

L^AT_EX Class for The *Annals of Mathematics**

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Abstract

This package provides a class for typesetting articles for The *Annals 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	6
2.4	Additional Macros	9
2.5	Theorems	11
2.6	Illustrations and color	11
2.7	Funding	11
2.8	Bibliography	12
2.9	Papers in languages other than English	13
3	Implementation	14
3.1	Identification	14
3.2	Options	14
3.3	Loading Class and Packages	15
3.4	Internationalization	16
3.5	Fonts	17
3.6	Page Dimensions and Paragraphing	18
3.7	Headers	19
3.8	Top Matter Macros	20
3.9	Typesetting Top Matter	26
3.10	Typesetting End Matter	29
3.11	Sectioning	31
3.12	Figures and Tables	31
3.13	Theorems	32

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3.14 Bibliography Macros	33
3.15 Additional Macros	33
3.16 End of Class	36

1 Introduction

The *Annals of Mathematics* is published bimonthly with the cooperation of Princeton University and the Institute for Advanced Study. Founded in 1884 by Ormond Stone of the University of Virginia, the journal was transferred in 1899 to Harvard University, and in 1911 to Princeton University. Since 1933, the Annals has been edited jointly by Princeton University and the Institute for Advanced Study (see <http://annals.princeton.edu/annals/about/journal/about.html>).

This class presents a complete redesign of the journal style—with new fonts and new interface.

An author well acquainted with AMS $\LaTeX$ 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 AMS $\LaTeX$ I could recommend the excellent book [1].

2 User's Guide

2.1 Installation

The installation of the class follows the usual practice [2] for $\LaTeX$ packages:

1. Run `latex` on `aomart.ins`. This will produce the file `aomart.cls`.
2. Put the file `aomart.cls` to the place where $\LaTeX$ can find them (see [2] or the documentation for your $\TeX$ system).
3. Update the database of file names. Again, see [2] or the documentation for your $\TeX$ system for the system-specific details.
4. The file `aomart.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 $\LaTeX$ 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 [3],
2. Package `hyperref` [4],
3. `ifpdf` package [5],
4. `fancyhdr` package [6],
5. `cmtiup` package [7] for “special italics” with uprgiht digits and punctuation. Note that since many distributions do not include this package, you may need to install it yourself. Just download the file <http://mirrors.ctan.org/fonts/cm/cmtiup.zip>, unzip it in your `TEXMF` directory and rebuild the file names database with the command like `mktexlsr`,
6. `yhmth` package [8].

2.2 Invocation

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

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

The class internally loads `amsart`, so all facilities of `amsart` [1, 9] can be used in the source.

The class should work with the `Babel` [10] package. At present, English, French and German languages are fully supported. See also Section 2.9.

options The options `draft` and `final` work in the same way as for `amsart` and standard `LaTeX`. If the option `draft` is chosen, the overfull lines are marked by black 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]{aomart}
\usepackage[final]{graphics}
```

or add in the beginning of the document

```
\overfullrule=5pt
```

option manuscript The option `manuscript` is intended to facilitate the communications between the editor and the author. It enables two things:

1. Numbering of lines in the manuscript is switched off in the normal mode, but is on in the manuscript mode.
2. Command `\EditorialComment` is no-op in normal mode, but produces marginal commentaries in the manuscript
3. Hyperlinks are black in normal mode, but blue in manuscript mode.

option screen The option `screen` is intended for the onscreen version of the acticle. If this option is selected, the links are blue colored, and the margins are reduced.

option olddoi Starting from version 1.9 (2011) the formatting of DOI numbers changed according to the new recommendations from CrossRef. The option `olddoi` switches on the “old” formatting. It is used for compatibility reasons.

option doi2016 Starting from version 1.5 (2016) the formatting of DOI numbers changed again according to Crossref recommendations. The option `doi2016` switches to the version existed between 2011 and 2016.

option oldkeywords Since June 2017 keywords and AMS Mathematical Subjects classification numbers are printed on the title page. The option `oldkeywords` suppresses this.

options 8pt 9pt 10pt 11pt 12pt 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 `11pt` of `amsart`).

option printscheme Normally the scheme for MSC numbers is not printed. If the option `printscheme` is chosen, however, it is printed explicitly.

2.3 Top Matter

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.

The macros described below must be issued in the preamble of the document, i.e. before `\begin{document}`. They produce fatal error otherwise. This behavior is required by the way non- $\TeX$ scripts process the files to produce metadata.

The only exception is `abstract`, which should be placed after `\begin{document}`.

2.3.1 Commands for Authors

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

```
\title[\langle ShortTitle \rangle]{\langle FullTitle \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.

