

L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> Document Styles for the  
Department of Electronics and Computer Science  
File version v1.6, dated 2003/25/04

Steve R. Gunn

Printed September 25, 2003

## 1 Description

These L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> document classes are designed to produce thesis, mini-thesis, progress, project, report, GDP report and GDP summary report documents which conform to the University of Southampton guidelines of April 2001. They are based on the document class `book`, but modify some of its layout decisions. An article class is also provided which is based on the document class `article`.

## 2 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP when generating the external files:

thesis	produce the <code>ecsthesis</code> document class
minithesis	produce the <code>ecsminithesis</code> document class
progress	produce the <code>ecsprogress</code> document class
project	produce the <code>ecsproject</code> document class
report	produce the <code>ecsreport</code> document class
article	produce the <code>ecsarticle</code> document class
gdp	produce the <code>ecsgdp</code> document class
gdpsummary	produce the <code>ecsgdpsummary</code> document class
testthesis	produce an example thesis
testminithesis	produce an example minithesis
testprogress	produce an example progress
testproject	produce an example project
testreport	produce an example report
testarticle	produce an example article
testgdp	produce an example GDP report
testgdpsummary	produce an example GDP summary report
introduction	produce an example introduction chapter
conclusions	produce an example conclusions chapter
appendix	produce an example appendix chapter
figure	produce an example figure file
definitions	produce an example definitions file
references	produce an example references file
bst	produce a bibliography style file
driver	produce a documentation driver file

### 3 Implementation

All options are passed on to the `book` or `article` class.

```
1 <{*thesis | minithesis | progress | project | report | article | gdp | gdpsummary}>
```

`\baseclass`

```
2 <{*thesis | minithesis | progress | project | report | gdp | gdpsummary}>
3 \def\baseclass{book}
4 </thesis | minithesis | progress | project | report | gdp | gdpsummary>
5 <{*article}>
6 \def\baseclass{article}
7 </article>

8 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{\baseclass}}
```

`\@checkoptions`

Before we can process the options we must deal with a small problem. That is, we want to change the default options of the `book` or `article` class to `a4paper` and `11pt` or `12pt` but the macro `\ProcessOptions` used by the `book` or `article` class processes the options in the order specified in the file. Because `a4paper` is the first of the paper sizing options it will be overridden by any user defined option. But the same is not true of the font size option `11pt` or `12pt`. To remedy this we define a macro `\@checkoptions{<default>}{<option-list>}` which checks to see if any options in `<option-list>` have been specified and if not adds `<default>` to the option list.

```
9 \def\@checkoptions#1#2{
```

```

10 \edef\@curroptions{\@optionlist{\@currname.\@current}}
11 \@tempwafalse
12 \@tfor\@this:=#2\do{
13   \@expandtwoargs\in@{\@this,}{,\@curroptions,}
14   \ifin@ \@tempwatrue \@break@tfor \fi
15   \let\@this\empty
16   \if@tempswa \else \PassOptionsToClass{#1}{\baseclass}\fi
17 }

```

With this macro at our disposal we can continue to process the options

```

18 <*thesis | minithesis | progress | report | article | gdp | gdpsummary>
19 \@checkoptions{11pt}{10pt}{11pt}{12pt}
20 </thesis | minithesis | progress | report | article | gdp | gdpsummary>
21 <*project>
22 \@checkoptions{12pt}{10pt}{11pt}{12pt}
23 </project>
24 \PassOptionsToClass{a4paper}{\baseclass}
25 \ProcessOptions\relax

```

and load the book or article document class with A4 as the default paper size.

```
26 \LoadClass{\baseclass}
```

### 3.1 Banner

`\bhrule` Provide a function to produce a banner on the output making the location of the  
`\btypeout` current section simpler.

```

27 \newcommand\bhrule{\typeout{-----}}
28 \newcommand\btypeout[1]{\bhrule\typeout{\space #1}\bhrule}

```

### 3.2 Date

`\today` This macro uses the  $\TeX$  primitives `\month`, `\day` and `\year` to provide the date of the  $\LaTeX$ -run in a suitable format.

```

29 <*thesis>
30 \def\today{\ifcase\month\or
31   January\or February\or March\or April\or May\or June\or
32   July\or August\or September\or October\or November\or December\fi
33   \space \number\year}
34 </thesis>

```

## 4 Document Layout

### 4.1 Spacing

Load the `setspace` package so that spacing can easily be set. The text in all three styles is set to one and a half spacing, paragraphs not indented, and a newline between paragraphs.

```

35 \usepackage{setspace}
36 <thesis | minithesis | progress | project | report | gdp | gdpsummary>\onehalfspacing
37 <article>\singlespacing

```

```
38 \setlength{\parindent}{0pt}
39 \setlength{\parskip}{2.0ex plus0.5ex minus0.2ex}
```

## 4.2 Margins

Load the `vmargin` package to setup the page dimensions.

```
40 \usepackage{vmargin}
41 (*thesis | minithesis | progress | project | report | gdp | gdpsummary)
42 \setmarginsrb          { 1.5in} % left margin
43                       { 0.6in} % top margin
44                       { 1.0in} % right margin
45                       { 0.8in} % bottom margin
46                       { 20pt}  % head height
47                       {0.25in} % head sep
48                       { 9pt}   % foot height
49                       { 0.3in} % foot sep
50 (/thesis | minithesis | progress | project | report | gdp | gdpsummary)
51 (*article)
52 \setmarginsrb          { 0.8in} % left margin
53                       { 0.6in} % top margin
54                       { 0.8in} % right margin
55                       { 0.8in} % bottom margin
56                       { 20pt}  % head height
57                       {0.25in} % head sep
58                       { 9pt}   % foot height
59                       { 0.3in} % foot sep
60 (/article)
```

## 4.3 Breaks

Control how pages and lines are broken.

```
61 \raggedbottom
62 \setlength{\topskip}{1\topskip \@plus 5\p@}
63 \doublehyphendemerits=10000 % No consecutive line hyphens.
64 \brokenpenalty=10000 % No broken words across columns/pages.
65 \widowpenalty=9999 % Almost no widows at bottom of page.
66 \clubpenalty=9999 % Almost no orphans at top of page.
67 \interfootnotelinepenalty=9999 % Almost never break footnotes.
```

## 4.4 Fancy Page Headers

Setup the the default fancy page headers with an underlined header containing chapter, name and page number.

```
68 \usepackage{fancyhdr}
69 \lhead[\rm\thepage]{\fancyplain{}{\sl{\rightmark}}}
70 \rhead[\fancyplain{}{\sl{\leftmark}}]{\rm\thepage}
71 \chead{}\lfoot{}\rfoot{}\cfoot{}
72 \pagestyle{fancy}
```

```
\chaptermark Redefine chaptermark and sectionmark to set up the correct header name and
\sectionmark produce a banner on the output making the location of messages simpler.
\subsectionmark
```

```
73 (*thesis | minithesis | progress | project | report | gdp)
```

```

74 \renewcommand{\chaptermark}[1]{\btypeout{\thechapter\space #1}\markboth{\@chapapp\ \thechapter
75 \renewcommand{\sectionmark}[1]{}}
76 \renewcommand{\subsectionmark}[1]{}}
77 </thesis | minithesis | progress | project | report | gdp)
78 (*article)
79 \renewcommand{\sectionmark}[1]{\btypeout{\thesection\space #1}}
80 \renewcommand{\subsectionmark}[1]{}}
81 \renewcommand{\subsubsectionmark}[1]{}}
82 </article)
83 (gdpsummary)\markboth{GDP Summary Report}{GDP Summary Report}

```

`\cleardoublepage` Redefine `cleardoublepage` to remove headers from blank pages in twosided documents.

```

84 \def\cleardoublepage{\clearpage\if@twoside \ifodd\c@page\else
85 \hbox{}}
86 \thispagestyle{empty}
87 \newpage
88 \if@twocolumn\hbox{}\newpage\fi\fi\fi}

```

## 4.5 Mathematics

Load the `amsmath` packages, so we can do some serious math, and setup the theorem environments.

```

89 \usepackage{amsmath,amsfonts,amssymb,amscd,amsthm,xspace}
90 \theoremstyle{plain}
91 (*thesis | minithesis | progress | project | report | gdp)
92 \newtheorem{example}{Example}[chapter]
93 \newtheorem{theorem}{Theorem}[chapter]
94 </thesis | minithesis | progress | project | report | gdp)
95 (*article | gdpsummary)
96 \newtheorem{example}{Example}[section]
97 \newtheorem{theorem}{Theorem}[section]
98 </article | gdpsummary)
99 \newtheorem{corollary}[theorem]{Corollary}
100 \newtheorem{lemma}[theorem]{Lemma}
101 \newtheorem{proposition}[theorem]{Proposition}
102 \newtheorem{axiom}[theorem]{Axiom}
103 \theoremstyle{definition}
104 \newtheorem{definition}[theorem]{Definition}
105 \theoremstyle{remark}
106 \newtheorem{remark}[theorem]{Remark}

```

## 4.6 Captions

`\fref` Load the `caption2` package to improve formatting of captions, and provide short  
`\tref` referencing commands.

```

\eref 107 \usepackage[centerlast,small,sc]{caption2}
\cref 108 \setlength{\captionmargin}{20pt}
\sref 109 \newcommand{\fref}[1]{Figure~\ref{#1}}
\aref 110 \newcommand{\tref}[1]{Table~\ref{#1}}
111 \newcommand{\eref}[1]{Equation~\ref{#1}}
112 \newcommand{\cref}[1]{Chapter~\ref{#1}}

```

```

113 \newcommand{\sref}[1]{Section~\ref{#1}}
114 \newcommand{\aref}[1]{Appendix~\ref{#1}}

```

## 4.7 Float Placement

`\topfraction` Preventing figures from appearing on a page by themselves. L<sup>A</sup>T<sub>E</sub>X's figure placement algorithm is quite biased in favour of putting figures on a page by themselves, instead of on the top of a page with some text below it. Fortunately, the parameters of the algorithm can be changed. The main problem is that L<sup>A</sup>T<sub>E</sub>X per default only allows a part of the top of a text-page (70%) to contain figures, and requires at least 20% of a page to be text when text and figures share a page. These parameters should be set to more reasonable values, for example 85% and 10%.

```

115 \renewcommand{\topfraction}{0.85}
116 \renewcommand{\bottomfraction}{.85}
117 \renewcommand{\textfraction}{0.1}
118 \renewcommand{\dbltopfraction}{.85}

```

`\floatpagefraction` This helps, but sometimes L<sup>A</sup>T<sub>E</sub>X puts a figure on a page by itself, although it would fit perfectly well on the top of a page. This happens when the figure will not fit on the page where it was defined. L<sup>A</sup>T<sub>E</sub>X then attempts to put it on a figures-only page before it attempts to put it at the top of the next page. A page may contain figures alone if the figure(s) use at least half the page. To prevent half-empty pages this limit should probably be increased to around 75%.

```

119 \renewcommand{\floatpagefraction}{0.75}
120 \renewcommand{\dblfloatpagefraction}{.75}

```

Be careful not to make `floatpagefraction` larger than `topfraction`, then you risk to produce a figure that can neither go on the top of a text page, nor on a page by itself. If that happens, the figure and all later figures will be postponed until next time a `clearpage` is executed (typically at the end of a chapter or the end of the document). This will also happen if a figure is too large to fit on a page.

```

121 \setcounter{topnumber}{9}
122 \setcounter{bottomnumber}{9}
123 \setcounter{totalnumber}{20}
124 \setcounter{dbltopnumber}{9}

```

## 4.8 Graphics

Load the `graphicx` package, so we can include pictures easily. Load the `epstopdf`, so that eps files are automatically converted to pdf when pdfL<sup>A</sup>T<sub>E</sub>X is used. This requires a version of *epstopdf* to be installed on you system. You can find a windows version at

<http://www.ctan.org/tex-archive/support/epstopdf/epstopdf.exe>.

```

125 \usepackage{graphicx}
126 \usepackage{epstopdf}

```

## 4.9 Subfigures and subtables

Load the `subfigure` package, so we can include subfigures easily.

```

127 \usepackage[scriptsize]{subfigure}

```

```
128 \usepackage{booktabs}
129 \usepackage{rotating}
```

## 4.10 Listings

Load the listings package, so we can include listings easily.

```
130 \usepackage{listings}
131 \usepackage{lstpatch}
132 \lstset{captionpos=b,
133         frame=tb,
134         basicstyle=\scriptsize\ttfamily,
135         showstringspaces=false,
136         keepspaces=true}
137 \lstdefinestyle{matlab} {
138     language=Matlab,
139     keywordstyle=\color{blue},
140     commentstyle=\color[rgb]{0.13,0.55,0.13}\em,
141     stringstyle=\color[rgb]{0.7,0,0} }
```

## 4.11 Hyperlinks

Load the hyperref package to provide hyperlinks in pdf and dvi documents.

```
142 \usepackage[pdfpagemode={UseOutlines},bookmarks=true,bookmarksopen=true,
143     bookmarksopenlevel=0,bookmarksnumbered=true,hypertextnames=false,
144     colorlinks,linkcolor={blue},citecolor={blue},urlcolor={red},
145     pdfstartview={FitV},unicode,breaklinks=true]{hyperref}
146 \pdfstringdefDisableCommands{
147     \let\\\space
148 }
```

