

An Acronym Environment for L^AT_EX 2_ε*

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1 Introduction

When writing a paper on cellular mobile radio I started to use a lot of acronyms. This can be very disturbing for the reader, as he might not know all the used acronyms. To help the reader I kept a list of all the acronyms at the end of my paper.

This package makes sure, that all acronyms used in the text are spelled out in full at least once.

2 The user interface

The package provides several commands and one environment for dealing with acronyms. Their appearance can be controlled by two package options and three macros.

2.1 Acronyms in the Text

`\ac` To enter an acronym inside the text, use the

`\ac{acronym}`

command. The first time you use an acronym, the full name of the acronym along with the acronym in brackets will be printed. If you specify the `footnote` option while loading the package, the full name of the acronym is printed as a footnote. The next time you access the acronym only the acronym will be printed.

`\acresetall` The 'memory' of the macro `\ac` can be flushed by calling the macro `\acresetall`. Afterwards, `\ac` will print the full name of any acronym and the acronym in brackets the next time it is used.

`\acf` If later in the text again the Full Name of the acronym should be printed, use the command

`\acf{acronym}`

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to access the acronym. It stands for “full acronym” and it always prints the full name and the acronym in brackets.

- `\acs` To get the short version of the acronym, use the command
`\acs{<acronym>}`
- `\acl` Gives you the expanded acronym without even mentioning the acronym.
`\acl{<acronym>}`
- `\acp` Works in the same way as `\ac`, but makes the short and/or long forms into English plurals by adding an ‘s’.
- `\acfp` Works in the same way as `\acf`, but makes the short and long forms into English plurals by adding an ‘s’.
- `\acsp` Works in the same way as `\acs`, but makes the short form into an English plural by adding an ‘s’.
- `\aclp` Works in the same way as `\acl`, but makes the long form into an English plural by adding an ‘s’.
- `\acfi` Prints the Full Name acronym (`\acl`) in italics and the abbreviated form (`\acs`) in upshaped form.
- `\acused` Marks an acronym as used, as if it had been called with `\ac`, but without printing anything. This means that in the future only the short form of the acronym will be printed.
- `\acsu` Prints the short form of the acronym and marks it as used.
- `\aclu` Prints the long form of the acronym and marks it as used.
 Example: `\acl{1ox}/\acl{1h2}` (`\acsu{1ox}/\acsu{1h2}`)
- `\...*` The following commands do the same as their unstarred forms, except that the acronym will not be marked as used. If you work with the ‘onlyused’ option then macros which have only been used with starred commands will not show up.
`\ac*`, `\acs*`, `\acl*`, `\acf*`, `\acp*`, `\acsp*`, `\aclp*`, `\acfp*`, `\acfi*`, `\acsu*` and `\aclu*`.

2.2 Customization

The appearance of `\acs` and `\acf` can be configured in various ways. Of main importance are the package options:

`footnote` makes the full name of the acronym appear as a footnote.

`smaller` lets the acronyms appear a bit smaller than the surrounding text. This is in accord with typographic convention. The `resize` package is required.

There are three lower-level macros controlling the output. Any acronym printed by `\acs` is formatted by `\acsfont`. Similarly, unless the option `footnote` is specified, `\acffont` handles the output of `\acf`, where the included acronym goes through `\acffont` (and `\acsfont`). The plural forms are treated accordingly. Usually the three macros do nothing. To give an example, the option `smaller` makes `\acsfont` use the command `\textsmaller` from the `resize` package:

```
\renewcommand*{\acsfont}[1]{\textsmaller{#1}}
```

2.3 Defining Acronyms

`acronym` With the `acronym` environment you define all the acronyms in your document.
`\acro` In the `acronym` environment, acronyms are defined with the command:

```
\acro{<acronym>}[<short name>]{<full name>}
```

The first argument `<acronym>` is the acronym string itself and is used in the commands of the previous section such as `\ac` or `\ac1`, that print the different forms of the acronym.

