

# The elsarticle.cls – Implimentation

Elsevier Ltd

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## 1 Implementation

```
1 <class>
2 %%
3 %% $Id: elsarticle.cls,v 1.20 2008-10-13 04:24:12 cvr Exp $
4 %%
5 \def\RCSfile{elsarticle}%
6 \def\RCSversion{1.2.0}%
7 \def\RCSdate{2009/09/17}%
8 \def\@shortjnl{\relax}
9 \def\@journal{Elsevier Ltd} \def\@company{Elsevier Ltd}
10 \def\@issn{000-0000}
11 \def\@shortjid{elsarticle}
12 \NeedsTeXFormat{LaTeX2e}[1995/12/01]
13 \ProvidesClass{\@shortjid}[\RCSdate, \RCSversion: \@journal]
14 \def\ABD{\AtBeginDocument}
15 \newif\ifpreprint \preprintfalse
16 \newif\iflongmktitle \longmktitlefalse
17
18 \def\@blstr{1}
19 \newdimen\@bls
20 \@bls=\baselineskip
21
22 \def\@finalWarning{%
23 *****\MessageBreak
24 This document is typeset in the CRC style which\MessageBreak
25 is not suitable for submission.\MessageBreak
26 \MessageBreak
27 Please typeset again using 'preprint' option\MessageBreak
28 for creating PDF suitable for submission.\MessageBreak
29 *****\MessageBreak
30 }
31
32 \DeclareOption{preprint}{\global\preprinttrue
33 \gdef\@blstr{1}\xdef\jtype{0}%
34 \AtBeginDocument{\@twosidefalse\@mparswitchfalse}}
35 \DeclareOption{final}{\gdef\@blstr{1}\global\preprintfalse}
36 \DeclareOption{review}{\global\preprinttrue\gdef\@blstr{1.5}}
```

```

37 \DeclareOption{authoryear}{\xdef\@biboptions{round,authoryear}}
38 \DeclareOption{number}{\xdef\@biboptions{numbers}}
39 \DeclareOption{numbers}{\xdef\@biboptions{numbers}}
40 \DeclareOption{longtitle}{\global\longmkttitletrue}
41 \DeclareOption{5p}{\xdef\jtype{5}\global\preprintfalse}
42 \ExecuteOptions{twocolumn}}
43 \def\jtype{0}
44 \DeclareOption{3p}{\xdef\jtype{3}\global\preprintfalse}
45 \DeclareOption{1p}{\xdef\jtype{1}\global\preprintfalse}
46 \AtBeginDocument{\@twocolumnfalse}}
47 \DeclareOption{times}{\IfFileExists{txfonts.sty}%
48 {\AtEndOfClass{\RequirePackage{txfonts}}%
49 \gdef\ttdefault{cmtt}%
50 \let\iint\relax
51 \let\iiint\relax
52 \let\iiiint\relax
53 \let\idotsint\relax
54 \let\openbox\relax}}{\RequirePackage{times}}}
55 \ExecuteOptions{a4paper,10pt,oneside,onecolumn,number,preprint}
56 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{article}}
57 \ProcessOptions
58 \LoadClass{article}
59 \RequirePackage{graphicx}

```

## 2 Preamble

```

60 \let\comma\@empty
61 \let\tnotesep\@empty
62 \def\ttitle#1{\gdef\@title{#1}}
63 \let\@title\@empty
64
65 \def\elsLabel#1{\@bsphack\protected@write\@auxout{}%
66 {\string\Newlabel{#1}{\@currentlabel}}\@esphack}
67 \def\Newlabel#1#2{\expandafter\xdef\csname X@#1\endcsname{#2}}
68
69 \def\elsRef#1{\@ifundefined{X@#1}{0}{\csname X@#1\endcsname}%
70 }
71
72 \def\tnotemark[#1]{\textsuperscript{\@for\@tmark:=#1\do{%
73 \edef\tnotenum{\@ifundefined{X@#1\@tmark}{1}{\elsRef{\@tmark}}}%
74 \ifcase\tnotenum\or\ding{73}\or,\ding{73}\ding{73}\fi}}%
75 }
76 \let\@tnotemark\@empty
77
78 \let\@tnotes\@empty
79 \RequirePackage{pifont}
80 \newcounter{tnote}
81 \def\tnotetext[#1]#2{\g@addto@macro\@tnotes{%
82 \refstepcounter{tnote}\elsLabel{#1}%
83 \def\thefootnote{\ifcase\c@tnote\or\ding{73}\or\ding{73}\ding{73}\fi}%

