

The relatese package

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Abstract

`relatese` is a small helper package for scientific reports. It provides a simplified way of loading commonly used package setups that enhance the standard \LaTeX system, with options to load modules for page layout, mathematics, figures, tables, scientific writing, references, and draft tools.

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1 Introduction

`relatese` is a small helper package for writing scientific reports and related academic documents in \LaTeX . It collects a set of defaults, package-loading shortcuts, and notation helpers that are commonly useful in reports containing mathematical expressions, figures, tables, units, chemical formulae, references, and structured page layouts.

The package was originally developed as a personal report template, but it was refactored to be more flexible than a fixed document class or a monolithic preamble. Instead of imposing a complete visual identity or a rigid document structure, `relatese` provides a compact core and a number of options that trigger the loading of predefined sets of modules. These options can be enabled only when needed, allowing the user to choose, for example, whether to load scientific-writing tools, mathematical notation commands, figure and table helpers, bibliography support, or extended layout features.

The core package loads a conservative set of broadly useful packages and defines a few default conventions for figures, tables, lists, and page geometry. Additional functionality is activated through package options such as `math`, `figures`, `tables`, `science` (with `sciencecomma` as an alternative), `refs`, and `full`. This makes the package suitable both for short reports with minimal setup and for larger scientific documents requiring more infrastructure.

One design goal of `relatese` is to keep common report-writing choices close at hand while avoiding the need to copy the same long preamble from project to project. Another goal is to keep these choices explicit: features that can affect compilation requirements or document semantics, such as `svg`, `biblatex`, `mhchem`, or `cleveref`, are grouped behind options rather than being treated as unavoidable defaults.

Although the package includes conveniences that are especially useful in scientific and technical writing, it is not meant to replace specialized document classes, journal templates, or institutional formatting rules. When a publisher, university, or funding agency provides its own class or template, that template should take precedence. In such cases, `relatese` can still be useful as a lightweight collection of helpers, provided that the selected options do not conflict with the required formatting.

The package also includes support for documents following Portuguese numerical conventions through the `sciencecomma` option, which configures `siunitx` to use a decimal comma. Language-dependent behavior is otherwise kept limited, so that document language can be handled by standard tools such as `babel` or `polyglossia`.

In short, `relatese` is intended to be a practical middle ground between a bare L^AT_EX preamble and a fully custom document class, providing reusable defaults and helpers, while leaving the document class, language setup, and final visual identity under the author's control.

2 Installation

Run LaTeX on `relatese.ins` to generate `relatese.sty`:

```
latex relatese.ins
```

Then place `relatese.sty` where TeX can find it, or keep it in the same directory as your document.

This documentation can be generated by running:

```
latex relatese.dtx
```

3 Basic usage

The package can be loaded without options:

```
\usepackage{relatese}
```

A fuller setup for scientific reports might use:

```
\usepackage[layout,math,figures,tables,sciencecomma,refs]{relatese}
```

4 Package options

`relatese` is organized around a small core and a set of optional modules. The core is always loaded and provides general-purpose defaults for page geometry, graphics, captions, tables, lists, colors, and basic mathematical support through `amsmath`. Additional features are enabled through package options.

Option	Effect
<code>layout</code>	Loads document-structure helpers.
<code>math</code>	Loads extra mathematical packages and notation helpers.
<code>figures</code>	Loads float, subfigure, landscape, barrier, and SVG support.
<code>tables</code>	Loads colored-table and cell-formatting helpers.
<code>science</code>	Loads <code>siunitx</code> and <code>mhchem</code> .
<code>sciencecomma</code>	Like <code>science</code> , with decimal comma for <code>siunitx</code> .
<code>siunitx</code>	Loads <code>siunitx</code> only.
<code>chemistry</code>	Loads <code>mhchem</code> only.
<code>refs</code>	Loads <code>biblatex</code> , <code>hyperref</code> , and <code>cleveref</code> .
<code>biblatex</code>	Loads <code>csquotes</code> and <code>biblatex</code> .
<code>cleveref</code>	Loads <code>hyperref</code> and <code>cleveref</code> .
<code>drafttools</code>	Loads drafting utilities such as <code>lipsum</code> .
<code>full</code>	Enables the main optional modules.

Options may be combined in the usual L^AT_EX way:

```
\usepackage[math,sciencecomma,refs]{relatese}
```

For convenience, the `full` option enables most modules at once. This is useful for larger reports or for documents following the conventions for which the package was originally designed. For more portable documents, however, it is usually better to enable only the modules that are actually needed.

4.1 The core package

Loading `relatese` without options activates the core configuration:

```
\usepackage{relatese}
```

The core loads a conservative set of packages that are broadly useful in scientific reports and academic writing: `xcolor`, `microtype`, `graphicx`, `amsmath`, `bm`, `booktabs`, `caption`, `enumitem`, and `geometry`.

The core also defines a small set of colors, sets a default graphics search path, configures captions for figures and tables, applies compact spacing to `itemize` lists, and makes page geometry presets available through `\setgeometry`. Since `geometry` is always loaded, these presets are available even when no package option is specified.

Example:

```
\documentclass[a4paper]{article}
\usepackage{relatese}

\begin{document}

\section{Introduction}
```

This document uses the core defaults provided by `\pkg{relatese}`.

```

\begin{itemize}
  \item Compact item spacing is already configured.
  \item Figure and table captions use the package defaults.
  \item Geometry presets are available through \cs{setgeometry}.
\end{itemize}

\end{document}

```

The default geometry preset is **standard**. It changes only the margins and does not force a paper size. The paper size should be selected by the document class, for example:

```

\documentclass[a4paper]{article}
\usepackage{relatexse}

```

or:

```

\documentclass[letterpaper]{article}
\usepackage{relatexse}

```

4.2 The layout option

The `layout` option enables additional packages related to document structure and page layout:

```

\usepackage[layout]{relatexse}

```

It loads `changepage`, `multicol`, `authblk`, `setspace`, `indentfirst`, `tocloft`, `lastpage`, `titlesec`, and `footmisc`.