Because internal commands take `<acronym>` for storing the different forms of the acronym, the \TeX code for the acronym is limited by `\csname`. If the acronym requires problematic or complicate \TeX stuff (font commands, ...), then this code can be given in the optional argument `<short name>`. The first argument `<acronym>` is then a simpler string to identify the acronym. For example, an acronym for water can look like this:

```
\acro{H2O}[$\mathrm{H_2O}$]{water}
```

Then `\acs{H2O}` gets “H₂O” and `\ac1{H2O}` prints “water”.

All acronym definitions, made by `\acro` or `\acrodef` are added to the `.aux` file. Therefore they are available from start-up in the next run.

`\acroextra` Inside the `acronym` environment additional information can be added to the list of acronyms with the `\acroextra` command that will not be included in the normal inline acronyms.

```
\acroextra{<additional info>}
```

for example:

```
\acro{H2O}[$\mathrm{H_2O}$]  
  {Dihydrogen Monoxide\acroextra{ (water)}}  
\acro{NA}[\ensuremath{N_{\mathrm{A}}}]  
  {Number of Avogadro\acroextra{ (See \S\protect\ref{A1})}}
```

Note that `\acroextra` must be inserted inside the `\acro` definition and that fragile commands must be protected. Be careful of unnecessary spaces.

The standard format of the acronym list is a `\description` environment. If you pass an optional parameter to the `acronym` environment, the width of the acronym-column will be fitted to the width of the given parameter (which should be the longest acronym). For example, if *HBCI* is the longest acronym used, the list should start with

```
\begin{acronym}[HBCI]
```

In standard mode, the acronym-list will consist of all defined acronyms, regardless if the the acronym was used in the text before or not. This behavior can be changed by loading the package with the parameter `printonlyused`:

```
\usepackage[printonlyused]{acronym}
```

2.4 Miscellaneous

Sectioning and pdf marks

Acronyms are robust (since version 1.12) and can be used in sectional headers such as `\chapter`, `\section`, etc., but please note the following:

- Do not use the general form (`\ac` or `\acp`) in sectional headers, because it will use the full name the first time, that is in the table of contents, and the short form further on.
- The text of `\acronym` is used verbatim in bookmarks and not `\shortname` for pdfTeX with `hyperref`.
- When the long form of the acronym is used in sectional headers (for pdfTeX with `hyperref`), it will end up in the pdf bookmarks. In that case it is good to hide unusual text such as math inside the `\texorpdfstring` defined by `hyperref`, for example:

```
\acro{Nx}[\ensuremath{N_{\chi}}]
      {\texorpdfstring{\mathchar"27E8\chi}{X}-faktor}
```

which will then give

```
pdf bookmark: \acf{Nx} → X-factor (Nx)
text:         \acf{Nx} → χ-factor (Nχ)
```

- For acronyms in sectional headers, the file must be PDF^LA^TE^X'ed 3 times before the bookmarks are correct.
- Acronyms in sectional headers together with the `footnote` option will not give reliable results, because it will end up in the running heads and table of contents. If you really need it, use the optional argument of the sectioning commands. For example:

```
\chapter[The water \texorpdfstring{\mathrm{H_2O}}{H2O}) ...]
      {The \acf{H2O} ...}
```