```

```

84     \footnotetext{#2}}
85
86 \let\@nonumnotes\@empty
87 \def\nonumnote#1{\g@addto@macro\@nonumnotes{%
88     \let\thefootnote\relax\footnotetext{#1}}}
89
90 \newcounter{fnote}
91 \def\fnmark[#1]{\let\comma\@empty
92     \def\@fnmark{\@for\@fnmark:=#1\do{%
93         \edef\fnotenum{\@ifundefined{X@\@fnmark}{1}{\elsRef{\@fnmark}}}%
94         \unskip\comma\fnotenum\let\comma,}%
95 }
96
97 \let\@fnotes\@empty\let\@fnmark\@empty
98 \def\fnintext[#1]#2{\g@addto@macro\@fnotes{%
99     \refstepcounter{fnote}\elsLabel{#1}%
100     \def\thefootnote{\thefnote}%
101     \global\setcounter{footnote}{\thefnote}%
102     \footnotetext{#2}}}
103
104 \def\cormark[#1]{\edef\cnotenum{\elsRef{#1}}%
105     \unskip\textsuperscript{\sep\ifcase\cnotenum\or
106         $\ast$\or$\ast\ast$\fi\hspace{-1pt}}\let\sep=,}
107
108 \let\@cormark\@empty
109 \let\@cornotes\@empty
110 \newcounter{cnote}
111 \def\cortext[#1]#2{\g@addto@macro\@cornotes{%
112     \refstepcounter{cnote}\elsLabel{#1}%
113     \def\thefootnote{\ifcase\thecnote\or$\ast$\or
114         $\ast\ast$\fi}%
115     \footnotetext{#2}}}
116
117 \let\@corref\@empty
118 \def\corref#1{\cormark[#1]}
119 \def\corref#1{\edef\cnotenum{\elsRef{#1}}%
120     \edef\@corref{\ifcase\cnotenum\or
121         $\ast$\or$\ast\ast$\fi\hspace{-1pt}}
122
123 \def\fnref#1{\fnmark[#1]}
124 \def\tnoteref#1{\tnotemark[#1]}
125
126 \def\resetTitleCounters{\c@cnote=0
127     \c@fnote=0 \c@tnote=0 \c@footnote=0}
128
129 \let\eadsep\@empty
130 \let\@elseads\@empty
131 \let\@elsuads\@empty
132 \let\@cormark\@empty
133 \def\hashchar{\expandafter\@gobble\string\~}

```

```

134 \def\underscorechar{\expandafter@gobble\string\_}
135 \def\lbracechar{\expandafter@gobble\string\{ }
136 \def\rbracechar{\expandafter@gobble\string\}}
137
138 \def\ead{\@ifnextchar[{\@quad}{\@ead}}
139 \gdef\@ead#1{\bgroup\def\_{{\string\underscorechar\space}%
140   \def~{{\string\lbracechar\space}%
141     \def~{{\hashchar\space}%
142       \def\}{{\string\rbracechar\space}%
143         \edef\tmp{\the\@eadauthor}
144         \immediate\write\@auxout{\string\emailauthor
145           {#1}{\expandafter\strip@prefix\meaning\tmp}}}%
146   \egroup
147 }
148 \newcounter{ead}
149 \gdef\emailauthor#1#2{\stepcounter{ead}%
150   \g@addto@macro\@elseads{\raggedright%
151     \let\corref@gobble
152     \eadsep\texttt{#1} (#2)\def\eadsep{\unskip,\space}}}%
153 }
154 \gdef\@quad[#1]#2{\bgroup
155   \def~{{\string\hashchar\space}%
156     \def\_{{\string\underscorechar\space}%
157       \edef\tmp{\the\@eadauthor}
158       \immediate\write\@auxout{\string\urlauthor
159         {#2}{\expandafter\strip@prefix\meaning\tmp}}}%
160   \egroup
161 }
162 \def\urlauthor#1#2{\g@addto@macro\@elsuads{\let\corref@gobble%
163   \raggedright\eadsep\texttt{#1}\space(#2)%
164   \def\eadsep{\unskip,\space}}}%
165 }
166
167 \def\elsauthors{}
168 \def\pprinttitle{}
169 \let\authorsep@empty
170 \let\sep@empty
171 \newcounter{author}
172 \def\author{\@ifnextchar[{\@@author}{\@author}}
173
174 \newtoks\@eadauthor
175 \def\@@author[#1]#2{\g@addto@macro\elsauthors{%
176   \def\baselinestretch{1}%
177   \authorsep#2\unskip\textsuperscript{#1}%
178   \@for\@@affmark:=#1\do{%
179     \edef\affnum{\@ifundefined{X\@@affmark}{1}{\elsRef{\@@affmark}}}%
180     \unskip\sep\affnum\let\sep=,%
181     \ifx\@fnmark\@empty\else\unskip\sep\@fnmark\let\sep=,\fi
182     \ifx\@corref\@empty\else\unskip\sep\@corref\let\sep=,\fi
183     }%

