

# The HEP-PAPER package\*

## Publications in high energy physics

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### Abstract

The HEP-PAPER package aims to provide a single style file containing most configurations and macros necessary to write appealing publications in High Energy Physics. Instead of reinventing the wheel by introducing newly created macros HEP-PAPER preferably loads third party packages.

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\*This document corresponds to HEP-PAPER v2.2.

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# 1 Introduction

For usual publications it is enough to load additionally to the `article` class without optional arguments only the `HEP-PAPER` package [1].

```
\documentclass{article}
\usepackage{hep-paper}
```

The most notable changes after loading the `HEP-PAPER` package is the change of some  $\text{\LaTeX}$  defaults. The paper and font sizes are set to `A4` and `11pt`, respectively. Additionally, the paper geometry is adjusted using the `GEOMETRY` package [2]. Furthermore, the font is changed to latin modern (LM) using the `HEP-FONT` package [3]. Finally, portable document format (PDF) hyperlinks are implemented with the `HYPERREF` package [4].

## 1.1 Options

- paper** The `paper=format` option loads the specified paper format. The possible *formats* are: `ao`, `a1`, `a2`, `a3`, `a4`, `a5`, `a6`, `bo`, `b1`, `b2`, `b3`, `b4`, `b5`, `b6`, `co`, `c1`, `c2`, `c3`, `c4`, `c5`, `c6`, `ansia`, `ansib`, `ansic`, `ansid`, `ansie`, `letter`, `executive`, `legal`. The default is `a4`.
- font** The `font=size` option loads the specified font size. The possible *sizes* are: `8pt`, `9pt`, `10pt`, `11pt`, `12pt`, `14pt`, `17pt`, `20pt`. The default is `11pt`.
- lang** The `lang=name` option switches the document language. The default is `british`.
- sansserif** The `sansserif` option switches the document including math to sans serif font shape.
- oldstyle** The `oldstyle` option activates the use of oldstyle text- (123) in favour of lining- (123) figures in text mode.
- parskip** The `parskip` option changes how paragraphs are separated from each other using the `PARSKIP` package [5]. The  $\text{\LaTeX}$  default is separation via indentation the `parskip` option switches to separation via vertical space.<sup>1</sup>
- symbols** The `symbols=family` is passed to the `HEP-MATH-FONT` package [6] and sets the family of the symbol fonts. `symbols=false` deactivates loading any additional symbol fonts.

### 1.1.1 Deactivation

The `HEP-PAPER` package loads few bigger packages which have a large impact on the document. The deactivation options can prevent such and other adjustments.

- defaults** The `defaults` option prevents the adjustment of the page geometry and the font size set by the document class.
- title** The `title=false` option deactivates the title page adjustments.
- bibliography** The `bibliography=key` option prevents the automatic loading of the `HEP-BIBLIOGRAPHY` package [7] if `key=false`.
- glossaries** The `glossaries=false` option deactivates acronyms and the use of the `HEP-ACRONYM` package [8].
- references** The `references=false` option prevents the `CLEVEREF` package [9] from being loaded and deactivates further redefinitions of reference macros.

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<sup>1</sup> Although the `parskip` option is used for this document, it is recommended only for very few document types such as technical manuals or answers to referees.

### 1.1.2 Compatibility

The compatibility options activate the compatibility mode for certain classes and packages used for publications in high energy physics. They are mostly suitable combinations of options described in the previous section. If HEP-PAPER is able to detect the presence of such a class or package, i.e. if it is loaded before the HEP-PAPER package, the compatibility mode is activated automatically.

- `beamer` The `beamer` option activates the BEAMER [10] compatibility mode.
- `jhep` The `jhep` option activates the JHEP [11] compatibility mode.
- `jcaph` The `jcaph` option activates the JCAPH [12] compatibility mode.
- `revtex` The `revtex` option activates the REVTeX [13] compatibility mode.
- `pos` The `pos` option activates the POS compatibility mode.
- `springer` The `springer` option activates the compatibility mode the `svjour` class [14].

### 1.1.3 Reactivation

The HEP-PAPER package deactivates unrecommended macros, which can be reactivated manually.

- `manualplacement` The `manualplacement` option reactivates manual float placement.
- `eqnarray` The `eqnarray` option reactivates the deprecated `eqnarray` environment.

## 2 Macros and environments

- `twocolumn` If the global `twocolumn` option is present the page geometry is changed to cover almost the entire page. Additionally the `abstract*` environment is defined that generates a one column abstract and takes care of placing the title information.
- `abstract*`

### 2.1 Title page

- `\series` The `\series{<series>}` macro is defined using the HEP-TITLE package [15].
- `\title` The PDF meta information is set according to the `\title{<text>}` and `\author{<text>}` information.
- `\subtitle` The `\subtitle{<subtitle>}` macro is defined.
- `\editor` The following lines add e.g. two authors with different affiliations
- `\author` `\author[1]{Author one \email{email one}}`
- `\affiliation` `\affiliation[1]{Affiliation one}`
- `\email` `\author[2]{Author two \email{email two}}`
- `\affiliation` `\affiliation[1,2]{Affiliation two}`
- `\preprint` The `\preprint{<number>}` macro places a pre-print number in the upper right corner of the title page.
- `abstract (env.)` The abstract environment is adjusted to not start with an indentation.
- `\titlefont` Various title font macros are defined, allowing to change the appearance of the `\maketitle` output.
- `\subtitlefont`
- `\authorfont`
- `\affiliationfont`
- `\preprintfont`

## 2.2 Text

The `inlinelist` and `enumdescript` environments are defined.