This option is intended for reports whose overall layout is controlled by the author. It is useful when the document needs multiple columns, customized author blocks, line spacing commands, first-paragraph indentation, table-of-contents adjustments, page-count references, or section-title formatting.

Since `layout` changes document-wide conventions, it should be used with some care when working with publisher templates, institutional classes, or document classes that already customize section headings, footnotes, or the table of contents.

In particular, `layout` changes footnote numbering to symbolic marks:

```

*, dagger, double dagger, ...

```

This reproduces one of the original conventions of the package, but it may not be appropriate for all document types.

Example:

```

\documentclass[a4paper]{article}
\usepackage[layout]{relatexse}

\title{A Scientific Report}
\author[1]{First Author}
\author[2]{Second Author}
\affil[1]{Institute A}
\affil[2]{Institute B}

\begin{document}

```

```

\maketitle
\onehalfspacing

\begin{multicols}{2}
This section is typeset in two columns.
\end{multicols}

\end{document}

```

The package includes a few geometry presets, summarized in table 4.1. None of them sets the paper size. Paper size should be selected by the document class, for example with `a4paper` or `letterpaper`.

Table 4.1: Geometry presets provided by `relatex`.

Preset	Margins	Intended use
<code>standard</code>	<code>hmargin=2.5cm, vmargin=3.5cm</code>	General reports and default use.
<code>compact</code>	<code>hmargin=2cm, vmargin=2.5cm</code>	Shorter documents or drafts with less white space.
<code>wide</code>	<code>hmargin=2cm, top=2.5cm, bottom=3cm</code>	Documents needing a wider text block, for example when equations, figures, or tables benefit from additional horizontal space.
<code>binding</code>	<code>inner=3cm, outer=2cm, top=3cm, bottom=3.5cm</code>	Printed documents that require extra inner margin for binding.
<code>draft</code>	<code>hmargin=3cm, vmargin=3.5cm</code>	Drafts with larger margins for handwritten notes, comments, or corrections.

These presets may be selected in the preamble with `\setgeometry`. For temporary geometry changes inside the document body, use `\newsetgeometry` and return to the previous layout with `\restoregeometry`.

4.3 The `math` option

The `math` option enables additional mathematical packages and a collection of notation helpers:

```
\usepackage[math]{relatex}
```

It loads `amssymb`, `xfrac`, `cancel`, and `xparse`. It also defines commands for common mathematical notation, including derivatives, differentials, inner products, chi-square symbols, Roman numerals, prime marks, and unit vectors.

4.3.1 Mathematical commands

The `math` option defines a small set of commands for common mathematical notation. The commands are intended as lightweight shortcuts for notation frequently used in scientific reports, lecture notes, and technical documents.

Basic notation

Command	Example input	Output
<code>\mean</code>	<code>\mean{x}</code>	$\langle x \rangle$
<code>\lapla</code>	<code>\lapla f</code>	$\nabla^2 f$
<code>\relprime</code>	<code>x\relprime</code>	x'
<code>\relprime</code> with argument	<code>x\relprime[2]</code>	x'^2
<code>\slparallel</code>	<code>E_{\slparallel}</code>	$E_{//}$

The command `\relprime` is provided instead of a more generic name such as `\prime`, since `\prime` is already a standard mathematical symbol in L^AT_EX. With an optional argument, `\relprime` can be used to indicate repeated primes.

The command `\slparallel` provides a slanted parallel marker. It does not redefine the standard `\parallel` symbol, so both forms remain available.

Differentials and derivatives

Command	Example input	Output
<code>\ud</code>	<code>\ud x</code>	dx
<code>\ud with order</code>	<code>\ud[2] x</code>	d^2x
<code>\dd</code>	<code>\dd{f}{x}</code>	$\frac{df}{dx}$
<code>\dd with order</code>	<code>\dd{f}{x}[2]</code>	$\frac{d^2f}{dx^2}$
<code>\dda</code>	<code>\dda{f}{x}</code>	$\frac{d}{dx}f$
<code>\dda with order</code>	<code>\dda{f}{x}[2]</code>	$\frac{d^2}{dx^2}f$
<code>\ddp</code>	<code>\ddp{f}{x}</code>	$\frac{\partial f}{\partial x}$
<code>\ddp with order</code>	<code>\ddp{f}{x}[2]</code>	$\frac{\partial^2 f}{\partial x^2}$
<code>\ddpa</code>	<code>\ddpa{f}{x}</code>	$\frac{\partial}{\partial x}f$
<code>\ddpa with order</code>	<code>\ddpa{f}{x}[2]</code>	$\frac{\partial^2}{\partial x^2}f$

The commands `\dd` and `\ddp` typeset total and partial derivatives of a given expression. The commands `\dda` and `\ddpa` typeset the corresponding differential operators applied to an expression. The optional argument specifies the order of the derivative.

For example:

$$\backslash[\backslash\mathrm{d}\mathrm{d}\{f\}\{x\}\backslash\mathrm{q}\mathrm{q}\mathrm{u}\mathrm{a}\mathrm{d}\backslash\mathrm{d}\{f\}\{x\}[2]\backslash\mathrm{q}\mathrm{q}\mathrm{u}\mathrm{a}\mathrm{d}\backslash\mathrm{d}\mathrm{p}\{f\}\{t\}\backslash]$$

produces:

$$\frac{df}{dx} \quad \frac{d^2f}{dx^2} \quad \frac{\partial f}{\partial t}$$

Products, statistics, and numerals

Command	Example input	Output
<code>\innp</code>	<code>\innp{u}{v}</code>	$\langle u, v \rangle$
<code>\chisq</code>	<code>\chisq</code>	χ^2
<code>\chisqred</code>	<code>\chisqred</code>	χ_{red}^2
<code>\rmnum</code>	<code>\rmnum{4}</code>	iv
<code>\Rmnum</code>	<code>\Rmnum{4}</code>	IV

The command `\innp` typesets a simple inner product using angle brackets. The commands `\chisq` and `\chisqred` are shortcuts for chi-square and reduced chi-square notation. The commands `\rmnum` and `\Rmnum` produce lower-case and upper-case Roman numerals.