```

```

184 \def\authorsep{\unskip,\space}%
185 \global\let\sep\empty\global\let\@corref\empty
186 \global\let\@fnmark\empty}%
187 \@eadauthor={#2}
188 }
189
190 \def\@author#1{\g@addto@macro\elsauthors{\normalsize%
191 \def\baselinestretch{1}%
192 \upshape\authorsep#1\unskip\textsuperscript{%
193 \ifx\@fnmark\empty\else\unskip\sep\@fnmark\let\sep=,\fi
194 \ifx\@corref\empty\else\unskip\sep\@corref\let\sep=,\fi
195 }%
196 \def\authorsep{\unskip,\space}%
197 \global\let\@fnmark\empty
198 \global\let\sep\empty}%
199 \@eadauthor={#1}
200 }
201
202 \def\elsaddress{}
203 \def\addsep{\par\vskip6pt}
204 \def\address{\@ifnextchar[{\@address}{\@address}}
205
206 \def\@alph#1{%
207 \ifcase#1\or a\or b\or c\or d\or e\or f\or g\or h\or i\or j\or k\or
208 l\or m\or n\or o\or p\or q\or r\or s\or t\or u\or v\or w\or x\or
209 y\or z%
210 \or aa\or ab\or ac\or ad\or ae\or af\or ag\or ah\or ai\or aj\or
211 ak\or al\or am\or an\or ao\or ap\or aq\or ar\or as\or at\or au\or
212 av\or aw\or ax\or ay\or az%
213 \or ba\or bb\or bc\or bd\or be\or bf\or bg\or bh\or bi\or bj\or
214 bk\or bl\or bm\or bn\or bo\or bp\or bq\or br\or bs\or bt\or bu\or
215 bv\or bw\or bx\or by\or bz%
216 \or ca\or cb\or cc\or cd\or ce\or cf\or cg\or ch\or ci\or cj\or
217 ck\or cl\or cm\or cn\or co\or cp\or cq\or cr\or cs\or ct\or cu\or
218 cv\or cw\or cx\or cy\or cz%
219 \or da\or db\or dc\or dd\or de\or df\or dg\or dh\or di\or dj\or
220 dk\or dl\or dm\or dn\or do\or dp\or dq\or dr\or ds\or dt\or du\or
221 dv\or dw\or dx\or dy\or dz%
222 \or ea\or eb\or ec\or ed\or ee\or ef\or eg\or eh\or ei\or ej\or
223 ek\or el\or em\or en\or eo\or ep\or eq\or er\or es\or et\or eu\or
224 ev\or ew\or ex\or ey\or ez%
225 \or fa\or fb\or fc\or fd\or fe\or ff\or fg\or fh\or fi\or fj\or
226 fk\or fl\or fm\or fn\or fo\or fp\or fq\or fr\or fs\or ft\or fu\or
227 fv\or fw\or fx\or fy\or fz%
228 \or ga\or gb\or gc\or gd\or ge\or gf\or gg\or gh\or gi\or gj\or
229 gk\or gl\or gm\or gn\or go\or gp\or gq\or gr\or gs\or gt\or gu\or
230 gv\or gw\or gx\or gy\or gz%
231 \else\@ctrerr\fi}
232
233 \newcounter{affn}

```

```

234 \renewcommand\theaffn{\alph{affn}}
235
236 \long\def\@@address[#1]#2{\g@addto@macro\elsaddress{%
237     \def\baselinestretch{1}%
238     \refstepcounter{affn}
239     \xdef\@currentlabel{\theaffn}
240     \elsLabel{#1}%
241     \textsuperscript{\theaffn}#2\par}}
242
243 \long\def\@address#1{\g@addto@macro\elsauthors{%
244     \def\baselinestretch{1}%
245     \addsep\footnotesize\itshape#1\def\addsep{\par\vskip6pt}%
246     \def\authorsep{\par\vskip8pt}}}
247
248 \newbox\absbox
249 \renewenvironment{abstract}{\global\setbox\absbox=\vbox\bgroup
250     \hsize=\textwidth\def\baselinestretch{1}%
251     \noindent\unskip\textbf{Abstract}
252     \par\medskip\noindent\unskip\ignorespaces}
253 {\egroup}
254
255 \newbox\keybox
256 \def\keyword{%
257     \def\sep{\unskip, }%
258     \def\MSC{\@ifnextchar[{\@MSC}{\@MSC[2000]}}
259     \def\@MSC[##1]{\par\leavevmode\hbox {\it ##1~MSC:\space}}%
260     \def\PACS{\par\leavevmode\hbox {\it PACS:\space}}%
261     \def\JEL{\par\leavevmode\hbox {\it JEL:\space}}%
262     \global\setbox\keybox=\vbox\bgroup\hsize=\textwidth
263     \normalsize\normalfont\def\baselinestretch{1}
264     \parskip\z@
265     \noindent\textit{Keywords: }
266     \raggedright                                     % Keywords are not justified.
267     \ignorespaces}
268 \def\endkeyword{\par \egroup}
269
270 \newdimen\Columnwidth
271 \Columnwidth=\columnwidth
272
273 \def\printFirstPageNotes{%
274     \iflongmktitle
275     \let\columnwidth=\textwidth\fi
276     \ifx\@tnotes\@empty\else\@tnotes\fi
277     \ifx\@nonumnotes\@empty\else\@nonumnotes\fi
278     \ifx\@cornotes\@empty\else\@cornotes\fi
279     \ifx\@elseads\@empty\relax\else
280     \let\thefootnote\relax
281     \footnotetext{\ifnum\thehead=1\relax
282         \textit{Email address:\space}\else
283         \textit{Email addresses:\space}\fi

