

L^AT_EX Class for *The Israel Journal of Mathematics**

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Abstract

This package provides a class for typesetting articles for *The Israel Journal of Mathematics*

Contents

1	Introduction	3
2	User's Guide	3
2.1	Installation	3
2.2	Invocation	4
2.3	Top Matter	5
2.3.1	Commands for Authors	5
2.3.2	Commands for Editors	7
2.4	Theorems, Lemmas, etc.	8
2.5	Bibliography	9
2.6	Illustrations	9
3	Implementation	10
3.1	Identification	10
3.2	Options	10
3.3	Loading Class and Packages	11
3.4	Fonts	11
3.5	Page Dimensions and Paragraphing	11
3.6	Headers	13
3.7	Top Matter Macros	13
3.8	Typesetting Top Matter	15
3.9	Table of Contents	18
3.10	Captions	19

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3.11	Sectioning	20
3.12	Theorem Styles	21
3.13	Bibliography	22
3.14	End of Class	23
4	Acknowledgements	24

1 Introduction

The Israel Journal of Mathematics is published by *The Hebrew University Magnes Press*. This class provides L^AT_EX support for its authors and editors. It strives to achieve the distinct “look and feel” of the journal, while having the interface similar to the one of the `amsart` document class [1]. This will help the authors already familiar with `amsart` to easily submit manuscripts for *The Israel Journal of Mathematics* or to put the preprints in <http://www.arxiv.org> with minimal changes in the L^AT_EX source.

This goal determined the implementation approach. We load the `amsart` class and redefine some of its internals on the fly. There are some additional commands added to support the features specific to the journal, but we aimed to keep their number minimal.

An author well acquainted with AMSL^AT_EX should find this package easy to use and configurable. The User Manual below illustrates the basic use of the class and discusses the differences with `amsart`. For an in-depth tutorial of AMSL^AT_EX I could recommend the excellent book [2].

2 User’s Guide

2.1 Installation

The installation of the class follows the usual practice [3] for L^AT_EX packages:

1. Run `latex` on `ijmart.ins`. This will produce the file `ijmart.cls`.
2. Put the files `ijmart.cls` and `ijmart.bst` to the places where L^AT_EX and Bib_T_EX can find them (see [3] or the documentation for your T_EX system).
3. Update the database of file names. Again, see [3] or the documentation for your T_EX system for the system-specific details.
4. The file `ijmart.pdf` provides the documentation for the package (this is the file you are probably reading now).

As an alternative to items 2 and 3 you can just put the files in the working directory where your `.tex` file is.

The class uses some other L^AT_EX classes or packages. Most probably, they are already installed on your system. If not (or if their versions are very old), you need to download and install them. Here is the list:

1. `amsart` class and related packages [1],
2. `ifpdf` package [4],
3. `fancyhdr` package [5],
4. `lastpage` package [6].

2.2 Invocation

To use the class, put in the preamble of your document

```
\documentclass[options]{ijmart}
```

The class internally loads `amsart`, so all facilities of `amsart` [2, 7] can be used in the source.

option Most of the options are just passed to `amsart` (see [2, 7] for their description).
french The class `ijmart` adds one new option **french**. If it is chosen, some words in the top matter will be typeset in French. Note that this option does *not* change the names of the table of contents and references. An author should also include a call, for example, to the Babel package [8], which takes care of these and other details of international typesetting.

If the author indeed chooses `babel`, then the option **french** is passed to the package. Therefore the following works:

```
\documentclass[french]{ijmart}  
\usepackage{babel} % the french option is passed to the package
```

Please note that `babel` scans the global options first, but the main language of the document must be the last one. Therefore if the paper is written in French, but uses English quotations, the proper way to call `babel` is the following:

```
\documentclass[french]{ijmart}  
\usepackage[english,french]{babel}
```

By default `babel` redefines French captions for figures and tables to use FIG. and TAB. correspondingly. If this is not acceptable, the authors should add to the preamble *after* the call to `babel` the following:

```
\addto\captionsfrench{%  
  \renewcommand{\figurename}{Figure}%  
  \renewcommand{\tablename}{Table}}%
```

options The options **draft** and **final** work in the same way as for `amsart` and standard
draft \LaTeX . If the option **draft** is chosen, the overfull lines are marked by black
final boxes on the margins *and* the `\includegraphics` prints blank placeholders for the images. The option **final** (default) switches off the marking of overfull lines and restores the behavior of `\includegraphics`. To switch on just the overfull marks, without changing the behavior of `\includegraphics`, one can either explicitly pass the option `final` to `graphics` package:

```
\documentclass[draft]{ijmart}  
\usepackage[final]{graphics}
```

or add in the beginning of the document

```
\overfullrule=5pt
```

options The size-changing options of `amsart` class (`8pt`, `9pt`, ..., `12pt`) have no effect other than producing a warning in the log since the journal is designed for only one type size (roughly corresponding to `10pt` of `amsart`).

`8pt`

`9pt`

`10pt` The journal uses a special paper size. If you process the manuscript with `pdflatex` to produce PDF output, the paper dimensions will be automatically set up by the class. However, if you use `latex` and `dvips`, you need to tell `dvips` what paper size to choose. One way to do this is to add to the `dvips` options the following:

`11pt`

`12pt`

```
-T 5.964in,8.844in -0 -0in,0.1in
```

2.3 Top Matter

Top matter contains the information about the paper: authors, title, affiliations, etc. The interface for `ijmart` top matter is very close to the one used by `amsart`. We added a couple of commands to deal with the information specific to the *The Israel Journal of Mathematics* and changed the behavior of several other commands to suit the style of the journal. These changes are documented below.

There are two kinds of top matter commands: the ones used primarily for authors and the ones used primarily for editors. We describe them separately.

2.3.1 Commands for Authors

`\title` The command `\title`, as in `amsart` class, has two arguments: one optional, and one mandatory:

```
\title[\langle Short Title \rangle]{\langle Full Title \rangle}
```

The mandatory argument is the full title of the article. The optional argument, if present, defines the shorter version of the title for running heads. If the optional argument is absent, the full title is used instead. Note that the titles are typeset in upper case, but you do not need to input them in capital letters: the class does the conversion automatically.

The optional argument should be used in two cases: when the full title is too long to fit in the running head, *and* when the author wants to add a footnote or linebreaks to the title. Unlike `amsart`, `ijmart` allows the command `\thanks` inside `\title` and `\author` commands. However, the footnote belongs to the title typeset in the top matter, not to the running head version. The optional argument in this case helps, as in the following example:

```
\title[Some properties of  $\sigma$ -algebras]{%
  Some properties of  $\sigma$ -algebras\thanks{%
    The work was supported by grant from NSF No.~123456789-MMMM}}}
```

The line breaks in the title, if necessary, are introduced by the command `\linebreak` in the second (mandatory) argument of `\title`:

```
\title[Title with line breaks]{Title \linebreak with line breaks}
```

`\author` The interface for specifying the authors and their affiliations is close to the one of `amsart` [9] (and different from the standard \LaTeX). For each author a separate command `\author` should be used, followed by `\address` and (optionally) `\curradr`, `\email` and `\urladdr`. The lines in the address should be divided by `\\`. Like the newer versions of `amsart`, `ijmart` does *not* require the doubling of the `@` symbols in the e-mail addresses. The macro `\author` has two arguments, similarly to `\title`:

```
\author[<AbbrevName>]{<FullName>}
```

The optional argument defines the shorter form of the author's name to be included in the running head. Similarly to `\title`, the command `\author` allows the use of `\thanks`. Again, to show that the footnote does not belong to the running head, the optional argument is used.