`\textsc` A bold versions **SMALL CAPS** and a sans serif version of **SMALL CAPS** is provided.

`\underline` The `\underline` macro is redefined to allow line-breaks. The `\overline` macro is extended to also  
`\overline` text outside of math environments.  
`\useparindent` If the `parskip` option is activated the `\useparindent` macro switches to the usual `parindent` mode,  
while the `\useparskip` macro switches to the `parskip` mode.

### 2.2.1 References and footnotes

`\cref` References are extended with the `CLEVEREF` package [9], which allows to e.g. just type `\cref{<key>}` in order to write ‘figure 1’. Furthermore, the `CLEVEREF` package allows to reference multiple objects within one `\cref{<key1,<key2>}`.

`\cite` Citations are adjusted to not start on a new line in order to avoid the repeated use of `~\cite{<key>}`.

`\ref` References are also adjusted to not start on a new line.

`\eqref` Footnotes are adjusted to swallow white space before the footnote mark and at the beginning of the footnote text.

`\subref`

`\footnote`

### 2.2.2 Acronyms

`\acronym` The `HEP-ACRONYM` package [8] is loaded. The `\acronym{<*>[<typeset abbreviation>] {<abbreviation>}{<*>}{<definition>}}`  
`\shortacronym` `definition)` macro generates the singular `\{<abbreviation>}` and plural `\{<abbreviation>s}` macros. The first star prevents the addition of an ‘s’ to the abbreviation plural. The second star restores the `TEX` default of swallowing subsequent white space. The long form is only shown at the first appearance of these macros, later appearances generate the abbreviation with a hyperlink to the long form. The long form is never used in math mode. Capitalization at the beginning of paragraphs and sentences is (mostly) ensured. The `\shortacronym` and `\longacronym` macros are drop-in replacements of the `\acronym` macro showing only the short or long form of their acronym.

## 2.3 Math

`\mathbf` The `HEP-MATH` [16] and `HEP-MATH-FONT` [6] packages are loaded. Bold math, via `\mathbf` is improved, i.e. ( $Ab\Gamma\delta\mathbf{Ab}\mathbf{\Gamma}\delta$ ). Macros switching to `bfseries` such as `\section{<text>}` are ensured to also typeset math in bold. The `\text{<text>}` macro makes it possible to write text within math mode, i.e. ( $Ab\Gamma\delta\mathbf{Ab}\mathbf{\Gamma}\delta$ ). The math sans serif alphabet is redefined to be italic sans serif if the main text is serif and italic serif if the main text is sans serif, i.e. ( $Ab\mathbf{\Gamma}\delta\mathbf{Ab}\mathbf{\Gamma}\delta$ ). The `\mathscr` font is adjusted depending on the `sansserif` option i.e. ( $\mathcal{A}\mathcal{B}\mathcal{C}\mathcal{D}$ ). The `\mathbb` font is adjusted depending on the `sansserif` option i.e. ( $\mathbb{A}\mathbb{h}\mathbb{1}$ ). Finally, the `\mathfrak` font is also available i.e. ( $\mathfrak{A}\mathfrak{a}\mathfrak{B}\mathfrak{b}\mathfrak{1}\mathfrak{2}$ ).

`\mathfrac` The `\frac{<number>}{<number>}` macro is accompanied by `\nicefrac{<number>}{<number>}`,  
`\nicefrac` `\textfrac{<number>}{<number>}`, and `\flatfrac{<number>}{<number>}` leading to  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{1}{2}$ , and  
`\flatfrac`  $\frac{1}{2}$ . Diagonal matrix `\diag` and signum `\sgn` operators are defined.

`\textfrac` The `\mathdef{<name>}[<arguments>]{<code>}` macro (re-)defines macros only within math mode without changing the text mode definition.

`\diag`

`\sgn` The imaginary unit  $i$  and the differential  $d$  are defined using this functionality.

`\mathdef`

`\i`

`\d`

`\numberwithin` For longer paper it can be useful to re-number the equation in accordance with the section numbering `\numberwithin{equation}{section}`. In order to further reduce the size of the equation counter it can be useful to wrap `align` environments with multiple rows in a `subequations` environment.

`\unit` The correct spacing for units, cf. equation (1), is provided by the macro `\unit[⟨value⟩]{⟨unit⟩}` which can also be used in text mode. The macro `\inv[⟨power⟩]{⟨text⟩}` allows to avoid math mode also for inverse units such as  $5 \text{ fb}^{-1}$  typeset via `\unit[5]{\inv{fb}}`.