3 An example file

```
1 \acrotest
2 \documentclass{article}
3 \usepackage[printronlyused]{acronym}
4 \begin{document}
5
6 \section{Intro}
7 In the early nineties, \acs{GSM} was deployed in many European
8 countries. \ac{GSM} offered for the first time international
9 roaming for mobile subscribers. The \acs{GSM}'s use of \ac{TDMA} as
10 its communication standard was debated at length. And every now
11 and then there are big discussion whether \ac{CDMA} should have
12 been chosen over \ac{TDMA}.
13
14 \section{Furthermore}
15 \acresetall
16 The reader could have forgotten all the nice acronyms, so we repeat the
17 meaning again.
18
19 If you want to know more about \acf{GSM}, \acf{TDMA}, \acf{CDMA}
20 and other acronyms, just read a book about mobile communication. Just
21 to mention it: There is another \ac{UA}, just for testing purposes!
22
23 \begin{figure}[h]
24 Figure
25 \caption{A float also admits references like \ac{GSM} or \acf{CDMA}.}
26 \end{figure}
27
28 \subsection{Some chemistry and physics}
29 \label{Chem}
30 \ac{NAD+} is a major electron acceptor in the oxidation
31 of fuel molecules. The reactive part of \ac{NAD+} is its nictinamide
32 ring, a pyridine derivate.
33
34 One mol consists of \acs{NA} atoms or molecules. There is a relation
35 between the constant of Boltzmann and the \acl{NA}:
36 \begin{equation}
37 k = R/\acs{NA}
38 \end{equation}
39
40 \acl{lox}/\acl{lh2} (\acsu{lox}/\acsu{lh2})
41
42 \section{Acronyms}
43 \begin{acronym}[TDMA]
44 \acro{CDMA}{Code Division Multiple Access}
45 \acro{GSM}{Global System for Mobile communication}
46 \acro{NA}[\ensuremath{N_{\mathrm{A}}}]
47 \quad {Number of Avogadro\acroextra{ (see \S\ref{Chem})}}
48 \acro{NAD+}[NAD\textsuperscript{+}]{Nicotinamide Adenine Dinucleotide}
```

```
49 \acro{NUA}{Not Used Acronym}
50 \acro{TDMA}{Time Division Multiple Access}
51 \acro{UA}{Used Acronym}
52 \acro{lox}[\ensuremath{LOX}]{Liquid Oxygen}%
53 \acro{lh2}[\ensuremath{LH_2}]{Liquid Hydrogen}%
54 \end{acronym}
55
56 \end{document}
57 </acrotest>
```

4 The implementation

58 `{*acronym}`

4.1 Identification

First we test that we got the right format and name the package.

```
59 \NeedsTeXFormat{LaTeX2e}[1999/12/01]
60 \ProvidesPackage{acronym}[2006/06/26
61                               v1.26
62                               Support for acronyms (Tobias Oetiker)]
63 \RequirePackage{suffix}
```

4.2 Options

`\ifAC@footnote` The option `footnote` leads to a redefinition of `\acf` and `\acfp`, making the full name appear as a footnote.

```
64 \newif\ifAC@footnote
65 \AC@footnotefalse
66 \DeclareOption{footnote}{\AC@footnotetrue}
```

`\ifAC@nohyperlinks` If `hyperref` is loaded, all acronyms will link to their glossary entry. With the option `nohyperlinks` these links can be suppressed.

```
67 \newif\ifAC@nohyperlinks
68 \AC@nohyperlinksfalse
69 \DeclareOption{nohyperlinks}{\AC@nohyperlinkstrue}
```

`\ifAC@printonlyused` We need a marker which is set if the option `printonlyused` was used.

```
70 \newif\ifAC@printonlyused
71 \AC@printonlyusedfalse
72 \DeclareOption{printonlyused}{\AC@printonlyusedtrue}
```

`\ifAC@smaller` The option `smaller` leads to a redefinition of `\acsfont`. We want to make the acronym appear smaller. Since this should be done in a context-sensitive way, we rely on the macro `\textsmaller` provided by the `relsize` package. As `\RequirePackage` cannot be used inside `\DeclareOption`, we need a boolean variable.

```
73 \newif\ifAC@smaller
74 \AC@smallerfalse
75 \DeclareOption{smaller}{\AC@smallertrue}
```

`\ifAC@dua` The option `dua` stands for “don’t use acronyms”. It leads to a redefinition of `\ac` and `\acp`, making the full name appear all the time and suppressing all acronyms but the explicit requested by `\acf` or `\acfp`.

```
76 \newif\ifAC@dua
77 \AC@duafalse
78 \DeclareOption{dua}{\AC@duatrue}
```

`\ifAC@nolist` The option `nolist` stands for “don’t write the list of acronyms”.

```
79 \newif\ifAC@nolist
80 \AC@nolistfalse
81 \DeclareOption{nolist}{\AC@nolisttrue}
```

Now we process the options.

```
82 \ProcessOptions\relax
```

4.3 Setup macros

`\acsfont` The appearance of the output of the commands `\acs` and `\acf` is partially controlled by `\acsfont`, `\acffont`, and `\acfsfont`. By default, they do nothing except when the `smaller` option is loaded.