```

```

284     \@elseads}\fi
285 \ifx\@elsuads\@empty\relax\else
286 \let\thefootnote\relax
287 \footnotetext{\textit{URL:}\space}%
288 \@elsuads}\fi
289 \ifx\@fnotes\@empty\else\@fnotes\fi
290 \iflongmkttitle\if@twocolumn
291 \let\columnwidth=\Columnwidth\fi\fi
292 }
293
294 \long\def\pprintMaketitle{\clearpage
295 \iflongmkttitle\if@twocolumn\let\columnwidth=\textwidth\fi\fi
296 \resetTitleCounters
297 \def\baselinestretch{1}%
298 \printFirstPageNotes
299 \begin{center}%
300 \thispagestyle{pprintTitle}%
301 \def\baselinestretch{1}%
302 \Large\@title\par\vskip18pt
303 \normalsize\elsauthors\par\vskip10pt
304 \footnotesize\itshape\elsaddress\par\vskip36pt
305 \hrule\vskip12pt
306 \ifvoid\absbox\else\unvbox\absbox\par\vskip10pt\fi
307 \ifvoid\keybox\else\unvbox\keybox\par\vskip10pt\fi
308 \hrule\vskip12pt
309 \end{center}%
310 \gdef\thefootnote{\arabic{footnote}}}%
311 }
312
313 \def\printWarning{%
314 \mbox{}\par\vfill\par\bgroup
315 \fboxsep12pt\fboxrule1pt
316 \hspace*{.18\textwidth}
317 \fcolorbox{gray50}{gray10}{\box\warnbox}
318 \egroup\par\vfill\thispagestyle{empty}
319 \setcounter{page}{0}
320 \clearpage}
321
322 \long\def\finalMaketitle{%
323 \resetTitleCounters
324 \def\baselinestretch{1}%
325 \MaketitleBox
326 \thispagestyle{pprintTitle}%
327 \gdef\thefootnote{\arabic{footnote}}}%
328 }
329
330 \long\def\MaketitleBox{%
331 \resetTitleCounters
332 \def\baselinestretch{1}%
333 \begin{center}%

```

```

334 \def\baselinestretch{1}%
335 \Large\@title\par\vskip18pt
336 \normalsize\elsauthors\par\vskip10pt
337 \footnotesize\itshape\elsaddress\par\vskip36pt
338 \hrule\vskip12pt
339 \ifvoid\absbox\else\unvbox\absbox\par\vskip10pt\fi
340 \ifvoid\keybox\else\unvbox\keybox\par\vskip10pt\fi
341 \hrule\vskip12pt
342 \end{center}%
343 }
344
345 \def\FNtext#1{\par\bgroupleft\footnotesize#1\egroupleft
346 \newdimen\space@left
347 \def\alarm#1{\typeout{*****}%
348 \typeout{#1}%
349 \typeout{*****}%
350 }
351 \long\def\getSpaceLeft{%\global\@twocolumnfalse%
352 \global\setbox0=\vbox{\hsize=\textwidth\MaketitleBox}%
353 \global\setbox1=\vbox{\hsize=\textwidth
354 \let\footnotetext\FNtext
355 \printFirstPageNotes}%
356 \xdef\noteheight{\the\ht1}%
357 \xdef\titleheight{\the\ht0}%
358 \@tempdima=\vsize
359 \advance\@tempdima-\noteheight
360 \advance\@tempdima-1\baselineskip
361 }
362
363 \skip\footins=24pt
364
365 \newbox\els@boxa
366 \newbox\els@boxb
367
368 \ifpreprint
369 \def\maketitle{\pprintMaketitle}
370 \else
371 \ifnum\jtype=1
372 \def\maketitle{%
373 \iflongmkttitle\getSpaceLeft
374 \global\setbox\els@boxa=\vsplit0 to \@tempdima
375 \box\els@boxa\par\resetTitleCounters
376 \thispagestyle{pprintTitle}%
377 \printFirstPageNotes
378 \box0%
379 \else
380 \finalMaketitle\printFirstPageNotes
381 \fi
382 \gdef\thefootnote{\arabic{footnote}}}%
383 \else