`\shortauthors` In some cases the authors list may be too long for the running head, even if the abbreviated forms are used for each author. In this case it is possible to change the running head by a *redefinition* of the command `\shortauthors`. This redefinition must be done after all `\author` commands, but before `\maketitle`:

```
\renewcommand{\shortauthors}{A.~Smith et al}
```

`\thanks` As discussed above, the behavior of the `\thanks` command in `ijmart` is different from the one in `amsart`. This command is allowed within the scope of the top matter commands. If it is used in the scope of the main argument of the commands `\author` and `\title`, the optional argument should be used to correctly typeset the running heads.

Sometimes it is necessary to have a `\thanks` footnote referring to more than one author. In this case the usual \LaTeX command `\footnotemark[<number>]` can help:

```
\author{A.~Uthor\thanks{The first and the third author were
supported by NSA grant~123456789}}
\author{W.~Riter\thanks{The second author was supported by NSF
grant~987654321}}
\author{C.~Orrrespondent\footnotemark[1]}
\address{Noname University\\ Nowhere, RI\\ USA}
\email{author@nowhere.edu, writer@nowhere.edu and
correspondent@nowhere.edu}
```

The command `\title` might have no more than one `\thanks` command in its scope.

`abstract` The abstract of the paper must be put between `\begin{abstract}` and

`\end{abstract}`. Note that to change the abstract name to *Résumé*, the authors should use Babel. Similarly to `amsart` class, abstract must precede `\maketitle`.

`\maketitle` The macro `\maketitle` typesets the top matter. All top matter information should be specified before this command.

`\tableofcontents` The authors are encouraged to include `\tableofcontents` for long papers. By default only the sections are included in the table. If the authors wish to have a more detailed table of contents, they could change the counter `tocdepth`, for example:

```
\setcounter{tocdepth}{1} % The default: only sections are included
\setcounter{tocdepth}{2} % Sections and subsections
\setcounter{tocdepth}{3} % Sections, subsections and subsubsections
...
```

If `tocdepth` is greater than the default value of 1, the formatting of the table of contents changes: the section entries then are typeset bold.

2.3.2 Commands for Editors

The commands described in this section should be used by the editors to insert the information about the published paper. They must be put before the `\maketitle` command.

`\issueinfo` The command `\issueinfo` has the same format as in the `amsart` document class:

```
\issueinfo{<volume>}{<number>}{<month>}{<year>}
```

Note that at present the class uses only the first and the last arguments of this command (volume and year) for the actual typesetting. However, we keep the original format of this command, first, for compatibility reasons, and second, to facilitate a possible automatic processing of journal issues in the future.

Example of this command:

```
\issueinfo{159}{1}{January}{2007}
```

`\pagespan` The command `\pagespan` has two arguments, setting the first and the last page numbers of the article. If the last argument is empty, the last page number is calculated automatically. If the first argument is negative, the page numbering is done in Roman numerals, for example, for editorial materials. Here are examples of this command:

```
\pagespan{5}{15} % Explicit page span
\pagespan{5}{} % The last page is calculated automatically
\pagespan{-5}{} % Page numbers are Roman numerals v, vi, ...
\pagespan{-5}{xx} % Page numbers are Roman numerals v, vi, ..., xx
```

`\date` The command `\date` is used to put the editorial information about the manuscript, usually the date when the manuscript was received. For example:

```
\date{Received March 12, 2006 and in revised form December 6, 2006.}
```

`\doiinfo` The command `\doiinfo` is used to specify the DOI number of the article, for example

```
\doiinfo{10.1007/s11856-007-0037-3}
```

2.4 Theorems, Lemmas, etc.

The class `amsart` defines three theorem styles: `plain`, `remark` and `definition`. They are redefined by `ijmart` to conform to the style of *The Israel Journal of Mathematics*. Otherwise the usage of the theorem-like environments is the same as for `amsart`. Note that *The Israel Journal of Mathematics* usually recommends `definition` style for remarks, while `remark` style is used for steps, facts, cases, etc.

`\popQED` The environment `proof` has the same syntax and meaning as for `amsart` package. According to the journal style, the QED symbol in proofs is not flushed left, like in `amsart`, but is typeset at the last line of the proof at some distance from the text. If a proof ends by a nested environment, this might lead to an ugly position of the QED symbol. The command `\popQED` inside a proof can be used to improve the situation¹. It causes the immediate typesetting of the QED symbol and deletes the QED symbol at the end of the current proof. For example

```
\begin{proof}
  This proof ends by an enumerated list:
  \begin{enumerate}
    \item Item
    \item Item \popQED
  \end{enumerate}
\end{proof}
```

Compare this to the similar code without `\popQED`.

`namedprop` Sometimes authors use non-standard names for their theorem-like propositions.
`namedprop*` The documentation [10] recommends the use of `\newtheorem*`:

```
\newtheorem*{KL}{Klein's Lemma}
```

However, if the number of such special environments is large enough, this might be too cumbersome. The package `progrnameijmart` provides two environments, `namedprop` and `namedprop*` to define such these propositions on the fly.

The environment `namedprop` is used for numbered named propositions (admittedly such propositions are less frequent than unnumbered ones). It has the following syntax:

¹It is actually defined in `amsart` too, but is not documented in the user's documentation there.


```

\begin{namedprop}{\langle style \rangle}{\langle numbered-as \rangle}{\langle name \rangle}[\langle note \rangle]
...
\end{namedprop}

```

where **style** is the style of the proposition (**plain**, **remark**, etc.), **nmubered-as** is the name of (already defined) theorem-like environment, that shares the numbering with this proposition, **name** is the name to use instead of “Theorem”, “Lemma”, and **note** is the note after the heading. For example,

```

\begin{namedprop}{plain}{thm}{Klein’s Lemma}[as restated in~\cite{a-1}]
...
\end{namedprop}

```

The nevironment `\namedprop*` is used for *unnumbered* named propositions:

```

\begin{namedprop*}{\langle style \rangle}{\langle name \rangle}[\langle note \rangle]
...
\end{namedprop*}

```

For example,

```

\begin{namedprop*}{plain}{Klein’s Lemma}[as restated in~\cite{a-1}]
...
\end{namedprop*}

```

2.5 Bibliography

The sample paper in the distribution shows the journal style for the list of references. For those authors who wish to use Bib_{TEX}, the style `ijmart.bst` is included in the distribution. It should be noted that the journal style requires full journal titles in references. This might require editing of `.bib` files.

2.6 Illustrations

The authors can use the `graphics`, `graphicx`, `PSTricks`, `pgf/tikz`, `Metapost` or other tools to include illustrations (see [11] for a comprehensive discussion of L^AT_EX graphics possibilities).