The option `smaller` leads to a redefinition of `\acsfont`. We want to make the acronym appear smaller. Since this should be done in a context-sensitive way, we rely on the macro `\textsmaller` provided by the `relsize` package.

```
83 \ifAC@smaller
84 \RequirePackage{relsize}
85 \newcommand*\acsfont[1]{\textsmaller{#1}}
86 \else
87 \newcommand*\acsfont[1]{#1}
88 \fi
89 \newcommand*\acffont[1]{#1}
90 \newcommand*\acfsfont[1]{#1}
```

4.4 Hyperlinks and PDF support

`\AC@hyperlink` Define dummy hyperlink commands
`\AC@hypertarget`

```
91 \def\AC@hyperlink#1#2{#2}
92 \def\AC@hypertarget#1#2{#2}
```

`\AC@raisedhypertarget` Make sure that hyperlink processing gets enabled before we process the document if `hyperref` has been loaded in the mean time.

```
93 \ifAC@nohyperlinks
94 \else
95 \AtBeginDocument{%
96 \ifpackageloaded{hyperref}
97 {\let\AC@hyperlink=\hyperlink
98 \newcommand*\AC@raisedhypertarget[2]{%
99 \Hy@raisedlink{\hypertarget{#1}{}}#2}%
100 \let\AC@hypertarget=\AC@raisedhypertarget}{}}
101 \fi
```

The `hyperref` package defines `\pdfstringdefDisableCommands` and `\texorpdfstring` for text in bookmarks. If undefined, then provide them it at the beginning of the document.

```
102 \AtBeginDocument{%
```

```

103 \providecommand\texorpdfstring[2]{#1}%
104 \providecommand\pdfstringdefDisableCommands[1]{}%
105 \pdfstringdefDisableCommands{%
106   \csname AC@starredfalse\endcsname
107   \csname AC@footnotefalse\endcsname
108   \let\AC@hyperlink\@secondoftwo
109   \let\acsfont\relax
110   \let\acffont\relax
111   \let\acfsfont\relax
112   \let\acused\relax
113   \let\null\relax
114   \def\AChy@call#1#2{%
115     \ifx*#1\@empty
116       \expandafter #2%
117     \else
118       #2{#1}%
119     \fi
120   }%
121   \def\acs#1{\AChy@call{#1}\AC@acs}%
122   \def\acl#1{\AChy@call{#1}\AC@acl}%
123   \def\acf#1{\AChy@call{#1}\AC@acf}%
124   \def\ac#1{\AChy@call{#1}\AC@ac}%
125   \def\acsp#1{\AChy@call{#1}\AC@acsp}%
126   \def\aclp#1{\AChy@call{#1}\AC@aclp}%
127   \def\acfp#1{\AChy@call{#1}\AC@acfp}%
128   \def\acp#1{\AChy@call{#1}\AC@acp}%
129   \def\acfi#1{\AChy@call{#1}\AC@acfi}%
130   \let\acsu\acs
131   \let\aclu\acl
132   \def\AChy@acf#1{\AC@acl{#1} (\AC@acs{#1})}%
133   \def\AChy@acfp#1{\AC@acl{#1}s (\AC@acs{#1}s)}%
134 }%
135 }

```

4.5 Additional Helper macros

We need a list of the used acronyms after the last `\acresetall` (or since beginning), a token list is very useful for this purpose

Clearlist

```
136 \newtoks\clearlist
```

`\AC@addtoclearlist` Adds acronyms to the clear list

```

137 \newcommand*\AC@addtoclearlist[1]{%
138   \global\clearlist\expandafter{\the\clearlist\AC@reset{#1}}%
139 }