Unit vectors

The package also defines shortcuts for common Cartesian, cylindrical, spherical, perpendicular, and parallel unit vectors.

Command	Example input	Output
<code>\vi</code>	<code>\vi</code>	\hat{e}_1
<code>\vj</code>	<code>\vj</code>	\hat{e}_2
<code>\vk</code>	<code>\vk</code>	\hat{e}_3
<code>\vs</code>	<code>\vs</code>	\hat{e}_s
<code>\vp</code>	<code>\vp</code>	\hat{e}_p
<code>\vperp</code>	<code>\vperp</code>	\hat{e}_\perp
<code>\vpar</code>	<code>\vpar</code>	\hat{e}_\parallel
<code>\vphi</code>	<code>\vphi</code>	\hat{e}_ϕ
<code>\vz</code>	<code>\vz</code>	\hat{e}_z
<code>\vsl</code>	<code>\vsl</code>	$\hat{e}_{s'}$
<code>\vphil</code>	<code>\vphil</code>	$\hat{e}_{\phi'}$
<code>\vzl</code>	<code>\vzl</code>	$\hat{e}_{z'}$
<code>\vr</code>	<code>\vr</code>	\hat{e}_r
<code>\vtheta</code>	<code>\vtheta</code>	\hat{e}_θ

For example:

```
\[
  \vec{A}
=
  A_{\perp}\vperp
+
  A_{\slparallel}\vpar
\]
```

produces:

$$\vec{A} = A_{\perp} \hat{e}_{\perp} + A_{\parallel} \hat{e}_{\parallel}$$

Display-math spacing

The command `\seteqskip` adjusts the vertical spacing around displayed equations:

```
\seteqskip
```

It sets `\abovedisplayskip`, `\belowdisplayskip`, `\abovedisplayshortskip`, and `\belowdisplayshortskip`. It is intended to be used after choosing the document line spacing, for example after `\onehalfspacing` or `\doublespacing`.

4.4 The figures option

The `figures` option enables additional support for figures, subfigures, float placement, landscape pages, and SVG graphics:

```
\usepackage[figures]{relatase}
```

This option loads `float`, `subcaption`, `placeins`, `pdfscape`, and `svg`. It is intended for documents that make substantial use of figures or that need more control over figure placement than the L^AT_EX defaults provide.

The core package already loads `graphicx` and `caption`, so basic figure inclusion is available even without this option. The `figures` option adds tools for subfigures, float barriers, landscape pages, and SVG inclusion.

Basic figure inclusion. Since `graphicx` is part of the core package, ordinary figures may be included without enabling `figures`:

```
\begin{figure}[htbp]
  \centering
  \includegraphics[width=.65\linewidth]{example-image}
  \caption{A simple figure.}
  \label{fig:simple}
\end{figure}
```

This produces a standard floating figure with the caption style configured by `relatase`. The package also adds `img/` to the graphics search path, so image files placed in that directory can be included without writing the full path.

Subfigures. With `figures`, the `subcaption` package is available. This allows several related panels to be grouped inside a single figure:

```
\begin{figure}[htbp]
  \centering

  \begin{subfigure}{.45\linewidth}
    \centering
    \includegraphics[width=\linewidth]{example-image-a}
    \caption{First panel.}
    \label{fig:panel-a}
  \end{subfigure}
```

```

\hfill
\begin{subfigure}{.45\linewidth}
  \centering
  \includegraphics[width=\linewidth]{example-image-b}
  \caption{Second panel.}
  \label{fig:panel-b}
\end{subfigure}

\caption{A figure composed of two panels.}
\label{fig:two-panels}
\end{figure}

```

Subfigure captions are configured to use the same general caption style as ordinary figures.

Float barriers. The `placeins` package provides the command `\FloatBarrier`. It prevents floats from moving past a given point in the document:

```

\section{Results}

Text discussing the first group of figures.

\begin{figure}[htbp]
  \centering
  \includegraphics[width=.7\linewidth]{result}
  \caption{A result figure.}
\end{figure}

\FloatBarrier

\section{Discussion}

```

This is useful in reports where figures should remain close to the section in which they are discussed.

Forced float placement. The `float` package provides the `H` placement specifier:

```

\begin{figure}[H]
  \centering
  \includegraphics[width=.7\linewidth]{setup}
  \caption{A figure placed exactly here.}
\end{figure}

```

This can be useful in drafts, laboratory reports, or teaching material. However, forced placement should be used sparingly, since it can make page breaking more difficult and may produce poor page layouts.

Landscape pages. The `pdflscape` package is useful for wide figures, diagrams, or tables that do not fit comfortably in portrait orientation:

```

\begin{landscape}
\begin{figure}[htbp]
  \centering
  \includegraphics[width=.9\linewidth]{wide-diagram}
  \caption{A wide diagram on a landscape page.}
\end{figure}
\end{landscape}

```

Pages inside the `landscape` environment are rotated in the output PDF, which is convenient for on-screen reading.

SVG graphics. The `figures` option also loads `svg`, allowing SVG files to be included with `\includesvg`:

```
\begin{figure}[htbp]
  \centering
  \includesvg[width=.65\linewidth]{diagram}
  \caption{A figure included from an SVG file.}
\end{figure}
```

In many workflows, SVG inclusion requires external conversion tools such as Inkscape, and may require shell escape depending on the compilation setup. This should be checked when building documents in restricted or automated environments.