3 Implementation

3.1 Identification

We start with the declaration who we are. Most `.dtx` files put driver code in a separate driver file `.drv`. We roll this code into the main file, and use the pseudo-guard `<gobble>` for it.

```
1 <class>\NeedsTeXFormat{LaTeX2e}
2 <*gobble>
3 \ProvidesFile{ijmart.dtx}
4 </gobble>
5 <class>\ProvidesClass{ijmart}
6 [2007/11/15 v1.2 Typesetting articles for The Israel Journal of Mathematics]
```

`\@classname` We also store the current class name in `\@classname`:

```
7 <class>\def\@classname{ijmart}%
```

And the driver code:

```
8 <*gobble>
9 \documentclass{ltxdoc}
10 \usepackage{array}
11 \usepackage{url,amsfonts}
12 \usepackage[breaklinks,colorlinks,linkcolor=black,citecolor=black,
13             pagecolor=black,urlcolor=black,hyperindex=false]{hyperref}
14 \PageIndex
15 \CodelineIndex
16 \RecordChanges
17 \EnableCrossrefs
18 \begin{document}
19   \DocInput{ijmart.dtx}
20 \end{document}
21 </gobble>
22 <*class>
```

3.2 Options

`\ifijm@french` First, the language option. We do not know whether the author chooses to use `babel`, so we define it in the way, which is compatible with `babel`, but works without it too.

```
23 \newif\ifijm@french
24 \ijm@frenchfalse
25 \DeclareOption{french}{\ijm@frenchtrue}
```

The size-changing options produce a warning:

```
26 \long\def\ijm@size@warning#1{%
27   \ClassWarning{\@classname}{Size-changing option #1 will not be
28     honored}}%
29 \DeclareOption{8pt}{\ijm@size@warning{\CurrentOption}}%
```

```

30 \DeclareOption{9pt}{\ijm@size@warning{\CurrentOption}}%
31 \DeclareOption{10pt}{\ijm@size@warning{\CurrentOption}}%
32 \DeclareOption{11pt}{\ijm@size@warning{\CurrentOption}}%
33 \DeclareOption{12pt}{\ijm@size@warning{\CurrentOption}}%

    All other options are passed to amsart:
34 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{amsart}}

    Now we read the configuration file
35 \InputIfFileExists{ijmart.cfg}{%
36   \ClassInfo{ijmart}{%
37     Loading configuration file ijmart.cfg}}{%
38   \ClassInfo{ijmart}{%
39     Configuration file ijmart.cfg is not found}}

And process the options:
40 \ProcessOptions\relax

```

3.3 Loading Class and Packages

We start with the base class

```

41 \PassOptionsToClass{10pt}{amsart}
42 \LoadClass{amsart}

    A bunch of packages:
43 \RequirePackage{ifpdf, fancyhdr, lastpage}

```

3.4 Fonts

The `amsart` class defines several options for different font sizes (10pt, 11pt, etc). We have just one design size for the articles corresponding to the 10pt option of `amsart`, but with larger `\baselineskip`.

`\@typesizes` The font information in `amsart` is stored in `\@typesizes` macro. It has 11 type-sizes: 5 below and 5 above `\normalsize`.

```

44 \def\@typesizes{%
45   \or{5}{7}\or{6}{8}\or{7}{9}\or{8}{11.2}\or{9}{12.6}%
46   \or{10}{14}% normalsize
47   \or{\@xipt}{15}\or{\@xipt}{16.8}\or{\@xivpt}{19.8}%
48   \or{\@xvipt}{23.3}\or{\@xxpt}{28}}%
49 \normalsize \linespacing=\baselineskip

```

3.5 Page Dimensions and Paragraphing

`\paperheight` The journal has rather narrow pages:
`\paperwidth`

```

50 \setlength{\paperheight}{636.77bp}
51 \setlength{\paperwidth}{429.41bp}

```

`\pdfpaperheight` If we deal with `pdftex`, we can use this information more creatively. This was inspired by memoir [12].

`\pdfpaperwidth`

`\pdfvorigin` 52 `\ifpdf\relax`

`\pdfhorigin` 53 `\pdfpageheight=\paperheight`
54 `\pdfpagewidth=\paperwidth`
55 `\pdfvorigin=0.9in`
56 `\pdfhorigin=1in`
57 `\fi`

`\headheight` We leave generous header space:
58 `\setlength{\headheight}{32pt}`

`\footskip` The footer is slightly larger than in `amsart`
59 `\setlength{\footskip}{42pt}%`

`\topmargin` The top margin is 50 bp:
60 `\setlength\topmargin{50bp}`
61 `\addtolength\topmargin{-0.9in}`
62 `\addtolength\topmargin{-\topskip}`
63 `\addtolength\topmargin{-\headsep}`
64 `\@settopoint\topmargin`

`\textheight` This code is similar to the one in [13]. `\textheight` is the height of the text including footnotes, but excluding running head and foot. We start with `\paperheight` and subtract margins, running heads and foots:
65 `\setlength\@tempdima{\paperheight}`
66 `\addtolength\@tempdima{-\topmargin}`
67 `\addtolength\@tempdima{-26bp}` % Bottom margin
68 `\addtolength\@tempdima{-\headheight}`
69 `\addtolength\@tempdima{-\headsep}`
70 `\addtolength\@tempdima{-\footskip}`
71 `\addtolength\@tempdima{-1in}`
We want this length to contain an integer number of lines:
72 `\divide\@tempdima\baselineskip`
73 `\@tempcnta=\@tempdima`
74 `\setlength\textheight{\@tempcnta\baselineskip}`
Now we take care of the first line height:
75 `\addtolength\textheight{\topskip}`

`\evensidemargin` The margins on even and odd pages are 43 bp:

`\oddsidemargin` 76 `\setlength\evensidemargin{43bp}`
77 `\addtolength\evensidemargin{-1in}`
78 `\setlength\oddsidemargin{43bp}`
79 `\addtolength\oddsidemargin{-1in}`

`\textwidth` The way to set up the right margin is slightly different:
80 `\setlength\textwidth{\paperwidth}`

```

81 \addtolength{\textwidth}{-1in}
82 \addtolength{\textwidth}{-\evensidemargin}
83 \addtolength{\textwidth}{-43bp} % right margin
84 \@settopoint{\textwidth}

```

`\parindent` The paragraph indentation is 1em:

```

85 \setlength{\parindent}{1em}

```

3.6 Headers

`\headrulewidth` We do not want decorative rules in the journal:

`\footrulewidth`

```

86 \renewcommand{\headrulewidth}{0pt}
87 \renewcommand{\footrulewidth}{0pt}

```

It is easy to set up headers with `fancyhdr`:

```

88 \pagestyle{fancy}
89 \fancyhead[L0]{\footnotesize Vol.~\currentvolume, \currentyear}
90 \fancyhead[CO]{\footnotesize\shorttitle}
91 \fancyhead[RO]{\footnotesize\thepage}
92 \fancyhead[LE]{\footnotesize\thepage}
93 \fancyhead[CE]{\footnotesize\shortauthors}
94 \fancyhead[RE]{\footnotesize Isr. J. Math.}
95 \fancyfoot{}

```

The first page has the special headers. The style `firstpage` is invoked by `amsart`; here we just redefine it.

```

96 \fancypagestyle{firstpage}{%
97   \fancyhf{}%
98   \chead{\tiny%
99     ISRAEL JOURNAL OF MATHEMATICS \textbf{\currentvolume}
100     (\currentyear),
101     \start@page--\end@page\}[0.5ex]
102   DOI: \@doiinfo}%
103   \cfoot{\thepage}}%

```

3.7 Top Matter Macros

Most top matter macros are defined in `amsart`. Here we just add some new macros and redefine some.

`\author` The macro `\author` provided by `amsart` is almost what we need. “Almost” because we want to add author’s name(s) to the address list to typeset them together.