## 5 Internal Names

<code>\supervisor</code>	The various elements of the documents are defined as control sequences to make
<code>\examiner</code>	it easy to customize this style for other parts of the University.
<code>\degree</code>	
<code>\authors</code>	149 \newcommand*{\supervisor}[1]{\def\supname{#1}}
<code>\addresses</code>	150 \newcommand*{\examiner}[1]{\def\examname{#1}}
<code>\university</code>	151 \newcommand*{\degree}[1]{\def\degreename{#1}}
<code>\UNIVERSITY</code>	152 \newcommand*{\authors}[1]{\def\authornames{#1}}
<code>\department</code>	153 \newcommand*{\addresses}[1]{\def\addressnames{#1}}
<code>\DEPARTMENT</code>	154 \newcommand*{\university}[1]{\def\univname{#1}}
<code>\group</code>	155 \newcommand*{\UNIVERSITY}[1]{\def\UNIVNAME{#1}}
<code>\GROUP</code>	156 \newcommand*{\department}[1]{\def\deptname{#1}}
<code>\faculty</code>	157 \newcommand*{\DEPARTMENT}[1]{\def\DEPTNAME{#1}}
<code>\FACULTY</code>	158 \newcommand*{\group}[1]{\def\groupname{#1}}
<code>\subject</code>	159 \newcommand*{\GROUP}[1]{\def\GROUPNAME{#1}}
<code>\keywords</code>	160 \newcommand*{\faculty}[1]{\def\facname{#1}}
	161 \newcommand*{\FACULTY}[1]{\def\FACNAME{#1}}
	162 \newcommand*{\subject}[1]{\def\subjectname{#1}}
	163 \newcommand*{\keywords}[1]{\def\keywordnames{#1}}

<code>\supname</code>	The internal names of the elements are set to defaults appropriate to the Department of Electronics and Computer Science.
<code>\examname</code>	
<code>\degreename</code>	164 <code>\supervisor</code> <code>{}</code>
<code>\authornames</code>	165 <code>\examiner</code> <code>{}</code>
<code>\univname</code>	166 <code>\degree</code> <code>{}</code>
<code>\UNIVNAME</code>	167 <code>\authors</code> <code>{}</code>
<code>\deptname</code>	168 <code>\university</code> <code>{\texorpdfstring{\href{http://www.soton.ac.uk}}</code>
<code>\DEPTNAME</code>	169 <code>{University of Southampton}}</code>
<code>\groupname</code>	170 <code>{University of Southampton}}</code>
<code>\GROUPNAME</code>	171 <code>\UNIVERSITY</code> <code>{\texorpdfstring{\href{http://www.soton.ac.uk}}</code>
<code>\facname</code>	172 <code>{UNIVERSITY OF SOUTHAMPTON}}</code>
<code>\FACNAME</code>	173 <code>{UNIVERSITY OF SOUTHAMPTON}}</code>
<code>\subjectname</code>	174 <code>\department</code> <code>{\texorpdfstring{\href{http://www.ecs.soton.ac.uk}}</code>
<code>\keywordnames</code>	175 <code>{School of Electronics and Computer Science}}</code>
	176 <code>{School of Electronics and Computer Science}}</code>
	177 <code>\DEPARTMENT</code> <code>{\texorpdfstring{\href{http://www.ecs.soton.ac.uk}}</code>
	178 <code>{SCHOOL OF ELECTRONICS AND COMPUTER SCIENCE}}</code>
	179 <code>{SCHOOL OF ELECTRONICS AND COMPUTER SCIENCE}}</code>
	180 <code>\group</code> <code>{\texorpdfstring{\href{http://www.isis.ecs.soton.ac.uk}}</code>
	181 <code>{Image, Speech and Intelligent Systems Group}}</code>
	182 <code>{Image, Speech and Intelligent Systems Group}}</code>
	183 <code>\GROUP</code> <code>{\texorpdfstring{\href{http://www.isis.ecs.soton.ac.uk}}</code>
	184 <code>{IMAGE, SPEECH AND INTELLIGENT SYSTEMS GROUP}}</code>
	185 <code>{IMAGE, SPEECH AND INTELLIGENT SYSTEMS GROUP}}</code>
	186 <code>\faculty</code> <code>{\texorpdfstring{\href{http://www.engineering.soton.ac.uk}}</code>
	187 <code>{Faculty of Engineering, Science and Mathematics}}</code>
	188 <code>{Faculty of Engineering, Science and Mathematics}}</code>
	189 <code>\FACULTY</code> <code>{\texorpdfstring{\href{http://www.engineering.soton.ac.uk}}</code>
	190 <code>{FACULTY OF ENGINEERING, SCIENCE AND MATHEMATICS}}</code>
	191 <code>{FACULTY OF ENGINEERING, SCIENCE AND MATHEMATICS}}</code>
	192 <code>\addresses</code> <code>{}</code>
	193 <code>\subject</code> <code>{}</code>
	194 <code>\keywords</code> <code>{}</code>

## 6 Special Pages

### 6.1 Title Page

`\maketitle` Setup an appropriate title page and pdf strings if we are using pdfL<sup>A</sup>T<sub>E</sub>X.

```

195 {*thesis | minithesis | progress | project | report | gdp | gdpsummary)}
196 \renewcommand\maketitle{
197   \btypeout{Title Page}
198   \hypersetup{pdftitle={\@title}}
199   \hypersetup{pdfsubject=\subjectname}
200   \hypersetup{pdfauthor=\authornames}
201   \hypersetup{pdfkeywords=\keywordnames}
202   \thispagestyle{empty}
203   \begin{titlepage}
204     \let\footnotesize\small
205     \let\footnoterule\relax
206     \let \footnote \thanks
207     \setcounter{footnote}{0}

```



```

208 \null\vfill
209 \vskip 60\p@
210 \begin{center}
211 \setlength{\parskip}{0pt}
212 {\large\textbf{\UNIVNAME}\par}
213 (*minithesis | progress | project | gdp | gdpsummary)
214 {\large \facname \par}
215 (/minithesis | progress | project | gdp | gdpsummary)
216 (*minithesis | progress | project)
217 {\large \deptname \par}
218 (/minithesis | progress | project)
219 \vfill
220 (*minithesis)
221 {\large A mini-thesis submitted for transfer from}
222 {\large MPhil to PhD \par}
223 (/minithesis)
224 (*progress)
225 {\large A progress report submitted for continuation}
226 {\large towards a PhD \par}
227 (/progress)
228 (*project)
229 {\large A project report submitted for the}
230 {\large award of \par \degreename \par}
231 (/project)
232 (*gdp)
233 {\large A group design project report submitted for}
234 {\large the award of \par \degreename \par}
235 (/gdp)
236 (*gdpsummary)
237 {\large A group design project summary report submitted}
238 {\large for the award of \par \degreename \par}
239 (/gdpsummary)
240 (*minithesis | progress | project | gdp | gdpsummary)
241 \vfill
242 {\normalsize Supervisor: \supname \par}
243 {\normalsize Examiner: \examname \par}
244 \vfill
245 \hspace{6mm}\parbox[t][51mm][s]{89mm}{
246 \center
247 \vfill
248 {\large \bf \@title \par}
249 \vfill
250 {\normalsize by \authornames \par}
251 \vfill
252 {\normalsize \@date \par}
253 \vfill
254 }
255 \parbox[t][95mm][s]{89mm}{
256 (/minithesis | progress | project | gdp | gdpsummary)
257 (*thesis | report)
258 {\huge \bf \@title \par}
259 \vfill
260 {\LARGE by \par}
261 \smallskip

```

```

262     {\LARGE \authornames \par}
263     \vfill
264 (*thesis)
265     {\large A thesis submitted in partial fulfillment for the \par}
266     {\large degree of Doctor of Philosophy \par}
267 
268 (report)     {\large Technical Report \par}
269     \bigskip
270     \bigskip
271 (thesis)     {\large in the \par}
272     {\large \facname \par}
273     {\large \deptname \par}
274     \bigskip
275     \bigskip
276     \bigskip
277     {\Large \@date \par}
278     \bigskip
279 

```

```

316     {\LARGE \@title \par}
317     \vskip 3em
318     {\large \lineskip .75em
319       \begin{tabular}[t]{c} \authornames \end{tabular}
320     \par}
321     \vskip 1em
322     {\large \lineskip .5em
323       \begin{tabular}[t]{c} \addressnames \end{tabular}
324     \par}
325     \vskip 1.5em
326     {\large \@date \par}
327     \if\keywordnames
328     \else
329       \quotation
330       \vskip 1.5em
331       {\noindent \normalsize
332         \textbf{Keywords:}
333         \textit{\keywordnames}
334       \par}
335       \endquotation
336     \fi
337   \end{center}
338   \par
339   \@thanks
340   \vfil\null
341   \end{titlepage}
342   \setcounter{footnote}{0}
343   \global\let\thanks\relax
344   \global\let\maketitle\relax
345   \global\let\@maketitle\relax
346   \global\let\@thanks\@empty
347   \global\let\@author\@empty
348   \global\let\@date\@empty
349   \global\let\@title\@empty
350   \global\let\title\relax
351   \global\let\author\relax
352   \global\let\date\relax
353   \global\let\and\relax
354 }
355 \else
356   \renewcommand\maketitle{
357     \btypeout{Title Page}
358     \hypersetup{pdftitle={\@title}}
359     \hypersetup{pdfsubject=\subjectname}
360     \hypersetup{pdfauthor=\authornames}
361     \hypersetup{pdfkeywords=\keywordnames}
362     \markboth{\authornames}{\@title}
363     \thispagestyle{empty}
364     \par
365     \begingroup
366       \renewcommand\thefootnote{\@fnsymbol\c@footnote}
367       \def\@makefnmark{
368         \rlap{\@textsuperscript{\normalfont\@thefnmark}}
369       }

```

```

370 \long\def\@makefntext##1{
371 \parindent 1em\noindent \hb@xt@1.8em
372 {\hss\@textsuperscript{\normalfont\@thefnmark}}##1
373 }
374 \if@twocolumn
375 \ifnum \col@number=\@ne
376 \maketitle
377 \else
378 \twocolumn[\maketitle]%
379 \fi
380 \else
381 \newpage
382 % Prevent figures from going at top of page.
383 \global\@topnum\z@
384 \maketitle
385 \fi
386 \thispagestyle{plain}\@thanks
387 \endgroup
388 \setcounter{footnote}{0}%
389 \global\let\thanks\relax
390 \global\let\maketitle\relax
391 \global\let\@maketitle\relax
392 \global\let\@thanks\@empty
393 \global\let\@author\@empty
394 \global\let\@date\@empty
395 \global\let\@title\@empty
396 \global\let\title\relax
397 \global\let\author\relax
398 \global\let\date\relax
399 \global\let\and\relax
400 }
401 \def\@maketitle{
402 \newpage
403 \null
404 \vskip 2em
405 \begin{center}
406 \let \footnote \thanks
407 {\LARGE \@title \par}
408 \vskip 1.5em
409 {\large \lineskip .5em
410 \begin{tabular}[t]{c} \authornames \end{tabular}
411 \par}
412 \vskip 0.7em
413 {\large \lineskip .5em
414 \begin{tabular}[t]{c} \addressnames \end{tabular}
415 \par}
416 \vskip 1em
417 {\large \@date}
418 \end{center}
419 \par
420 \vskip 1.5em
421 }
422 \fi
423 </article>

```

## 6.2 Abstract Page

`\abstract` Setup an appropriate abstract page.

```

424 (*thesis | minithesis | progress | project | report | gdp)
425 \newenvironment{abstract}
426 {
427   \btypeout{Abstract Page}
428   \thispagestyle{empty}
429   \null\vfil
430   \begin{center}
431     \setlength{\parskip}{0pt}
432     {\normalsize \UNIVNAME \par}
433     \bigskip
434     {\underline{ABSTRACT} \par}
435     \bigskip
436     {\normalsize \FACNAME \par}
437 (*thesis | minithesis | progress | project | report)
438     {\normalsize \DEPTNAME \par}
439 </thesis | minithesis | progress | project | report)
440     \bigskip
441 (*thesis)
442     {\normalsize \underline{Doctor of Philosophy}\par}
443 </thesis)
444 (*minithesis)
445     {\normalsize \underline{A mini-thesis submitted for transfer from MPhil to PhD}\par}
446 </minithesis)
447 (*progress)
448     {\normalsize \underline{A progress report submitted for continuation towards a PhD}\par}
449 </progress)
450 (*project)
451     {\normalsize \underline{A project report submitted for the award of \degreename}\par}
452 </project)
453 (*gdp)
454     {\normalsize \underline{A group design project report submitted for the award of \degreename}\par}
455 </gdp)
456     \bigskip
457     {\normalsize\bf \@title \par}
458     \medskip
459     {\normalsize by \authornames \par}
460     \bigskip
461   \end{center}
462 }
463 {
464   \vfil\vfil\vfil\null
465   \cleardoublepage
466 }
467 </thesis | minithesis | progress | project | report | gdp)
468 (*article)
469 \if@titlepage
470   \renewenvironment{abstract}{
471     \titlepage
472     \null\vfil
473     \@beginparpenalty\@lowpenalty
474     \begin{center}

```

```

475     \bfseries \abstractname
476     \@endparpenalty\@M
477 \end{center}
478 \begin{itshape}
479 \noindent
480 }
481 {
482 \par
483 \end{itshape}
484 \if\keywordnames
485 \else
486 \quote
487 \vskip 1.5em
488 {\noindent \normalsize
489 \textbf{Keywords:}
490 \textit{\keywordnames}
491 \par}
492 \endquote
493 \fi
494 \vfil\null\endtitlepage
495 }
496 \else
497 \renewenvironment{abstract}{
498 \if@twocolumn
499 \section*{\abstractname}
500 \else
501 \small
502 \begin{center}
503 {\bfseries \abstractname\vspace{-.5em}\vspace{\z@}}
504 \end{center}
505 \quote
506 \fi
507 \begin{itshape}
508 }
509 {
510 \end{itshape}
511 \if\keywordnames
512 \else
513 \vskip 1.5em
514 {\noindent \normalsize
515 \textbf{Keywords:}
516 \textit{\keywordnames}
517 \par}
518 \fi
519 \if@twocolumn\else\endquote\fi
520 }
521 \fi
522 </article>