Example. The following minimal example uses subfigures and a float barrier:

```
\documentclass[a4paper]{article}
\usepackage[figures]{relatex}

\begin{document}

\section{Experimental setup}

\begin{figure}[htbp]
  \centering

  \begin{subfigure}{.45\linewidth}
    \centering
    \includegraphics[width=\linewidth]{example-image-a}
    \caption{First view.}
  \end{subfigure}
  \hfill
  \begin{subfigure}{.45\linewidth}
    \centering
    \includegraphics[width=\linewidth]{example-image-b}
    \caption{Second view.}
  \end{subfigure}

  \caption{Two views of the experimental setup.}
\end{figure}

\FloatBarrier

\section{Results}

The figures from the previous section will not float into this section.

\end{document}
```

4.5 The tables option

The `tables` option enables additional tools for more elaborate tables:

```
\usepackage[tables]{relatex}
```

This option loads `colortbl` and `makecell`. The core package already loads `booktabs`, so high-quality horizontal rules are available even without `tables`. The `tables` option is intended for documents that need colored rows or cells, multi-line table cells, or more flexible table headings.

Basic tables. Since `booktabs` is part of the core package, simple tables can be written without enabling `tables`:

```
\begin{table}[htbp]
\centering
\caption{A simple table using \pkg{booktabs}.}
\begin{tabular}{ll}
\toprule
Quantity & Value \\
\midrule
A & 1.0 \\
B & 2.0 \\
\bottomrule
\end{tabular}
\end{table}
```

The `tables` option adds tools for cases where this basic structure is not enough.

Multi-line cells. The `makecell` package provides the command `\makecell`, which is useful for table headings or cells that need explicit line breaks:

```
\begin{table}[htbp]
\centering
\caption{A table using multi-line cells.}
\begin{tabular}{ll}
\toprule
Quantity & \makecell{Measured\\value} \\
\midrule
A & 1.0 \\
B & 2.0 \\
\bottomrule
\end{tabular}
\end{table}
```

Colored rows and cells. The `colortbl` package allows rows and cells to be colored. The package colors defined by `relatex`, such as `superlightgray`, may be used for subtle table backgrounds:

```
\begin{table}[htbp]
\centering
\caption{A table with a highlighted row.}
\begin{tabular}{ll}
\toprule
Quantity & Value \\
\midrule
\rowcolor{superlightgray}
A & 1.0 \\
B & 2.0 \\
\bottomrule
\end{tabular}
\end{table}
```

Table coloring should be used with care. In particular, colors should not be the only way to communicate information, since the document may be printed in grayscale or read with accessibility tools.

Example. The following example combines `booktabs`, `makecell`, and `colortbl`:

```
\documentclass[a4paper]{article}
\usepackage[tables]{relatex}

\begin{document}

\begin{table}[htbp]
\centering
\caption{Example table using the \opt{tables} option.}
\begin{tabular}{lll}
\toprule
Sample & \makecell{Measured\quantity} & Value \\
\midrule
\rowcolor{superlightgray}
A & Thickness & 10.0 \\
B & Thickness & 12.5 \\
C & Thickness & 11.8 \\
\bottomrule
\end{tabular}
\end{table}

\end{document}
```

4.6 The science option

The `science` option enables tools commonly used in scientific and technical writing:

```
\usepackage[science]{relatex}
```

This option loads `siunitx` and `mhchem`. It is intended for documents that contain physical quantities, units, chemical formulae, or chemical reactions.

Units and quantities. The `siunitx` package provides consistent formatting for numbers, units, ranges, and quantities:

```
The sample thickness was \SI{10}{\micro\meter}.
The beam energy was \SI{2.4}{\mega\electronvolt}.
The speed was \SI{3.0e8}{\meter\per\second}.
```

The `science` option applies a small set of defaults:

```
group-digits=none,
range-phrase=--,
per-mode=symbol
```

This means that ranges and units can be written as:

```
\SIrange{1}{5}{\mega\electronvolt}
\si{\meter\per\second}
```

Chemical notation. The `mhchem` package is loaded with version 4 syntax. It provides the command `\ce` for chemical formulae, ions, isotopes, and reactions:

```
\ce{H2O}
\ce{Fe^{2+}}
\ce{^{60}Co}
\ce{A + B -> C}
```

For example:

```
Water radiolysis may be represented schematically as
\[
\ce{H2O -> H^{\cdot} + OH^{\cdot}.}
\]
```

Example. The following example uses both `siunitx` and `mhchem`:

```
\documentclass[a4paper]{article}
\usepackage[science]{relatase}

\begin{document}

The target thickness was \SI{10}{\micro\meter}, and the proton
beam energy was \SI{2.4}{\mega\electronvolt}.

A simple reaction may be written as
\[
\ce{H2O -> H^{\cdot} + OH^{\cdot}.}
\]

\end{document}
```

The `science` option is useful for reports in physics, chemistry, engineering, medical physics, and related fields. Documents that follow decimal-comma conventions should use `sciencecomma` instead.

4.7 The `sciencecomma` option

The `sciencecomma` option is a variant of `science` for documents that use a decimal comma:

```
\usepackage[sciencecomma]{relatase}
```

It loads the same scientific-writing tools as `science`, but also configures `siunitx` to use a comma as the decimal marker:

```
\sisetup{output-decimal-marker={,}}
```

This is useful for documents written according to Portuguese or other decimal-comma conventions:

```
\SI{3.14}{\meter}
```

will be printed using a decimal comma according to the `siunitx` configuration.

Language selection itself is not handled by `relatase`. Users should continue to use `babel` or `polyglossia` for hyphenation, translated strings, and other language-dependent behavior.