Another note: `amsart` stores the list of all authors in the macro `\authors`. We need it now only to check whether the list is empty

```

104 \renewcommand{\author}[2][]{%
105   \ifx\@empty\authors
106     \gdef\authors{#2}%
107     \gdef\addresses{\author{#2}}%
108   \else

```

```

109     \g@addto@macro\authors{\and#2}%
110     \g@addto@macro\addresses{\and\author{#2}}%
111 \fi
112 \def\@tempa{#1}%
113 \ifx\@tempa\@empty\relax
114     \ifx\@empty\shortauthors
115         \gdef\shortauthors{#2}%
116     \else
117         \g@addto@macro\shortauthors{\and#2}%
118     \fi
119 \else
120 \ifx\@empty\shortauthors
121     \gdef\shortauthors{#1}%
122 \else
123     \g@addto@macro\shortauthors{\and#1}%
124 \fi
125 \fi
126 }%

```

abstract The following code is mostly from [1] with the changes due to our style. The comments are mostly from the same source.

In AMS-derived document classes, the abstract should be placed before `\maketitle` (otherwise the desired ordering of frontmatter elements cannot be ensured in all cases).

```

127 \newbox\abstractbox

```

We start by checking whether `\maketitle` has already been used (in which case it was reset to `\relax`); if so, we give a warning that the abstract should be placed before `\maketitle`.

```

128 \renewenvironment{abstract}{%
129     \ifx\maketitle\relax
130         \ClassWarning{\@classname}{Abstract should precede
131             \protect\maketitle\space in AMS-derived document classes; reported}%
132     \fi
133     \global\setbox\abstractbox=\vtop \bgroup
134     \vglue 10pt plus 6pt minus 6pt%
135     \normalfont\tiny
136     \centering\MakeUppercase{\abstractname}\par%
137     \Small
138     \list{}{\labelwidth\z@
139         \leftmargin3pc \rightmargin\leftmargin
140         \listparindent\normalparindent \itemindent\z@
141         \parsep\z@ \@plus\p@

```

In order to get equation numbers indented with the rest of the abstract, we have to do this:

```

142     \let\fullwidthdisplay\relax
143     }%
144     \item[]%
145 }{%

```

```

146     \vspace*{-10pt}
147   \endlist\egroup

If the abstract was supposed to be typeset earlier, then \@setabstract is now equal
to \relax, and we had better drop the contents of the abstract box onto the page
immediately, to salvage the situation as best we can.

148   \ifx\@setabstract\relax \@setabstracta \fi
149 }%

```

\pagespan This macro is different from the one provided by `amsart` because we want to have the option of automatic calculation of the last page number.

```

150 \def\pagespan#1#2{\pagenumbering{arabic}\setcounter{page}{#1}%
151   \def\start@page{#1}%
152   \ifnum\c@page<\z@ \pagenumbering{roman}\setcounter{page}{-#1}%
153     \def\start@page{\romannumeral#1}%
154   \fi%
155   \def\@tempa{#2}%
156   \ifx\@tempa\@empty\def\end@page{\pageref{LastPage}}%
157   \else\def\end@page{#2}\fi}
158 \pagespan{1}{}

```

\doiinfo This is the doi number of the article:

```

159 \def\doiinfo#1{\gdef\@doiinfo{#1}}
160 \doiinfo{10.1007/s000000000000000000000000}

```

\thanks The macro `\thanks` is redefined in `amsart`. Here is the adapted original definition from the L^AT_EX kernel. Note that the footnotes on the title page are typeset in `\small` size, rather than in `\footnotesize`.

```

161 \def\thanks#1{\footnotemark
162   \protected@xdef\thankses{\thankses
163     \protect\footnotetext[\the\c@footnote]{\small#1}}%
164 }
165 \let\@thanks\@empty

```

3.8 Typesetting Top Matter

\@maketitle@hook The `\@maketitle@hook` is called by `\maketitle` in `amsart`. We use it to a number of redefinitions.

```

166 \def\@maketitle@hook{%
  At this point we collected all authors in \shortauthors, so we can uppercase it:
167   \uppercase\nonmath\shortauthors

  The footnote numbering on the title page is rather interesting. It is *, then
  **, then †, then ††, etc.

168   \renewcommand\thefootnote{\ifcase\c@footnote\relax
169     \or\@fnsymbol{1}%
170     \or\@fnsymbol{1}\@fnsymbol{1}%
171     \or\@fnsymbol{2}%

```

```

172 \or\@fnsymbol{2}\@fnsymbol{2}%
173 \or\@fnsymbol{3}%
174 \or\@fnsymbol{3}\@fnsymbol{3}%
175 \or\@fnsymbol{4}%
176 \or\@fnsymbol{4}\@fnsymbol{4}%
177 \or\@fnsymbol{5}%
178 \or\@fnsymbol{5}\@fnsymbol{5}%
179 \or\@fnsymbol{6}%
180 \or\@fnsymbol{6}\@fnsymbol{6}%
181 \fi}%
182 \def\@makefnmark{\@textsuperscript{\normalfont\@thefnmark}}%
183 \long\def\@makefntext##1{\noindent\hangindent=2em\hangafter=1
184 \hb@xt@2em{%
185 \hss\@textsuperscript{\normalfont\footnotesize\@thefnmark\space}}##1}%
186 \def\footnoterule{\kern-3pt\hrule width 2in\kern 2.6pt}
187 \setcounter{footnote}{0}%
188 }%

\@adminfootnotes amsart typesets the footnotes before typesetting the authors and title. Since we
form the footnotes later, we must delay this till the end of the top matter:
189 \def\@adminfootnotes{}%

\andify In the US the common style for lists is “Tom, Dick, and Harry”. It is hard-coded
into amsart. However, our journal style is “Tom, Dick and Harry” (is it the British
usage?). Therefore we need to redefine the function \andify:
190 \renewcommand{\andify}{%
191 \nxandlist{\unskip, }\unskip} \@@and~}{\unskip} \@@and~}}

\@@and Normally the macro \@@and is expanded just to ‘and’. However, if french option
is selected, we want the french version:
192 \def\@@and{AND}
193 \ifijm@french\def\@@and{ET}\fi

\@@by Same with \@@by:
194 \def\@@by{BY}
195 \ifijm@french\def\@@by{PAR}\fi

\curraddrname The keywords for the specific parts of the address (e-mail, current address, etc.)
\emailaddrname depend on the language chosen.
\urladdrname
196 \def\curraddrname{Current address:}%
197 \def\emailaddrname{e-mail:}%
198 \def\urladdrname{URL:}%
199 \ifijm@french
200 \def\curraddrname{Adresse actuelle:}%
201 \def\emailaddrname{courriel:}%
202 \fi

\@settitle The title is set in large font uppercase. There is a problem, however: uppercasing
title means uppercasing everything, including thanks! We solve this problem in

```


the following way: we typeset the title twice, once invisibly in the lowercase, and again in uppercase, but without typesetting the footnote text.

```

203 \def\@settitle{%
204     \begin{center}%
205     \makebox[0pt]{\hphantom{\@title}}%
206     \def\thanks##1{\addtocounter{footnote}{-1}\footnotemark}%
207     \uppercase\@title
208     \Large\baselineskip=14pt\lineskiplimit=2pt\lineskip=2pt\@title%
209     \end{center}}%

```

`\@setauthors` While we call this macro `\@setauthors`, in fact it is setting the names *and* addresses of the authors.

