

# The rotchiffre package

Heiko Oberdiek\*

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## Abstract

This package implements chiffres ROT13 with its variants ROT5, ROT18, and ROT47.

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\*Please report any issues at <https://github.com/ho-tex/oberdiek/issues>

# 1 Documentation

## 1.1 Motivation

In the newsgroup `comp.text.tex` there was a discussion [1] about package `fontspec`. Stephan Hennig provided an example to implement ROT13 as OpenType feature [2]. And Robin Fairbairns requested a CTAN upload [3] ☹.

But I think it would be not fair to the users of old  $\text{\TeX}$  engines without OpenType support that they will not be able to decrypt texts generated by the new package ☹. Therefore I have written this package that implements ROT13 even for  $\text{\initex}$ . Also other variants ROT5, ROT18, ROT47 are provided.

## 1.2 Usage

`\EdefRot {<type>} {<cmd>} {<text>}`

The `<text>` is expanded and sanitized. All tokens are letters with catcode 12 (other) with the exception of the space token that has character code 32 (0x20) and catcode 10 (space). This follows  $\text{\TeX}$ 's convention of `\string` and `\meaning`.

The chiffre type is specified by `<type>` it takes a number. For example, ROT13 is specified by 13. The selected chiffre is applied to `<text>` and the result is stored in macro `<cmd>`.

The following table lists the supported rotation chiffres.

chiffre	from	to
<b>ROT13</b>	A-Z	N-Z A-M
	a-z	n-z a-m
<b>ROT5</b>	0-9	5-9 0-4
<b>ROT18</b>	A-Z 0-9	S-Z 0-9 A-R
	a-z	n-z a-m
<b>ROT47</b>	!-~	P-~ !-0

In case of ROT47 the range is the ASCII range from character codes 33 (0x21) ‘!’ upto 126 (0xFE) ‘~’.

The specifications of the algorithms are taken from the description in Wikipedia [4, 5], ROT18 is further specified by “computerfreak” [6].

### 1.2.1 Examples

The famous English pangram [7] is converted by

```
\EdefRot{13}\result{The quick brown fox jumps over the lazy dog}
```

The result is stored in macro `\result` with the following contents:

```
Gur dhvpx oebja sbk whzcf bire gur ynml qbt
```

Command names are converted to strings before. Therefore the text should not contain  $\text{\TeX}$  markup, example:

```
\EdefRot{13}\result{\texttt{Hello}\par\textit{World}}
\result → Uryyb\nqinapr \cne@qrnguplpyrf \@ar Jbeyq
```

But macros can be used that contain text. They are expanded.

```
\newcommand{\Name}{Heiko}
\newcommand{\Email}{heiko.oberdiek at gmail.com}
\EdefRot{13}\result{Hello \Name\space<\Email>}
\result → Uryyb Urvxb <urvxb.boreqvr ng tbbtyrznvy.pbz>
```

## 2 Implementation

```
1 (*package)
```

### 2.1 Reload check and package identification

Reload check, especially if the package is not used with L<sup>A</sup>T<sub>E</sub>X.

```
2 \begingroup\catcode61\catcode48\catcode32=10\relax%
3 \catcode13=5 % ^~M
4 \endlinechar=13 %
5 \catcode35=6 % #
6 \catcode39=12 % '
7 \catcode44=12 % ,
8 \catcode45=12 % -
9 \catcode46=12 % .
10 \catcode58=12 % :
11 \catcode64=11 % @
12 \catcode123=1 % {
13 \catcode125=2 % }
14 \expandafter\let\expandafter\x\csname ver@rotchiffre.sty\endcsname
15 \ifx\x\relax % plain-TEX, first loading
16 \else
17 \def\empty{}%
18 \ifx\x\empty % LATEX, first loading,
19 % variable is initialized, but \ProvidesPackage not yet seen
20 \else
21 \expandafter\ifx\csname PackageInfo\endcsname\relax
22 \def\x#1#2{%
23 \immediate\write-1{Package #1 Info: #2.}%
24 }%
25 \else
26 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
27 \fi
28 \x{rotchiffre}{The package is already loaded}%
29 \aftergroup\endinput
30 \fi
31 \fi
32 \endgroup%
```