4.8 The refs option

The **refs** option enables the complete reference-management setup provided by **relatese**:

```
\usepackage[refs]{relatese}
```

This option loads **csquotes**, **biblatex**, **hyperref**, and **cleveref**. It is intended for documents whose bibliography, hyperlinks, and cross-reference style are controlled by the author.

Bibliography setup. The bibliography is handled by **biblatex** with **biber** as the backend. The default options are:

```
backend=biber,  
style=numeric-comp,  
sorting=none,  
backref=true,  
autocite=superscript
```

This gives numeric compressed citations, bibliography entries sorted by order of appearance, back-references, and superscript autocitations.

A typical document uses:

```
\addbibresource{references.bib}  
...  
\autocite{key}  
...  
\printbibliography
```

Documents using this option should be compiled with **biber**, not **BibTeX**.

Hyperlinks. The option also loads **hyperref** with Unicode bookmarks, breakable links, and colored links:

```
colorlinks=true,  
linkcolor=darkblue,  
urlcolor=darkblue,  
citecolor=darkblue
```

The color **darkblue** is defined by the core package.

Clever references. The **cleveref** package is loaded after **hyperref**. This allows references such as:

```
\cref{sec:method}  
\Cref{fig:setup}
```

No explicit language option is passed to **cleveref**. The document language should be configured with **babel** or **polyglossia**.

Example.

```
\documentclass[a4paper]{article}
\usepackage[refs]{relatese}

\addbibresource{references.bib}

\begin{document}

\section{Introduction}

As discussed in \autocite{einstein1905}, references are handled by
\pkg{biblatex}.

The method is described in \cref{sec:method}.

\section{Method}
\label{sec:method}

\printbibliography

\end{document}
```

Since reference and bibliography styles are often specified by journals, publishers, or universities, the `refs` option should be used only when these choices are under the author's control.

4.9 The biblatex option

The `biblatex` option enables only the bibliography part of the reference setup:

```
\usepackage[biblatex]{relatese}
```

This option loads `csquotes` and `biblatex`, using the same bibliography configuration as the `refs` option:

```
backend=biber,
style=numeric-comp,
sorting=none,
backref=true,
autocite=superscript
```

It does not load `hyperref` or `cleveref`. This is useful when the document should use the `relatese` bibliography defaults, but hyperlinks or clever references need to be configured separately.

Example.

```
\documentclass[a4paper]{article}
\usepackage[biblatex]{relatese}

\addbibresource{references.bib}

\begin{document}

A citation appears here \autocite{key}.

\printbibliography

\end{document}
```

Documents using this option should be compiled with `biber`. If hyperlinks and intelligent cross-references are also desired, use `refs` instead.

4.10 The `cleveref` option

The `cleveref` option enables intelligent cross-references:

```
\usepackage[cleveref]{relatese}
```

It loads `cleveref`. If `hyperref` has not already been loaded through `refs`, `relatese` loads `hyperref` first. This preserves the usual loading order:

```
hyperref
cleveref
```

The option is useful for documents with many labeled sections, figures, tables, or equations.

Basic usage. With `cleveref`, references can be written without manually typing words such as “section”, “figure”, or “table”:

```
See \cref{sec:method}.
See \Cref{fig:setup}.
```

The package automatically determines the type of the referenced object.

Language. No explicit language option is passed to `cleveref`. Language selection should be handled by `babel` or `polyglossia`. This keeps `relatese` from forcing a specific document language.

Example.

```
\documentclass[a4paper]{article}
\usepackage[cleveref]{relatese}
```

```
\begin{document}
```

```
\section{Experimental setup}
\label{sec:setup}
```

The experimental setup is described in `\cref{sec:setup}`.

```
\begin{figure}[htbp]
  \centering
  \rule{.5\linewidth}{2cm}
  \caption{A placeholder figure.}
  \label{fig:placeholder}
\end{figure}
```

See also `\Cref{fig:placeholder}`.

```
\end{document}
```

If bibliography management is also desired, use `refs` instead of enabling `cleveref` alone.

4.11 The drafttools option

The `drafttools` option loads utilities that are useful while drafting or testing a document layout:

```
\usepackage[drafttools]{relatese}
```

Currently, this option loads `lipsum`, which provides dummy text. Dummy text is useful when testing page layout, headings, figures, tables, and section structure before the final content is available.

Example.

```
\documentclass[a4paper]{article}
\usepackage[drafttools]{relatese}

\begin{document}

\section{Draft section}

\lipsum[1-3]

\end{document}
```

Since dummy-text tools are not needed in final documents, they are kept behind an explicit option rather than being loaded by default.

4.12 The full option

The `full` option enables the main working set of modules provided by `relatese`:

```
\usepackage[full]{relatese}
```

It is intended for documents that use most of the package conventions: layout helpers, mathematical notation, figure and SVG support, extended tables, scientific-writing tools, bibliography support, hyperlinks, and clever references.

In practice, `full` is equivalent to enabling the main options:

```
layout,
math,
figures,
tables,
sciencecomma,
refs
```

The option is convenient for personal reports, teaching material, or scientific documents whose formatting is controlled by the author. For documents subject to journal, publisher, or institutional requirements, it is usually better to enable only the specific options needed.

Example.

```
\documentclass[a4paper]{article}
\usepackage[full]{relatese}

\addbibresource{references.bib}

\begin{document}
```

```

\section{Introduction}

A quantity with units may be written as
\SI{10}{\micro\meter}.

A derivative may be written as
\[
\dd{f}{x}
\]

The method is described in \cref{sec:method}.

\section{Method}
\label{sec:method}

A chemical expression may be written as
\[
\ce{H2O -> H^{\cdot} + OH^{\cdot}}
\]

\printbibliography

\end{document}

```

Documents using `full` and `bibliography` commands should be compiled with `biber`.