The authors' block is centered:

```

210 \def\@setauthors{\vglue 21pt plus 6pt minus 3pt%
211     \begin{center}%

```

We need to properly treat the current address, e-mail and URL of the authors. Note that `amsart` uses an optional first argument to these macros; we silently drop it.

```

212 \def\curraddr##1##2{\begingroup
213     \@ifnotempty{##2}{\par\curraddrname{}\par
214         ##2\par}\endgroup}%
215 \def\email##1##2{\begingroup
216     \@ifnotempty{##2}{\par\emailaddrname{}\~%
217         ##2\par}\endgroup}%
218 \def\urladdr##1##2{\begingroup
219     \@ifnotempty{##2}{\par\urladdrname{}\~%
220         ##2\par}\endgroup}%

```

We print the word “by” only if there is at least one author. I am not sure how it can be that a manuscript has no authors, but has addresses defined. Maybe official editorial?

```

221     \if\authors\@empty\relax\else{\normalfont\tiny\@by}\par\medskip

```

The authors are typeset in small caps:

```

222     \def\author##1{{\normalsize\scshape##1}\par\medskip}

```

The keyword “and” is typeset like “by” with large skip:

```

223     \def\and{\par\bigskip{\normalfont\tiny\@and}\par\medskip}

```

And everything else is typeset in italics:

```

224     \small\itshape\addresses
225     \end{center}}%

```

`\@maketitle` We typeset footnotes at the end of the top matter typesetting. Note the larger type size for the `\@date` footnote.

```

226 \let\@origmaketitle=\@maketitle
227 \def\@maketitle{\@origmaketitle
228     \thankses
229     \ifx\@date\@empty\else

```

```

230 \def\thefootnote{}%
231 \footnotetext{\small\@date}\fi%
232 \gdef\thefootnote{\@arabic\c@footnote}}

```

`\enddoc@text` In `amsart` the macro `\enddoc@text` typesets addresses at the end of the document. We do not need it:

```

233 \def\enddoc@text{}

```

3.9 Table of Contents

By default we include in the table of contents only sections:

```

234 \setcounter{tocdepth}{1}

```

`\contentsnamefont` The table of contents is typeset smaller than in `amsart`:

```

235 \renewcommand\contentsnamefont{\scshape\footnotesize}

```

`\@starttoc` We also rewrite `\@starttoc` to make the type smaller. The comments are again from `amsart`:

```

236 \def\@starttoc#1#2{\begingroup
237 \setTrue{#1}%

```

Remove the skip after the abstract so that we can substitute another.

```

238 \par\removelastskip\vskip\z@skip

```

The first two arguments of `\@startsection` here are special values that cause different internal branches to be taken.

```

Arguments: {} = name = empty
\@M = no number should be used and no table of contents entry
\z@ = indent amount
12pt + 12pt = vskip before
6pt = vskip after
\centering\contentsnamefont = format

```

```

239 \@startsection{}{\@M\z@{\linespacing\@plus\linespacing}%
240 {.5\linespacing}{\centering\contentsnamefont}{#2}%

```

If we have a list of figures or list of tables we want to put them in the main table of contents, but we don't want to put an entry there for the main table of contents itself. So we check to see if argument 2 is `\contentsname` and if it is then we refrain from doing `\addcontentsline`.

```

241 \ifx\contentsname#2%
242 \else \addcontentsline{toc}{section}{#2}\fi

```

We want the table of contents to have the same width as the abstract

```

243 \list{}{\labelwidth\z@
244 \leftmargin2.4pc \rightmargin\leftmargin
245 \listparindent\z@ \itemindent\z@
246 \parsep\z@ \@plus\p@}%
247 \item[]%
248 \small\@input{\jobname.#1}\endlist%

```

```

249 \if@filesw
250 \exp\newwrite\csname tf@#1\endcsname
251 \immediate\exp\openout\csname tf@#1\endcsname \jobname.#1\relax
252 \fi
253 \global\@nobreakfalse \endgroup
254 \addvspace{32\p@\@plus14\p@}%
255 \let\tableofcontents\relax
256 }%

\@dotsep Separation between the dots for table of contents:
257 \newcommand\@dotsep{4.5}

\@tocline We want dots in the table of contents...
258 \def\@tocline#1#2#3#4#5#6#7{\relax
259 \ifnum #1>\c@tocdepth % then omit
260 \else
261 \par \addpenalty\@secpenalty\addvspace{#2}%
262 \begingroup \hyphenpenalty\@M
263 \@ifempty{#4}{%
264 \tempdima\csname r@tocindent\number#1\endcsname\relax
265 }{%
266 \tempdima#4\relax
267 }%
268 \parindent\z@ \leftskip#3\relax \advance\leftskip\tempdima\relax
269 \rightskip\@pnumwidth plus4em \parfillskip-\@pnumwidth
270 #5\leavevmode\hskip-\@tempdima #6\nobreak\relax
271 \leaders\hbox{$\m@th
272 \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
273 mu$}\hfill
274 \hbox to\@pnumwidth{\@tocpagenum{#7}}\par
275 \nobreak
276 \endgroup
277 \fi}%

\l@section The actual formatting of section entries depend whether subsections are included
in toc. If yes, the sections are bold.
278 \def\l@section{%
279 \@tocline{1}{0pt}{1pc}{\bfseries}\fi}
280 \ifnum\c@tocdepth>1\bfseries\fi}}

\l@subsection These entries are idented.
\l@subsubsection 281 \def\l@subsubsection{\@tocline{2}{0pt}{2.8pc}{5pc}{\bfseries}}
282 \def\l@subsubsection{\@tocline{3}{0pt}{4.6pc}{7pc}{\bfseries}}

```

3.10 Captions

\@captionheadfont The captions in amsart are in small caps. In this journal they are not:

```

283 \def\@captionheadfont{\normalfont}

```

3.11 Sectioning

`\@secnumfont` It is possible in `amsart` to have section numbers in the font different from the title font. We do not want this:

```
284 \let\@secnumfont\@empty
```

Now we redefine sections. The arguments of the `\@startsection` commands are

#1	#2	#3	#4	#5	#6
{NAME}	{LEVEL}	{INDENT}	{BEFORESKIP}	{AFTERSKIP}	{STYLE}

`\section` Most sections are not centered, unlike `amsart` ones:

```
285 \def\section{\@startsection{section}{1}%
286   \z@{20pt plus 4pt minus 4pt}{0.5\linespacing}%
287   {\normalfont\bfseries}}%
```

`\centeredsection` However, there are special centered sections, for example, “References”:

```
288 \def\centeredsection{\@startsection{section}{1}%
289   \z@{20pt plus 4pt minus 4pt}{0.5\linespacing}%
290   {\normalfont\bfseries\centering}}%
```

`\subsection` Subsections are in small caps on the line with text.

```
291 \def\subsection{\@startsection{subsection}{2}%
292   \z@{.5\linespacing\@plus.7\linespacing}{-0.5em}%
293   {\normalfont\scshape}}%
```

`\subsubsection` Subsubsection heads are in italics

```
294 \def\subsubsection{\@startsection{subsubsection}{3}%
295   \z@{.5\linespacing\@plus.7\linespacing}{-0.5em}%
296   {\normalfont\itshape}}%
```

`\paragraph` Paragraphs and subparagraphs are in normal font:

`\subparagraph`

```
297 \def\paragraph{\@startsection{paragraph}{4}%
298   \z@\z@{-0.5em}%
299   {\normalfont}}%
300 \def\subparagraph{\@startsection{subparagraph}{5}%
301   \z@\z@{-0.5em}%
302   {\normalfont}}%
```