```

`\acresetall` This macro resets the `ac@FN` - tag of each acronym, therefore `\ac` will use `FullName`
`\AC@reset` (`FN`) next time it is called

```
140 \newcommand*\acresetall{\the\clearlist\clearlist={}}
```

```

141 \def\AC@reset#1{%
142   \global\expandafter\let\csname ac@#1\endcsname\relax}

\AC@used We also need a markers for 'used'.
143 \newcommand*\AC@used{@<>@<>}

\AC@populated An on/off flag to note if any acronyms were logged. This is needed for the first run
with printonlyused option, because the acronym list are then empty, resulting
in a "missing item" error.
144 \newcommand{\AC@populated}{}

\AC@logged Log the usage by writing the \acronymused to the aux file and by reading it back
\acronymused again at the beginning of the document (performed automatically by LaTeX). This
results in processing the document twice, but it is needed anyway for the rest of
the package.
This methodology is needed when the list of acronyms is in the front matter
of the document.
145 \newcommand*\AC@logged}[1]{%
146   \acronymused{#1}% mark it as used in the current run too
147   \@bsphack
148   \protected@write\auxout{}{\string\acronymused{#1}}%
149   \@esphack}

Keep it out of bookmarks.
150 \AtBeginDocument{%
151   \pdfstringdefDisableCommands{%
152     \let\AC@logged\gobble
153   }%
154 }

Flag the acronym at the beginning of the document as used (called by the aux
file).
155 \newcommand*\acronymused}[1]{%
156   \expandafter\ifx\csname acused@#1\endcsname\AC@used
157     \relax
158   \else
159     \global\expandafter\let\csname acused@#1\endcsname\AC@used
160     \global\let\AC@populated\AC@used
161   \fi}

```

4.6 Defining acronyms

There are three commands that define acronyms: `\newacro`, `\acrodef`, and `\acro`. They are called with the following arguments:

$$\acro{\langle acronym \rangle}[\langle short name \rangle]{\langle full name \rangle}$$

The mechanism used in this package is to make the optional $\langle short name \rangle$ identical to the $\langle acronym \rangle$ when it is empty (no optional argument), thereby only the second (optional) argument is stored together with the $\langle full name \rangle$.

`\newacro` The internal macro `\newacro` stores the *short name* and the *full name* in the command `\fn@<acronym>`.

```

162 \newcommand*\newacro[1]{%
163   \@ifnextchar[{\AC@newacro{#1}}{\AC@newacro{#1}[\AC@temp]}}
164 \newcommand\AC@newacro{}
165 \def\AC@newacro#1[#2]#3{%
166   \def\AC@temp{#1}%
167   \expandafter\gdef\csname fn@#1\endcsname{#{2}{#3}}%
168   }

```

`\acrodef` The user command `\acrodef` calls `\newacro` and writes it into the `.aux` file.

```

\AC@acrodef 169 \newcommand*\acrodef[1]{%
170   \@ifnextchar[{\AC@acrodef{#1}}{\AC@acrodef{#1}[\AC@temp]}}
171 \newcommand\AC@acrodef{}
172 \def\AC@acrodef#1[#2]#3{%
173   \def\AC@temp{#1}%
174   \@bsphack
175   \protected@write\@auxout[{}]{\string\newacro{#1}[#2]{#3}}%
176   \@esphack}

```

`AC@deflist` In standard mode, the acronym - list is formatted with a description environment. If an optional argument is passed to the acronym environment, the list is formatted as a `AC@deflist`, which needs the longest appearing acronym as parameter. If the option `'nolist'` is selected the environment is empty.

```

177 \def\bflabel#1[{\textbf{\textsf{#1}}\hfill}]
178 \newenvironment{AC@deflist}[1]%
179   {\ifAC@nolist%
180     \else%
181       \raggedright\begin{list}{}%
182         {\settowidth\labelwidth{\textbf{\textsf{#1}}}%
183          \setlength\leftmargin\labelwidth%
184          \addtolength\leftmargin\labelsep%
185          \renewcommand\makelabel{\bflabel}}%
186       \fi}%
187   {\ifAC@nolist%
188     \else%
189       \end{list}%
190     \fi}%