Package identification:

```
33 \begingroup\catcode61\catcode48\catcode32=10\relax%
34 \catcode13=5 % ^~M
35 \endlinechar=13 %
36 \catcode35=6 % #
37 \catcode39=12 % '
38 \catcode40=12 % (
39 \catcode41=12 % )
40 \catcode44=12 % ,
41 \catcode45=12 % -
42 \catcode46=12 % .
43 \catcode47=12 % /
44 \catcode58=12 % :
45 \catcode64=11 % @
46 \catcode91=12 % [
47 \catcode93=12 % ]
48 \catcode123=1 % {
49 \catcode125=2 % }
50 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
51 \def\x#1#2#3[#4]{\endgroup
52 \immediate\write-1{Package: #3 #4}%
53 \xdef#1{#4}%
54 }%
55 \else
56 \def\x#1#2[#3]{\endgroup
```

```

57      #2[#{#3}]%
58      \ifx#1\@undefined
59      \xdef#1{#3}%
60      \fi
61      \ifx#1\relax
62      \xdef#1{#3}%
63      \fi
64    }%
65  \fi
66 \expandafter\x\csname ver@rotchiffre.sty\endcsname
67 \ProvidesPackage{rotchiffre}%
68 [2016/05/16 v1.1 Perform simple rotation ciphers (HO)]%

```

## 2.2 Catcodes

```

69 \begingroup\catcode61\catcode48\catcode32=10\relax%
70 \catcode13=5 % ^^M
71 \endlinechar=13 %
72 \catcode123=1 % {
73 \catcode125=2 % }
74 \catcode64=11 % @
75 \def\x{\endgroup
76   \expandafter\edef\csname RotCh@AtEnd\endcsname{%
77     \endlinechar=\the\endlinechar\relax
78     \catcode13=\the\catcode13\relax
79     \catcode32=\the\catcode32\relax
80     \catcode35=\the\catcode35\relax
81     \catcode61=\the\catcode61\relax
82     \catcode64=\the\catcode64\relax
83     \catcode123=\the\catcode123\relax
84     \catcode125=\the\catcode125\relax
85   }%
86 }%
87 \x\catcode61\catcode48\catcode32=10\relax%
88 \catcode13=5 % ^^M
89 \endlinechar=13 %
90 \catcode35=6 % #
91 \catcode64=11 % @
92 \catcode123=1 % {
93 \catcode125=2 % }
94 \def\TMP@EnsureCode#1#2{%
95   \edef\RotCh@AtEnd{%
96     \RotCh@AtEnd
97     \catcode#1=\the\catcode#1\relax
98   }%
99   \catcode#1=#2\relax
100 }
101 \TMP@EnsureCode{42}{12}% *
102 \TMP@EnsureCode{43}{12}% +
103 \TMP@EnsureCode{45}{12}% -
104 \TMP@EnsureCode{46}{12}% .
105 \TMP@EnsureCode{47}{12}% /
106 \TMP@EnsureCode{60}{12}% <
107 \TMP@EnsureCode{62}{12}% >
108 \TMP@EnsureCode{91}{12}% [
109 \TMP@EnsureCode{93}{12}% ]
110 \TMP@EnsureCode{96}{12}% '
111 \edef\RotCh@AtEnd{\RotCh@AtEnd\noexpand\endinput}

```

## 2.3 Loading resources

```

112 \begingroup\expandafter\expandafter\expandafter\endgroup
113 \expandafter\ifx\csname RequirePackage\endcsname\relax

```

```

114 \input infwarerr.sty\relax
115 \input ltxcmds.sty\relax
116 \input pdfescape.sty\relax
117 \else
118 \RequirePackage{infwarerr}[2010/04/08]%
119 \RequirePackage{ltxcmds}[2010/03/01]%
120 \RequirePackage{pdfescape}[2010/03/01]%
121 \fi