```

## 6.3 Contents Pages

### 6.3.1 Add to Table of Contents

Ensures numbering for sub-subsections in the table of contents, and provide for 6 levels to appear in toc. Define `addtotoc` to enable adding elements to the toc at chapter level, using a dummy counter to fix bookmarks in pdfL<sup>A</sup>T<sub>E</sub>X.

```
523 (*thesis | minithesis | progress | project | report | gdp | article)
524 \addtocounter{secnumdepth}{1}
525 \setcounter{tocdepth}{6}
526 \newcounter{dummy}
527 \newcommand\addtotoc[1]{
528 \refstepcounter{dummy}
529 (*thesis | minithesis | progress | project | report | gdp)
530 \addcontentsline{toc}{chapter}{#1}}
531 \thesis | minithesis | progress | project | report | gdp)
532 (*article)
533 \addcontentsline{toc}{section}{#1}}
534 \article)
```

### 6.3.2 Table of Contents

`\tableofcontents` Adjust line and paragraph spacing.

```
535 \renewcommand\tableofcontents{
536 \btypeout{Table of Contents}
537 \begin{spacing}{1}{
538   \setlength{\parskip}{1pt}
539   \if@twocolumn
540     \@restonecoltrue\onecolumn
541   \else
542     \@restonecolfalse
543   \fi
544 (*thesis | minithesis | progress | project | report | gdp)
545   \chapter*{\contentsname
546 \thesis | minithesis | progress | project | report | gdp)
547 (*article)
548   \section*{\contentsname
549 \article)
550     \@mkboth{
551       \MakeUppercase\contentsname}{\MakeUppercase\contentsname}}
552   \@starttoc{toc}
553   \if@restonecol\twocolumn\fi
554 \thesis | minithesis | progress | project | report | gdp) \cleardoublepage
555 } \end{spacing}
556 }
```

### 6.3.3 List of Figures

`\listoffigures` Adjust line and paragraph spacing.

```
557 \renewcommand\listoffigures{
558 \btypeout{List of Figures}
559 \begin{spacing}{1}{
560   \setlength{\parskip}{1pt}
```

```

561 \if@twocolumn
562 \@restonecoltrue\onecolumn
563 \else
564 \@restonecolfalse
565 \fi
566 (*thesis | minithesis | progress | project | report | gdp)
567 \chapter*{\listfigurename
568 </thesis | minithesis | progress | project | report | gdp)
569 (*article)
570 \section*{\listfigurename
571 </article)
572 \@mkboth{\MakeUppercase\listfigurename}
573 {\MakeUppercase\listfigurename}}
574 \@starttoc{lof}
575 \if@restonecol\twocolumn\fi
576 (*thesis | minithesis | progress | project | report | gdp)
577 \cleardoublepage
578 </thesis | minithesis | progress | project | report | gdp)
579 }\end{spacing}
580 }

```

### 6.3.4 List of Tables

`\listoftables` Adjust line and paragraph spacing.

```

581 \renewcommand\listoftables{
582 \btypeout{List of Tables}
583 \begin{spacing}{1}{
584 \setlength{\parskip}{1pt}
585 \if@twocolumn
586 \@restonecoltrue\onecolumn
587 \else
588 \@restonecolfalse
589 \fi
590 (*thesis | minithesis | progress | project | report | gdp)
591 \chapter*{\listtablename
592 </thesis | minithesis | progress | project | report | gdp)
593 (*article)
594 \section*{\listtablename
595 </article)
596 \@mkboth{
597 \MakeUppercase\listtablename}{\MakeUppercase\listtablename}}
598 \@starttoc{lot}
599 \if@restonecol\twocolumn\fi
600 (*thesis | minithesis | progress | project | report | gdp)
601 \cleardoublepage
602 </thesis | minithesis | progress | project | report | gdp)
603 }\end{spacing}
604 }

```

### 6.4 List of Symbols

`\listofsymbols` Provide a `listofsymbols` command to produce a list of symbols,

```

605 (*thesis | minithesis | progress | report | article)

```



```

606 \newcommand\listsymbolname{Nomenclature}
607 </thesis | minithesis | progress | report | article>
608 < *project | gdp>
609 \newcommand\listsymbolname{List of Symbols}
610 </project | gdp>
611 \usepackage{longtable}
612 \newcommand\listofsymbols[2]{
613 \btypeout{\listsymbolname}
614 \addtotoc{\listsymbolname}
615 < *thesis | minithesis | progress | project | report | gdp>
616 \chapter*{\listsymbolname
617 </thesis | minithesis | progress | project | report | gdp>
618 < *article>
619 \section*{\listsymbolname
620 </article>
621 \@mkboth{
622 \MakeUppercase\listsymbolname}{\MakeUppercase\listsymbolname}}
623 \begin{longtable}[c]{#1}#2\end{longtable}\par
624 < *thesis | minithesis | progress | project | report | gdp>
625 \cleardoublepage
626 </thesis | minithesis | progress | project | report | gdp>
627 }
628 </thesis | minithesis | progress | project | report | gdp | article>

```

## 6.5 Acknowledgements

`\acknowledgements` Thank someone!

```

629 \newcommand\acknowledgements[1]{
630 \btypeout{Acknowledgements}
631 \addtotoc{Acknowledgements}
632 < *thesis | minithesis | progress | project | report | gdp>
633 \thispagestyle{plain}
634 \null\vfil
635 \vskip 60\p@
636 \begin{center}{\Large\bf Acknowledgements \par}\end{center}
637 {\normalsize #1}
638 \vfil\vfil\null
639 \cleardoublepage
640 </thesis | minithesis | progress | project | report | gdp>
641 < *article>
642 \section*{Acknowledgements}
643 {\normalsize #1}
644 </article>
645 }

```

## 6.6 Dedicatory

`\dedicatory` Dedicate the document to someone!

```

646 \newcommand\dedicatory[1]{
647 \btypeout{Dedicatory}
648 < *thesis | minithesis | progress | project | report | gdp>
649 \thispagestyle{plain}
650 \null\vfil

```

```

651 \vskip 60\p@
652 \begin{center}{\Large \sl #1}\end{center}
653 \vfil\null
654 \cleardoublepage
655 </thesis | minithesis | progress | project | report | gdp>
656 }

```

## 7 Parts

`\frontmatter` Modify frontmatter.

```

657 <{*article}
658 \newcommand\frontmatter{ }
659 </article>

```

`\mainmatter` Modify mainmatter.

```

660 <{*article}
661 \newcommand\mainmatter{ }
662 </article>

```

`\backmatter` Modify backmatter to add the bibliography to the table of contents.

```

663 <{*thesis | minithesis | progress | project | report | gdp>
664 \renewcommand\backmatter{
665   \if@openright
666     \cleardoublepage
667   \else
668     \clearpage
669   \fi
670   \addtotoc{\bibname}
671   \btypeout{\bibname}
672   \@mainmatterfalse}
673 </thesis | minithesis | progress | project | report | gdp>
674 <{*article}
675 \newcommand\bibname{References}
676 \newcommand\backmatter{
677   \addtotoc{\bibname}
678   \btypeout{\bibname}
679 }
680 </article>
681 </thesis | minithesis | progress | project | report | article | gdp | gdpsummary>

```

## 8 Example Documents

```

682 <{*testthesis}
683 \documentclass{ecsthesis}      % Use the Thesis Style
684 </testthesis>
685 <{*testminithesis}
686 \documentclass{ecsmithesis}  % Use the minithesis Style
687 </testminithesis>
688 <{*testprogress}
689 \documentclass{ecsprogress}   % Use the progress Style

```

```

690 </testprogress>
691 < *testproject>
692 \documentclass{ecsproject}      % Use the Project Style
693 </testproject>
694 < *testreport>
695 \documentclass{ecsreport}      % Use the Report Style
696 </testreport>
697 < *testarticle>
698 \documentclass{ecsarticle}     % Use the Article Style
699 </testarticle>
700 < *testgdp>
701 \documentclass{ecsgdp}         % Use the GDP Report Style
702 </testgdp>
703 < *testgdpsummary>
704 \documentclass{ecsgdpsummary}  % Use the GDP Summary Report Style
705 </testgdpsummary>
706 < *testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>
707 \graphicspath{{../Figures/}}   % Location of your graphics files
708 \usepackage{natbib}            % Use Natbib style for the refs.
709 \hypersetup{colorlinks=true}   % Set to false for black/white printing
710 \input{Definitions}           % Include your abbreviations
711 %% -----
712 \begin{document}
713 \frontmatter
714 \title      {An Investigation into \dots}
715 \authors   {\texorpdfstring
716             {\href{mailto:S.R.Gunn@ecs.soton.ac.uk}{Steve R. Gunn}}
717             {Steve R. Gunn}
718             }
719 \addresses  {\groupname\\deptname\\univname}
720 \date      {\today}
721 \subject   {}
722 \keywords  {}
723 < *testminithesis | testprogress | testproject | testgdp | testgdpsummary>
724 \supervisor {Mr Beavis}
725 \examiner   {Dr Butthead}
726 </testminithesis | testprogress | testproject | testgdp | testgdpsummary>
727 < *testproject>
728 \degree     {BEng Electronic Engineering}
729 </testproject>
730 < *testgdp | testgdpsummary>
731 \degree     {Master of Engineering}
732 </testgdp | testgdpsummary>
733 \maketitle
734 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>
735 < *testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp>
736 \begin{abstract}
737 This work is all about \dots
738 \end{abstract}
739 \tableofcontents
740 \listoffigures
741 \listoftables
742 \lstlistoflistings
743 \listofsymbols{ll}{\w$ & The weight vector}

```

```

744 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp>
745 (*testthesis | testminithesis | testprogress | testproject | testreport | testgdp)
746 \acknowledgements{Thanks to no one.}
747 \dedicatory{To \dots}
748 </testthesis | testminithesis | testprogress | testproject | testreport | testgdp>
749 (*testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary)
750 \mainmatter
751 %% -----
752 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary)
753 (*testthesis | testminithesis | testprogress | testproject | testreport | testgdp)
754 \include{Introduction}
755 \include{Conclusions}
756 \appendix
757 \include{AppendixA}
758 \backmatter
759 \bibliographystyle{ecs}
760 \bibliography{ECS}
761 </testthesis | testminithesis | testprogress | testproject | testreport | testgdp>
762 (*testgdpsummary)
763 \section*{Introduction}
764 \section*{Objectives}
765 \section*{Resources}
766 \section*{Constraints}
767 \section*{Approaching the task}
768 \section*{Team Organisation}
769 \section*{Important Results}
770 \section*{Conclusions}
771 \section*{Recommendations}
772 </testgdpsummary>
773 (*introduction)
774 \chapter{Introduction} \label{Chapter:Introduction}
775 </introduction>
776 (*testarticle)
777 \section{Introduction} \label{Section:Introduction}
778 </testarticle>
779 (*introduction | testarticle)
780 You probably found all the files from \cite{Gunn:2001:pdflatex}.
781 \tref{Table:tabex} illustrates the results of my work.
782 \begin{table}[!htb]
783   \centering
784   \begin{tabular}{cc}
785     \toprule
786     \textbf{Training Error} & \textbf{Testing Error} \\
787     \midrule
788     0 & \infty \\
789     \bottomrule
790   \end{tabular}
791   \caption{The Results}
792   \label{Table:tabex}
793 \end{table}
794
795 \fref{Figure:figex} shows why this is the case.
796 \begin{figure}[!htb]
797   \centering

```

```

798 \includegraphics[width=8cm]{figure}
799 \caption{A colourful picture.}
800 \label{Figure:figex}
801 \end{figure}
802
803 This page shows you a subfigure example in \ref{Figure:figsubex}.
804 \begin{figure}[!htb]
805 \centering
806 \subfigure[The left caption]{
807 \includegraphics[width=4.2cm]{figure}
808 \label{Figure:figsubex:left}
809 }
810 \subfigure[The right caption]{
811 \includegraphics[width=4.2cm]{figure}
812 \label{Figure:figsubex:right}
813 }
814 \caption{A doubly colourful picture.}
815 \label{Figure:figsubex}
816 \end{figure}
817 </introduction | testarticle>
818 < *conclusions>
819 \chapter{Conclusions} \label{Chapter: Conclusions}
820 </conclusions>
821 < *testarticle>
822 %% -----
823 \section{Conclusions} \label{Section: Conclusions}
824 </testarticle>
825 < *conclusions | testarticle>
826 It works.
827 </conclusions | testarticle>
828 < *testarticle>
829 \acknowledgements{Thanks to no one.}
830 \backmatter
831 \bibliographystyle{ecs}
832 \bibliography{ECS}
833 \appendix
834 </testarticle>
835 < *appendix | testarticle>
836 < *appendix>
837 \chapter{Stuff} \label{Chapter: Stuff}
838 </appendix>
839 < *testarticle>
840 %% -----
841 \section{Stuff} \label{Section: Stuff}
842 </testarticle>
843 The following gets in the way of the text....
844 </appendix | testarticle>
845 < *testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>
846 \end{document}
847 %% -----
848 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>

```

## 8.1 Example Figure

```

849 < *figure>

```

```

850 %%BoundingBox: 0 150 600 650
851 %%EndComments
852 0.0 setlinewidth
853 /length 0.1 def
854 /width 0.02 def
855 /hsvcircle {
856 gsave
857   /h 0.0 def
858   0 4 360 {
859     pop
860     gsave
861     0.5 0.0 translate
862     newpath
863     0.0 0.0 moveto
864     length 0.0 lineto
865     length width lineto
866     0.0 width lineto
867     closepath
868     h 1.0 1.0 sethsbcolor
869     fill
870     grestore
871     /h h 4 360 div add def
872     4 rotate
873   } for
874 grestore
875 } def
876 0.0 setlinewidth
877 0.0 setgray
878 300 400 translate
879 500 500 scale
880 30 rotate
881 1.0 0.7 scale
882 -30 rotate
883 hsvcircle
884 0.8 0.8 scale
885 hsvcircle
886 0.8 0.8 scale
887 hsvcircle
888 0.8 0.8 scale
889 hsvcircle
890 0.8 0.8 scale
891 hsvcircle
892 0.8 0.8 scale
893 hsvcircle
894 0.8 0.8 scale
895 hsvcircle
896 showpage
897 </figure>