```



```

384 \ifnum\jtype=5
385   \def\maketitle{%
386     \iflongmktitle\getSpaceLeft
387     \global\setbox\els@boxa=\vsplit0 to \@tempdima
388     \box\els@boxa\par\resetTitleCounters
389     \thispagestyle{pprintTitle}%
390     \printFirstPageNotes
391     \twocolumn[\box0]\printFirstPageNotes
392   \else
393     \twocolumn[\finalMaketitle]\printFirstPageNotes
394   \fi
395   \gdef\thefootnote{\arabic{footnote}}}%
396 \else
397 \if@twocolumn
398   \def\maketitle{%
399     \iflongmktitle\getSpaceLeft
400     \global\setbox\els@boxa=\vsplit0 to \@tempdima
401     \box\els@boxa\par\resetTitleCounters
402     \thispagestyle{pprintTitle}%
403     \printFirstPageNotes
404     \twocolumn[\box0]%
405   \else
406     \twocolumn[\finalMaketitle]\printFirstPageNotes
407   \fi
408   \gdef\thefootnote{\arabic{footnote}}}%
409 \else
410   \def\maketitle{%
411     \iflongmktitle\getSpaceLeft
412     \global\setbox\els@boxa=\vsplit0 to \@tempdima
413     \box\els@boxa\par\resetTitleCounters
414     \thispagestyle{pprintTitle}%
415     \printFirstPageNotes
416     \box0%
417   \else
418     \finalMaketitle\printFirstPageNotes
419   \fi
420   \gdef\thefootnote{\arabic{footnote}}}%
421 \fi
422 \fi
423 \fi
424 \fi

```

### 3 Headers/footers

```

425 \def\ps@pprintTitle{%
426   \let\@oddhead\@empty
427   \let\@evenhead\@empty
428   \def\@oddfoot{\footnotesize\itshape
429     Preprint submitted to \ifx\@journal\@empty Elsevier
430     \else\@journal\fi\hfill\today}%

```

```
431 \let\@evenfoot\@oddfoot}
```

## 4 Section headings

```
432 \def\@seccntDot{.}
433 \def\@seccntformat#1{\csname the#1\endcsname\@seccntDot\hskip 0.5em}
434
435 \renewcommand\section{\@startsection {section}{1}{\z0}%
436     {18\p@ \@plus 6\p@ \@minus 3\p@}%
437     {9\p@ \@plus 6\p@ \@minus 3\p@}%
438     {\normalsize\bfseries\boldmath}}
439 \renewcommand\subsection{\@startsection{subsection}{2}{\z0}%
440     {12\p@ \@plus 6\p@ \@minus 3\p@}%
441     {3\p@ \@plus 6\p@ \@minus 3\p@}%
442     {\normalfont\normalsize\itshape}}
443 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z0}%
444     {12\p@ \@plus 6\p@ \@minus 3\p@}%
445     {\p@}%
446     {\normalfont\normalsize\itshape}}
447
448 \def\paragraph{\secdef{\els@aparagraph}{\els@bparagraph}}
449 \def\els@aparagraph[#1]#2{\elsparagraph[#1]{#2.}}
450 \def\els@bparagraph#1{\elsparagraph*{#1.}}
451
452 \newcommand\elsparagraph{\@startsection{paragraph}{4}{\z0}%
453     {10\p@ \@plus 6\p@ \@minus 3\p@}%
454     {-6\p@}%
455     {\normalfont\itshape}}
```