```

## 2.4 \EdefRot as robust macro

The main macro `\EdefRot` is made robust if  $\varepsilon$ -TeX or L<sup>A</sup>T<sub>E</sub>X are present.

```

\EdefRot
122 \ltx@ifundefined{protected}{%
123   \ltx@ifundefined{DeclareRobustCommand}{%
124     \def\RotCh@temp{\def\EdefRot##1}%
125   }{%
126     \def\RotCh@temp{\DeclareRobustCommand*\EdefRot[1]}%
127   }%
128 }{%
129   \def\RotCh@temp{\protected\def\EdefRot##1}%
130 }
131 \RotCh@temp{%
132   \RotCh@GetNumber{#1}%
133   \ltx@ifundefined{RotCh@rot@romannumeral\RotCh@number}{%
134     \@PackageError{rotchiffre}{%
135       Unknown chiffre ROT\RotCh@number
136     }\@ehc
137     \EdefSanitize
138   }{%
139     \RotCh@rot
140   }%
141 }

```

`\RotCh@GetNumber` If  $\varepsilon$ -TeX is active, then the chiffre number can be an expression supported by `\numexpr`.

```

142 \ltx@ifundefined{numexpr}{%
143   \def\RotCh@GetNumber#1{%
144     \edef\RotCh@number{\number#1}%
145   }%
146 }{%
147   \def\RotCh@GetNumber#1{%
148     \edef\RotCh@number{\the\numexpr#1\relax}%
149   }%
150 }

```

## 2.5 Set \lccode on a range of characters

`\RotCh@count`

```

151 \countdef\RotCh@count=255 %

```

`\RotCh@count@end`

```

152 \countdef\RotCh@count@end=2 %

```

`RotCh@RangeIgnore`

```

153 \def\RotCh@RangeIgnore{%
154   \RotCh@loop{%
155     \lccode\RotCh@count=\ltx@zero
156   }%
157 }

```

\RotCh@RangeSet

```
158 \ltx@ifundefined{numexpr}{%
159   \countdef\RotCh@count@temp=4 %
160   \def\RotCh@RangeSet#1{%
161     \RotCh@loop{%
162       \RotCh@count@temp=\RotCh@count
163       \advance\RotCh@count@temp #1 %
164       \lccode\RotCh@count=\RotCh@count@temp
165     }%
166   }%
167 }{%
168   \def\RotCh@RangeSet#1{%
169     \RotCh@loop{%
170       \lccode\RotCh@count=\numexpr\RotCh@count#1\relax
171     }%
172   }%
173 }
```

\RotCh@loop

```
174 \def\RotCh@loop#1#2#3{%
175   \RotCh@count=#2 %
176   \RotCh@count@end=#3 %
177   \def\RotCh@action{#1}%
178   \RotCh@@loop
179 }%
```

RotCh@@loop

```
180 \def\RotCh@@loop{%
181   \RotCh@action
182   \ifnum\RotCh@count<\RotCh@count@end
183     \advance\RotCh@count\ltx@one
184     \expandafter\RotCh@@loop
185   \fi
186 }
```

## 2.6 Chiffres

### 2.6.1 ROT13

\RotCh@rot@xiii

```
187 \def\RotCh@rot@xiii{%
188   \RotCh@RangeIgnore{0}{64}%
189   \RotCh@RangeSet{+13}{65}{77}%
190   \RotCh@RangeSet{-13}{78}{90}%
191   \RotCh@RangeIgnore{91}{96}%
192   \RotCh@RangeSet{+13}{97}{109}%
193   \RotCh@RangeSet{-13}{110}{122}%
194   \RotCh@RangeIgnore{123}{255}%
195 }
```

### 2.6.2 ROT5

\RotCh@rot@v

```
196 \def\RotCh@rot@v{%
197   \RotCh@RangeIgnore{0}{47}%
198   \RotCh@RangeSet{+5}{48}{52}%
199   \RotCh@RangeSet{-5}{53}{57}%
200   \RotCh@RangeIgnore{58}{255}%
201 }
```