```

## 8.2 Definitions File

```

898 (*definitions)
899 \newcommand{\BibTeX}{\rm B\kern-.05em{\sc i\kern-.025em b}\kern-.08em T\kern-.1667em\lower.7
900
901 %% People

```

```

902 \newcounter{address}
903 \setcounter{address}{1}
904 \renewcommand{\theaddress}{\textsuperscript{\fnsymbol{address}}}
905 \newcommand{\address}[1]{\refstepcounter{address}\theaddress#1\}
906 \newcommand{\Name}[3]{\texorpdfstring{\href{mailto:#3}{#2}#1}{#2}\xspace}
907 \newcommand{\SteveRGunn}[1]{\Name{#1}{Steve R. Gunn}{S.R.Gunn@ecs.soton.ac.uk}}
908
909 %% Dingbats
910 \newcommand{\tick}{\ding{51}}
911 \newcommand{\cross}{\ding{55}}
912
913 %% Calculus
914 \newcommand{\pd}[2]{\ensuremath{\frac{\partial #1}{\partial #2}}\xspace}
915 \newcommand{\fd}[2]{\ensuremath{\frac{d #1}{d #2}}\xspace}
916 \newcommand{\dint}{\ensuremath{\int\!|\!|\!|\int}\xspace}
917 \newcommand{\tint}{\ensuremath{\int\!|\!|\!|\int\!|\!|\!|\int}\xspace}
918
919 %% Math Sets
920 \newcommand{\Q}[1]{\ensuremath{\mathbb{#1}}\xspace}
921 \newcommand{\R}{\Q{\R}}
922
923 %% Matrix, Vector
924 \newcommand{\V}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
925 \newcommand{\M}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
926 \newcommand{\0}{\V{0}}
927 \newcommand{\1}{\V{1}}
928 \newcommand{\I}{\M{I}}
929
930 %% Math Functions
931 \newcommand{\F}[1]{\ensuremath{\mathrm{#1}}\xspace}
932 \newcommand{\sgn}{\F{sgn}}
933 \newcommand{\tr}{\F{trace}}
934 \newcommand{\diag}{\F{diag}}
935
936 %% Math Names
937 \newcommand{\N}[1]{\ensuremath{\mathit{#1}}\xspace}
938
939 %% Data
940 \newcommand{\mc}[1]{\ensuremath{\mathcal{#1}}\xspace}
941 \newcommand{\Hyp}{\mc{H}}
942 \newcommand{\D}{\mc{D}}
943
944 %% Kernel
945 \newcommand{\K}{\M{K}}
946 \newcommand{\eins}{\texorpdfstring{\ensuremath{\epsilon}}{\textepsilon}-insensitive\xspace}
947 \newcommand{\e}{\ensuremath{\epsilon}\xspace}
948 \newcommand{\Bxi}{\ensuremath{\boldsymbol{\xi}}\xspace}
949 \newcommand{\Kanova}{\ensuremath{\mathit{K}_{ANOVA}}\xspace}
950 \newcommand{\Kspline}{\ensuremath{\mathit{K}_{spline}}\xspace}
951
952 %% Bayesian
953 \newcommand{\MP}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}P}\xspace}
954 \newcommand{\ML}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}L}\xspace}
955 \newcommand{\Qw}{\ensuremath{Q_{\w}(\w)}\xspace}

```

```

956 \newcommand{\Qa}{\ensuremath{Q_{\Ba}(\Ba)}\xspace}
957 \newcommand{\Qb}{\ensuremath{Q_{\beta}(\beta)}\xspace}
958 \newcommand{\wMPab}{\ensuremath{w_{\MP|\bar{\Ba},\bar{\beta}}}\xspace}
959 \newcommand{\wMP}{\ensuremath{w_{\MP}}\xspace}
960 \newcommand{\yMP}{\ensuremath{y_{\MP}}\xspace}
961 \newcommand{\BaMP}{\ensuremath{\Ba_{\hspace{1pt}\MP}}\xspace}
962 \newcommand{\aMP}{\ensuremath{\alpha_{\hspace{1pt}\MP}}\xspace}
963 \newcommand{\bMP}{\ensuremath{\beta_{\hspace{1pt}\MP}}\xspace}
964 \newcommand{\Sab}{\ensuremath{M_{\Sigma}(\bar{\Ba},\bar{\beta})}\xspace}
965 \newcommand{\Ba}{\ensuremath{\boldsymbol{\alpha}}\xspace}
966 \newcommand{\Bb}{\ensuremath{\boldsymbol{\beta}}\xspace}
967 \newcommand{\Bm}{\ensuremath{\boldsymbol{\mu}}\xspace}
968 \newcommand{\BL}{\ensuremath{\boldsymbol{\Lambda}}\xspace}
969 \newcommand{\BPhi}{\ensuremath{\boldsymbol{\Phi}}\xspace}
970 \newcommand{\SMP}{\ensuremath{M_{\Sigma}(\MP)}\xspace}
971
972 \newcommand{\Pa}{\ensuremath{P(\alpha|\mathcal{H})}\xspace}
973 \newcommand{\Pb}{\ensuremath{P(\beta|\mathcal{H})}\xspace}
974 \newcommand{\Pab}{\ensuremath{P(\alpha,\beta|\mathcal{H})}\xspace}
975 \newcommand{\Pw}{\ensuremath{P(w|\mathcal{H})}\xspace}
976 \newcommand{\PD}{\ensuremath{P(D|\mathcal{H})}\xspace}
977 \newcommand{\PWa}{\ensuremath{P(w|\alpha,\mathcal{H})}\xspace}
978 \newcommand{\PDIwb}{\ensuremath{P(D|w,\beta,\mathcal{H})}\xspace}
979 \newcommand{\PDwab}{\ensuremath{P(D,w,\alpha,\beta|\mathcal{H})}\xspace}
980 \newcommand{\PDIw}{\ensuremath{P(D|w,\mathcal{H})}\xspace}
981 \newcommand{\PWID}{\ensuremath{P(w|D,\mathcal{H})}\xspace}
982 \newcommand{\PwabID}{\ensuremath{P(w,\alpha,\beta|D,\mathcal{H})}\xspace}
983
984 \newcommand{\PanH}{\ensuremath{P(\alpha)}\xspace}
985 \newcommand{\PbnH}{\ensuremath{P(\beta)}\xspace}
986 \newcommand{\PabnH}{\ensuremath{P(\alpha,\beta)}\xspace}
987 \newcommand{\PwnH}{\ensuremath{P(w)}\xspace}
988 \newcommand{\PDnH}{\ensuremath{P(D)}\xspace}
989 \newcommand{\PWanH}{\ensuremath{P(w|\alpha)}\xspace}
990 \newcommand{\PDIwnH}{\ensuremath{P(D|w,\beta)}\xspace}
991 \newcommand{\PDwabnH}{\ensuremath{P(D,w,\Ba,\beta)}\xspace}
992 \newcommand{\PDIwnH}{\ensuremath{P(D|w)}\xspace}
993 \newcommand{\PWIDnH}{\ensuremath{P(w|D)}\xspace}
994 \newcommand{\PwabIDnH}{\ensuremath{P(w,\alpha,\beta|D)}\xspace}
995
996 \newcommand{\PDwBab}{\ensuremath{P(D,w,\Ba,\beta|\mathcal{H})}\xspace}
997 \newcommand{\PWIBa}{\ensuremath{P(w|\Ba,\mathcal{H})}\xspace}
998 \newcommand{\PBab}{\ensuremath{P(\Ba,\beta|\mathcal{H})}\xspace}
999 \newcommand{\PWabBabID}{\ensuremath{P(w,\Ba,\beta|D,\mathcal{H})}\xspace}
1000
1001 \newcommand{\PBanH}{\ensuremath{P(\Ba)}\xspace}
1002 \newcommand{\PWIBanH}{\ensuremath{P(w|\Ba)}\xspace}
1003
1004 %% Snakes
1005 \newcommand{\Esnake}{\ensuremath{\mathit{E}_{\{snake\}}}\xspace}
1006 \newcommand{\Eimage}{\ensuremath{\mathit{E}_{\{image\}}}\xspace}
1007 \newcommand{\Econt}{\ensuremath{\mathit{E}_{\{cont\}}}\xspace}
1008 \newcommand{\Ecurv}{\ensuremath{\mathit{E}_{\{curv\}}}\xspace}
1009 \newcommand{\Eint}{\ensuremath{\mathit{E}_{\{int\}}}\xspace}

```



```

1010 \newcommand{\Eext}{\ensuremath{\mathit{E}_{\text{ext}}}\xspace}
1011 \newcommand{\Eterm}{\ensuremath{\mathit{E}_{\text{term}}}\xspace}
1012 \newcommand{\Eline}{\ensuremath{\mathit{E}_{\text{line}}}\xspace}
1013 \newcommand{\Edge}{\ensuremath{\mathit{E}_{\text{edge}}}\xspace}
1014 \newcommand{\Econ}{\ensuremath{\mathit{E}_{\text{con}}}\xspace}
1015 \newcommand{\Eangle}{\ensuremath{\mathit{E}_{\text{angle}}}\xspace}
1016 \newcommand{\Elshape}{\ensuremath{\mathit{E}_{\text{lshape}}}\xspace}
1017 \newcommand{\Edgedir}{\ensuremath{\mathit{E}_{\text{edgedir}}}\xspace}
1018 \newcommand{\Emodel}{\ensuremath{\mathit{E}_{\text{model}}}\xspace}
1019 \newcommand{\wte}{\ensuremath{\mathit{w}_{\text{term}}}\xspace}
1020 \newcommand{\wli}{\ensuremath{\mathit{w}_{\text{line}}}\xspace}
1021 \newcommand{\wed}{\ensuremath{\mathit{w}_{\text{edge}}}\xspace}
1022 \newcommand{\wco}{\ensuremath{\mathit{w}_{\text{con}}}\xspace}
1023
1024
1025 %% Environments
1026 \newcounter{alg}
1027 \newenvironment{algorithm}[1]
1028 {
1029     \stepcounter{alg}
1030     \begin{table}[htb]
1031     \centering
1032     \begin{tabular}[t]{l}
1033     \hline&
1034     \multicolumn{2}{l}{\bf Algorithm \arabic{alg}: #1}\&
1035 } {
1036     &
1037     \hline
1038     \end{tabular}
1039     \end{table}
1040 }
1041 </definitions>

8.3 References File

1042 <*references>
1043 @MISC{Gunn:2001:pdflatex,
1044   author = {S.R. Gunn},
1045   title = {PDFLaTeX Instructions},
1046   year = {2001},
1047   url = {http://www.ecs.soton.ac.uk/~srg/softwaretools/document/}
1048 }
1049 </references>

8.4 Bibliography Style File

1050 <*bst>
1051 %% File: 'ecs.bst'
1052 %% A modification of 'plainnat.bst' for use with natbib package
1053 %%
1054 %% Copyright 1993-1999 Patrick W Daly
1055 %% Max-Planck-Institut f"ur Aeronomie
1056 %% Max-Planck-Str. 2
1057 %% D-37191 Katlenburg-Lindau
1058 %% Germany
1059 %% E-mail: daly@linmpi.mpg.de

```

```

1060 %%
1061 %% This program can be redistributed and/or modified under the terms
1062 %% of the LaTeX Project Public License Distributed from CTAN
1063 %% archives in directory macros/latex/base/lppl.txt; either
1064 %% version 1 of the License, or any later version.
1065 %%
1066 %% Includes field URL for Internet addresses
1067 %%
1068 ENTRY
1069 { address
1070   author
1071   booktitle
1072   chapter
1073   edition
1074   editor
1075   howpublished
1076   institution
1077   isbn
1078   issn
1079   journal
1080   key
1081   month
1082   note
1083   number
1084   organization
1085   pages
1086   publisher
1087   school
1088   series
1089   title
1090   type
1091   url
1092   volume
1093   year
1094 }
1095 {}
1096 { label extra.label sort.label short.list }
1097
1098 INTEGERS { output.state before.all mid.sentence after.sentence after.block }
1099
1100 FUNCTION {init.state.consts}
1101 { #0 'before.all :=
1102   #1 'mid.sentence :=
1103   #2 'after.sentence :=
1104   #3 'after.block :=
1105 }
1106
1107 STRINGS { s t }
1108
1109 FUNCTION {output.nonnull}
1110 { 's :=
1111   output.state mid.sentence =
1112     { ", " * write$ }
1113     { output.state after.block =

```

```

1114     { add.period$ write$
1115       newline$
1116       "\newblock " write$
1117     }
1118     { output.state before.all =
1119       'write$
1120       { add.period$ " " * write$ }
1121     if$
1122   }
1123   if$
1124   mid.sentence 'output.state :=
1125 }
1126 if$
1127 s
1128 }
1129
1130 FUNCTION {output}
1131 { duplicate$ empty$
1132   'pop$
1133   'output.nonnull
1134   if$
1135 }
1136
1137 FUNCTION {output.check}
1138 { 't :=
1139   duplicate$ empty$
1140   { pop$ "empty " t * " in " * cite$ * warning$ }
1141   'output.nonnull
1142   if$
1143 }
1144
1145 FUNCTION {fin.entry}
1146 { add.period$
1147   write$
1148   newline$
1149 }
1150
1151 FUNCTION {new.block}
1152 { output.state before.all =
1153   'skip$
1154   { after.block 'output.state := }
1155   if$
1156 }
1157
1158 FUNCTION {new.sentence}
1159 { output.state after.block =
1160   'skip$
1161   { output.state before.all =
1162     'skip$
1163     { after.sentence 'output.state := }
1164     if$
1165   }
1166   if$
1167 }