5 Implementation

```

1 %% relatese.sty -- General-purpose report helper package
2 %% Reorganized version with option-based package loading.
3 %%
4 %% Suggested usage:
5 %%   \usepackage{relatese}
6 %%   \usepackage[layout,sciencecomma,refs]{relatese}
7 %%   \usepackage[full]{relatese}
8 %%
9 %% Geometry presets:
10 %%   \setgeometry{standard}
11 %%   \setgeometry{compact}
12 %%   \setgeometry{wide}
13 %%   \setgeometry{binding}
14 %%   \setgeometry{draft}
15
16 \NeedsTeXFormat{LaTeX2e}
17 \ProvidesPackage{relatese}[2026/05/30 v0.3 General report helper package]
18
19 \makeatletter
20
21 % -----
22 % Option switches
23 % -----
24
25 \newif\ifrelatese@layout
26 \newif\ifrelatese@math
27 \newif\ifrelatese@figures
28 \newif\ifrelatese@tables

```

```

29 \newif\ifrelatelse@siunitx
30 \newif\ifrelatelse@sciencecomma
31 \newif\ifrelatelse@chemistry
32 \newif\ifrelatelse@refs
33 \newif\ifrelatelse@biblatex
34 \newif\ifrelatelse@cleveref
35 \newif\ifrelatelse@drafttools
36
37 % Core packages are always loaded. They are small, broadly useful, and unlikely
38 % to impose a document structure.
39
40 % Layout and document-structure options.
41 \DeclareOption{layout}{%
42   \relatelse@layouttrue
43 }
44
45 % Mathematics options.
46 \DeclareOption{math}{\relatelse@mathtrue}
47
48 % Figure and table options.
49 \DeclareOption{figures}{%
50   \relatelse@figuretrue
51 }
52 \DeclareOption{tables}{\relatelse@tabletrue}
53
54 % Scientific-writing options. The science option loads siunitx and mhchem;
55 % sciencecomma also enables decimal comma in siunitx.
56 \DeclareOption{science}{%
57   \relatelse@siunitxtrue
58   \relatelse@chemistrytrue
59 }
60 \DeclareOption{sciencecomma}{%
61   \relatelse@siunitxtrue
62   \relatelse@chemistrytrue
63   \relatelse@sciencecommatrue
64 }
65 \DeclareOption{siunitx}{\relatelse@siunitxtrue}
66 \DeclareOption{chemistry}{\relatelse@chemistrytrue}
67
68 % Reference-management options.
69 \DeclareOption{refs}{%
70   \relatelse@refstrue
71   \relatelse@biblatextrue
72   \relatelse@clevereftrue
73 }
74 \DeclareOption{biblatex}{\relatelse@biblatextrue}
75 \DeclareOption{cleveref}{\relatelse@clevereftrue}
76
77 % Development option.
78 \DeclareOption{drafttools}{\relatelse@drafttoolstrue}
79
80 % Convenience option: approximates the older monolithic behavior.
81 \DeclareOption{full}{%
82   \relatelse@layouttrue
83   \relatelse@mathtrue
84   \relatelse@figuretrue
85   \relatelse@tabletrue
86   \relatelse@siunitxtrue

```

```

87 \relates@chemistrytrue
88 \relates@refstrue
89 \relates@biblatextrue
90 \relates@clevereftrue
91 }
92
93 \DeclareOption*{%
94   \PackageWarning{relatese}{Unknown option ‘\CurrentOption’}%
95 }
96
97 \ProcessOptions\relax
98
99 % -----
100 % Core package set
101 % -----
102
103 \RequirePackage{xcolor}
104 \RequirePackage{microtype}
105 \RequirePackage{graphicx}
106 \RequirePackage{amsmath}
107 \RequirePackage{bm}
108 \RequirePackage{booktabs}
109 \RequirePackage[hang,footnotesize,bf,tableposition=top]{caption}
110 \RequirePackage{enumitem}
111
112 % Additional colors to what is defined in xcolor
113 \definecolor{darkblue}{RGB}{0,0,192}
114 \definecolor{lightblue}{RGB}{48,224,255}
115 \definecolor{darkgreen}{RGB}{0,128,0}
116 \definecolor{darkred}{RGB}{192,0,0}
117 \definecolor{lightred}{RGB}{224,92,92}
118 \definecolor{orange}{RGB}{254,80,0}
119 \definecolor{wine}{RGB}{142,54,70}
120 \definecolor{superlightgray}{RGB}{240,240,240}
121 \definecolor{darkergray}{RGB}{80,80,80}
122
123 % Default graphic search path. This is convenient, but still mild enough to keep
124 % in the core because it only adds a lookup path.
125 \graphicspath{{img/}}
126 \DeclareGraphicsExtensions{.pdf,.png,.jpg,.jpeg,.eps}
127
128 % Caption defaults.
129 \captionsetup[figure]{font=footnotesize,format=hang}
130 \captionsetup[table]{font=footnotesize,format=hang,position=above}
131
132 % Compact itemize lists.
133 \setlist[itemize]{%
134   itemsep=2pt,
135   topsep=10pt,
136   parsep=0pt,
137   partopsep=0pt
138 }
139
140 % -----
141 % Layout and page geometry
142 % -----
143
144 \RequirePackage{geometry}

