# The chet package

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This is a sample produced using `chet`. This package is inspired by Paul Ginsparg's `harvmac`, but uses LaTeX $2_\varepsilon$ instead of TeX. The commands provided are to be used as faster alternatives to LaTeX $2_\varepsilon$'s default environments (which can all still be used with `chet`).

(`chet` can be found at `http://www.ctan.org/pkg/chet`.)

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## 1. Basic commands

<div style="float:left">SecLabel</div>

### 1.1. Preamble

To use `chet` first make sure that the file `chet.sty` is in your path. (If you have references you also have to add the file `chetref.bst` to your path.) You can then start your document with `\documentclass{article}` and include `\usepackage{chet}` in the preamble. For labels of equations, sections, etc. to appear on the margins, you can use the command `\draftmode`.

In the preamble of the document one also specifies the title, abstract, preprint number, authors' email addresses, (see usage in this example file). Note that if you have math in the title you should put it in `\titlemath{}`, i.e. use `$\titlemath{...}$`, in order to achieve the correct amount of boldness. The command `\emailV{}` is also available to be used when emails are to be displayed as vertically justified footnotes (one below the other) rather than in the same line. Additionally, if you want to have only one footnote with all email addresses and without footnote marks, then you can use the command `\emails{}` inside the `\author{}` environment. If a specific date is desired, then just include `\date{}` with the desired date in the preamble of your document, and the default current date on the bottom left of the title page will be substituted with the one you specified.

It is suggested that authors compile straight to `pdf` with `pdflatex`, i.e. following TEX→PDF. The compilation method TEX→DVI→PS→PDF is obsolete and redundant, and should not be used. As far as I know the only problem that arises frequently with TEX→PDF is the inability to obtain `psfrag` replacements in `eps` figures; that can be taken care of

<p style="text-align:center">1</p>

very easily with the package `pstool`. Of course, these days one should only make figures with *TikZ*.

## 1.2. Sections

Sections start with the command `\newsec{}[]`. The first argument is the name of the section, while the second provides the label. You can refer back to sections simply by putting a slash in front of their label. For example, if you write `\newsec{Name}[Label]` you can just type `\Label` in the subsequent text and the number of the section will appear, e.g. you can refer to section 1. Note that if you are referring to a label you define in a later line, for example you want to refer to a later section, then the default `\ref{Label}` is needed.[1] Note, also, that the second argument of the command can be omitted altogether, i.e. the command `\newsec{}` starts a section but does not give it a label. The commands `\subsec{}[]` and `\subsubsec{}[]` that define subsections and subsubsections respectively, are similarly defined.

## 1.3. Equations

For equations use the command `\eqn{}[]`. Again, inside `{}` you write the equation and inside `[]` the label, if you want one. An equation number will appear only if you do type `[Label]`.[2] For example, If you give the label `EqMagic` to an equation,

$$e^{i\pi} + 1 = 0, \tag{1.1} \quad \text{EqMagic}$$

then you can just type `\EqMagic` to reference it, (1.1). For aligned equations with one number in the vertical middle use the command `\eqna{}[]`. A single `&` indicates the alignment point, while `\\` indicates a line break. For example,

$$\begin{aligned} \cos^2\theta + \sin^2\theta &= 1, \\ \cos^2\theta - \sin^2\theta &= \cos 2\theta. \end{aligned} \tag{1.2} \quad \text{EqTrig}$$

You can later refer to equation (1.2) with `\EqTrig`.

Commands that simplify the writing of subequations are also supplied for two, three, and four subequations. They are, respectively, `\twoseqn{}[]{}[][]`, `\threeseqn{}[]{}[]{}[][]`, and `\fourseqn{}[]{}[]{}[]{}[][]`. Each pair of `{}[]` receives an equation and

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[1] The same holds for all references to equations defined with the commands outlined in this section.

[2] If you leave the `[]` empty, the equation is going to get a number but not a label. If you don't type the `[]` at all, then the equation will have no number.

a label,[3] while the last `[]` is used for an overall label and can be omitted. Each of the

<div style="margin-left:-2em">TrigAll</div>

equations has an `&` at the alignment point. For example, equation (1.2) could be written as

$$\cos^2\theta + \sin^2\theta = 1, \qquad\qquad (1.3a) \quad \textsf{FTrig}$$

$$\cos^2\theta - \sin^2\theta = \cos 2\theta. \qquad\qquad (1.3b) \quad \textsf{STrig}$$

You can then refer to (1.3a), (1.3b), or (1.3). More complicated structures with subequations can be achieved with the corresponding `amsmath` environment. Note that all equation environments define labels that can be used only later in the text with `\Label`. The original `\eqref{Label}` is otherwise needed. In the rare occasion that the name of your label coincides with the name of a LaTeX $2_\varepsilon$ command, you will get an error and the file won't compile. In that case, just change the name of your label.

## 1.4. Citations

To cite a paper use the command `\rcite{}`. (The default command `\cite{}` can still be used.) The syntax is exactly the same as in `\cite`, but, if `\draftmode` is used, `\rcite` presents the label of the citation as an exponent to the citation number wherever that appears (except in the bibliography, where the label appears on the left margin).

The `.bib` file can be included in the main `.tex` file, preferably at the end, right before the `\end{document}`. The way to do this is with the environment

```
\begin{filecontents}{bibname.bib}
    Your citations go here...
\end{filecontents}
```

Here, `bibname.bib` should be substituted with the name of the `.bib` file that you call in the command `\bibliography{}`.[4] (See usage in this example file.) Note that you still have to run BibTeX to compile the bibliography.

For example, limit cycles appear in the RG in $4-\epsilon$ dimensions as demonstrated in [1][FGS].

### Acknowledgments

I would like to thank Ken Intriligator, Ben Grinstein, and Jean-François Fortin for adopting `chet`, and for their numerous suggestions and tips that helped me improve the package.

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[3]If you don't want to label a subequation leave the corresponding `[]` empty.

[4]The functions supported from the `.bst` style file are `@article`, `@book`, `@inbook`, and `@inproceedings`.

Several LaTeX packages are called by default by `chet`. In alphabetical order, they are `amsmath`, `caption`, `cite`, `collref`, `datetime`, `filecontents`, `footmisc`, `geometry`, `hyperref`, `kvoptions`, `manyfoot`, `microtype`, `pifont`, `showkeys`, `tocloft`, `xparse`, and `xspace`. I would like to thank the authors of these great packages for their amazing work!

## Appendix A. Other commands

Commands often used include

- `\toc`: produces the table of contents.

- `\foot{}`: produces footnotes.

- `\ack{}`: used for acknowledgements.

- `\begin{appendices}...\end{appendices}`: used for appendices.

- `\bibliography{}`: produces the bibliography.

## Appendix B. Conference proceedings

If you want to use the macros for equations and sections defined in `chet`, but have to use another `.sty` file, for example for conference proceedings, then you can just use the option `macrosonly` when you call `chet`, i.e. instead of `\usepackage{chet}`, include `\usepackage[macrosonly]{chet}` in the preamble of your `.tex` file.

### References

FGS [1] J.-F. Fortin, B. Grinstein & A. Stergiou, *"Scale without Conformal Invariance: An Example"*, `arXiv:1106.2540`.