sub>E</sub>X

---

## Part II



# Macro descriptions

---

<b>2</b>	<b>Extracting information from regular labels</b>	<b>5</b>
<b>3</b>	<b>Extracting information from cleveref</b>	<b>6</b>
<b>4</b>	<b>Additional macros and utilities</b>	<b>8</b>
4.1	Expandable Commands . . . . .	8
4.2	Nonexpandable Commands . . . . .	9

---

## 2 Extracting information from regular labels

Depending on loading of  **hyperref** there is some more information (properties) stored with a `\label` command. Common properties are reference and page, additions of  **hyperref** are name, anchor and the (yet) unused 5th argument of `\newlabel`, the property is called unused as of version 0.3.

All properties are extracted with `\crtextractref`<sup>→P.5</sup>.

Expandable

`\crtextractref{<property>}{<label name>}`

This command will extract one of the properties reference, page, anchor, name and unused from the label given as the 2nd mandatory argument.

v0.3  
2017-10-  
29

For convenience, there are shortcuts to extract a specific property:

Expandable

`\crtcrefpage{<label name>}`

This extracts the page number that would be printed by `\pageref`.

v0.3  
2017-10-  
29

Expandable



`\crtrefnumber{<label name>}`

This extracts the reference value (or something that is stored by `\@currentlabel` belonging to a certain label name.

v0.3  
2017-10-  
29

### 3. EXTRACTING INFORMATION FROM CLEVEREF

---

With  **hyperref** being loaded, following return non-empty label information, without  **hyperref** they are available, but expand to nothing.

`\crtrefname{<label name>}`

This extracts the name of the sectioning unit or counter as being specified with `\nameref`.

Expandable

v0.3  
2017-10-  
29

Expandable



`\crtrefanchor{<label name>}`

This extracts the hyper target anchor of the reference in order to be used with `\hyperlink`.

v0.3  
2017-10-  
29


Expandable

`\crtrefunused{<label name>}`



This extracts the yet unused 5th argument of labels generated after  **hyperref** is loaded. As of version v6.85a of  **hyperref**, this argument has no meaning yet. If this is going to be change in future, `\crtrefunused`<sup>P.6</sup> will probably be removed and replaced by another macro that reflects the meaning of this 5th argument.

v0.3  
2017-10-  
29

## 3 Extracting information from cleveref

The  **cleveref** package redefines the `\label` macro and stores another label with the same basic name and a suffix `@cref`, so

```
\label{foo}
```

would generate both the labels `foo` and `foo@cref`. The  **cleveref** - version of a label saves basically five properties to the  `.aux` - file.

- `counter`

This property holds the name of the counter that was used in `\refstepcounter`.

- `number`

This property holds the value of label, this is usually the value of a counter



Please note that this property does not mean the reference value that is displayed with `\cref` or `\Cref`.

- `result`

### 3. *EXTRACTING INFORMATION FROM CLEVEREF*

---

- `reference` This property holds the reference that is to be typeset, i.e. the content displayed with `\cref` or `\Cref`, however, without hyperlinks.
- `page` This property stores the page number of the `\label` usage.



### 3. EXTRACTING INFORMATION FROM CLEVEREF

---

✉ **crossreftools** extracts those properties with `\crtextractcref`<sup>→P.7</sup>.

Expandable

`\crtextractcref{<property>}{<label name>}`

This command will extract one of the properties counter, number, result, reference and page from the label given as the 2nd mandatory argument.

v0.1  
2017-10-  
08

For convenience, there are shortcuts to extract a specific property:

Expandable

`\crtcrefcounter{<label name>}`

This extracts the counter belonging to a certain label name.

v0.1  
2017-10-  
08

Expandable

`\crtcrefnumber{<label name>}`

This extracts the counter value (or something that is stored by `\cref@currentlabel` belonging to a certain label name.

v0.1  
2017-10-  
08

Expandable

`\crtcrefresult{<label name>}`

This extracts the result of the splitting of a counter belonging to a certain label name.

v0.1  
2017-10-  
08

Expandable

`\crtcrefreference{<label name>}`

This extracts the reference that would be printed by `\cref` or `\Cref`, without hyperlinks.

v0.1  
2017-10-  
08

Expandable

`\crtcrefpage{<label name>}`

This extracts the page number that would be printed by `\pageref`.

v0.1  
2017-10-  
08

## 4 Additional macros and utilities

### 4.1 Expandable Commands

✉ **crossreftools** provides some expandable helper macros in order to query the cross reference names that are stored with `\crefname` and `\Crefname` from ✉ **cleveref**.