```

```

145
146
147 % Select a named geometry preset. This command is intended for the preamble.
148 \newcommand{\setgeometry}[1]{%
149   \@ifundefined{relatase@geometry@#1}{%
150     \PackageError{relatase}
151       {Unknown geometry preset: #1}
152       {Available presets: standard, compact, wide, binding, draft.}%
153   }{%
154     \csname relatase@geometry@#1\endcsname
155   }%
156 }
157
158 % Apply a named geometry preset in the document body, using geometry's
159 % \newgeometry. Return to the previous layout with \restoregeometry.
160 \newcommand{\newsetgeometry}[1]{%
161   \@ifundefined{relatase@newgeometry@#1}{%
162     \PackageError{relatase}
163       {Unknown geometry preset: #1}
164       {Available presets: standard, compact, wide, binding, draft.}%
165   }{%
166     \csname relatase@newgeometry@#1\endcsname
167   }%
168 }
169
170 \newcommand{\relatase@geometry@standard}{%
171   \geometry{hmargin=2.5cm,vmargin=3.5cm}%
172 }
173 \newcommand{\relatase@geometry@compact}{%
174   \geometry{hmargin=2cm,vmargin=2.5cm}%
175 }
176 \newcommand{\relatase@geometry@wide}{%
177   \geometry{hmargin=2cm,top=2.5cm,bottom=3cm}%
178 }
179 \newcommand{\relatase@geometry@binding}{%
180   \geometry{inner=3cm,outer=2cm,top=3cm,bottom=3.5cm}%
181 }
182 \newcommand{\relatase@geometry@draft}{%
183   \geometry{hmargin=3cm,vmargin=3.5cm}%
184 }
185
186 \newcommand{\relatase@newgeometry@standard}{%
187   \newgeometry{hmargin=2.5cm,vmargin=3.5cm}%
188 }
189 \newcommand{\relatase@newgeometry@compact}{%
190   \newgeometry{hmargin=2cm,vmargin=2.5cm}%
191 }
192 \newcommand{\relatase@newgeometry@wide}{%
193   \newgeometry{hmargin=2cm,top=2.5cm,bottom=3cm}%
194 }
195 \newcommand{\relatase@newgeometry@binding}{%
196   \newgeometry{inner=3cm,outer=2cm,top=3cm,bottom=3.5cm}%
197 }
198 \newcommand{\relatase@newgeometry@draft}{%
199   \newgeometry{hmargin=3cm,vmargin=3.5cm}%
200 }
201
202 % Apply the default geometry preset.

```

```

203 \setgeometry{standard}
204
205 \ifrelatese@layout
206   \RequirePackage{changepage}
207   \RequirePackage{multicol}
208   \RequirePackage{authblk}
209   \RequirePackage{setspace}
210   \RequirePackage{indentfirst}
211   \RequirePackage{tocloft}
212   \RequirePackage{lastpage}
213   \RequirePackage{titlesec}
214   \RequirePackage{footmisc}
215
216   % Run-in unnumbered paragraphs.
217   \titleformat{name=\paragraph,numberless}[runin]%
218     {\normalfont\normalsize\bfseries}{\}{5pt}{}
219
220   % Symbol footnotes reproduce the original package behavior. This is kept under
221   % the layout option because it changes document-wide numbering.
222   \renewcommand{\thefootnote}{\fnsymbol{footnote}}
223 \fi
224
225 % -----
226 % Mathematics
227 % -----
228
229 \ifrelatese@math
230   \RequirePackage{amssymb}
231   \RequirePackage{xfrac}
232   \RequirePackage{cancel}
233   \renewcommand{\CancelColor}{\color{red}}
234
235   \RequirePackage{xparse}
236
237   % Display math spacing helper. Use after setting line spacing.
238   \newcommand{\seteqskip}{%
239     \setlength{\abovedisplayskip}{15pt}%
240     \setlength{\belowdisplayskip}{25pt}%
241     \setlength{\abovedisplayshortskip}{10pt}%
242     \setlength{\belowdisplayshortskip}{20pt}%
243   }
244
245   % Common notation helpers.
246   \newcommand{\mean}[1]{\ensuremath{\left<\#1\right>}}
247   \newcommand{\lapla}{\nabla^{\{2\}}}
248
249   \NewDocumentCommand{\relprime}{o}{%
250     \IfNoValueTF{#1}{%
251       \ensuremath{\sim\prime}}%
252     }{%
253       \ensuremath{\sim\prime{#1}}}%
254     }%
255   }
256
257   \NewDocumentCommand{\ud}{o}{%
258     \IfNoValueTF{#1}{%
259       \ensuremath{\mathrm{d}}}%
260     }{%

```

```

261     \ensuremath{\mathrm{d}}^{\#1}}%
262   }%
263 }
264
265 % Total derivatives.
266 \NewDocumentCommand{\dd}{m m o}{%
267   \IfNoValueTF{#3}{%
268     \frac{\ud #1}{\ud #2}%
269   }{%
270     \frac{\ud^{\#3}#1}{\ud {#2}^{\#3}}%
271   }%
272 }
273
274 % Open total derivative operator.
275 \NewDocumentCommand{\dda}{m m o}{%
276   \IfNoValueTF{#3}{%
277     \frac{\ud}{\ud #2}{#1}%
278   }{%
279     \frac{\ud^{\#3}}{\ud {#2}^{\#3}}{#1}%
280   }%
281 }
282
283 % Partial derivatives.
284 \NewDocumentCommand{\ddp}{m m o}{%
285   \IfNoValueTF{#3}{%
286     \frac{\partial #1}{\partial #2}%
287   }{%
288     \frac{\partial^{\#3}#1}{\partial {#2}^{\#3}}%
289   }%
290 }
291
292 % Open partial derivative operator.
293 \NewDocumentCommand{\ddpa}{m m o}{%
294   \IfNoValueTF{#3}{%
295     \frac{\partial}{\partial #2}{#1}%
296   }{%
297     \frac{\partial^{\#3}}{\partial {#2}^{\#3}}{#1}%
298   }%
299 }
300
301 % Inner product.
302 \NewDocumentCommand{\innp}{m m}{\left<{#1},{#2}\right>}
303
304 % Chi-square helpers.
305 \newcommand{\chisq}{\ensuremath{\chi^2}}
306 \newcommand{\chisqred}{\ensuremath{\chi^2_{\text{red}}}}
307
308
309 % Roman numerals.
310 \newcommand{\rmnum}[1]{\romannumeral #1}
311 \newcommand{\Rmnum}[1]{\expandafter\@slowromancap\romannumeral #1@}
312
313 % Slanted parallel marker
314 \newcommand{\slparallel}{\mathchoice
315   {\mathrel{/\mkern-5mu/}}% display
316   {\mathrel{/\mkern-5mu/}}% text
317   {\mathrel{/\mkern-4mu/}}% script
318   {\mathrel{/\mkern-3mu/}}% scriptscript