`\if@afterindent` The first paragraph after section head is *not* indented, like in standard L^AT_EX— but *unlike* `amsart`. The code below is inspired by David Carlisle’s package `indentfirst` [14] (of course David wanted to *have* the first indent, and we want the opposite):

```
303 \let\@afterindenttrue\@afterindentfalse
304 \@afterindentfalse
```

3.12 Theorem Styles

Here we redefine three main style of `amsart`. Here are the arguments of `\newtheoremstyle` from [1]:

```

#1
\newtheoremstyle{NAME}%
#2#3#4
{ABOVESPACE}{BELOWSPACE}{BODYFONT}%
#5#6#7#8
{INDENT}{HEADFONT}{HEADPUNCT}{HEADSPACE}%
#9
{CUSTOM-HEAD-SPEC}

```

In the `plain` style the name (“theorem”) and number are printed in small caps, the optional note is in upright, and the text is slanted.

```

305 \newtheoremstyle{plain}{0.5\linespacing}{0.5\linespacing}{\slshape}{0pt}%
306   {\scshape}{:}{0.5em}{\thmname{#1}\thmnumber{ #2}\thmnote{\upshape{ } (#3)}}

```

In the `definition` style the name, the number is slanted, and the text and the note are upright.

```

307 \newtheoremstyle{definition}{0.5\linespacing}{0.5\linespacing}%
308   {\upshape}{0pt}%
309   {\slshape}{:}{0.5em}{\thmname{#1}\thmnumber{ #2}\thmnote{\upshape{ } (#3)}}

```

In the `remark` style the name and the number are in small caps, the note and the text text is upright.

```

310 \newtheoremstyle{remark}{0.5\linespacing}{0.5\linespacing}%
311   {\upshape}{0pt}%
312   {\scshape}{:}{0.5em}{\thmname{#1}\thmnumber{ #2}\thmnote{\upshape{ } (#3)}}

```

`proof` We want to have the word “proof” slanted rather than italicized:

```

313 \renewenvironment{proof}[1][\proofname]{\par
314   \pushQED{\qed}%
315   \normalfont \topsep6\p@\@plus6\p@\relax
316   \trivlist
317     \item[\hskip\labelsep
318       \slshape
319       #1\@addpunct{.}]\ignorespaces
320 }{%
321   \popQED\endtrivlist\@endpfalse
322 }

```

`\qed` Unlike `amsart`, we do not want the QED symbol to be flushed right in the text mode:

```

323 \DeclareRobustCommand{\qed}{%
324   \ifmmode \mathqed
325   \else
326     \leavevmode\unskip\penalty9999 \hbox{} \nobreak
327     \quad\hbox{\qedsymbol}%
328   \fi}%

```

`\qedsymbol` The QED symbol itself is a small closed box:

```
329 \def\qedsymbol{\rule[0.47pt]{4pt}{6pt}}%
```

`\namedprop` This is the unstarred version of the macro. It calls the command and then closes the group opened by `\namedprop@`

```
330 \newenvironment{namedprop}{%
331   \namedprop@}%
332   \end{namedprop@thm}%
333   \egroup}
```

`\namedprop*` The starred version is similar:

```
334 \newenvironment{namedprop*}{%
335   \namedprop@star@}%
336   \end{namedprop@thm}%
337   \egroup}
```

`\namedprop@star@` The starred version has two mandatory arguments: style and name, and one optional argument: note.

```
338 \def\namedprop@star@#1#2{%
339   \ifnextchar[{\namedprop@star@@{#1}{#2}}{\namedprop@star@@{#1}{#2}[]}}%
```

`\namedprop@star@@` This is the command that does the real work:

```
340 \def\namedprop@star@@#1#2[#3]{%
341   \bgroup
342   \let\namedprop@thm\relax
343   \theoremstyle{#1}
344   \newtheorem*{namedprop@thm}{#2}
345   \begin{namedprop@thm}[#3]}
```

`\namedprop@` This is the unstarred version of the macro. It has three mandatory arguments: style, counter and the name, and one optional argument: the note.

```
346 \def\namedprop@#1#2#3{%
347   \ifnextchar[{\namedprop@@{#1}{#2}{#3}}{\namedprop@@{#1}{#2}{#3}[]}}%
```

`\namedprop@@` And the real macro:

```
348 \def\namedprop@@#1#2#3[#4]{%
349   \bgroup
350   \let\namedprop@thm\relax
351   \theoremstyle{#1}
352   \newtheorem{namedprop@thm}[#2]{#3}
353   \begin{namedprop@thm}[#4]}
```

3.13 Bibliography

`\@bibtitlestyle` Unlike other section heads, the word “References” in the journal is centered:

```
354 \renewcommand{\@bibtitlestyle}{%
355   \@xp\centeredsection\@xp*\@xp{\refname}%
356 }%
```

3.14 End of Class

357 $\langle /class \rangle$

4 Acknowledgements

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As a result of their efforts, the Journal was not only saved from extinction, but it has expanded and is considered a leader in its field. With the recent change in the production procedure to a more global format, we have moved to another program, building on the sturdy basis which they created.

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Change History

v0.2		\footskip: Changed	12
General: First fully functional version	3	\pdfhorigin: Changed offsets . .	12
v0.3		\textheight: Changed	12
\@bibtitlestyle: Redefined to have centered heading	22	\topmargin: Changed offsets . . .	12
\@captionheadfont: Redefined . .	19	v1.0	
\@classname: Introduced macro .	10	\@maketitle@hook: Deleted rlap from footnotemark	15
\@maketitle: Changed size for date	17	General: Documentation update . .	3
\@maketitle@hook: Changed footnotes formatting	15	v1.1	
\@typesizes: Redefined amsart defaults	11	General: Updated documentation for theorems	8
General: Documentation update . .	3	\namedprop: Introduced macro . .	22
abstract: Changed spacing	14	\namedprop*: Introduced macro .	22
\centeredsection: Added macro	20	\namedprop@: Introduced macro .	22
\footskip: Redefined	12	\namedprop@@: Introduced macro	22
\if@afterindent: Deleted first indent after the section head . .	20	\namedprop@star@: Introduced macro	22
\pdfhorigin: Changed offsets . .	12	\namedprop@star@@: Introduced macro	22
\qed: Redefined amsart default . .	21	v1.1a	
\qedsymbol: Redefined amsart default	22	General: Documentation update . .	3
proof: Redefined amsart defaults	21	v1.2	
\thanks: Changed size	15	\@starttoc: Redefined	18
v0.4		General: Added documentation for table of contents formatting . . .	7
General: Redefined remark and definition styles: the note is now upright.	21	\l@section: Redefined to check whether subsections are present	19
		\l@subsubsection: Added indentation	19