Greek letters are adjusted to always be italic and upright in math and text mode, respectively, using the HEP-MATH-FONT [6] package. This allows differentiations like

$$\sigma = 5 \text{ fb} , \quad \text{at } 5 \sigma \text{ C.L.} , \quad \mu = 5 \text{ cm} , \quad l = 5 \mu\text{m} . \quad (1)$$

Additionally, Greek letters can also be directly typed using Unicode.

`\ev` The HEP-MATH package [16] provides additional macros such as

`\pdv`  $\langle \phi \rangle , \quad \frac{\partial^3 f}{\partial x \partial y^2} , \quad [A, B] , \quad \mathcal{O}(x^2) , \quad x|_0^\infty , \quad \det(M) . \quad (2)$

`\order` The `\cancel{⟨characters⟩}` macro and the `\slashed{⟨character⟩}` macro allow to ~~cancel~~ math and use the Dirac slash notation i.e.  $\cancel{\phi}$ , respectively.

`\slashed` A better looking over left right arrow is defined i.e.  $\overleftrightarrow{\partial}$ .

`\overlefttrightarrow`

## 2.4 Floats

`figure (env.)` Automatic float placement is adjusted to place a single float at the top of pages and to reduce the number of float pages, using the HEP-FLOAT package [17]. The most useful float placement is usually achieved by placing the float *in front* of the paragraph it is referenced in first.

`panels (env.)` The `panels` environment provides sub-floats and takes as mandatory argument either the number of sub-floats (default 2) or the width of the first sub-float as fraction of the `\linewidth`. Within the `\begin{panels}[⟨vertical alignment⟩]{⟨width⟩}` environment the `\panel` macro initiates a new sub-float. In the case that the width of the first sub-float has been given as an optional argument to the `panels` environment the `\panel{⟨width⟩}` macro takes the width of the next sub-float as mandatory argument.

`\graphic` The `\graphic[⟨width⟩]{⟨figure⟩}` macro is defined, which is a wrapper for the `\includegraphics{⟨figure⟩}` macro and takes the figure width as fraction of the `\linewidth` as optional argument (default 1).  
`\graphics` If the graphics are located in a sub-folder its path can be indicated by `\graphics{⟨subfolder⟩}`.

## 2.5 Bibliography

`\bibliography` The BIBLATEX package [18] is loaded for bibliography management. The user has to add the line `\bibliography{⟨my.bib⟩}` to the preamble of the document and `\printbibliography` at the end of the document. The bibliography is generated by BIBER [19]. BIBLATEX is extended by the HEP-BIBLIOGRAPHY package [7] to be able to cope with the `collaboration` and `reportNumber` fields provided by `inspirehep.net` and a bug in the volume number is fixed. Additionally, the PubMed IDs are recognized and `ctan.org`, `github.com`, `gitlab.com`, `bitbucket.org`, `launchpad.net`, `sourceforge.net`, and `hepforge.org` are valid `eprinttypes`. Errata can be included using the related feature.

`\article{key1,`

```
    ...,
    relatedtype="erratum",
    related="key2",
}
\article{key2,
    ...,
}
```

### 3 Conclusion

The `HEP-PAPER` package provides a matching selection of preloaded packages and additional macros enabling the user to focus on the content instead of the layout by reducing the amount of manual tasks. The majority of the loaded packages are fairly lightweight, the others can be deactivated with package options.

`arxiv-collector` `arxiv.org` [20] requires the setup dependent `bb1` files instead of the original `bib` files, which causes trouble if the local `LATEX` version differs from the one used by arXiv. The `ARXIV-COLLECTOR` python script [21] alleviates this problem by collecting all files necessary for publication on arXiv (including figures).

## A Options

<\*package>

Load the `KVOPTIONS` package [22] and define a `hep` namespace.

```
1 \RequirePackage{kvoptions}
2 \SetupKeyvalOptions{
3   family=hep,
4   prefix=hep@
5 }
```

`paper` Define a `paper=size` option. Make A4 paper the default.

```
6 \DeclareStringOption[a4]{paper}
```

`font` Define a `figures=size` option. Make 11pt the default font size.

```
7 \DeclareStringOption[11pt]{font}
```

`lang` Define the `lang` option, which takes the values provided by the `BABEL` package [23]. Make `british` the default language.

```
8 \DeclareStringOption[british]{lang}
```

`sansserif` Define the option pair `serif` and `sansserif` controlling the font shape of the whole document.

```
9 \DeclareBoolOption[true]{serif}
10 \DeclareComplementaryOption{sansserif}{serif}
```

`lining` Define the `lining` option deactivating the use of text figures in text mode.

```
11 \DeclareBoolOption[true]{lining}
12 \DeclareComplementaryOption{oldstyle}{lining}
```

`parskip` Define the option pair `parindent` and `parskip` controlling the separation of paragraphs.

```
13 \DeclareBoolOption[true]{parindent}
14 \DeclareComplementaryOption{parskip}{parindent}
```

`symbols` Provide the `symbols` option allowing to switch the symbol font.

```
15 \DeclareStringOption[true]{symbols}
```