```

```

1168
1169 FUNCTION {not}
1170 { { #0 }
1171   { #1 }
1172   if$
1173 }
1174
1175 FUNCTION {and}
1176 { 'skip$
1177   { pop$ #0 }
1178   if$
1179 }
1180
1181 FUNCTION {or}
1182 { { pop$ #1 }
1183   'skip$
1184   if$
1185 }
1186
1187 FUNCTION {new.block.checka}
1188 { empty$
1189   'skip$
1190   'new.block
1191   if$
1192 }
1193
1194 FUNCTION {new.block.checkb}
1195 { empty$
1196   swap$ empty$
1197   and
1198   'skip$
1199   'new.block
1200   if$
1201 }
1202
1203 FUNCTION {new.sentence.checka}
1204 { empty$
1205   'skip$
1206   'new.sentence
1207   if$
1208 }
1209
1210 FUNCTION {new.sentence.checkb}
1211 { empty$
1212   swap$ empty$
1213   and
1214   'skip$
1215   'new.sentence
1216   if$
1217 }
1218
1219 FUNCTION {field.or.null}
1220 { duplicate$ empty$
1221   { pop$ "" }

```

```

1222     'skip$
1223   if$
1224 }
1225
1226 FUNCTION {emphasize}
1227 { duplicate$ empty$
1228   { pop$ "" }
1229   { "{\em " swap$ * "}" * }
1230   if$
1231 }
1232
1233 INTEGERS { nameptr namesleft numnames }
1234
1235 FUNCTION {format.names}
1236 { 's :=
1237   #1 'nameptr :=
1238   s num.names$ 'numnames :=
1239   numnames 'namesleft :=
1240   { namesleft #0 > }
1241   { s nameptr "{ff~}{vv~}{ll}{, jj}" format.name$ 't :=
1242     nameptr #1 >
1243     { namesleft #1 >
1244       { ", " * t * }
1245       { numnames #2 >
1246         { "," * }
1247         'skip$
1248         if$
1249         t "others" =
1250           { " et~al." * }
1251           { " and " * t * }
1252         if$
1253       }
1254     } if$
1255   }
1256   't
1257   if$
1258   nameptr #1 + 'nameptr :=
1259   namesleft #1 - 'namesleft :=
1260 }
1261 while$
1262 }
1263
1264 FUNCTION {format.key}
1265 { empty$
1266   { key field.or.null }
1267   { "" }
1268   if$
1269 }
1270
1271 FUNCTION {format.authors}
1272 { author empty$
1273   { "" }
1274   { author format.names }
1275   if$

```

```

1276 }
1277
1278 FUNCTION {format.editors}
1279 { editor empty$
1280   { "" }
1281   { editor format.names
1282     editor num.names$ #1 >
1283     { ", editors" * }
1284     { ", editor" * }
1285     if$
1286   }
1287   if$
1288 }
1289
1290 FUNCTION {format.isbn}
1291 { isbn empty$
1292   { "" }
1293   { new.block "ISBN " isbn * }
1294   if$
1295 }
1296
1297 FUNCTION {format.issn}
1298 { issn empty$
1299   { "" }
1300   { new.block "ISSN " issn * }
1301   if$
1302 }
1303
1304 %FUNCTION {format.url}
1305 %{ url empty$
1306 %   { "" }
1307 %   { new.block "URL \url{" url * "}" * }
1308 %   if$
1309 %}
1310 %
1311 %FUNCTION {format.title}
1312 %{ title empty$
1313 %   { "" }
1314 %   { title "t" change.case$ }
1315 %   if$
1316 %}
1317 FUNCTION {format.url}
1318 { ""
1319 }
1320
1321 FUNCTION {format.title}
1322 { title empty$
1323   { "" }
1324   { url empty$
1325     { title "t" change.case$ }
1326     { "\href{" url * "}{ " * title "t" change.case$ * "}" * }
1327     if$
1328   }
1329   if$

```

```

1330 }
1331
1332
1333 FUNCTION {format.full.names}
1334 {'s :=
1335   #1 'nameptr :=
1336   s num.names$ 'numnames :=
1337   numnames 'namesleft :=
1338   { namesleft #0 > }
1339   { s nameptr
1340     "{vv~}{ll}" format.name$ 't :=
1341     nameptr #1 >
1342     {
1343       namesleft #1 >
1344       { ", " * t * }
1345       {
1346         numnames #2 >
1347         { ", " * }
1348         'skip$
1349         if$
1350         t "others" =
1351           { " et~al." * }
1352           { " and " * t * }
1353         if$
1354       }
1355     }
1356   }
1357   't
1358   if$
1359   nameptr #1 + 'nameptr :=
1360   namesleft #1 - 'namesleft :=
1361 }
1362 while$
1363 }
1364
1365 FUNCTION {author.editor.full}
1366 { author empty$
1367   { editor empty$
1368     { "" }
1369     { editor format.full.names }
1370   }
1371 }
1372 { author format.full.names }
1373 if$
1374 }
1375
1376 FUNCTION {author.full}
1377 { author empty$
1378   { "" }
1379   { author format.full.names }
1380 }
1381 if$
1382 }
1383 FUNCTION {editor.full}

```

```

1384 { editor empty$
1385     { "" }
1386     { editor format.full.names }
1387 if$
1388 }
1389
1390 FUNCTION {make.full.names}
1391 { type$ "book" =
1392   type$ "inbook" =
1393   or
1394     'author.editor.full
1395     { type$ "proceedings" =
1396       'editor.full
1397       'author.full
1398     } if$
1399   }
1400 if$
1401 }
1402
1403 FUNCTION {output.bibitem}
1404 { newline$
1405   "\bibitem[" write$
1406   label write$
1407   ")" make.full.names duplicate$ short.list =
1408     { pop$ }
1409     { * }
1410   if$
1411   "]" * write$
1412   cite$ write$
1413   "]" write$
1414   newline$
1415   ""
1416   before.all 'output.state :=
1417 }
1418
1419 FUNCTION {n.dashify}
1420 { 't :=
1421   ""
1422   { t empty$ not }
1423   { t #1 #1 substring$ "-" =
1424     { t #1 #2 substring$ "--" = not
1425       { "--" *
1426         t #2 global.max$ substring$ 't :=
1427       }
1428       { { t #1 #1 substring$ "-" = }
1429         { "-" *
1430           t #2 global.max$ substring$ 't :=
1431         }
1432         while$
1433       }
1434     } if$
1435   }
1436   { t #1 #1 substring$ *
1437     t #2 global.max$ substring$ 't :=

```



```

1438     }
1439     if$
1440   }
1441   while$
1442 }
1443
1444 FUNCTION {format.date}
1445 { year duplicate$ empty$
1446   { "empty year in " cite$ * warning$
1447     pop$ "" }
1448   'skip$
1449   if$
1450   month empty$
1451     'skip$
1452     { month
1453       " " * swap$ *
1454     }
1455   if$
1456   extra.label *
1457 }
1458
1459 FUNCTION {format.btitle}
1460 { title emphasize
1461 }
1462
1463 FUNCTION {tie.or.space.connect}
1464 { duplicate$ text.length$ #3 <
1465   { "~" }
1466   { " " }
1467   if$
1468   swap$ * *
1469 }
1470
1471 FUNCTION {either.or.check}
1472 { empty$
1473   'pop$
1474   { "can't use both " swap$ * " fields in " * cite$ * warning$ }
1475   if$
1476 }
1477
1478 FUNCTION {format.bvolume}
1479 { volume empty$
1480   { "" }
1481   { "volume" volume tie.or.space.connect
1482     series empty$
1483     'skip$
1484     { " of " * series emphasize * }
1485     if$
1486     "volume and number" number either.or.check
1487   }
1488   if$
1489 }
1490
1491 FUNCTION {format.number.series}

```

```

1492 { volume empty$
1493   { number empty$
1494     { series field.or.null }
1495     { output.state mid.sentence =
1496       { "number" }
1497       { "Number" }
1498     if$
1499     number tie.or.space.connect
1500     series empty$
1501     { "there's a number but no series in " cite$ * warning$ }
1502     { " in " * series * }
1503     if$
1504   }
1505   if$
1506 }
1507 { "" }
1508 if$
1509 }
1510
1511 FUNCTION {format.edition}
1512 { edition empty$
1513   { "" }
1514   { output.state mid.sentence =
1515     { edition "l" change.case$ " edition" * }
1516     { edition "t" change.case$ " edition" * }
1517   if$
1518   }
1519 if$
1520 }
1521
1522 INTEGERS { multiresult }
1523
1524 FUNCTION {multi.page.check}
1525 { 't :=
1526   #0 'multiresult :=
1527   { multiresult not
1528     t empty$ not
1529     and
1530   }
1531   { t #1 #1 substring$
1532     duplicate$ "-" =
1533     swap$ duplicate$ "," =
1534     swap$ "+" =
1535     or or
1536     { #1 'multiresult := }
1537     { t #2 global.max$ substring$ 't := }
1538   if$
1539   }
1540 while$
1541 multiresult
1542 }
1543
1544 FUNCTION {format.pages}
1545 { pages empty$

```

```

1546 { "" }
1547 { pages multi.page.check
1548   { "pages" pages n.dashify tie.or.space.connect }
1549   { "page" pages tie.or.space.connect }
1550   if$
1551 }
1552 if$
1553 }
1554
1555 FUNCTION {format.vol.num.pages}
1556 { volume field.or.null
1557   number empty$
1558   'skip$
1559   { "\penalty0 (" number * ")" * *
1560     volume empty$
1561     { "there's a number but no volume in " cite$ * warning$ }
1562     'skip$
1563     if$
1564   }
1565   if$
1566   pages empty$
1567   'skip$
1568   { duplicate$ empty$
1569     { pop$ format.pages }
1570     { ":\penalty0 " * pages n.dashify * }
1571     if$
1572   }
1573   if$
1574 }
1575
1576 FUNCTION {format.chapter.pages}
1577 { chapter empty$
1578   'format.pages
1579   { type empty$
1580     { "chapter" }
1581     { type "1" change.case$ }
1582     if$
1583     chapter tie.or.space.connect
1584     pages empty$
1585     'skip$
1586     { ", " * format.pages * }
1587     if$
1588   }
1589   if$
1590 }
1591
1592 FUNCTION {format.in.ed.booktitle}
1593 { booktitle empty$
1594   { "" }
1595   { editor empty$
1596     { "In " booktitle emphasize * }
1597     { "In " format.editors * ", " * booktitle emphasize * }
1598     if$
1599   }

```

```

1600 if$
1601 }
1602
1603 FUNCTION {empty.misc.check}
1604 { author empty$ title empty$ howpublished empty$
1605   month empty$ year empty$ note empty$
1606   and and and and and
1607   key empty$ not and
1608     { "all relevant fields are empty in " cite$ * warning$ }
1609     'skip$
1610 if$
1611 }
1612
1613 FUNCTION {format.thesis.type}
1614 { type empty$
1615   'skip$
1616   { pop$
1617     type "t" change.case$
1618   }
1619 if$
1620 }
1621
1622 FUNCTION {format.tr.number}
1623 { type empty$
1624   { "Technical Report" }
1625   'type
1626 if$
1627 number empty$
1628   { "t" change.case$ }
1629   { number tie.or.space.connect }
1630 if$
1631 }
1632
1633 FUNCTION {format.article.crossref}
1634 { key empty$
1635   { journal empty$
1636     { "need key or journal for " cite$ * " to crossref " * crossref *
1637       warning$
1638       ""
1639     }
1640     { "In {\em " journal * "\/}" * }
1641     if$
1642   }
1643   { "In " key * }
1644 if$
1645 " \citep{" * crossref * "}" *
1646 }
1647
1648 FUNCTION {format.book.crossref}
1649 { volume empty$
1650   { "empty volume in " cite$ * "'s crossref of " * crossref * warning$
1651     "In "
1652   }
1653   { "Volume" volume tie.or.space.connect

```

```

1654     " of " *
1655   }
1656   if$
1657   editor empty$
1658   editor field.or.null author field.or.null =
1659   or
1660   { key empty$
1661     { series empty$
1662       { "need editor, key, or series for " cite$ * " to crossref " *
1663         crossref * warning$
1664         "" *
1665       }
1666       { "{\em " * series * "\/}" * }
1667     } if$
1668   }
1669   { key * }
1670   if$
1671   }
1672   'skip$
1673   if$
1674   ", \citet{" * crossref * "}" *
1675 }
1676
1677 FUNCTION {format.incoll.inproc.crossref}
1678 { editor empty$
1679   editor field.or.null author field.or.null =
1680   or
1681   { key empty$
1682     { booktitle empty$
1683       { "need editor, key, or booktitle for " cite$ * " to crossref " *
1684         crossref * warning$
1685         ""
1686       }
1687       { "In {\em " booktitle * "\/}" * }
1688     } if$
1689   }
1690   { "In " key * }
1691   if$
1692   }
1693   { "In " }
1694   if$
1695   " \citet{" * crossref * "}" *
1696 }
1697
1698 FUNCTION {article}
1699 { output.bibitem
1700   format.authors "author" output.check
1701   author format.key output
1702   new.block
1703   format.title "title" output.check
1704   new.block
1705   crossref missing$
1706   { journal emphasize "journal" output.check
1707     format.vol.num.pages output