### 2.6.3 ROT18

```
\RotCh@rot@xviii
202 \def\RotCh@rot@xviii{%
203   \RotCh@RangeIgnore{0}{47}%
204   \RotCh@RangeSet{+25}{48}{57}%
205   \RotCh@RangeIgnore{58}{64}%
206   \RotCh@RangeSet{+18}{65}{72}%
207   \RotCh@RangeSet{-25}{73}{82}%
208   \RotCh@RangeSet{-18}{83}{90}%
209   \RotCh@RangeIgnore{91}{96}%
210   \RotCh@RangeSet{+13}{97}{109}%
211   \RotCh@RangeSet{-13}{110}{122}%
212   \RotCh@RangeIgnore{123}{255}%
213 }
```

### 2.6.4 ROT47

```
\RotCh@rot@xlvi
214 \def\RotCh@rot@xlvi{%
215   \RotCh@RangeIgnore{0}{32}%
216   \RotCh@RangeSet{+47}{33}{79}%
217   \RotCh@RangeSet{-47}{80}{126}%
218   \RotCh@RangeIgnore{127}{255}%
219 }
```

## 2.7 \RotCh@rot with big char support

Some modern T<sub>E</sub>X engines support characters with more than eight bits (codes greater as 255). LuaT<sub>E</sub>X and X<sub>Ǝ</sub>T<sub>E</sub>X are detected by the caret notation that is extended by these engines.

```
220 \begingroup
221   \catcode0=9 %
222   \catcode'\^=7 %
223   \catcode'\^^=12 %
224   \def\x{^^^^0000}%
225 \expandafter\endgroup
226 \ifx\x\ltx@empty
```

\RotCh@toks

```
227   \toksdef\RotCh@toks=0 %
```

\RotCh@rot

```
228   \long\def\RotCh@rot#1#2{%
229     \EdefSanitize#1{#2}%
230     \begingroup
231       \csname RotCh@rot@\romannumeral\RotCh@number\endcsname
232       \RotCh@toks={}%
233       \expandafter\RotCh@SplitSpace#1 \@nil
234       \expandafter\endgroup
235       \expandafter\def\expandafter#1\expandafter{%
236         \the\RotCh@toks
237       }%
238   }%
```

\RotCh@SplitSpace

```
239   \def\RotCh@temp#1{%
240     \def\RotCh@SplitSpace##1 ##2\@nil{%
241       \RotCh@Add##1\relax
242       \ifx\relax##2\relax
243         \expandafter\ltx@gobble
```

```

244     \else
245     \RotCh@toks\expandafter{\the\RotCh@toks#1}%
246     \expandafter\ltx@firstofone
247     \fi
248     {%
249     \RotCh@SplitSpace##2\@nil
250     }%
251 }%
252 }%
253 \RotCh@temp{ }%

\RotCh@Add
254 \def\RotCh@Add#1{%
255     \ifx#1\relax
256     \else
257     \ifnum'#1>126 %
258     \RotCh@toks\expandafter{\the\RotCh@toks#1}%
259     \else
260     \lowercase{%
261     \RotCh@toks\expandafter{\the\RotCh@toks#1}%
262     }%
263     \fi
264     \expandafter\RotCh@Add
265     \fi
266 }%

267 \else

```

## 2.8 \RotCh@rot without big char support

```

\RotCh@rot
268 \long\def\RotCh@rot#1#2{%
269     \EdefSanitize#1{#2}%
270     \begingroup
271     \csname RotCh@rot@\romannumeral\RotCh@number\endcsname
272     \lowercase\expandafter{\expandafter\endgroup
273     \expandafter\def\expandafter#1\expandafter{#1}%
274     }%
275 }%

276 \fi
277 \RotCh@AtEnd%
278 \endpackage

```

## 3 Installation

### 3.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/rotchiffre.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/rotchiffre.pdf](#) Documentation.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

TDS refers to the standard “A Directory Structure for T<sub>E</sub>X Files” ([CTAN:pkg/tds](#)). Directories with `texmf` in their name are usually organized this way.