```

`acronym` In the `'acronym'` - environment, all acronyms are defined, and printed if they have been used before, which is indicated by the `acused-tag`.

```

\begin{acronym}
\acro{CDMA}{Code Division Multiple Access\acroextra{\ ...}}
\end{acronym}

```

`\acroextra` Additional information can be added after to `\acro` definition for display in the list of acronyms. This command is only active inside the `acronym` environment. Outside it gobbles up its argument.

```

191 \newcommand{\acroextra}[1]{}

\acro Acronyms can be defined with the user command \acro in side the acronym
environment.

192 \newenvironment{acronym}[1][1]{%
193   \providecommand*\acro{\AC@acro}%
194   \long\def\acroextra##1{##1}%
195   \ifx#1%
196     \global\expandafter\let\csname ac@des@mark\endcsname\AC@used%
197     \ifAC@nolist%
198     \else%
199       \begin{description}%
200       \fi%
201     \else%
202       \begin{AC@deflist}{#1}%
203       \fi%
204     }%
205   {%
206     \ifx\AC@populated\AC@used\else%
207       \ifAC@nolist%
208       \else%
209         \item[]\relax%
210       \fi%
211     \fi%
212     \expandafter\ifx\csname ac@des@mark\endcsname\AC@used%
213     \ifAC@nolist%
214     \else%
215       \end{description}%
216     \fi%
217     \else%
218     \end{AC@deflist}%
219     \fi%

\AC@acro
\AC@@acro
220 \newcommand*\AC@acro[1]{%
221   \@ifnextchar[{\AC@@acro{#1}}{\AC@@acro{#1}[\AC@temp]}}

222 \newcommand\AC@@acro{}
223 \def\AC@@acro#1[#2]#3{%
224   \def\AC@temp{#1}%
225   \ifAC@nolist%
226   \else%
227     \ifAC@printonlyused%
228       \expandafter\ifx\csname acused@#1\endcsname\AC@used%
229       \item[\protect\AC@hypertarget{#1}{\acsfont{#2}}] #3%
230     \fi%
231   \else%
232     \item[\protect\AC@hypertarget{#1}{\acsfont{#2}}] #3%
233   \fi%
234 \fi%

```

```

235 \begingroup
236   \def\acroextra##1{%
237     \@sphack
238     \protected@write\@auxout{%
239       {\string\newacro{#1}[\string\AC@hyperlink{#1}{#2}]{#3}}%
240     \@esphack
241   \endgroup}

```

4.7 Using acronyms

`\ifAC@starred` Before the macros are defined, we need a boolean variable which will be set to true or false, when the following commands are used in the starred or unstarred form. If it is true, the acronym will be not be logged, otherwise it will be logged.

```
242 \newif\ifAC@starred
```

`\AC@get` If the acronym is undefined, the internal macro `\AC@get` warns the user by printing the name in bold with an exclamation mark at the end. If defined, `\AC@get` uses the same mechanism used by the LaTeX kernel commands `\ref` and `\pageref` to return the short `\AC@acs` and long forms `\AC@acl` of the acronym saved in `\fn@<acronym>`.

```

243 \newcommand*{\AC@get}[3]{%
244   \ifx#1\relax
245     \PackageWarning{acronym}{Acronym ‘#3’ is not defined}%
246     \textbf{#3!}%
247   \else
248     \expandafter#2#1\null
249   \fi}

```

`\AC@acs` The internal commands `\AC@acs` and `\AC@acl` returns the (unformatted) short `\AC@acl` and the long forms of an acronym as saved in `\fn@<acronym>`.

```

250 \newcommand*{\AC@acs}[1]{%
251   \expandafter\AC@get\csname fn@#1\endcsname\@firstoftwo{#1}}
252 \newcommand*{\AC@acl}[1]{%
253   \expandafter\AC@get\csname fn@#1\endcsname\@secondoftwo{#1}}