```

```

1708     format.date "year" output.check
1709   }
1710   { format.article.crossref output.nonnull
1711     format.pages output
1712   }
1713   if$
1714   format.issn output
1715   format.url output
1716   new.block
1717   note output
1718   fin.entry
1719 }
1720
1721 FUNCTION {book}
1722 { output.bibitem
1723   author empty$
1724     { format.editors "author and editor" output.check
1725       editor format.key output
1726     }
1727     { format.authors output.nonnull
1728       crossref missing$
1729         { "author and editor" editor either.or.check }
1730         'skip$
1731       if$
1732     }
1733   if$
1734   new.block
1735   format.btitle "title" output.check
1736   crossref missing$
1737     { format.bvolume output
1738       new.block
1739       format.number.series output
1740       new.sentence
1741       publisher "publisher" output.check
1742       address output
1743     }
1744     { new.block
1745       format.book.crossref output.nonnull
1746     }
1747   if$
1748   format.edition output
1749   format.date "year" output.check
1750   format.isbn output
1751   format.url output
1752   new.block
1753   note output
1754   fin.entry
1755 }
1756
1757 FUNCTION {booklet}
1758 { output.bibitem
1759   format.authors output
1760   author format.key output
1761   new.block

```

```

1762 format.title "title" output.check
1763 howpublished address new.block.checkb
1764 howpublished output
1765 address output
1766 format.date output
1767 format.isbn output
1768 format.url output
1769 new.block
1770 note output
1771 fin.entry
1772 }
1773
1774 FUNCTION {inbook}
1775 { output.bibitem
1776   author empty$
1777   { format.editors "author and editor" output.check
1778     editor format.key output
1779   }
1780   { format.authors output.nonnull
1781     crossref missing$
1782     { "author and editor" editor either.or.check }
1783     'skip$
1784     if$
1785   }
1786   if$
1787   new.block
1788   format.btitle "title" output.check
1789   crossref missing$
1790   { format.bvolume output
1791     format.chapter.pages "chapter and pages" output.check
1792     new.block
1793     format.number.series output
1794     new.sentence
1795     publisher "publisher" output.check
1796     address output
1797   }
1798   { format.chapter.pages "chapter and pages" output.check
1799     new.block
1800     format.book.crossref output.nonnull
1801   }
1802   if$
1803   format.edition output
1804   format.date "year" output.check
1805   format.isbn output
1806   format.url output
1807   new.block
1808   note output
1809   fin.entry
1810 }
1811
1812 FUNCTION {incollection}
1813 { output.bibitem
1814   format.authors "author" output.check
1815   author format.key output

```

```

1816 new.block
1817 format.title "title" output.check
1818 new.block
1819 crossref missing$
1820 { format.in.ed.booktitle "booktitle" output.check
1821     format.bvolume output
1822     format.number.series output
1823     format.chapter.pages output
1824     new.sentence
1825     publisher "publisher" output.check
1826     address output
1827     format.edition output
1828     format.date "year" output.check
1829 }
1830 { format.incoll.inproc.crossref output.nonnull
1831     format.chapter.pages output
1832 }
1833 if$
1834 format.isbn output
1835 format.url output
1836 new.block
1837 note output
1838 fin.entry
1839 }
1840
1841 FUNCTION {inproceedings}
1842 { output.bibitem
1843     format.authors "author" output.check
1844     author format.key output
1845     new.block
1846     format.title "title" output.check
1847     new.block
1848     crossref missing$
1849     { format.in.ed.booktitle "booktitle" output.check
1850         format.bvolume output
1851         format.number.series output
1852         format.pages output
1853         address empty$
1854         { organization publisher new.sentence.checkb
1855             organization output
1856             publisher output
1857             format.date "year" output.check
1858         }
1859         { address output.nonnull
1860             format.date "year" output.check
1861             new.sentence
1862             organization output
1863             publisher output
1864         }
1865     }
1866 }
1867 { format.incoll.inproc.crossref output.nonnull
1868     format.pages output
1869 }

```



```

1870 if$
1871 format.isbn output
1872 format.url output
1873 new.block
1874 note output
1875 fin.entry
1876 }
1877
1878 FUNCTION {conference} { inproceedings }
1879
1880 FUNCTION {manual}
1881 { output.bibitem
1882   format.authors output
1883   author format.key output
1884   new.block
1885   format.btitle "title" output.check
1886   organization address new.block.checkb
1887   organization output
1888   address output
1889   format.edition output
1890   format.date output
1891   format.url output
1892   new.block
1893   note output
1894   fin.entry
1895 }
1896
1897 FUNCTION {mastersthesis}
1898 { output.bibitem
1899   format.authors "author" output.check
1900   author format.key output
1901   new.block
1902   format.title "title" output.check
1903   new.block
1904   "Master's thesis" format.thesis.type output.nonnull
1905   school "school" output.check
1906   address output
1907   format.date "year" output.check
1908   format.url output
1909   new.block
1910   note output
1911   fin.entry
1912 }
1913
1914 FUNCTION {misc}
1915 { output.bibitem
1916   format.authors output
1917   author format.key output
1918   title howpublished new.block.checkb
1919   format.title output
1920   howpublished new.block.checka
1921   howpublished output
1922   format.date output
1923   format.issn output

```

```

1924 format.url output
1925 new.block
1926 note output
1927 fin.entry
1928 empty.misc.check
1929 }
1930
1931 FUNCTION {phdthesis}
1932 { output.bibitem
1933   format.authors "author" output.check
1934   author format.key output
1935   new.block
1936   format.btitle "title" output.check
1937   new.block
1938   "PhD thesis" format.thesis.type output.nonnull
1939   school "school" output.check
1940   address output
1941   format.date "year" output.check
1942   format.url output
1943   new.block
1944   note output
1945   fin.entry
1946 }
1947
1948 FUNCTION {proceedings}
1949 { output.bibitem
1950   format.editors output
1951   editor format.key output
1952   new.block
1953   format.btitle "title" output.check
1954   format.bvolume output
1955   format.number.series output
1956   address output
1957   format.date "year" output.check
1958   new.sentence
1959   organization output
1960   publisher output
1961   format.isbn output
1962   format.url output
1963   new.block
1964   note output
1965   fin.entry
1966 }
1967
1968 FUNCTION {techreport}
1969 { output.bibitem
1970   format.authors "author" output.check
1971   author format.key output
1972   new.block
1973   format.title "title" output.check
1974   new.block
1975   format.tr.number output.nonnull
1976   institution "institution" output.check
1977   address output

```

```

1978 format.date "year" output.check
1979 format.url output
1980 new.block
1981 note output
1982 fin.entry
1983 }
1984
1985 FUNCTION {unpublished}
1986 { output.bibitem
1987 format.authors "author" output.check
1988 author format.key output
1989 new.block
1990 format.title "title" output.check
1991 format.url output
1992 new.block
1993 note "note" output.check
1994 format.date output
1995 fin.entry
1996 }
1997
1998 FUNCTION {default.type} { misc }
1999
2000
2001 MACRO {jan} {"January"}
2002
2003 MACRO {feb} {"February"}
2004
2005 MACRO {mar} {"March"}
2006
2007 MACRO {apr} {"April"}
2008
2009 MACRO {may} {"May"}
2010
2011 MACRO {jun} {"June"}
2012
2013 MACRO {jul} {"July"}
2014
2015 MACRO {aug} {"August"}
2016
2017 MACRO {sep} {"September"}
2018
2019 MACRO {oct} {"October"}
2020
2021 MACRO {nov} {"November"}
2022
2023 MACRO {dec} {"December"}
2024
2025
2026
2027 MACRO {acmcs} {"ACM Computing Surveys"}
2028
2029 MACRO {acta} {"Acta Informatica"}
2030
2031 MACRO {cacm} {"Communications of the ACM"}

```

```

2032
2033 MACRO {ibmjrd} {"IBM Journal of Research and Development"}
2034
2035 MACRO {ibmsj} {"IBM Systems Journal"}
2036
2037 MACRO {ieeese} {"IEEE Transactions on Software Engineering"}
2038
2039 MACRO {ieeetc} {"IEEE Transactions on Computers"}
2040
2041 MACRO {ieeetcad}
2042 {"IEEE Transactions on Computer-Aided Design of Integrated Circuits"}
2043
2044 MACRO {ipl} {"Information Processing Letters"}
2045
2046 MACRO {jacm} {"Journal of the ACM"}
2047
2048 MACRO {jcsc} {"Journal of Computer and System Sciences"}
2049
2050 MACRO {scp} {"Science of Computer Programming"}
2051
2052 MACRO {sicomp} {"SIAM Journal on Computing"}
2053
2054 MACRO {tocs} {"ACM Transactions on Computer Systems"}
2055
2056 MACRO {tods} {"ACM Transactions on Database Systems"}
2057
2058 MACRO {tog} {"ACM Transactions on Graphics"}
2059
2060 MACRO {toms} {"ACM Transactions on Mathematical Software"}
2061
2062 MACRO {toois} {"ACM Transactions on Office Information Systems"}
2063
2064 MACRO {toplas} {"ACM Transactions on Programming Languages and Systems"}
2065
2066 MACRO {tcs} {"Theoretical Computer Science"}
2067
2068
2069 READ
2070
2071 FUNCTION {sortify}
2072 { purify$
2073   "1" change.case$
2074 }
2075
2076 INTEGERS { len }
2077
2078 FUNCTION {chop.word}
2079 { 's :=
2080   'len :=
2081   s #1 len substring$ =
2082     { s len #1 + global.max$ substring$ }
2083     's
2084   if$
2085 }

```

```

2086
2087 FUNCTION {format.lab.names}
2088 { 's :=
2089   s #1 "{vv~}{ll}" format.name$
2090   s num.names$ duplicate$
2091   #2 >
2092   { pop$ " et~al." * }
2093   { #2 <
2094     'skip$
2095     { s #2 "{ff }{vv }{ll}{ jj}" format.name$ "others" =
2096       { " et~al." * }
2097       { " and " * s #2 "{vv~}{ll}" format.name$ * }
2098     if$
2099   }
2100   if$
2101 }
2102 if$
2103 }
2104
2105 FUNCTION {author.key.label}
2106 { author empty$
2107   { key empty$
2108     { cite$ #1 #3 substring$ }
2109     'key
2110     if$
2111   }
2112   { author format.lab.names }
2113   if$
2114 }
2115
2116 FUNCTION {author.editor.key.label}
2117 { author empty$
2118   { editor empty$
2119     { key empty$
2120       { cite$ #1 #3 substring$ }
2121       'key
2122       if$
2123     }
2124     { editor format.lab.names }
2125     if$
2126   }
2127   { author format.lab.names }
2128   if$
2129 }
2130
2131 FUNCTION {author.key.organization.label}
2132 { author empty$
2133   { key empty$
2134     { organization empty$
2135       { cite$ #1 #3 substring$ }
2136       { "The " #4 organization chop.word #3 text.prefix$ }
2137       if$
2138     }
2139     'key

```

```

2140     if$
2141   }
2142   { author format.lab.names }
2143 if$
2144 }
2145
2146 FUNCTION {editor.key.organization.label}
2147 { editor empty$
2148   { key empty$
2149     { organization empty$
2150       { cite$ #1 #3 substring$ }
2151       { "The " #4 organization chop.word #3 text.prefix$ }
2152     if$
2153   }
2154   'key
2155   if$
2156 }
2157 { editor format.lab.names }
2158 if$
2159 }
2160
2161 FUNCTION {calc.short.authors}
2162 { type$ "book" =
2163   type$ "inbook" =
2164   or
2165   'author.editor.key.label
2166   { type$ "proceedings" =
2167     'editor.key.organization.label
2168     { type$ "manual" =
2169       'author.key.organization.label
2170       'author.key.label
2171     if$
2172   }
2173   if$
2174 }
2175 if$
2176 'short.list :=
2177 }
2178
2179 FUNCTION {calc.label}
2180 { calc.short.authors
2181   short.list
2182   "("
2183   *
2184   year duplicate$ empty$
2185   short.list key field.or.null = or
2186     { pop$ "" }
2187     'skip$
2188   if$
2189   *
2190   'label :=
2191 }
2192
2193 FUNCTION {sort.format.names}

```

```

2194 { 's :=
2195 #1 'nameptr :=
2196 ""
2197 s num.names$ 'numnames :=
2198 numnames 'namesleft :=
2199 { namesleft #0 > }
2200 { nameptr #1 >
2201   { " " * }
2202   'skip$
2203   if$
2204   s nameptr "{vv{ } }{ll{ }}{ ff{ }}{ jj{ }}" format.name$ 't :=
2205   nameptr numnames = t "others" = and
2206   { "et al" * }
2207   { t sortify * }
2208   if$
2209   nameptr #1 + 'nameptr :=
2210   namesleft #1 - 'namesleft :=
2211   }
2212 while$
2213 }
2214
2215 FUNCTION {sort.format.title}
2216 { 't :=
2217   "A " #2
2218   "An " #3
2219   "The " #4 t chop.word
2220   chop.word
2221   chop.word
2222   sortify
2223   #1 global.max$ substring$
2224 }
2225
2226 FUNCTION {author.sort}
2227 { author empty$
2228   { key empty$
2229     { "to sort, need author or key in " cite$ * warning$
2230     ""
2231     }
2232     { key sortify }
2233     if$
2234   }
2235   { author sort.format.names }
2236   if$
2237 }
2238
2239 FUNCTION {author.editor.sort}
2240 { author empty$
2241   { editor empty$
2242     { key empty$
2243       { "to sort, need author, editor, or key in " cite$ * warning$
2244       ""
2245       }
2246       { key sortify }
2247     if$