### A.1 Deactivation

`defaults` Define the `defaults` option which deactivates the `paper` and `font` options and prevents the change of the class defaults by this package.

```
16 \DeclareBoolOption[false]{defaults}
```

`title` Provide the `title` option deactivating redefinitions of title macros.

```
17 \DeclareBoolOption[true]{title}
```

**physics** Provide the `physics` option for deactivating redefinition of physics macros.

```
18 \DeclareBoolOption[true]{physics}
```

**bibliography** Provide the `bibliography` option for passing a `style` string to the BIBLATEX package [18] or disabling the automatic loading of `biblatex`.

```
19 \DeclareStringOption[numeric-comp]{bibliography}
```

**glossaries** Provide the `glossaries` option able to turn of the use of the HEP-ACRONYM package [8].

```
20 \DeclareBoolOption[true]{glossaries}
```

**references** Provide the `references` option for preventing the CLEVEREF package from being loaded redefinitions of reference macros.

```
21 \DeclareBoolOption[true]{references}
```

## A.2 Compatibility

**beamer** Provide the `beamer` option for BEAMER [10] compatibility mode.

```
22 \DeclareBoolOption[false]{beamer}
```

**revtex** Provide the `revtex` option for REVTeX [13] compatibility mode.

```
23 \DeclareBoolOption[false]{revtex}
```

**jhep** Provide the `jhep` option for JHEP [11] compatibility mode.

```
24 \DeclareBoolOption[false]{jhep}
```

**jcacp** Provide the `jcacp` option for JCAP [12] compatibility mode.

```
25 \DeclareBoolOption[false]{jcacp}
```

**pos** Provide the `pos` option for PoS compatibility mode.

```
26 \DeclareBoolOption[false]{pos}
```

**springer** Provide the `springer` option for Springer compatibility mode.

```
27 \DeclareBoolOption[false]{springer}
```

**amsart** Provide the `amsart` option for AMS article compatibility mode.

```
28 \DeclareBoolOption[false]{amsart}
```

### A.3 Reactivation

`eqnarray` Provide the `eqnarray` option for reactivating the `eqnarray` environment.

```
29 \DeclareBoolOption[true]{eqnarray}
```

`manualplacement` Provide the `manualplacement` option for reactivating the manual placement of floats.

```
30 \DeclareBoolOption[false]{manualplacement}
```

### A.4 Process options

```
31 \ProcessKeyvalOptions*
```

Read the class options regarding font and paper size.

```
32 \def\hep@get@class#1.cls#2\relax{\def\hep@class{#1}}
33 \def\hep@get@class{\expandafter\hep@get@class\@filelist\relax}
34 \hep@get@class
35 \@ifclasswith{\hep@class}{10pt}{\setkeys{hep}{font=10pt}}{}
36 \@ifclasswith{\hep@class}{12pt}{\setkeys{hep}{font=12pt}}{}
37 \@ifclasswith{\hep@class}{a5paper}{\setkeys{hep}{paper=a5}}{}
38 \@ifclasswith{\hep@class}{b5paper}{\setkeys{hep}{paper=b5}}{}
39 \@ifclasswith{\hep@class}{letterpaper}{\setkeys{hep}{paper=letter}}{}
40 \@ifclasswith{\hep@class}{legalpaper}{\setkeys{hep}{paper=legal}}{}
41 \@ifclasswith{\hep@class}{executivepaper}{%
42 \setkeys{hep}{paper=executive}%
43 }
```

### A.5 Set compatibility

Set the `amsart` compatibility options using the `xPATCH` package [24].

```
44 \@ifclassloaded{amsart}{\setkeys{hep}{amsart}}{}
45 \ifhep@amsart
46 \setkeys{hep}{defaults, title=false}
47 \RequirePackage{xpatch}
48 \xpretocmd{\@adminfootnotes}{\let\@makefntext\BHFN@OldMakefntext}{}{}
49 \fi
```

Set the `springer` compatibility options.

```
50 \@ifclassloaded{svjour}{\setkeys{hep}{springer}}{}
51 \@ifclassloaded{svjour2}{\setkeys{hep}{springer}}{}
52 \@ifclassloaded{svjour3}{\setkeys{hep}{springer}}{}
53 \ifhep@springer
54 \setkeys{hep}{defaults, title=false}
55 \let\cl@chapter\undefined
56 \fi
```

Set the `pos` compatibility options.

```
57 \@ifclassloaded{PoS}{\setkeys{hep}{pos}}{}
58 \ifhep@pos
```

```

59 \setkeys{hep}{defaults, title=false}
60 \DeclareRobustCommand\boldmath{\@nomath\boldmath\mathversion{bold}}
61 \fi

```

Set the beamer compatibility options.

```

62 \@ifclassloaded{beamer}{\setkeys{hep}{beamer}}{}
63 \ifhep@beamer
64 \setkeys{hep}{defaults, title=false, references=false, sansserif}
65 \@ifpackageloaded{beamerbasefont}{\usefonttheme{professionalfonts}}{}
66 \setbeamertemplate{navigation symbols}{}
67 \fi