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	<code>\@startsection</code>	<code>\addvspace</code> . . . 254, 261
<code>\@and</code> 191, <u>192</u> , 223	. 239, 285, 288,	<code>\advance</code> 268
<code>\@by</code> <u>194</u> , 221	291, 294, 297, 300	<code>\and</code> 109,
<code>\@M</code> 239, 262	<code>\@starttoc</code> <u>236</u>	110, 117, 123, 223
<code>\@addpunct</code> 319	<code>\@tempa</code> 112, 113, 155, 156	<code>\andify</code> <u>190</u>
<code>\@adminfootnotes</code> . . <u>189</u>	<code>\@tempcnta</code> 73, 74	<code>\author</code> 6, <u>104</u> , 222
<code>\@afterindentfalse</code> .	<code>\@tempdima</code> . . 65–73,	<code>\authors</code>
. 303, 304	264, 266, 268, 270	. 105, 106, 109, 221
<code>\@afterindenttrue</code> . 303	<code>\@textsuperscript</code> .	B
<code>\@arabic</code> 232	. . . . . 182, 185	<code>\baselineskip</code>
<code>\@bibtitlestyle</code> . . . <u>354</u>	<code>\@thanks</code> 165	. . . 49, 72, 74, 208
<code>\@captionheadfont</code> . <u>283</u>	<code>\@thefnmark</code> . . . 182, 185	<code>\begin</code> 18,
<code>\@classname</code> . . . <u>7</u> , 27, 130	<code>\@title</code> . . . 205, 207, 208	204, 211, 345, 353
<code>\@date</code> 229, 231	<code>\@tocline</code>	<code>\begingroup</code> . . . 212,
<code>\@doinfo</code> 102, 159	. 258, 279, 281, 282	215, 218, 236, 262
<code>\@dotsep</code> <u>257</u> , 272	<code>\@tocpagenum</code> 274	<code>\bfseries</code> . 280, 287, 290
<code>\@empty</code> . . . 105, 113,	<code>\@typesizes</code> <u>44</u>	<code>\bgroup</code> . . . 133, 341, 349
114, 120, 156,	<code>\@xiipt</code> 47	<code>\bigskip</code> 223
165, 221, 229, 284	<code>\@xipt</code> 47	C
<code>\@endpfalse</code> 321	<code>\@xivpt</code> 47	<code>\c@footnote</code> 163, 168, 232
<code>\@fnsymbol</code> . . . 169–180	<code>\@xp</code> 250, 251, 355	<code>\c@page</code> 152
<code>\@ifempty</code> 263	<code>\@xvipt</code> 48	<code>\c@tocdepth</code> . . . 259, 280
<code>\@ifnextchar</code> . . 339, 347	<code>\@xxpt</code> 48	<code>\centeredsection</code> . .
<code>\@ifnotempty</code>	<code>\@</code> 101	. . . . . <u>288</u> , 355
. 213, 216, 219	10pt (option) 5	<code>\centering</code> 136, 240, 290
<code>\@input</code> 248	11pt (option) 5	<code>\cfoot</code> 103
<code>\@makefnmark</code> 182	12pt (option) 5	<code>\thead</code> 98
<code>\@makefntext</code> 183	8pt (option) 5	<code>\ClassInfo</code> 36, 38
<code>\@maketitle</code> <u>226</u>	9pt (option) 5	<code>\ClassWarning</code> . . 27, 130
<code>\@maketitle@hook</code> . . <u>166</u>	A	<code>\CodelineIndex</code> 15
<code>\@nobreakfalse</code> 253	<code>\abstract</code> <u>127</u>	<code>\contentsname</code> 241
<code>\@origmaketitle</code> 226, 227	abstract (environ-	<code>\contentsnamefont</code> .
<code>\@plus</code> 141, 239, 246,	ment) 6	. . . . . <u>235</u> , 240
254, 292, 295, 315	<code>\abstractbox</code> . . 127, 133	<code>\csname</code> . . . 250, 251, 264
<code>\@pnumwidth</code> . . . 269, 274	<code>\abstractname</code> 136	<code>\curraddr</code> 6, 212
<code>\@secnumfont</code> <u>284</u>	<code>\addcontentsline</code> . . 242	<code>\curraddrname</code> . <u>196</u> , 213
<code>\@secpenalty</code> 261	<code>\addpenalty</code> 261	<code>\CurrentOption</code> . . 29–34
<code>\@setabstract</code> 148	<code>\address</code> 6	<code>\currentvolume</code> . . 89, 99
<code>\@setabstracta</code> 148	<code>\addresses</code> 107, 110, 224	<code>\currentyear</code> . . . 89, 100
<code>\@setauthors</code> <u>210</u>	<code>\addtocounter</code> 206	D
<code>\@setttitle</code> <u>203</u>	<code>\addtolength</code>	<code>\date</code> 8
<code>\@settopoint</code> 64, 84	. 61–63, 66–71,	
	75, 77, 79, 81–83	

<code>\DeclareOption</code>	<code>\fancyhf</code> 97	<code>\ifnum</code> 152, 259, 280
. 25, 29–34	<code>\fancypagestyle</code> 96	<code>\ifpdf</code> 52
<code>\DeclareRobustCommand</code>	<code>\fi</code> 57, 111, 118,	<code>\ifx</code> 105, 113,
. 323	124, 125, 132,	114, 120, 129,
<code>\def</code> 7, 26, 44, 112,	148, 154, 157,	148, 156, 229, 241
150, 151, 153,	181, 193, 195,	<code>\ignorespaces</code> 319
155–157, 159,	202, 231, 242,	<code>\ijm@frenchfalse</code> 24
161, 166, 182,	252, 277, 280, 328	<code>\ijm@frenchtrue</code> 25
183, 186, 189,	<code>final</code> (option) 4	<code>\ijm@size@warning</code> .
192–198, 200,	<code>\footnotemark</code> 161, 206	. . . . . 26, 29–33
201, 203, 206,	<code>\footnoterule</code> 186	<code>\immediate</code> 251
210, 212, 215,	<code>\footnotesize</code>	<code>\InputIfFileExists</code> 35
218, 222, 223,	. . . . . 89–94, 185, 235	<code>\issueinfo</code> 7
227, 230, 233,	<code>\footnotetext</code> 163, 231	<code>\item</code> 144, 247, 317
236, 258, 278,	<code>\footrulewidth</code> 86	<code>\itemindent</code> 140, 245
281–283, 285,	<code>\footskip</code> 59, 70	<code>\itshape</code> 224, 296
288, 291, 294,	<code>french</code> (option) 4	
297, 300, 329,	<code>\fullwidthdisplay</code> 142	J
338, 340, 346, 348		<code>\jobname</code> 248, 251
<code>\divide</code> 72	G	
<code>\DocInput</code> 19	<code>\g@addto@macro</code>	K
<code>\documentclass</code> 9	. . . . . 109, 110, 117, 123	<code>\kern</code> 186
<code>\doiinfo</code> 8, 159	<code>\gdef</code> 106, 107,	
<code>draft</code> (option) 4	115, 121, 159, 232	L
	<code>\global</code> 133, 253	<code>\l@section</code> 278
E		<code>\l@subsection</code> 281
<code>\egroup</code> 147, 333, 337	H	<code>\l@subsubsection</code> 281
<code>\else</code> 108, 116, 119,	<code>\hangafter</code> 183	<code>\labelsep</code> 317
122, 157, 221,	<code>\hangindent</code> 183	<code>\labelwidth</code> 138, 243
229, 242, 260, 325	<code>\hb@xt@</code> 184	<code>\Large</code> 208
<code>\email</code> 6, 215	<code>\hbox</code> 271,	<code>\leaders</code> 271
<code>\emailaddrname</code> 196, 216	272, 274, 326, 327	<code>\leavevmode</code> 270, 326
<code>\EnableCrossrefs</code> 17	<code>\headheight</code> 58, 68	<code>\leftmargin</code> 139, 244
<code>\end</code> 20, 209, 225, 332, 336	<code>\headrulewidth</code> 86	<code>\leftskip</code> 268
<code>\end@page</code> 101, 156, 157	<code>\headsep</code> 63, 69	<code>\let</code> 142, 165, 226, 255,
<code>\endcsname</code> 250, 251, 264	<code>\hfill</code> 273	284, 303, 342, 350
<code>\enddoc@text</code> 233	<code>\hphantom</code> 205	<code>\lineskip</code> 208
<code>\endgroup</code> 214,	<code>\hrule</code> 186	<code>\lineskiplimit</code> 208
217, 220, 253, 276	<code>\hskip</code> 270, 317	<code>\linespacing</code>
<code>\endlist</code> 147, 248	<code>\hss</code> 185	. . . . . 49, 239, 240,
<code>\endtrivlist</code> 321	<code>\hyphenpenalty</code> 262	286, 289, 292,
environments:		295, 305, 307, 310
<code>abstract</code> 6	I	<code>\list</code> 138, 243
<code>namedprop</code> 8	<code>\if</code> 221	<code>\listparindent</code> 140, 245
<code>namedprop*</code> 8	<code>\if@afterindent</code> 303	<code>\LoadClass</code> 42
<code>\evensidemargin</code> 76, 82	<code>\if@filesw</code> 249	<code>\long</code> 26, 183
	<code>\ifcase</code> 168	
F	<code>\ifijm@french</code>	M
<code>\fancyfoot</code> 95	. . . . . 23, 193, 195, 199	<code>\m@th</code> 271
<code>\fancyhead</code> 89–94	<code>\ifmmode</code> 324	<code>\makebox</code> 205