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.

`\author` The interface for specifying the authors and their affiliations is close the the
`\email` one of `amsart` [11] (and different from the standard $\LaTeX$). For each author a
`\address` separate command `\author` should be used, followed by `\address` and (optionally)
`\curraddr` `\curraddr`, `\email`, `\urladdr` and `\orcid`. Note that the house style of the
`\urladdr` *Annals of Mathematics* requires writing `\address` in the form *Institution, City*,
`\orcid` *State* (or *Institution, City, Country* for non-US locations). Like the newer versions
of `amsart`, `aomart` does *not* require the doubling of the `@` symbols in the e-mail
addresses. The macro `\author` has two arguments, similarly to `\title`:

```
\author[\langle AbbrevName \rangle]{\langle FullName \rangle}
```

The optional argument defines the shorter form of the author's name to be included in the running head.

`\givenname` The papers published in the *Annals of Mathematics* are included in various
`\surname` databases. For the indexing purposes it is important to correctly separate the
authors' names into "First Name/Surname" parts. This operation is not easy for
the computers. Therefore we decided that the authors should know best how to
deal with their names. The macros `\givenname` and `\surname` are used to indicate
how to split the name into the parts.

`\fulladdress` Another command which does not affect the typesetting is `\fulladdress`. It
is used to store the full mailing address of the author for the online version of the
journal and various databases.

`\contrib` Sometimes there are contributors to a paper, who are not full authors: the
person may write an appendix or other part of the paper. You can use the com-
mand `\contrib[\langle role \rangle]{\langle name \rangle}` for indicating these persons. Note that [*\langle role \rangle*]
argument has a special meaning, indicating that the role of this person is the same
as for the previous contributor, for example,

```
\contrib[with Appendix-A by]{A. U. Thor}  
\givenname{Alexandra}\surname{Thor}
```

```

\contrib{A. N. Other}
\givenname{Antony N.}\surname{Other}
\contrib[with Appendix-B by]{Y. Etanother}
\givenname{Yakov}\surname{Etanother}

```

In this example Appendix A is written by A. U. Thor and A. N. Another, and Appendix B is written by Y. Etanother. Commands `\orcid`, `\email`, `\address`, `\fulladdress`, `\givenname` and `\surname` can be used for contributors in the same way they are used for authors.

`\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` Like `amsart` (and unlike standard L^AT_EX), `aomart` allows `\thanks` only *outside* of commands `\title` and `\author`.

`\copyrightnote` Normally each paper is copyrighted by Department of Mathematics, Princeton University. This is reflected in the footnote on the first page of the article. However, by arrangement with the editors, certain papers may have different copyright. The command `\copyrightnote{copyright statement}`, if issued, changes the footnote to the corresponding text, for example:

```

\copyrightnote{\textcopyright~2012 by the authors. This paper may
be reproduced, in its entirety, for noncommercial purposes.}

```

Note that if you issue this command, you should explicitly include both the copyright sign and the year unless the paper does not have a copyright, for example:

```

\copyrightnote{This paper is in the public domain}

```

`abstract (env.)` The abstract of the paper must be put between `\begin{abstract}` and `\end{abstract}`. Unlike the situation in `amsart` class, abstract may be put *after* `\maketitle`.

A paper may have several abstracts in different languages. This situation is discussed in Section 2.9.

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

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.