Expandable

`\crtcrefname{⟨counter name⟩}`

This extracts the lower case cross reference name of a given counter.

v0.1  
2017-10-08

Expandable

`\crtCrefname{⟨counter name⟩}`

This extracts the upper case cross reference name of a given counter.

v0.1  
2017-10-08

Expandable

`\crtcrefpluralname{⟨counter name⟩}`

This extracts the lower case cross reference plural name of a given counter.

v0.1  
2017-10-08

Expandable

`\crtCrefpluralname{⟨counter name⟩}`

This extracts the upper case cross reference plural name of a given counter.

v0.1  
2017-10-08

Expandable

`\crtcrefnamebylabel{⟨label name⟩}`

This extracts the lower case cross reference name of a given label.

v0.1  
2017-10-08v0.2  
2017-10-08

Expandable

`\crtCrefnamebylabel{⟨label name⟩}`

This extracts the upper case cross reference name of a given label.

v0.1  
2017-10-08v0.2  
2017-10-08

Expandable


`\crtcref{⟨label name⟩}`

This displays the reference in the same way as `\cref` from ✉ **cleveref** would do in a setup without using `\crefformat` etc. The hyperlink is not displayed, however. This command is expandable.

For the upper case version see `\crtCref`<sup>P.9</sup>.

v0.3  
2017-10-29

`\crtCref{<label name>}`



This displays the reference in the same way as `\Cref` from  **cleveref** would do in a setup without using `\Crefformat` etc. The hyperlink is not displayed, however. This command is expandable.

For the lower case version see `\crtcref` <sup>→ P.8</sup>.

v0.3  
2017-10-  
29


### 4.2 Nonexpandable Commands

`\crthyperlink{<anchor>}{<link text>}`

This is a wrapper to the `\hyperlink` macro from  **hyperref** to the given `{<anchor>}`, displaying the `{<link text>}`. If  **hyperref** is not loaded, only the link text is displayed.

v0.3  
2017-10-  
29


`\crthypercref{<label name>}`

This generates a linked reference to a given label like `\cref` would do. If  **hyperref** is not loaded, no link but only the reference text is displayed.

For the upper case version see `\crtcref` <sup>→ P.8</sup>.

v0.3  
2017-10-  
29

`\crthyperCref{<label name>}`

This generates a linked reference to a given label like `\Cref` would do. If  **hyperref** is not loaded, no link but only the reference text is displayed.

For the lower case version see `\crtcref` <sup>→ P.8</sup>.

v0.3  
2017-10-  
29

---

## Part III

# Examples

---

5	Driver example	10
6	Version history	14
	Index	15

---

## 5 Driver example

```
%% LaTeX package crossreftools - version 0.3 (2017/10/31 -- 08:22:45)
%% Driver file for crossreftools.sty
%%
%%
%%
-----
%% Copyright (c) 2017 by Dr. Christian Hupfer <typography dot with dot latex
    at gmail dot com>
%%
-----
%%
%% This work may be distributed and/or modified under the
%% conditions of the LaTeX Project Public License, either version 1.3
%% of this license or (at your option) any later version.
%% The latest version of this license is in
%% http://www.latex-project.org/lppl.txt
%% and version 1.3 or later is part of all distributions of LaTeX
%% version 2005/12/01 or later.
%%
%%
%% This work has the LPPL maintenance status ‘author-maintained’
%%
%%

\documentclass{book}
```

```
\usepackage{hyperref}
\usepackage{cleveref}

\usepackage{crossreftools}

\setlength{\parindent}{0em}

\def\labeltoshow{foochapterlabel}

\def\equationlabeltoshow{fooequationlabel}

\begin{document}

\setcounter{chapter}{16}

Let us refer the usual way: \Cref{\labeltoshow}

\edef\foocntr{\crtcrefcounter{\labeltoshow}}

The counter for \fbox{\labeltoshow} is \foocntr\ or
\crtcrefcounter{\labeltoshow}. It is used on page
\crtcrefpage{\labeltoshow}. The value for the misspelled label name is
\crtcrefnumber{labeltoshowstuff}, whereas the correct value is
\crtcrefnumber{\labeltoshow}.

The result is \fbox{\crtcrefresult{\labeltoshow}}

\edef\labeltoshowname{\crtcrefname{chapter}}

\section{Extracting usual reference information}

Extracting content with \verb!\crtextractref!
\begin{itemize}
\item reference: \crtextractcref{reference}{\labeltoshow}
```

```
\item page: \crtexttractref{page}{\labeltoshow}
\end{itemize}
```