## 5 List environment

```
456 \newdimen\leftMargin
457 \leftMargin=2em
458 \newtoks\@enLab %\newtoks\@enfont
459 \def\@enQmark{?}
460 \def\@enLabel#1#2{%
461     \edef\@enThe{\noexpand#1{\@enumctr}}%
462     \@enLab\expandafter{\the\@enLab\csname the\@enumctr\endcsname}%
463     \@enloop}
464 \def\@enSpace{\afterassignment\@enSp@ce\let\@tempa= }
465 \def\@enSp@ce{\@enLab\expandafter{\the\@enLab\space}\@enloop}
466 \def\@enGroup#1{\@enLab\expandafter{\the\@enLab{#1}}\@enloop}
467 \def\@enOther#1{\@enLab\expandafter{\the\@enLab#1}\@enloop}
468 \def\@enloop{\futurelet\@entemp\@enloop@}
469 \def\@enloop@{%
470     \ifx A\@entemp \def\@tempa{\@enLabel\Alph } \else
471     \ifx a\@entemp \def\@tempa{\@enLabel\alph } \else
472     \ifx i\@entemp \def\@tempa{\@enLabel\roman } \else
473     \ifx I\@entemp \def\@tempa{\@enLabel\Roman } \else
474     \ifx 1\@entemp \def\@tempa{\@enLabel\arabic} \else
```

```

475 \ifx \@sptoken\@entemp \let\@tempa\@enSpace \else
476 \ifx \bgroup\@entemp \let\@tempa\@enGroup \else
477 \ifx \@enum@\@entemp \let\@tempa\@gobble \else
478 \let\@tempa\@enOther
479 \fi\fi\fi\fi\fi\fi\fi\fi
480 \@tempa}
481 \newlength{\@sep} \newlength{\@@sep}
482 \setlength{\@sep}{.5\baselineskip plus.2\baselineskip
483 \minus.2\baselineskip}
484 \setlength{\@@sep}{.1\baselineskip plus.01\baselineskip
485 \minus.05\baselineskip}
486 \providecommand{\sfbc}{\rmfamily\upshape}
487 \providecommand{\sfn}{\rmfamily\upshape}
488 \def\@enfont{\ifnum \@enumdepth >1\let\@nxt\sfn \else\let\@nxt\sfbcs \fi\@nxt}
489 \def\enumerate{%
490 \ifnum \@enumdepth >3 \@toodeep\else
491 \advance\@enumdepth \@ne
492 \edef\@enumctr{enum\romannumeral\the\@enumdepth}\fi
493 \ifnextchar[{\@enum@}{\@enum@}}
494 \def\@enum@[#1]{%
495 \@enLab{}\let\@enThe\@enQmark
496 \@enloop#1\@enum@
497 \ifx\@enThe\@enQmark\@warning{The counter will not be printed.%
498 ^^J\space\@spaces\@spaces\@spaces The label is: \the\@enLab}\fi
499 \expandafter\edef\csname label\@enumctr\endcsname{\the\@enLab}%
500 \expandafter\let\csname the\@enumctr\endcsname\@enThe
501 \csname c@\@enumctr\endcsname7
502 \expandafter\settowidth
503 \csname leftmargin\romannumeral\@enumdepth\endcsname
504 {\the\@enLab\hskip\labelsep}%
505 \@enum@}
506 \def\@enum@{\list{\@enfont\csname label\@enumctr\endcsname}}%
507 {\usecounter{\@enumctr}\def\makelabel##1{\hss\llap{##1}}}%
508 \ifnum \@enumdepth>1\setlength{\topsep}{\@sep}\else
509 \setlength{\topsep}{\@sep}\fi
510 \ifnum \@enumdepth>1\setlength{\itemsep}{0pt plus1pt minus1pt}%
511 \else \setlength{\itemsep}{\@sep}\fi
512 %\setlength\leftmargin{\leftMargin}%%{1.8em}
513 \setlength{\parsep}{0pt plus1pt minus1pt}%
514 \setlength{\parskip}{0pt plus1pt minus1pt}
515 }
516
517 \def\endenumerate{\par\ifnum \@enumdepth >1\addvspace{\@sep}\else
518 \addvspace{\@sep}\fi \endlist}
519
520 \def\sitem{\@noitemargtrue\@item[\@itemlabel *]}
521
522 \def\itemize{\ifnextchar[{\@Itemize}{\@Itemize[]}}
523
524 \def\@Itemize[#1]{\def\next{#1}%

```

```

525 \ifnum \@itemdepth >\thr@@\toodeep\else
526 \advance\@itemdepth\@ne
527 \ifx\next\@empty\else\expandafter\def\csname
528   labelitem\romannumeral\the\@itemdepth\endcsname{#1}\fi%
529 \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
530 \expandafter\list\csname\@itemitem\endcsname
531 {\def\makelabel##1{\hss\llap{##1}}}%
532 \fi}