`\keyword` The command `\keyword` adds a keyword to the list of keywords. This command may be repeated, for example

`\keyword{Embedding theorem}`
`\keyword{Relatively hyperbolic group}`

`\subject` The command `\subject` has three parameters: whether the subject is primary or secondary, the classification scheme and the subject itself, for example

`\subject{primary}{msc2000}{20E45}`
`\subject{secondary}{msc2000}{20F65}`

`\formatdate` The macro `\formatdate` is used to format the dates in the commands. Its argument is the date in the format `YYYY-MM-DD`, for example

`\formatdate{2010-08-13}`

`\received` The commands `\received`, `\revised`, `\accepted`, `\published`, `\publishedonline`
`\revised` accept as a parameter a date in the form `\formatdate{YYYY-MM-DD}`, for
`\accepted` example

`\published` `\received{\formatdate{2004-12-24}}`
`\publishedonline` `\revised{\formatdate{2006-04-12}}`
`\accepted{\formatdate{2007-10-02}}`

`\proposed` The macros `\proposed`, `\seconded`, `\corresponding`, `\editor`, `\version` are
`\seconded` used to set the corresponding metadata for the editorial process, for example

`\corresponding` `\proposed{E. D. Itor}`
`\editor` `\seconded{A. S. Sociate}`
`\version` `\corresponding{A. U. Thor}`
`\version{2.1}`

`\volumenumber` The macros `\volumenumber`, `\issuenumber`, `\publicationyear`, `\papernumber`,
`\issuenumber` `\startpage`, `\endpage` set up the corresponding data for the paper, for example:

`\publicationyear` `\volumenumber{172}`
`\papernumber` `\issuenumber{1}`
`\startpage` `\publicationyear{2010}`
`\endpage` `\papernumber{1}`
`\startpage{1}`
`\endpage{39}`

Note that if the argument of `\endpage` is empty, L^AT_EX tries to calculate the last page number as best as it can.

`\copyrightyear` In the standard copyright statement the copyright year is assumed to be the same as the `\publicationyear`. However, for special cases one can set the copyright year explicitly, for example,

`\publicationyear{2012}`
`\copyrightyear{2011}`

Note that if you use your own copyright statement instead of the canned one (with the command `\copyrightnote`), you need to put there the copyright year explicitly instead of using this command.

`\doinumber` The macros `\doinumber`, `\mrnumber` and `\zblnumber` set the information about paper in four major reference databases: DOI (<http://www.doi.org/>), `\mrnumber` MathSciNet (<http://www.ams.org/mathscinet/>), Zentralblatt MATH (<http://www.zentralblatt-math.org/zmath/>) and arXiv (<https://www.arxiv.org>). `\zblnumber` `\arxivnumber` The use of these macros should be obvious:

```
\doinumber{10.1215/S0012-7094-92-06520-3}
\mrnumber{1154181}
\zblnumber{0774.14039}
\arxivnumber{1234.567890}
```

Note the difference between these commands and the bibliography commands discussed in Section 2.8. Commands in this Section set up the data for the *current article*. Commands in Section 2.8 set up the data for the articles in the bibliography list.

Normally you should *not* use `\doinumber` command, since the class will construct the standard DOI for the paper from the volume, issue and paper information. Use it *only* if the result is by any reason wrong.

`\oldsubsections` Starting with version 1.2 we decreased the vertical spacing before `\subsection`. The command `\oldsubsections` restores the “old” values.

The class has a system of editorial comments and highlighting for communication between copy editors, production editors, journal editors and authors. All these comments are visible only in the `manuscript` mode. In production environment they are not displayed.

The important feature of these commands is the notion of **audience**. Each comment or highlighting has an audience in mind, which is the optional argument of the comments and highlights. One can selectively enable the comments for the given audience. There is a special audience called `default`, which is enabled, well, by default. All other audiences must be enabled explicitly.

`\EditorialComment` The macro `\EditorialComment[audience]{comments}[vertical offset]` typesets the comments on the margins in the `manuscript` mode for the selected audience, for example,

```
Erd\os proved the following theorem.\EditorialComment{A citation is
needed}
```

```
Erd\os proved the following
theorem~\cite{Erd01}.\EditorialComment[Editor]{Please check the
citation}
```

The style does not check whether comments overlap, so sometimes you need to manually shift a comment up or down. The second optional argument will do it, for example

```
Erd\os proved the following
theorem~\cite{Erd01}.\EditorialComment[Editor]{Please check the
citation}[-5pt]
```