If the `\fbox{hyperref}` package is loaded, further properties are retrievable:

```
\begin{itemize}
\item name: \crtexttractref{name}{\labeltoshow}
\item hyperanchor: \crtexttractref{anchor}{\labeltoshow}
\item unused: \crtexttractref{unused}{\labeltoshow}
\end{itemize}
```

The 5th (and usually empty) label property introduced by `hyperref` is unused as of version v6.85a of that package -- `\crtexttractref{unused}{labelname}` will return nothing here, i.e. the expansion is empty.

```
\section{Extracting the cleveref names}
```

```
\begin{itemize}
```

```
\item The lower case cross reference name for \fbox{\equationlabeltoshow} is
\crctcrefnamebylabel{\equationlabeltoshow}, this time using
\verb!\crctcrefnamebylabel!; the upper case name is
\crtCrefnamebylabel{\equationlabeltoshow}.
```

```
\item Extracting content with \verb!\crtexttractref!
```

```
\begin{itemize}
\item counter: \crtexttractref{counter}{\labeltoshow}
\item number: \crtexttractref{number}{\labeltoshow}
\item result: \crtexttractref{result}{\labeltoshow}
\item reference: \crtexttractref{reference}{\labeltoshow}
\item page: \crtexttractref{page}{\labeltoshow}
\end{itemize}
\end{itemize}
```

The macro `\verb!\crtexttractref!` is expandable!  
`\edef\counterof{\crtexttractref{counter}{\labeltoshow}}` Using the stored value for counter: `\counterof!`

See `\crthyperCref{fooequationlabel}`

```
\chapter{This is foo}\label{foochapterlabel}


\setcounter{section}{5}
\section{Foo}\label{foosectionlabel}

\begin{equation}
  E=mc^2\label{firstequationlabel}
\end{equation}

\begin{equation}
  E=mc^2\label{fooequationlabel}
\end{equation}

\end{document}
```

## 6 Version history

- Version v0.3 2017-10-29 Added the extraction macros for regular labels (i.e. not the  **cleveref** - related ones) and convenience wrappers for generating links.
- Version v0.2 2017-10-25 Introduced a check in `\crtcrefnamebylabel→P.8` and `\crtCrefnamebylabel→P.8` whether given label exists
- Version v0.1 2017-10-08 First version



## Index

\crtCref, 11  
\crtcref, 10  
\crtcrefcounter, 9  
\crtCrefname, 10  
\crtcrefname, 10  
\crtCrefnamebylabel, 10  
\crtcrefnamebylabel, 10  
\crtcrefnumber, 9  
\crtcrefpage, 6, 9  
\crtCrefpluralname, 10  
\crtcrefpluralname, 10  
\crtcrefreference, 9  
\crtcrefresult, 9  
\crtexttractcref, 9  
\crtexttractref, 6  
\crthyperCref, 11  
\crthypercref, 11  
\crthyperlink, 11  
\crtrefanchor, 7  
\crtrefname, 7  
\crtrefnumber, 6  
\crtrefunused, 7

### Package

cleveref, 4, 5, 7, 10, 11, 16  
crossreftools, 4, 5, 9, 10  
hyperref, 4, 6, 7, 11  
refcount, 4