```

## 6 Theorem environment

```

533 \def\newdefinition#1{%
534   \@ifnextchar[{\@odfn{#1}}{\@ndfn{#1}}}%]
535 \def\@ndfn#1#2{%
536   \@ifnextchar[{\@xndfn{#1}{#2}}{\@yndfn{#1}{#2}}}%
537 \def\@xndfn#1#2[#3]{%
538   \expandafter\@ifdefinable\csname #1\endcsname
539     {\@definecounter{#1}\@newctr{#1}[#3]%
540     \expandafter\xdef\csname the#1\endcsname{%
541       \expandafter\noexpand\csname the#3\endcsname \@dfncountersep
542       \@dfncounter{#1}}%
543     \global\@namedef{#1}{\@dfn{#1}{#2}}%
544     \global\@namedef{end#1}{\@enddefinition}}}%
545 \def\@yndfn#1#2{%
546   \expandafter\@ifdefinable\csname #1\endcsname
547     {\@definecounter{#1}%
548     \expandafter\xdef\csname the#1\endcsname{\@dfncounter{#1}}%
549     \global\@namedef{#1}{\@dfn{#1}{#2}}%
550     \global\@namedef{end#1}{\@enddefinition}}}%
551 \def\@odfn#1[#2]#3{%
552   \@ifundefined{c@#2}{\@nocounterr{#2}}%
553   {\expandafter\@ifdefinable\csname #1\endcsname
554     {\global\@namedef{the#1}{\@nameuse{the#2}}
555     \global\@namedef{#1}{\@dfn{#2}{#3}}%
556     \global\@namedef{end#1}{\@enddefinition}}}%
557 \def\@dfn#1#2{%
558   \refstepcounter{#1}%
559   \@ifnextchar[{\@ydfn{#1}{#2}}{\@xdfn{#1}{#2}}}%
560 \def\@xdfn#1#2{%
561   \@begindefinition{#2}{\csname the#1\endcsname}\ignorespaces}
562 \def\@ydfn#1#2[#3]{%
563   \@opargbegindefinition{#2}{\csname the#1\endcsname}{#3}\ignorespaces}
564 \def\@dfncounter#1{\noexpand\arabic{#1}}
565 \def\@dfncountersep{.}
566 \def\@begindefinition#1#2{\trivlist
567   \item[\hskip\labelsep\bfseries #1\ #2.]\upshape}
568 \def\@opargbegindefinition#1#2#3{\trivlist
569   \item[\hskip\labelsep\bfseries #1\ #2\ (#3).]\upshape}
570 \def\@enddefinition{\endtrivlist}
571

```

```

572 \def\@begintheorem#1#2{\trivlist
573   \let\baselinestretch\@blstr
574   \item[\hskip \labelsep{\bfseries #1\ #2.}]\itshape}
575 \def\@opargbegintheorem#1#2#3{\trivlist
576   \let\baselinestretch\@blstr
577   \item[\hskip \labelsep{\bfseries #1\ #2\ (#3).}]\itshape}
578
579 \def\newproof#1{%
580   \ifnextchar[{\@opr{#1}}{\@nprf{#1}}}
581 \def\@nprf#1#2{%
582   \ifnextchar[{\@xnprf{#1}{#2}}{\@ynprf{#1}{#2}}}
583 \def\@xnprf#1#2[#3]{%
584   \expandafter\@ifdefinable\csname #1\endcsname
585     {\@definecounter{#1}\@newctr{#1}[#3]%
586       \expandafter\xdef\csname the#1\endcsname{%
587         \expandafter\noexpand\csname the#3\endcsname \@prfcountersep
588         \@prfcounter{#1}}%
589       \global\@namedef{#1}{\@prf{#1}{#2}}%
590       \global\@namedef{end#1}{\@endproof}}}
591 \def\@ynprf#1#2{%
592   \expandafter\@ifdefinable\csname #1\endcsname
593     {\@definecounter{#1}%
594       \expandafter\xdef\csname the#1\endcsname{\@prfcounter{#1}}%
595       \global\@namedef{#1}{\@prf{#1}{#2}}%
596       \global\@namedef{end#1}{\@endproof}}}
597 \def\@opr#1[#2]#3{%
598   \ifundefined{c#2}{\@nocounterr{#2}}%
599   {\expandafter\@ifdefinable\csname #1\endcsname
600     {\global\@namedef{the#1}{\@nameuse{the#2}}%
601     \global\@namedef{#1}{\@prf{#2}{#3}}%
602     \global\@namedef{end#1}{\@endproof}}}}
603 \def\@prf#1#2{%
604   \refstepcounter{#1}%
605   \ifnextchar[{\@yprf{#1}{#2}}{\@xprf{#1}{#2}}}
606 \def\@xprf#1#2{%
607   \@beginproof{#2}{\csname the#1\endcsname}\ignorespaces}
608 \def\@yprf#1#2[#3]{%
609   \@opargbeginproof{#2}{\csname the#1\endcsname}{#3}\ignorespaces}
610 \def\@prfcounter#1{\noexpand\arabic{#1}}
611 \def\@prfcountersep{.}
612 \def\@beginproof#1#2{\trivlist\let\baselinestretch\@blstr
613   \item[\hskip \labelsep{\scshape #1.}]\rmfamily}
614 \def\@opargbeginproof#1#2#3{\trivlist\let\baselinestretch\@blstr
615   \item[\hskip \labelsep{\scshape #1\ (#3).}]\rmfamily}
616 \def\@endproof{\endtrivlist}
617 \newcommand*\qed{\hbox{\hfill$\Box$}}
618
619 \ifundefined{@biboptions}{\xdef\@biboptions{numbers}}{}
620 \InputIfFileExists{\jobname.spl}{}{}
621 \RequirePackage[\@biboptions]{natbib}