```

Set the revtex compatibility options.

```

68 \@ifclassloaded{revtex4}{\setkeys{hep}{revtex}}{}
69 \@ifclassloaded{revtex4-1}{\setkeys{hep}{revtex}}{}
70 \@ifclassloaded{revtex4-2}{\setkeys{hep}{revtex}}{}
71 \ifhep@revtex
72 \setkeys{hep}{defaults, title=false, bibliography=false, lang=american}
73 \fi

```

Define the SISSA conditional.

```

74 \@ifpackageloaded{jheppub}{\setkeys{hep}{jhep}}{}
75 \@ifpackageloaded{jcappub}{\setkeys{hep}{jcap}}{}
76 \newif\ifhep@sisssa
77 \ifhep@jhep\hep@sisstrue
78 \else
79 \ifhep@jcap\hep@sisstrue
80 \else\hep@sissafalse
81 \fi
82 \fi

```

Set the SISSA compatibility options.

```

83 \ifhep@sisssa
84 \setkeys{hep}{defaults, title=false, bibliography=false}
85 \PassOptionsToPackage{
86   colorlinks=true, linktocpage=true, pdfproducer=medialab, pdfa=true,
87   urlcolor=blue, anchorcolor=blue, citecolor=blue, filecolor=blue,
88   linkcolor=blue, menucolor=blue, pagecolor=blue
89 }{hyperref}
90 \AtBeginDocument{\renewcommand{\foreignabbrfont}}{}
91 \fi
92 \ifhep@jhep
93 \PassOptionsToPackage{\hep@paper paper}{geometry}
94 \RequirePackage{geometry}
95 \geometry{
96   offset=0in, textheight=.762\paperheight, textwidth=.72\paperwidth
97 }
98 \fi

```

## B Font

Load the HEP-FONT package [3].

```
99 \PassOptionsToPackage{
100 size=\hep@font,
101 sans=\ifhep@serif false\else true\fi,
102 lining=\ifhep@lining true\else false\fi
103 }{hep-font}
104 \RequirePackage{hep-font}
```

### B.1 Math fonts

Load the HEP-MATH-FONT package [6].

```
105 \PassOptionsToPackage{symbols=\hep@symbols}{hep-math-font}
106 \RequirePackage{hep-math-font}
```

## C Geometry

Load the GEOMETRY package [2] and adjust the text width and height. This step must happen after readjusting the font size in appendix B.

```
107 \ifhep@defaults\else
108 \RequirePackage{geometry}
109 \geometry{\hep@paper paper, includeheadfoot}
110 \if@twocolumn
111 \geometry{hscale=.85, vscale=.925, vmarginratio=1:1}
112 \geometry{headsep=2ex, footskip=6ex}
113 \setlength{\columnsep}{1.1em}
114 \else
115 \geometry{hscale=.75, vscale=.8, vmarginratio=3:4}
116 \fi
117 \fi
```

`\useparskip` Load the PARSKIP package [5] if requested and provide two commands switching between the two  
`\useparindent` paragraph modes.

```
118 \ifhep@parindent\else
119 \RequirePackage{parskip}
120 \newcommand{\useparskip}{%
121 \setlength{\parskip}{.5\baselineskip plus 2pt}%
122 \setlength{\parindent}{0pt}%
123 }
124 \newcommand{\useparindent}{%
125 \setlength{\parskip}{0pt}%
126 \setlength{\parindent}{15pt}%
127 \if@twocolumn\setlength\parindent{1em}
128 \else\setlength\parindent{1.5em}
129 \fi
130 }
131 \fi
```

## D Text

Load the HEP-TEXT package [25].

```
132 \PassOptionsToPackage{lang=\hep@lang}{hep-text}
133 \RequirePackage{hep-text}
```

## E Math

Load the HEP-MATH package [16].

```
134 \ifhep@physics\RequirePackage{hep-math}\fi
```

## F Floats

Adjust the L<sup>A</sup>T<sub>E</sub>X float placement defaults using the HEP-FLOAT package [17].

```
135 \PassOptionsToPackage{
136   manualplacement=\ifhep>manualplacement true\else false \fi
137 }{hep-float}
138 \RequirePackage{hep-float}
```

`\ifhep@journal` Define a new journal conditional.

```
139 \newif\ifhep@journal
140 \ifhep@sissa\hep@journaltrue
141 \else\ifhep@revtex\hep@journaltrue
142   \else\ifhep@pos\hep@journaltrue
143     \else\ifhep@springer\hep@journaltrue
144       \else\hep@journalfalse
145     \fi
146   \fi
147 \fi
148 \fi
```

Prevent the CAPTION package [26] from complaining about the journal classes and packages.

```
149 \ifhep@journal
150   \setlength\abovecaptionskip{\f@size\p@}
151   \setlength\belowcaptionskip{0\p@}
152   \long\def\@makecaption#1#2{%
153     \vskip\abovecaptionskip
154     \sbox\@tempboxa{#1: #2}%
155     \ifdim \wd\@tempboxa >\hsize
156       #1: #2\par
157     \else
158       \global \@minipagefalse
159       \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
160     \fi
161     \vskip\belowcaptionskip%
162   }
```

```
163 \fi
```