```

`\acs` The user macro `\acs` prints the short form of the acronym using the font specified by `\acsfont`.

```

\@acs 254 \newcommand*{\acs}{\AC@starredfalse\protect\acsa}%
      255 \WithSuffix\newcommand\acs*{\AC@starredtrue\protect\acsa}%
      256 \newcommand*{\acsa}[1]{%
      257   \texorpdfstring{\protect\@acs{#1}}{#1}}
      258 \newcommand*{\@acs}[1]{%
      259   \acsfont{\AC@acs{#1}}%
      260 %% having a footnote on acs sort of defetes the purpose
      261 %%   \ifAC@footnote
      262 %%     \footnote{\AC@acl{#1}}}%
      263 %%   \fi
      264 \ifAC@starred\else\AC@logged{#1}\fi}

```

`\acl` The user macro `\acl` prints the full name of the acronym.

```

\@acl 265 \newcommand*{\acl}{\AC@starredfalse\protect\@acl}%
      266 \WithSuffix\newcommand\acl*{\AC@starredtrue\protect\@acl}%
      267 \newcommand*{\@acl}[1]{%
      268   \AC@acl{#1}%
      269   \ifAC@starred\else\AC@logged{#1}\fi}

```

`\acf` The user macro `\acf` always prints the full name with the acronym. The format depends on `\acffont` and `\acfsfont`, and on the option `footnote` handled below.

`\@acf` The acronym is added to the clear list to keep track of the used acronyms and it is marked as used by by `\gdefining` the `\ac@FN` to be `\AC@used` after its first use.

The option `footnote` leads to a redefinition of `\acf`, making the full name appear as a footnote. There is then no need for `\acffont` and `\acfsfont`.

```

270 \newcommand*{\acf}{\AC@starredfalse\protect\acfa}%
271 \WithSuffix\newcommand\acf*{\AC@starredtrue\protect\acfa}%
272 \newcommand*{\acfa}[1]{%
273   \texorpdfstring{\protect\@acf{#1}}{\AC@acl{#1} ( #1)}}
274 \newcommand*{\@acf}[1]{%
275   \ifAC@footnote
276     \acsfont{\AC@acs{#1}}%
277     \footnote{\AC@acl{#1}}}%
278   \else
279     \acffont{%
280       \AC@acl{#1}%
281       \nolinebreak[3] %
282       \acfsfont{(\acsfont{\AC@acs{#1}})}%
283     }%
284   \fi
285   \expandafter\ifx\csname ac@#1\endcsname\AC@used
286   \relax%
287   \else
288     \global\expandafter\let\csname ac@#1\endcsname\AC@used
289     \AC@addtoclearlist{#1}%
290   \fi
291   \ifAC@starred\else\AC@logged{#1}\fi}

```

`\ac` The first time an acronym is accessed its Full Name (FN) is printed. The next time just (FN). When the `footnote` option is used the short form (FN) is always used.

```

292 \newcommand*{\ac}{\AC@starredfalse\protect\@ac}%
293 \WithSuffix\newcommand\ac*{\AC@starredtrue\protect\@ac}%
294 \newcommand*{\@ac}[1]{%
295   \ifAC@dua
296     \ifAC@starred\acl*{#1}\else\acl{#1}\fi%
297   \else
298     \expandafter\ifx\csname ac@#1\endcsname\AC@used%
299     \ifAC@starred\acs*{#1}\else\acs{#1}\fi%

```

```

300 \else
301 \ifAC@starred\acf*{#1}\else\acf{#1}\fi%
302 \fi
303 \fi}

```

`\acsp` The user macro `\acsp` prints the plural short form of the acronym. This is the acronym itself or the *short name*, if the optional argument is given in the definition of the acronym plus an ‘s’.

```

304 \newcommand*{\acsp}{\AC@starredfalse\protect\acspa}%
305 \WithSuffix\newcommand\acsp*{\AC@starredtrue\protect\acspa}%
306 \newcommand*{\acspa}[1]{%
307 \texorpdfstring{\protect\@acsp{#1}}{#1s}}
308 \newcommand*{\@acsp}[1]{%
309 \acsfont{\AC@acs{#1}}s%
310 \ifAC@starred\else\AC@logged{#1}\fi}

```

`\aclp` The user macro `\aclp` prints the plural full name of the acronym.

```

\@aclp 311 \newcommand*{\aclp}{\AC@starredfalse\protect\@aclp}%
312 \WithSuffix\newcommand\aclp*{\AC@starredtrue\protect\@aclp}%
313 \newcommand*{\@aclp}[1]{%
314 \AC@acl{#1}s%
315 \ifAC@starred\else\AC@logged{#1}\fi}

```

`\acfp` The user macro `\acfp` always prints the plural full name with the plural of the acronym. The format depends on `\acffont` and `\acfsfont`, and on the option `\@acfp footnote` handled below.