```

```

622
623 \newwrite\splwrite
624 \immediate\openout\splwrite=\jobname.spl
625 \def\biboptions#1{\def\next{#1}\immediate\write\splwrite{%
626   \string\g@addto@macro\string\@biboptions{%
627     ,\expandafter\strip@prefix\meaning\next}}
628
629 \let\baselinestretch=\@blstr
630

```

## 7 Page dimensions and margins for final form

### 7.1 Option 1p

```

631 \ifnum\jtype=1
632 \RequirePackage{geometry}
633 \geometry{twoside,
634   paperwidth=210mm,
635   paperheight=297mm,
636   textheight=562pt,
637   textwidth=384pt,
638   centering,
639   headheight=50pt,
640   headsep=12pt,
641   footskip=12pt,
642   footnotesep=24pt plus 2pt minus 12pt,
643 }
644 \global\let\bibfont=\footnotesize
645 \global\bibsep=0pt
646 \if@twocolumn\global\@twocolumnfalse\fi
647 %

```

### 7.2 Option '3p'

```

648 \else\ifnum\jtype=3
649 \RequirePackage{geometry}
650 \geometry{twoside,
651   paperwidth=210mm,
652   paperheight=297mm,
653   textheight=622pt,
654   textwidth=468pt,
655   centering,
656   headheight=50pt,
657   headsep=12pt,
658   footskip=18pt,
659   footnotesep=24pt plus 2pt minus 12pt,
660   columnsep=2pc
661 }
662 \global\let\bibfont=\footnotesize
663 \global\bibsep=0pt
664 \if@twocolumn\input{fleqn.clo}\fi

```

### 7.3 Option '5p'

```
665 \else\ifnum\jtype=5
666 \RequirePackage{geometry}
667 \geometry{twoside,
668   paperwidth=210mm,
669   paperheight=297mm,
670   textheight=682pt,
671   textwidth=522pt,
672   centering,
673   headheight=50pt,
674   headsep=12pt,
675   footskip=18pt,
676   footnotesep=24pt plus 2pt minus 12pt,
677   columnsep=18pt
678 }%
679 \global\let\bibfont=\footnotesize
680 \global\bibsep=0pt
681 \input{fleqn.clo}
682 \global\@twocolumntrue
683 %%
684 %% End of option '5p'
685 %%
686 \fi\fi\fi
```

## 8 Other items

```
687 \def\journal#1{\gdef\@journal{#1}}
688 \let\@journal\@empty
689 \newenvironment{frontmatter}{}{\maketitle}
690
691 \long\def\@makecaption#1#2{%
692   \vskip\abovecaptionskip\footnotesize
693   \sbox\@tempboxa{#1: #2}%
694   \ifdim \wd\@tempboxa >\hsize
695     #1: #2\par
696   \else
697     \global \@minipagefalse
698     \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
699   \fi
700   \vskip\belowcaptionskip}
701
702 \AtBeginDocument{\@ifpackageloaded{hyperref}
703   {\def\@linkcolor{blue}
704     \def\@anchorcolor{blue}
705     \def\@citecolor{blue}
706     \def\@filecolor{blue}
707     \def\@urlcolor{blue}
708     \def\@menucolor{blue}
709     \def\@pagecolor{blue}}
```

```

710 \begingroup
711   \@makeother\`%
712   \@makeother\=%
713   \edef\x{%
714     \edef\noexpand\x{%
715       \endgroup
716       \noexpand\toks@{%
717         \catcode 96=\noexpand\the\catcode'\noexpand'\relax
718         \catcode 61=\noexpand\the\catcode'\noexpand\=\relax
719       }%
720     }%
721     \noexpand\x
722   }%
723 \x
724 \@makeother\`
725 \@makeother\=
726 }{}}
727 %%
728 \renewcommand\appendix{\par
729   \setcounter{section}{0}%
730   \setcounter{subsection}{0}%
731   \setcounter{equation}{0}
732   \gdef\thefigure{\@Alph\c@section.\arabic{figure}}%
733   \gdef\thetable{\@Alph\c@section.\arabic{table}}%
734   \gdef\thesection{\appendixname\@Alph\c@section}%
735   \@addtoreset{equation}{section}%
736   \gdef\theequation{\@Alph\c@section.\arabic{equation}}%
737 }
738 \def\appendixname{Appendix }
739
740 %% Added for work with amsrefs.sty
741
742 \ifpackageloaded{amsrefs}%
743 {}
744 {\let\bibsection\relax%
745   \AtBeginDocument{\def\cites@b#1#2,#3{%
746     \begingroup%
747       \toks@{\InnerCite{#2}#1}%
748       \ifx\@empty#3\@xp\@gobble\fi
749       \cites@c#3%
750     }}}
751 %
752 %%
753 </class>
754 %

```



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