Readjust the document captions to look like the original revtex captions using the RAGGED2E package [27].

```
164 \ifhep@revtex
165   \RequirePackage{ragged2e}
166   \DeclareCaptionFormat{revtex}{#1#2\justifying{#3}}
167   \captionsetup{font=small, format=revtex}
168   \captionsetup[sub]{font=footnotesize, format=plain}
169   \renewcommand{\figurename}{Figure}
170   \renewcommand{\tablename}{Table}
171 \fi
```

## G Title page

Adjust the title page using the HEP-TITLE package [15].

```
172 \ifhep@title\RequirePackage{hep-title}\fi
```

## H Bibliography

Check if bibliography management is requested using the PDFTEXCMDS package [28]. And load the HEP-BIBLIOGRAPHY package [7]

```
173 \RequirePackage{pdftexcmds}
174 \ifnum\pdf@strcmp{\hep@bibliography}{false}=0\else
175   \PassOptionsToPackage{style=\hep@bibliography}{hep-bibliography}
176   \RequirePackage{hep-bibliography}
177 \fi
```

## I Hyperlinks, Footnotes and References

Load the HEP-REFERENCE package [29].

```
178 \ifhep@references
179 \RequirePackage{hep-reference}
```

Set the PDF meta data according to the paper information and ensure that unnecessary information is suppressed.

```
180 \ifhep@revtex
181   \AtBeginShipout{\hypersetup{pdftitle={\@title}}}
182 \else
183   \ifhep@beamer\else
184     \AtBeginDocument{\hypersetup{pdftitle={\@title}}}
185   \fi
186 \fi
187 \ifhep@title
188   \AtBeginDocument{\hypersetup{pdfauthor=\AB@authlist}}
189 \else
```

```

190 \ifhep@beamer\else
191   \ifhep@pos\else\AtBeginDocument{\hypersetup{pdfauthor={\@author}}}\fi
192 \fi
193 \fi

```

End of references conditional

```
194 \fi
```

## J Acronyms

Define acronyms if not deactivated. Acronyms are implemented in the HEP-ACRONYM package [8] and must be loaded after the HYPERREF package in appendix I. Set the abbreviation style.

```
195 \ifhep@glossaries\RequirePackage{hep-acronym}\fi
```

```
</package>
```

## K Tests

### K.1 JHEP

```
<*testJHEP>
```

```

196 \documentclass[a4paper, 11pt]{article}
197
198 \usepackage{jheppub}
199 \usepackage[lang=english]{hep-paper}
200 \usepackage[math]{blindtext}
201
202 \begin{document}
203
204 \title{Title}
205
206 \emailAdd{first@email.com}
207 \author[a]{First author}
208 \emailAdd{second@email.com}
209 \author[b]{Second author}
210 \affiliation[a]{First affiliation}
211 \affiliation[b]{Second affiliation}
212
213 \abstract{\blindtext}
214
215 \maketitle
216
217 \Blinddocument
218
219 \end{document}

```

```
</testJHEP>
```

## K.2 JCAP

```
<*testJCAP>

220 \documentclass[a4paper, 11pt]{article}
221
222 \usepackage{jcapub}
223 \usepackage[lang=english]{hep-paper}
224 \usepackage[math]{blindtext}
225
226 \begin{document}
227
228 \title{Title}
229
230 \emailAdd{first@email.com}
231 \author[a]{First author}
232 \emailAdd{second@email.com}
233 \author[b]{Second author}
234 \affiliation[a]{First affiliation}
235 \affiliation[b]{Second affiliation}
236
237 \abstract{\blindtext}
238
239 \maketitle
240
241 \Blinddocument
242
243 \end{document}

</testJCAP>
```

## K.3 AMSArt

```
<*testAMSArt>

244 \documentclass{amsart}
245
246 \usepackage[lang=english]{hep-paper}
247 \usepackage[math]{blindtext}
248
249 \title{title}
250
251 \author{Author}
252 \address{Address 1}
253 \email{first@email.com}
254 \author{Author 2}
255 \email{second@email.com}
256 \address{Address 2}
257
258 \date{date}
259
260 \begin{document}
```

```

261
262 \begin{abstract}
263 \blindtext
264 \end{abstract}
265
266 \maketitle
267
268 \Blinddocument
269
270 \end{document}
</testAMSArt>

```

## K.4 Beamer

```

<*testBeamer>

271 \documentclass{beamer}
272
273 \usepackage[lang=english]{hep-paper}
274 \usepackage[math]{blindtext}
275
276 \title{Title}
277 \subtitle{Subtitle}
278 \author{Author}
279 \institute{Institute}
280 \date{Event}
281
282 \begin{document}
283
284 \frame{\titlepage}
285
286 \begin{frame}{Frame title}
287 \blindtext
288 \end{frame}
289
290 \end{document}
</testBeamer>