The option `footnote` leads to a redefinition of `\acfp`, making the full name appear as a footnote. There is then no need for `\acffont` and `\acfsfont`.

```

316 \newcommand*{\acfp}{\AC@starredfalse\protect\acfpa}%
317 \WithSuffix\newcommand\acfp*{\AC@starredtrue\protect\acfpa}%
318 \newcommand*{\acfpa}[1]{%
319 \texorpdfstring{\protect\@acfp{#1}}{\AC@acl{#1}s (#1s)}}
320 \newcommand*{\@acfp}[1]{%
321 \ifAC@footnote
322 \acsfont{\AC@acs{#1}}s%
323 \footnote{\AC@acl{#1}s{}}%
324 \else
325 \acffont{%
326 \AC@acl{#1}s%
327 \nolinebreak[3] %
328 \acfsfont{(\acsfont{\AC@acs{#1}}s)}%
329 }%
330 \fi
331 \expandafter\ifx\csname ac@#1\endcsname\AC@used
332 \relax%
333 \else
334 \global\expandafter\let\csname ac@#1\endcsname\AC@used

```

```

335         \AC@addtoclearlist{#1}%
336     \fi
337     \ifAC@starred\else\AC@logged{#1}\fi}

\acp The first time an acronym is accessed Full Names (FNs) is printed. The next time
\@acp just (FNs).
338 \newcommand*\acp{\AC@starredfalse\protect\@acp}%
339 \WithSuffix\newcommand\acp*\AC@starredtrue\protect\@acp}%

340 \newcommand{\@acp}[1]{%
341     \ifAC@dua
342         \ifAC@starred\aclp*{#1}\else\aclp{#1}\fi%
343     \else
344         \expandafter\ifx\csname ac@#1\endcsname\AC@used
345         \ifAC@starred\acsp*{#1}\else\acsp{#1}\fi%
346     \else
347         \ifAC@starred\acfp*{#1}\else\acfp{#1}\fi%
348     \fi
349 \fi}

\acfi The Full Name is printed in italics and the abbreviated is printed in upshape.
\acfia 350 \newcommand*\acfi{\AC@starredfalse\protect\acfia}%
351 \WithSuffix\newcommand\acfi*\AC@starredtrue\protect\acfia}%

352 \newcommand{\acfia}[1]{%
353     {\itshape \AC@acl{#1} \nolinebreak[3]} (\ifAC@starred\acs*{#1}\else\acs{#1}\fi)}

\acused Marks the acronym as used. Don't confuse this with \acronymused!
354 \newcommand{\acused}[1]{%
355 \global\expandafter\let\csname ac@#1\endcsname\AC@used%
356 \AC@addtoclearlist{#1}}

\acsu Print the short form of the acronym and mark it as used.
\acsua 357 \newcommand*\acsu{\AC@starredfalse\protect\acsua}%
358 \WithSuffix\newcommand\acsu*\AC@starredtrue\protect\acsua}%

359 \newcommand{\acsua}[1]{%
360     \ifAC@starred\acs*{#1}\else\acs{#1}\fi\acused{#1}}

\aclu Print the long form of the acronym and mark it as used.
\aclua 361 \newcommand*\aclu{\AC@starredfalse\protect\aclua}%
362 \WithSuffix\newcommand\aclu*\AC@starredtrue\protect\aclua}%

363 \newcommand{\aclua}[1]{%
364     \ifAC@starred\acl*{#1}\else\acl{#1}\fi\acused{#1}}

365 \endinput
366 </acronym>

That's it.

```