```

```

2248     }
2249     { editor sort.format.names }
2250     if$
2251   }
2252   { author sort.format.names }
2253   if$
2254 }
2255
2256 FUNCTION {author.organization.sort}
2257 { author empty$
2258   { organization empty$
2259     { key empty$
2260       { "to sort, need author, organization, or key in " cite$ * warning$
2261         ""
2262       }
2263       { key sortify }
2264     }
2265   }
2266   { "The " #4 organization chop.word sortify }
2267   if$
2268 }
2269 { author sort.format.names }
2270 if$
2271 }
2272
2273 FUNCTION {editor.organization.sort}
2274 { editor empty$
2275   { organization empty$
2276     { key empty$
2277       { "to sort, need editor, organization, or key in " cite$ * warning$
2278         ""
2279       }
2280       { key sortify }
2281     }
2282   }
2283   { "The " #4 organization chop.word sortify }
2284   if$
2285 }
2286 { editor sort.format.names }
2287 if$
2288 }
2289
2290 FUNCTION {presort}
2291 { calc.label
2292   label sortify
2293   " "
2294   *
2295   type$ "book" =
2296   type$ "inbook" =
2297   or
2298   'author.editor.sort
2299   { type$ "proceedings" =
2300     'editor.organization.sort
2301     { type$ "manual" =

```



```

2302         'author.organization.sort
2303         'author.sort
2304     if$
2305     }
2306     if$
2307     }
2308 if$
2309 " "
2310 *
2311 year field.or.null sortify
2312 *
2313 " "
2314 *
2315 title field.or.null
2316 sort.format.title
2317 *
2318 #1 entry.max$ substring$
2319 'sort.label :=
2320 sort.label *
2321 #1 entry.max$ substring$
2322 'sort.key$ :=
2323 }
2324
2325 ITERATE {presort}
2326
2327 SORT
2328
2329 STRINGS { longest.label last.label next.extra }
2330
2331 INTEGERS { longest.label.width last.extra.num number.label }
2332
2333 FUNCTION {initialize.longest.label}
2334 { "" 'longest.label :=
2335 #0 int.to.chr$ 'last.label :=
2336 "" 'next.extra :=
2337 #0 'longest.label.width :=
2338 #0 'last.extra.num :=
2339 #0 'number.label :=
2340 }
2341
2342 FUNCTION {forward.pass}
2343 { last.label label =
2344   { last.extra.num #1 + 'last.extra.num :=
2345     last.extra.num int.to.chr$ 'extra.label :=
2346   }
2347   { "a" chr.to.int$ 'last.extra.num :=
2348     "" 'extra.label :=
2349     label 'last.label :=
2350   }
2351 if$
2352 number.label #1 + 'number.label :=
2353 }
2354
2355 FUNCTION {reverse.pass}

```

```

2356 { next.extra "b" =
2357   { "a" 'extra.label := }
2358   'skip$
2359   if$
2360   extra.label 'next.extra :=
2361   extra.label
2362   duplicate$ empty$
2363   'skip$
2364   { "{\natexlab{" swap$ * "}}" * }
2365   if$
2366   'extra.label :=
2367   label extra.label * 'label :=
2368 }
2369
2370 EXECUTE {initialize.longest.label}
2371
2372 ITERATE {forward.pass}
2373
2374 REVERSE {reverse.pass}
2375
2376 FUNCTION {bib.sort.order}
2377 { sort.label 'sort.key$ :=
2378 }
2379
2380 ITERATE {bib.sort.order}
2381
2382 SORT
2383
2384 FUNCTION {begin.bib}
2385 { preamble$ empty$
2386   'skip$
2387   { preamble$ write$ newline$ }
2388   if$
2389   "\begin{thebibliography}{ number.label int.to.str$ * "}" *
2390   write$ newline$
2391   "\expandafter\ifx\csname natexlab\endcsname\relax\def\natexlab#1{#1}\fi"
2392   write$ newline$
2393   "\expandafter\ifx\csname url\endcsname\relax" write$ newline$
2394   " \def\url#1{\tt #1}\fi" write$ newline$
2395 }
2396
2397 EXECUTE {begin.bib}
2398
2399 EXECUTE {init.state.consts}
2400
2401 ITERATE {call.type$}
2402
2403 FUNCTION {end.bib}
2404 { newline$
2405   "\end{thebibliography}" write$ newline$
2406 }
2407
2408 EXECUTE {end.bib}
2409 </bst>

```

# Index

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

Symbols	
\!	916, 917
\"	1055
\/	1640, 1666, 1687
\@M	476
\@author	289, 347, 393
\@beginparpenalty	473
\@break@tfor	14
\@chapapp	74
\@checkoptions	<u>9</u> , 19, 22
\@currrent	10
\@currname	10
\@curroptions	10, 13
\@date	252, 277, 290, 326, 348, 394, 417
\@empty	15, 288–291, 346–349, 392–395
\@endparpenalty	476
\@expandtwoargs	13
\@fnsymbol	366
\@lowpenalty	473
\@mainmatterfalse	672
\@makefnmark	367
\@makefntext	370
\@maketitle	345, 376, 378, 384, 391, 401
\@mkboth	550, 572, 596, 621
\@ne	375
\@plus	62
\@ptionlist	10
\@restonecolfalse	542, 564, 588
\@restonecoltrue	540, 562, 586
\@starttoc	552, 574, 598
\@tempswafalse	11
\@tempwatrue	14
\@textsuperscript	368, 372
\@tfor	12
\@thanks	282, 288, 339, 346, 386, 392
\@thefnmark	368, 372
\@this	12, 13, 15
\@title	198, 248, 258, 291, 303, 307, 316, 349, 358, 362, 395, 407, 457
\@topnum	383
\\	147, 719, 786, 788, 905, 1033, 1034, 1036
Numbers	
\0	926
\1	927
\_	74
A	
\abstract	<u>424</u>
\abstractname	475, 499, 503
\acknowledgements	<u>629</u> , 746, 829
\addcontentsline	530, 533
\address	905
\addresses	<u>149</u> , 192, 719
\addressnames	153, 323, 414
\addtocounter	524
\addtotoc	527, 614, 631, 670, 677
\alpha	962, 965, 972, 974, 977, 979, 982, 984, 986, 989, 994
\aMP	962
\and	295, 353, 399
\appendix	756, 833
\arabic	1034
\aref	<u>107</u>
\author	293, 351, 397
\authornames	152, <u>164</u> , 200, 250, 262, 305, 307, 319, 360, 362, 410, 459
\authors	<u>149</u> , 167, 715
B	
\Ba	956, 958, 961, 964, 965, 991, 996–999, 1001, 1002
\backmatter	<u>663</u> , 758, 830
\BaMP	961
\bar	958, 964
\baseclass	<u>2</u> , 8, 16, 24, 26
\Bb	966
\begin	203, 210, 308, 315, 319, 323, 405, 410, 414, 430, 474, 478, 502, 507, 537, 559, 583, 623, 636, 652, 712, 736, 782, 784, 796, 804, 1030, 1032, 2389
\beginngroup	365
\beta	957, 958, 963, 964, 966, 973, 974, 978, 979, 982, 985, 986, 990, 991, 994, 996, 998, 999
\bf	248, 258, 457, 636, 1034
\bfseries	475, 503
\bhrule	<u>27</u>
\bibitem	1405
\bibliography	760, 832
\bibliographystyle	759, 831

<code>\bibname</code> . . . . .	670, 671, 675, 677, 678	<code>\degreename</code> . . . . .	
<code>\BibTeX</code> . . . . .	899		151, <u>164</u> , 230, 234, 238, 451, 454
<code>\bigskip</code> . . . . .	269, 270, 274– 276, 278, 433, 435, 440, 456, 460	<code>\DEPARTMENT</code> . . . . .	<u>149</u> , 177
<code>\BL</code> . . . . .	968	<code>\department</code> . . . . .	<u>149</u> , 174
<code>\Bm</code> . . . . .	967	<code>\DEPTNAME</code> . . . . .	157, <u>164</u> , 438
<code>\bMP</code> . . . . .	963	<code>\deptname</code> . . . . .	156, <u>164</u> , 217, 273, 719
<code>\boldsymbol</code> . . . . .	924, 925, 948, 965–969	<code>\diag</code> . . . . .	934
<code>\bottomfraction</code> . . . . .	116	<code>\ding</code> . . . . .	910, 911
<code>\bottomrule</code> . . . . .	789	<code>\dint</code> . . . . .	916
<code>\BPhi</code> . . . . .	969	<code>\do</code> . . . . .	12
<code>\brokenpenalty</code> . . . . .	64	<code>\documentclass</code> . . . . .	683, 686, 689, 692, 695, 698, 701, 704
<code>\btypeout</code> . . . . .	<u>27</u> , 74, 79, 197, 302, 357, 427, 536, 558, 582, 613, 630, 647, 671, 678	<code>\dots</code> . . . . .	714, 737, 747
<code>\Bxi</code> . . . . .	948	<code>\doublehyphendemerits</code> . . . . .	63
<b>C</b>			
<code>\c@footnote</code> . . . . .	366	<b>E</b>	
<code>\c@page</code> . . . . .	84	<code>\e</code> . . . . .	947
<code>\caption</code> . . . . .	791, 799, 814	<code>\Eangle</code> . . . . .	1015
<code>\captionmargin</code> . . . . .	108	<code>\Econ</code> . . . . .	1014
<code>\center</code> . . . . .	246	<code>\Econt</code> . . . . .	1007
<code>\centering</code> . . . . .	783, 797, 805, 1031	<code>\Ecurv</code> . . . . .	1008
<code>\cfoot</code> . . . . .	71	<code>\edef</code> . . . . .	10
<code>\chapter</code> 545, 567, 591, 616, 774, 819, 837		<code>\Eedge</code> . . . . .	1013
<code>\chaptermark</code> . . . . .	<u>73</u>	<code>\Eedgedir</code> . . . . .	1017
<code>\thead</code> . . . . .	71	<code>\Eext</code> . . . . .	1010
<code>\cite</code> . . . . .	780	<code>\Eimage</code> . . . . .	1006
<code>\citep</code> . . . . .	1645	<code>\eins</code> . . . . .	946
<code>\citeta</code> . . . . .	1674, 1695	<code>\Eint</code> . . . . .	1009
<code>\cleardoublepage</code> . . . . .	<u>84</u> , 296, 465, 554, 577, 601, 625, 639, 654, 666	<code>\Eline</code> . . . . .	1012
<code>\clearpage</code> . . . . .	84, 668	<code>\else</code> . . . . .	16, 84, 328, 355, 377, 380, 485, 496, 500, 512, 519, 541, 563, 587, 667
<code>\clubpenalty</code> . . . . .	66	<code>\Elshape</code> . . . . .	1016
<code>\col@number</code> . . . . .	375	<code>\em</code> . . . . .	140, 1229, 1640, 1666, 1687
<code>\color</code> . . . . .	139–141	<code>\Emodel</code> . . . . .	1018
<code>\contentsname</code> . . . . .	545, 548, 551	<code>\end</code> . . . . .	280, 284, 319, 323, 337, 341, 410, 414, 418, 461, 477, 483, 504, 510, 555, 579, 603, 623, 636, 652, 738, 790, 793, 801, 816, 846, 1038, 1039, 2405
<code>\cref</code> . . . . .	<u>107</u>	<code>\endcsname</code> . . . . .	2391, 2393
<code>\cross</code> . . . . .	911	<code>\endgroup</code> . . . . .	387
<code>\csname</code> . . . . .	2391, 2393	<code>\endquotation</code> . . . . .	335
<code>\CurrentOption</code> . . . . .	8	<code>\endquote</code> . . . . .	492, 519
<b>D</b>			
<code>\D</code> . . . . .	942, 976, 978–982, 988, 990–994, 996, 999	<code>\endtitlepage</code> . . . . .	494
<code>\date</code> . . . . .	294, 352, 398, 720	<code>\ensuremath</code> . . . . .	914–917, 920, 924, 925, 931, 937, 940, 946–950, 953–970, 972–982, 984–994, 996–999, 1001, 1002, 1005–1022
<code>\dblfloatpagefraction</code> . . . . .	120	<code>\epsilon</code> . . . . .	946, 947
<code>\dbltopfraction</code> . . . . .	118	<code>\eref</code> . . . . .	<u>107</u>
<code>\DeclareOption</code> . . . . .	8	<code>\Esnake</code> . . . . .	1005
<code>\dedicatory</code> . . . . .	<u>646</u> , 747	<code>\Eterm</code> . . . . .	1011
<code>\def</code> . . . . .	3, 6, 9, 30, 84, 149–163, 367, 370, 401, 2391, 2394	<code>\examiner</code> . . . . .	<u>149</u> , 165, 725
<code>\degree</code> . . . . .	<u>149</u> , 166, 728, 731		