```

## K.5 PoS

```

<*testPoS>

291 \documentclass{PoS}
292
293 \usepackage[lang=english,title=false]{hep-paper}
294 \usepackage[math]{blindtext}
295
296 \title{Title}
297
298 \author{First author \thanks{first@email.com}}

```

```

299 \author{
300 \speaker{Second author is speaker}\\
301 First affiliation\\
302 E-mail: \email{second@email.com}
303 }
304 \author{Third author \thanks{\email{third@email.com}}\\
305 Second affiliation}
306 \author{Fourth author\\Third affiliation}
307 \FullConference{Full conference}
308 \ShortTitle{Short title}
309
310 \begin{abstract}
311 \blindtext
312 \end{abstract}
313
314 \begin{document}
315
316 \Blinddocument
317
318 \end{document}
</testPoS>

```

## K.6 RevTeX

```

<*testRevTeX>
319 \documentclass[
320 aps,
321 prl,
322 reprint,
323 nofootinbib,
324 nobibnotes,
325 superscriptaddress,
326 preprintnumbers,
327 ]{revtex4-2}
328
329 \usepackage{hep-paper}
330 \usepackage[math]{blindtext}
331
332 \begin{document}
333
334 \title{Title}
335
336 \author{First author}
337 \email[E-mail me at: ]{first@email.com}
338 \affiliation{First affiliation}
339 \author{Second author}
340 \email{second@email.com}
341 \affiliation{Second affiliation}
342 \affiliation{Third affiliation}

```

```

343 \author{Third author}
344 \affiliation{Fourth affiliation}
345
346 \begin{abstract}
347 \blindtext
348 \end{abstract}
349
350 \maketitle
351
352 \Blinddocument
353
354 \end{document}
</testRevTeX>

```

## K.7 Springer

```

<*testSpringer>

355 \documentclass[twocolumn,epjc3]{svjour3}
356
357 \usepackage[lang=english]{hep-paper}
358 \usepackage[math]{blindtext}
359
360 \journalname{Journal name}
361
362 \title{Title\thanksref{title}}
363
364 \titlerunning{Short title}
365
366 \subtitle{Subtitle}
367
368 \thankstext{title}{Title thanks}
369
370 \authorrunning{Short form of author list}
371
372 \thankstext{email1}{e-mail: first@email.com}
373 \thankstext{email2}{e-mail: second@email.com}
374
375 \institute{
376   First address \label{address1} \and
377   Second address \label{address2} \and
378   \emph{Present Address:} if needed\label{address3}
379 }
380
381 \date{Received: date / Accepted: date}
382
383 \begin{document}
384
385 \author{
386   First Author\thanksref{email1,address1} \and

```

```
387 Second Author\thanksref{email2,address2,address3}
388 }
389
390 \maketitle
391
392 \begin{abstract}
393 \blindtext
394 \end{abstract}
395
396 \Blinddocument
397
398 \end{document}

</testSpringer>
```

## L Readme

```
<*readme>
```

```
399 # The 'hep-paper' package
400
401 A 'LaTeX' package for publications in High Energy Physics.
402
403 ## Introduction
404
405 The 'hep-paper' package aims to provide a single style file containing
406 most configurations and macros necessary to write appealing publications
407 in High Energy Physics. Instead of reinventing the wheel by introducing
408 newly created macros 'hep-paper' preferably loads third party packages as
409 long as they are lightweight enough.
410
411 For usual publications it is enough to load additionally to the 'article'
412 class without optional arguments only the 'hep-paper' package.
413
414 \documentclass{article}
415 \usepackage{hep-paper}
416
417 ## Author
418
419 Jan Hajer
420
421 ## License
422
423 This file may be distributed and/or modified under the conditions of the
424 'LaTeX' Project Public License, either version 1.3c of this license or
425 (at your option) any later version. The latest version of this license is
426 in 'http://www.latex-project.org/lppl.txt' and version 1.3c or later is
427 part of all distributions of LaTeX version 2005/12/01 or later.

</readme>
```