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<sup>1</sup>[CTAN:pkg/rotchiffre](#)



## 3.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

## 3.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain `TEX`:

```
tex rotchiffre.dtx
```

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
rotchiffre.sty → tex/generic/oberdiek/rotchiffre.sty
rotchiffre.pdf → doc/latex/oberdiek/rotchiffre.pdf
rotchiffre.dtx → source/latex/oberdiek/rotchiffre.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

## 3.4 Refresh file name databases

If your `TEX` distribution (`TEX Live`, `MiKTEX`, ...) relies on file name databases, you must refresh these. For example, `TEX Live` users run `texhash` or `mktextlsr`.

## 3.5 Some details for the interested

**Unpacking with L<sup>A</sup>T<sub>E</sub>X.** The `.dtx` chooses its action depending on the format:

**plain T<sub>E</sub>X:** Run `docstrip` and extract the files.

**L<sup>A</sup>T<sub>E</sub>X:** Generate the documentation.

If you insist on using L<sup>A</sup>T<sub>E</sub>X for `docstrip` (really, `docstrip` does not need L<sup>A</sup>T<sub>E</sub>X), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{rotchiffre.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfL<sup>A</sup>T<sub>E</sub>X:

```
pdflatex rotchiffre.dtx
makeindex -s gind.ist rotchiffre.idx
pdflatex rotchiffre.dtx
makeindex -s gind.ist rotchiffre.idx
pdflatex rotchiffre.dtx
```

## 4 References

- [1] Stephan Hennig et. al.: *fontspec: no ligatures with Times New Roman*; newsgroup `comp.text.tex`, [news:4cdbe27\\$0\\$6765\\$9b4e6d93@newsspool3.arcor-online.net](https://groups.google.com/group/comp.text.tex/browse_thread/thread/6266f98e998ce333/d7b32e9dcc610c87), 2010-11-11.  
[https://groups.google.com/group/comp.text.tex/browse\\_thread/thread/6266f98e998ce333/d7b32e9dcc610c87](https://groups.google.com/group/comp.text.tex/browse_thread/thread/6266f98e998ce333/d7b32e9dcc610c87)
- [2] Stephan Hennig: *Re: fontspec: no ligatures with Times New Roman*; newsgroup `comp.text.tex`, [news:4cdc2abe\\$0\\$6762\\$9b4e6d93@newsspool3.arcor-online.net](https://groups.google.com/group/comp.text.tex/msg/d7b32e9dcc610c87), 2010-11-11.  
<https://groups.google.com/group/comp.text.tex/msg/d7b32e9dcc610c87>
- [3] Robin Fairbairns: *Re: fontspec: no ligatures with Times New Roman*; newsgroup `comp.text.tex`, [news:qf4obmua0v.fsf@sxp10.cl.cam.ac.uk](https://groups.google.com/group/comp.text.tex/msg/7c03e91407144704), 2010-11-12.  
<https://groups.google.com/group/comp.text.tex/msg/7c03e91407144704>
- [4] Wikipedia/German: *ROT13*; 2010-10-26.  
<https://de.wikipedia.org/wiki/ROT13>
- [5] Wikipedia/English: *ROT13*; 2010-11-11.  
<https://en.wikipedia.org/wiki/ROT13>
- [6] Computerfreak/German: *ROT-18*; 2010-04-12.  
<http://www.compufreak.info/2010/04/12/rot-18/>
- [7] Wikipedia/English: *The quick brown fox jumps over the lazy dog*; 2010-11-09.  
[https://en.wikipedia.org/wiki/The\\_quick\\_brown\\_fox\\_jumps\\_over\\_the\\_lazy\\_dog](https://en.wikipedia.org/wiki/The_quick_brown_fox_jumps_over_the_lazy_dog)

## 5 History

[2010/11/12 v1.0]

- First version.

[2016/05/16 v1.1]

- Documentation updates.

## 6 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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