<code>\maketitle</code> . 7, 129, 131	<code>draft</code> 4	<code>\relax</code> 40, 52,
<code>\MakeUppercase</code> 136	<code>final</code> 4	113, 129, 142,
<code>\mathqed</code> 324	<code>french</code> 4	148, 168, 221,
<code>\medskip</code> 221–223	<code>\or</code> 45–48, 169–180	251, 255, 258,
<code>\mkern</code> 272		264, 266, 268,
	P	270, 315, 342, 350
N	<code>\p@</code> .. 141, 246, 254, 315	<code>\removeatlastskip</code> ... 238
<code>\namedprop</code> 330	<code>\PageIndex</code> 14	<code>\renewcommand</code>
<code>namedprop</code> (environ- ment) 8	<code>\pagenumbering</code> 150, 152	... 86, 87, 104,
<code>\namedprop*</code> 334	<code>\pageref</code> 156	168, 190, 235, 354
<code>namedprop*</code> (environ- ment) 8	<code>\pagespan</code> 7, 150	<code>\renewenvironment</code> .
<code>\namedprop@</code> ... 331, 346	<code>\pagestyle</code> 88	..... 128, 313
<code>\namedprop@@</code> .. 347, 348	<code>\paperheight</code> . 50, 53, 65	<code>\RequirePackage</code> ... 43
<code>\namedprop@star@</code> ..	<code>\paperwidth</code> .. 50, 54, 80	<code>\rightmargin</code> .. 139, 244
..... 335, 338	<code>\par</code> 136,	<code>\rightskip</code> 269
<code>\namedprop@star@@</code> .	213, 214, 216,	<code>\romannumeral</code> 153
..... 339, 340	217, 219–223,	<code>\rule</code> 329
<code>\namedprop@thm</code> 342, 350	238, 261, 274, 313	
<code>\NeedsTeXFormat</code> 1	<code>\paragraph</code> 297	S
<code>\newbox</code> 127	<code>\parfillskip</code> 269	<code>\scshape</code> 222,
<code>\newcommand</code> 257	<code>\parindent</code> 85, 268	235, 293, 306, 312
<code>\newenvironment</code> 330, 334	<code>\parsep</code> 141, 246	<code>\section</code> 285
<code>\newif</code> 23	<code>\PassOptionsToClass</code>	<code>\setbox</code> 133
<code>\newtheorem</code> ... 344, 352	..... 34, 41	<code>\setcounter</code>
<code>\newtheoremstyle</code> ..	<code>\pdfhorigin</code> 52	. 150, 152, 187, 234
.... 305, 307, 310	<code>\pdfpageheight</code> 53	<code>\setlength</code> 50,
<code>\newwrite</code> 250	<code>\pdfpagewidth</code> 54	51, 58–60, 65,
<code>\nobreak</code> .. 270, 275, 326	<code>\pdfpaperheight</code> ... 52	74, 76, 78, 80, 85
<code>\noindent</code> 183	<code>\pdfpaperwidth</code> 52	<code>\setTrue</code> 237
<code>\normalfont</code>	<code>\pdfvorigin</code> 52	<code>\shortauthors</code> 6, 93,
. 135, 182, 185,	<code>\penalty</code> 326	114, 115, 117,
221, 223, 283,	<code>\popQED</code> 8, 321	120, 121, 123, 167
287, 290, 293,	<code>\ProcessOptions</code> ... 40	<code>\shorttitle</code> 90
296, 299, 302, 315	<code>\proof</code> 313	<code>\slshape</code> .. 305, 309, 318
<code>\normalparindent</code> .. 140	<code>\proofname</code> 313	<code>\Small</code> 137
<code>\normalsize</code> 49, 222	<code>\protect</code> 131, 163	<code>\small</code> 163, 224, 231, 248
<code>\number</code> 264	<code>\protected@xdef</code> ... 162	<code>\space</code> 131, 185
<code>\nxandlist</code> 191	<code>\ProvidesClass</code> 5	<code>\start@page</code> 101, 151, 153
	<code>\ProvidesFile</code> 3	<code>\subparagraph</code> 297
	<code>\pushQED</code> 314	<code>\subsection</code> 291
O		<code>\subsubsection</code> 294
<code>\oddsidemargin</code> 76	Q	
<code>\openout</code> 251	<code>\qed</code> 314, 323	T
options:	<code>\qedsymbol</code> ... 327, 329	<code>\tableofcontents</code> 7, 255
10pt 5	<code>\qqquad</code> 327	<code>\textbf</code> 99
11pt 5		<code>\textheight</code> 65
12pt 5	R	<code>\textwidth</code> 80
8pt 5	<code>\RecordChanges</code> 16	<code>\thanks</code> 6, 161, 206
9pt 5	<code>\refname</code> 355	<code>\thankses</code> 162, 228
		<code>\the</code> 163

<code>\thefootnote</code>	<code>\trivlist</code> 316	V
. . . . 168, 230, 232		<code>\vglue</code> 134, 210
<code>\theoremstyle</code> . . 343, 351	U	<code>\vskip</code> 238
<code>\thepage</code> . . . 91, 92, 103	<code>\unskip</code> 191, 326	<code>\vspace</code> 146
<code>\thmname</code> . . 306, 309, 312	<code>\uppercase\nonmath</code> .	<code>\vtop</code> 133
<code>\thmnote</code> . . 306, 309, 312	. . . . . 167, 207	Z
<code>\thmnumber</code> 306, 309, 312	<code>\upshape</code> 306,	<code>\z@</code> 138, 140,
<code>\tiny</code> . . 98, 135, 221, 223	308, 309, 311, 312	141, 152, 239,
<code>\title</code> 5	<code>\urladdr</code> 6, 218	243, 245, 246,
<code>\topmargin</code> 60, 66	<code>\urladdrname</code> . . 196, 219	268, 286, 289,
<code>\topsep</code> 315	<code>\usepackage</code> 10–12	292, 295, 298, 301
<code>\topskip</code> 62, 75		<code>\z@skip</code> 238