## References

- [1] J. Hajer. ‘The `hep-paper` package: Publications in high energy physics’ (2019). CTAN: `hep-paper`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [2] D. Carlisle and H. Umeki. ‘The `geometry` package: Flexible and complete interface to document dimensions’ (1996). CTAN: `geometry`. GitHub: [davidcarlisle/geometry](https://github.com/davidcarlisle/geometry).
- [3] J. Hajer. ‘The `hep-font` package: Latin modern extended by computer modern’ (2021). CTAN: `hep-font`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [4] *L<sup>A</sup>T<sub>E</sub>X<sub>3</sub> Project*. ‘Hypertext marks in L<sup>A</sup>T<sub>E</sub>X: a manual for `hyperref`: Extensive support for hypertext in L<sup>A</sup>T<sub>E</sub>X’ (1995). CTAN: `hyperref`. GitHub: [latex3/hyperref](https://github.com/latex3/hyperref).
- [5] R. Fairbairns, F. Mittelbach, and H. Partl. ‘The `parskip` package: Layout with zero `\parindent`, non-zero `\parskip`’ (1989). CTAN: `parskip`. GitHub: [FrankMittelbach/fmitemx](https://github.com/FrankMittelbach/fmitemx).
- [6] J. Hajer. ‘The `hep-math-font` package: Extended Greek and sans serif math’ (2021). CTAN: `hep-math-font`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [7] J. Hajer. ‘The `hep-bibliography` package: Bibliographies for high energy physics’ (2021). CTAN: `hep-bibliography`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [8] J. Hajer. ‘The `hep-acronym` package: An acronym extension for glossaries’ (2021). CTAN: `hep-acronym`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [9] T. Cubitt. ‘The `cleveref` package: Intelligent cross-referencing’ (2006). CTAN: `cleveref`. URL: [dr-qubit.org/cleveref](https://dr-qubit.org/cleveref).
- [10] T. Tantau, J. Wright, and V. Miletic. ‘The `beamer` class: A L<sup>A</sup>T<sub>E</sub>X class for producing presentations and slides’ (2003). CTAN: `beamer`. GitHub: [josephwright/beamer](https://github.com/josephwright/beamer).
- [11] *SISSA Medialab*. ‘The JHEP package’ (1997). URL: [jhep.sissa.it/jhep/help/JHEP\\_TeXclass.jsp](http://jhep.sissa.it/jhep/help/JHEP_TeXclass.jsp).
- [12] *SISSA Medialab*. ‘The JCAP package’ (2002). URL: [jcap.sissa.it/jcap/help/JCAP\\_TeXclass.jsp](http://jcap.sissa.it/jcap/help/JCAP_TeXclass.jsp).
- [13] *American Physical Society*. ‘The REV<sub>T</sub>E<sub>X</sub> class: Styles for various Physics Journals’ (1999). CTAN: `revtex`. URL: [journals.aps.org/revtex](http://journals.aps.org/revtex).
- [14] *Springer Verlag*. ‘The `svjour` package: Macros for Springer journals’ (1997). CTAN: `springer`.
- [15] J. Hajer. ‘The `hep-title` package: Extensions for the title page’ (2021). CTAN: `hep-title`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [16] J. Hajer. ‘The `hep-math` package: Extended math macros’ (2021). CTAN: `hep-math`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [17] J. Hajer. ‘The `hep-float` package: Convenience package for float placement’ (2021). CTAN: `hep-float`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).
- [18] P. Lehman, J. Wright, A. Boruvka, and P. Kime. ‘The `biblatex` Package: Sophisticated Bibliographies in L<sup>A</sup>T<sub>E</sub>X’ (2006). CTAN: `biblatex`. GitHub: [plk/biblatex](https://github.com/plk/biblatex).
- [19] F. Charette and P. Kime. ‘`biber`: Backend processor for BibL<sup>A</sup>T<sub>E</sub>X’ (2009). GitHub: [plk/biber](https://github.com/plk/biber). SourceForge: `biblatex-biber`.
- [20] *arXiv Team*. ‘arXiv: free distribution service and an open archive for scholarly articles’ (1991). URL: [arxiv.org](https://arxiv.org).
- [21] D. Sutherland. ‘`arxiv-collector`: A little Python script to collect L<sup>A</sup>T<sub>E</sub>X sources for upload to the arXiv’ (2018). GitHub: [dougalsutherland/arxiv-collector](https://github.com/dougalsutherland/arxiv-collector).
- [22] H. Oberdiek. ‘The `kvoptions` package: Key value format for package options’ (2004). CTAN: `kvoptions`. GitHub: [ho-tex/kvoptions](https://github.com/hob2tex/kvoptions).
- [23] J. Braams, J. Bezos, and at al. ‘Babel Localization and internationalization: Multilingual support for Plain T<sub>E</sub>X or L<sup>A</sup>T<sub>E</sub>X’ (1989). CTAN: `babel`. GitHub: [latex3/babel](https://github.com/latex3/babel).
- [24] E. Gregorio. ‘The `xpatch` package: Extending etoolbox patching commands’ (2012). CTAN: `xpatch`.
- [25] J. Hajer. ‘The `hep-text` package: List and text extensions’ (2021). CTAN: `hep-text`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: [janhajer/hep-paper](https://github.com/janhajer/hep-paper).

- [26] A. Sommerfeldt. ‘The `caption` package: Customising captions in floating environments’ (1994). CTAN: `caption`. GitLab: `axelsommerfeldt/caption`.
- [27] M. Schröder. ‘The `ragged2e`-package: Alternative versions of “ragged”-type commands’ (1996). CTAN: `ragged2e`. GitLab: `hagenbuch/ragged2e`.
- [28] H. Oberdiek. ‘The `pdftexcmds` package: Lua $\TeX$  support for pdf $\TeX$  utility functions’ (2007). CTAN: `pdftexcmds`.
- [29] J. Hajer. ‘The `hep-reference` package: Selection of reference improvements’ (2021). CTAN: `hep-reference`. DOI: [10.5281/zenodo.3606436](https://doi.org/10.5281/zenodo.3606436). GitHub: `janhajer/hep-paper`.