```

```

319 }
320
321 % Cartesian, cylindrical, and spherical unit vectors.
322 \newcommand{\vi}{\ensuremath{\hat{e}_{1}}}
323 \newcommand{\vj}{\ensuremath{\hat{e}_{2}}}
324 \newcommand{\vk}{\ensuremath{\hat{e}_{3}}}
325 \newcommand{\vs}{\ensuremath{\hat{e}_{s}}}
326 \newcommand{\vp}{\ensuremath{\hat{e}_{p}}}
327 \newcommand{\vperp}{\ensuremath{\hat{e}_{\perp}}}
328 \newcommand{\vpar}{\ensuremath{\hat{e}_{\parallel}}}
329 \newcommand{\vphi}{\ensuremath{\hat{e}_{\phi}}}
330 \newcommand{\vz}{\ensuremath{\hat{e}_{z}}}
331 \newcommand{\vsl}{\ensuremath{\hat{e}_{s\relprime}}}
332 \newcommand{\vphil}{\ensuremath{\hat{e}_{\phi\relprime}}}
333 \newcommand{\vzl}{\ensuremath{\hat{e}_{z\relprime}}}
334 \newcommand{\vr}{\ensuremath{\hat{e}_{r}}}
335 \newcommand{\vtheta}{\ensuremath{\hat{e}_{\theta}}}
336
337 \fi
338
339 % Number equations, tables, and figures within sections.
340 \numberwithin{equation}{section}
341 \numberwithin{table}{section}
342 \numberwithin{figure}{section}
343 \renewcommand{\arraystretch}{1.5}
344
345 % -----
346 % Figures and floats
347 % -----
348
349 \ifrelatese@figures
350 \RequirePackage{float}
351 \RequirePackage{subcaption}
352 \RequirePackage{placeins}
353 \RequirePackage{pdflscape}
354 \RequirePackage{svg}
355
356 \captionsetup[subfigure]{font=footnotesize,format=hang}
357 \captionsetup[subtable]{font=footnotesize,format=hang,position=above,singlelinecheck=false}
358
359 % Table captions above tables. This reproduces the original float setup.
360 \floatstyle{plaintop}
361 \restylefloat{table}
362 \fi
363
364 % -----
365 % Tables
366 % -----
367
368 \ifrelatese@tables
369 \RequirePackage{colortbl}
370 \RequirePackage{makecell}
371 \fi
372
373 % -----
374 % Scientific writing: units and chemistry
375 % -----
376

```

```

377 \ifrelatelse@siunitx
378   \RequirePackage[detect-all]{siunitx}
379
380   % Language-neutral defaults.
381   \sisetup{%
382     group-digits=none,
383     range-phrase=--,
384     per-mode=symbol
385   }
386
387   % Decimal comma convention.
388   \ifrelatelse@sciencecomma
389     \sisetup{output-decimal-marker={,}}
390   \fi
391 \fi
392
393 \ifrelatelse@chemistry
394   \RequirePackage[version=4]{mhchem}
395 \fi
396
397 % -----
398 % Hyperlinks, bibliography, and clever references
399 % -----
400
401 \ifrelatelse@biblatex
402   \RequirePackage{csquotes}
403   \RequirePackage[
404     backend=biber,
405     style=numeric-comp,
406     sorting=none,
407     backref=true,
408     autocite=superscript
409   ]{biblatex}
410 \fi
411
412 % hyperref should be loaded late. cleveref should be loaded after hyperref.
413 \ifrelatelse@refs
414   \RequirePackage[
415     unicode,
416     bookmarks=true,
417     breaklinks
418   ]{hyperref}
419
420   \hypersetup{%
421     colorlinks=true,
422     linkcolor=darkblue,
423     urlcolor=darkblue,
424     citecolor=darkblue
425   }
426 \fi
427
428 \ifrelatelse@cleveref
429   \ifrelatelse@refs\else
430     \RequirePackage[
431       unicode,
432       bookmarks=true,
433       breaklinks
434     ]{hyperref}

```

```

435
436   \hypersetup{%
437       colorlinks=true,
438       linkcolor=darkblue,
439       urlcolor=darkblue,
440       citecolor=darkblue
441   }
442   \fi
443
444   \RequirePackage{cleveref}
445 \fi
446
447 % -----
448 % Draft tools and small utilities
449 % -----
450
451 \ifrelatese@drafttools
452   \RequirePackage{lipsum}
453 \fi
454
455 % Quotation helper.
456 \newcommand{\quoteblock}[2]{%
457   \begin{samepage}%
458     \begin{quotation}%
459       \emph{' '#1'}}%
460       \begin{flushright}%
461         -- #2%
462       \end{flushright}%
463     \end{quotation}%
464   \end{samepage}%
465 }
466
467 % Easy-to-find revision marker preserved from the original package.
468 \newcommand{\coxa}{%
469   {\Huge C\kern-.1667em\lower.5ex\hbox{0}\-X\kern-.1667em\lower.5ex\hbox{A}\@}%
470   \@ifundefined{index}{\index{CoXa}}%
471 }
472
473 \makeatother
474 \endinput

```