<code>\examname</code> .....	150, <a href="#">164</a> , 243	<code>\ifcase</code> .....	30
<code>\expandafter</code> .....	2391, 2393	<code>\ifin@</code> .....	14
<b>F</b>			
<code>\F</code> .....	931–934	<code>\ifnum</code> .....	375
<code>\FACNAME</code> .....	161, <a href="#">164</a> , 436	<code>\ifodd</code> .....	84
<code>\facname</code> .....	160, <a href="#">164</a> , 214, 272	<code>\ifx</code> .....	2391, 2393
<code>\FACULTY</code> .....	<a href="#">149</a> , 189	<code>\in@</code> .....	13
<code>\faculty</code> .....	<a href="#">149</a> , 186	<code>\include</code> .....	754, 755, 757
<code>\fancyplain</code> .....	69, 70	<code>\includegraphics</code> .....	798, 807, 811
<code>\fd</code> .....	915	<code>\infty</code> .....	788
<code>\fi</code> .....	14, 16, 32, 88, 336, 379, 385, 422, 493, 506, 518, 519, 521, 543, 553, 565, 575, 589, 599, 669, 2391, 2394	<code>\input</code> .....	710
<code>\floatpagefraction</code> .....	<a href="#">119</a>	<code>\int</code> .....	916, 917
<code>\fnsymbol</code> .....	904	<code>\interfootnotelinepenalty</code> .....	67
<code>\footnote</code> .....	206, 312, 406	<b>K</b>	
<code>\footnoterule</code> .....	205, 311	<code>\K</code> .....	945
<code>\footnotesize</code> .....	204, 310	<code>\Kanova</code> .....	949
<code>\frac</code> .....	914, 915	<code>\kern</code> .....	899
<code>\href</code> .....	<a href="#">107</a> , 795, 803	<code>\keywordnames</code> ..	163, <a href="#">164</a> , 201, 306, 327, 333, 361, 484, 490, 511, 516
<code>\frontmatter</code> .....	<a href="#">657</a> , 713	<code>\keywords</code> .....	<a href="#">149</a> , 194, 722
<b>G</b>			
<code>\global</code> 286–295, 343–353, 383, 389–399		<code>\Kspline</code> .....	950
<code>\graphicspath</code> .....	707	<b>L</b>	
<code>\GROUP</code> .....	<a href="#">149</a> , 183	<code>\label</code> .....	774, 777, 792, 800, 808, 812, 815, 819, 823, 837, 841
<code>\group</code> .....	<a href="#">149</a> , 180	<code>\Lambda</code> .....	968
<code>\GROUPNAME</code> .....	159, <a href="#">164</a>	<code>\LARGE</code> .....	260, 262, 316, 407
<code>\groupname</code> .....	158, <a href="#">164</a> , 719	<code>\Large</code> .....	277, 636, 652
<b>H</b>			
<code>\hb@xt@</code> .....	371	<code>\large</code> .	212, 214, 217, 221, 222, 225, 226, 229, 230, 233, 234, 237, 238, 248, 265, 266, 268, 271– 273, 318, 322, 326, 409, 413, 417
<code>\hbox</code> .....	85, 88, 899	<code>\leftmark</code> .....	70
<code>\hline</code> .....	1033, 1037	<code>\let</code> ....	15, 147, 204–206, 286–295, 310–312, 343–353, 389–399, 406
<code>\href</code> .....	168, 171, 174, 177, 180, 183, 186, 189, 716, 906, 1326	<code>\lfoot</code> .....	71
<code>\hspace</code> .....	245, 953, 954, 961–963	<code>\lhead</code> .....	69
<code>\hss</code> .....	372	<code>\lineskip</code> .....	318, 322, 409, 413
<code>\huge</code> .....	258	<code>\listfigurename</code> ..	567, 570, 572, 573
<code>\Hyp</code> .....	941	<code>\listoffigures</code> .....	<a href="#">557</a> , 740
<code>\hypersetup</code> .....	.. 198–201, 303–306, 358–361, 709	<code>\listofsymbols</code> .....	<a href="#">605</a> , 743
<b>I</b>			
<code>\I</code> .....	928	<code>\listoftables</code> .....	<a href="#">581</a> , 741
<code>\if</code> .....	327, 484, 511	<code>\listsymbolname</code> .....	.. 606, 609, 613, 614, 616, 619, 622
<code>\if@openright</code> .....	665	<code>\listtablename</code> .....	591, 594, 597
<code>\if@restonecol</code> .....	553, 575, 599	<code>\LoadClass</code> .....	26
<code>\if@tempswa</code> .....	16	<code>\long</code> .....	370
<code>\if@titlepage</code> .....	300, 469	<code>\lower</code> .....	899
<code>\if@twocolumn</code> .....	.. 88, 374, 498, 519, 539, 561, 585	<code>\lstdefinestyle</code> .....	137
<code>\if@twoside</code> .....	84	<code>\lstlistoflistings</code> .....	742
<b>M</b>			
		<code>\lstset</code> .....	132
		<code>\M</code> .....	925, 928, 945, 964, 970

<code>\mainmatter</code> .....	660, 750	<code>\PabnH</code> .....	986
<code>\maketitle</code> .....	195, 733	<code>\pagestyle</code> .....	72
<code>\MakeUppercase</code> .....	551, 572, 573, 597, 622	<code>\PanH</code> .....	984
<code>\markboth</code> .....	74, 83, 307, 362	<code>\par</code> 212, 214, 217, 222, 226, 230, 234,	
<code>\mathbb</code> .....	920	238, 242, 243, 248, 250, 252,	
<code>\mathcal</code> .....	940, 972–982, 996–999	258, 260, 262, 265, 266, 268,	
<code>\mathit</code> .....	937, 949, 950, 953, 954, 1005–1022	271–273, 277, 281, 316, 320,	
<code>\mathrm</code> .....	931	324, 326, 334, 338, 364, 407,	
<code>\mc</code> .....	940–942	411, 415, 419, 432, 434, 436,	
<code>\medskip</code> .....	458	438, 442, 445, 448, 451, 454,	
<code>\midrule</code> .....	787	457, 459, 482, 491, 517, 623, 636	
<code>\ML</code> .....	954	<code>\parbox</code> .....	245, 255
<code>\month</code> .....	30	<code>\parindent</code> .....	38, 371
<code>\MP</code> .....	953, 958–963, 970	<code>\parskip</code> ...	39, 211, 431, 538, 560, 584
<code>\mu</code> .....	967	<code>\partial</code> .....	914
<code>\multicolumn</code> .....	1034	<code>\PassOptionsToClass</code> .....	8, 16, 24
<b>N</b>			
<code>\N</code> .....	937	<code>\Pb</code> .....	973
<code>\Name</code> .....	906, 907	<code>\PBab</code> .....	998
<code>\natexlab</code> .....	2364, 2391	<code>\PBanH</code> .....	1001
<code>\newblock</code> .....	1116	<code>\PbnH</code> .....	985
<code>\newcommand</code> .....	27, 28, 109–114,	<code>\PD</code> .....	976
149–163, 527, 606, 609, 612,		<code>\pd</code> .....	914
629, 646, 658, 661, 675, 676,		<code>\pdfstringdefDisableCommands</code> ...	146
899, 905–907, 910, 911, 914–		<code>\PDIw</code> .....	980
917, 920, 921, 924–928, 931–		<code>\PDIwb</code> .....	978
934, 937, 940–942, 945–950,		<code>\PDIwbnH</code> .....	990
953–970, 972–982, 984–994,		<code>\PDIwnH</code> .....	992
996–999, 1001, 1002, 1005–1022		<code>\PDnH</code> .....	988
<code>\newcounter</code> .....	526, 902, 1026	<code>\PDwab</code> .....	979
<code>\newenvironment</code> .....	425, 1027	<code>\PDwabnH</code> .....	991
<code>\newpage</code> .....	87, 88, 381, 402	<code>\PDwBab</code> .....	996
<code>\newtheorem</code> .....		<code>\penalty</code> .....	1559, 1570
.. 92, 93, 96, 97, 99–102, 104, 106		<code>\Phi</code> .....	969
<code>\noindent</code> .....	331, 371, 479, 488, 514	<code>\ProcessOptions</code> .....	25
<code>\normalfont</code> .....	368, 372	<code>\Pw</code> .....	975
<code>\normalsize</code> .....		<code>\PwabID</code> .....	982
.. 242, 243, 250, 252, 331, 432,		<code>\PwabIDnH</code> .....	994
436, 438, 442, 445, 448, 451,		<code>\PwBabID</code> .....	999
454, 457, 459, 488, 514, 637, 643		<code>\PwIa</code> .....	977
<code>\null</code> .. 208, 283, 313, 340, 403, 429,		<code>\PwIanH</code> .....	989
464, 472, 494, 634, 638, 650, 653		<code>\PwIBa</code> .....	997
<code>\number</code> .....	33	<code>\PwIBanH</code> .....	1002
<b>O</b>			
<code>\onecolumn</code> .....	540, 562, 586	<code>\PwID</code> .....	981
<code>\onehalfspacing</code> .....	36	<code>\PwIDnH</code> .....	993
<code>\or</code> .....	30–32	<code>\PwnH</code> .....	987
<b>P</b>			
<code>\p@</code> .....	62, 209, 314, 635, 651	<b>Q</b>	
<code>\Pa</code> .....	972	<code>\Q</code> .....	920, 921
<code>\Pab</code> .....	974	<code>\Qa</code> .....	956
		<code>\Qb</code> .....	957
		<code>\quotation</code> .....	329
		<code>\quote</code> .....	486, 505
		<code>\Qw</code> .....	955

<b>R</b>	
<code>\R</code> .....	921
<code>\raggedbottom</code> .....	61
<code>\ref</code> .....	109–114
<code>\refstepcounter</code> .....	528, 905
<code>\relax</code> .....	25, 205, 286, 287, 292–295, 311, 343–345, 350– 353, 389–391, 396–399, 2391, 2393
<code>\renewcommand</code> .....	74– 76, 79–81, 115–120, 196, 301, 356, 366, 535, 557, 581, 664, 904
<code>\renewenvironment</code> .....	470, 497
<code>\rfoot</code> .....	71
<code>\rhead</code> .....	70
<code>\rightmark</code> .....	69
<code>\rlap</code> .....	368
<code>\rm</code> .....	69, 70, 899
<b>S</b>	
<code>\Sab</code> .....	964
<code>\sc</code> .....	899
<code>\scriptscriptstyle</code> .....	953, 954
<code>\scriptsize</code> .....	134
<code>\section</code> .....	499, 548, 570, 594, 619, 642, 763–771, 777, 823, 841
<code>\sectionmark</code> .....	<u>73</u>
<code>\setcounter</code> .....	121– 124, 207, 285, 342, 388, 525, 903
<code>\setlength</code> .....	38, 39, 62, 108, 211, 431, 538, 560, 584
<code>\setmarginsrb</code> .....	42, 52
<code>\sgn</code> .....	932
<code>\Sigma</code> .....	964, 970
<code>\singlespacing</code> .....	37
<code>\sl</code> .....	69, 70, 652
<code>\small</code> .....	204, 310, 501
<code>\smallskip</code> .....	261
<code>\SMP</code> .....	970
<code>\space</code> .....	28, 33, 74, 79, 147
<code>\sref</code> .....	<u>107</u>
<code>\stepcounter</code> .....	1029
<code>\SteveRGunn</code> .....	907
<code>\subfigure</code> .....	806, 810
<code>\subject</code> .....	<u>149</u> , 193, 721
<code>\subjectname</code> ..	162, <u>164</u> , 199, 304, 359
<code>\subsectionmark</code> .....	<u>73</u>
<code>\subsubsectionmark</code> .....	81
<code>\supervisor</code> .....	<u>149</u> , 164, 724
<code>\supname</code> .....	<u>149</u> , <u>164</u> , 242
<b>T</b>	
<code>\tableofcontents</code> .....	<u>535</u> , 739
<code>\texorpdfstring</code> ..	168, 171, 174, 177, 180, 183, 186, 189, 715, 906, 946
<code>\textbf</code> .....	212, 332, 489, 515, 786
<code>\textepsilon</code> .....	946
<code>\textfraction</code> .....	<u>115</u>
<code>\textit</code> .....	333, 490, 516
<code>\textsuperscript</code> .....	904
<code>\thanks</code> ...	206, 286, 312, 343, 389, 406
<code>\theaddress</code> .....	904, 905
<code>\thechapter</code> .....	74
<code>\thefootnote</code> .....	366
<code>\theoremstyle</code> .....	90, 103, 105
<code>\thepage</code> .....	69, 70
<code>\thesection</code> .....	79
<code>\thispagestyle</code> .....	86, 202, 309, 363, 386, 428, 633, 649
<code>\tick</code> .....	910
<code>\tint</code> .....	917
<code>\title</code> .....	292, 350, 396, 714
<code>\titlepage</code> .....	471
<code>\today</code> .....	<u>29</u> , 720
<code>\topfraction</code> .....	<u>115</u>
<code>\toprule</code> .....	785
<code>\topskip</code> .....	62
<code>\tr</code> .....	933
<code>\tref</code> .....	<u>107</u> , 781
<code>\tt</code> .....	2394
<code>\ttfamily</code> .....	134
<code>\twocolumn</code> .....	378, 553, 575, 599
<code>\typeout</code> .....	27, 28
<b>U</b>	
<code>\underline</code> .....	434, 442, 445, 448, 451, 454
<code>\UNIVERSITY</code> .....	<u>149</u> , 171
<code>\university</code> .....	<u>149</u> , 168
<code>\UNIVNAME</code> .....	155, <u>164</u> , 212, 432
<code>\univname</code> .....	154, <u>164</u> , 719
<code>\url</code> .....	1307, 2394
<code>\usepackage</code> .....	35, 40, 68, 89, 107, 125–131, 142, 611, 708
<b>V</b>	
<code>\v</code> .....	924, 926, 927
<code>\vfil</code> .....	208, 283, 313, 340, 429, 464, 472, 494, 634, 638, 650, 653
<code>\vfill</code> .....	219, 241, 244, 247, 249, 251, 253, 259, 263
<code>\vskip</code> .....	209, 314, 317, 321, 325, 330, 404, 408, 412, 416, 420, 487, 513, 635, 651
<code>\vspace</code> .....	503
<b>W</b>	
<code>\w</code> .....	955, 958, 959, 975, 977–982, 987, 989–994, 996, 997, 999, 1002
<code>\wco</code> .....	1022
<code>\wed</code> .....	1021

<code>\widowpenalty</code> .....	65	953–970, 972–982, 984–994,
<code>\wli</code> .....	1020	996–999, 1001, 1002, 1005–1022
<code>\wMP</code> .....	959	
<code>\wMPab</code> .....	958	<b>Y</b>
<code>\wte</code> .....	1019	<code>\year</code> .....
		33
	<b>X</b>	<code>\yMP</code> .....
<code>\xi</code> .....	948	960
<code>\xspace</code> ...	906, 914–917, 920, 924,	<b>Z</b>
	925, 931, 937, 940, 946–950,	<code>\z@</code> .....
		383, 503