Code	Example
<code>\widetilde{AB}</code>	$\widetilde{AB}$
<code>\widehat{AB}</code>	$\widehat{AB}$
<code>\widetriangle{AB}</code>	$\widetriangle{AB}$
<code>\wideparen{AB}</code>	$\wideparen{AB}$
<code>\widering{AB}</code>	$\widering{AB}$
<code>\widebar{AB}</code>	$\widebar{AB}$

Table 1: Wide Mathematical Accents

`\Highlight` The macro `\Highlight[⟨audience⟩]{⟨text⟩}` highlights the `text` for the selected `audience`. The highlighting is done using the color selected for the given audience, for example

This is described by the following
theorem\Highlight{:}\EditorialComment{Added ``:''}

This is described by the following
theorem\Highlight[Editor]{:}\EditorialComment[Editor]{Do we need
``:'' here?}

`\ECSelect` The audiences to be displayed are selected by the command `\ECSelect[⟨color⟩]{⟨audience⟩}` audiences, for example,

\ECSelect{Editor}
\ECSelect[teal]{Author}

The default color is black, and the audience “default” is selected by default.

`\HSelect` The command `\Hselect[⟨color⟩]{⟨audience⟩}` selects the audience for which the highlight is intended. The optional argument “color” is used for highlighting, for example,

\HSelect[green]{Editor}

The default color is red, and the audience “default” is selected by default.

2.4 Additional Macros

`eqnarray` (*env.*) Thee class `aomart` loads the class `amsart`. Therefore all familiar `amsmath` commands [9] are available. In particular, there are many commands for writing multiline equations (`split`, `align`, `gather`, `multline`, ...). The environments `eqnarray` and `eqnarray*`, while still available, are *not* recommended and should be avoided if possible.

`\widetilde` A number of “wide” mathematical accents is available due to the (inter-
`\widehat` nally loaded) package `yhmath` [8]: `\widetilde`, `\widehat`, `\widetriangle`,
`\widetriangle` `\wideparen`, `\widering`, `\widebar`. See Table 1 for the example of the usage.

`\wideparen` A set of macros is used to make more convenient clickable references in the on-
`\widering`
`\widebar`
`\fullref`
`\pfullref`
`\bfullref`
`\eqfullref`
`\fullpageref`

line versions of papers. The package `hyperref` [4] makes clickable reference numbers in the phrases like

```
...in theorem~\ref{thm:Noeter}...
...see equation~\eqref{eq:alpha}...
```

However, it is more convenient for the readers if both the number *and* the word “theorem” or “equation” were clickable. The macros `\*fullref` solve this problem. Each macro has two arguments: the word and the reference, for example

```
...in \fullref{theorem}{thm:Noeter}...
```

The command `\pfullref` typesets the reference in parentheses. The command `\bfullref` typesets it in brackets, and the command `\eqfullref` uses the `\eqref` command, for example,

```
...see \eqfullref{equation}{eq:alpha}...
```

The similar command `\fullpageref` is used to make the word “page” clickable, for example,

```
...see \eqfullref{equation}{eq:alpha} on
\fullpageref{eq:alpha}...
```

By default the command adds the word “page” to the text. You can override this choice using the optional parameter, e.g.

```
\fullpageref[The page]{eq:alpha} starts the discussion of...
```

The Perl script `fullref.pl` can be used to convert change all references to the `\fullref` commands. It works in the following way:

```
perl fullref.pl original.pl > result.pl
```

The script converts all instances of combinations “word `\ref{reference}`”, “word~`\ref{reference}`” and “word~`\pageref{reference}`” to “`\fullref{word}{reference}`”, and similarly for parenthesized references, `\eqref` commands, and page references. To prevent the converting, just put `\ref{reference}` or `\eqref{reference}` inside braces. The “word” here must not start with a backslash (i.e. must not be a macro itself). This prevents disastrous results for phrases like “see~`\ref{a}`”, `\ref{b}`”.

The distribution includes two sample files, `aomsample.tex` and `aomsample1.tex`, the latter being obtained from the former by the script `fullref.pl`.

Note that `\autoref` command of `hyperref` provides for another mechanism that achieves the same goal. Unlike `\fullref` command, the command `\autoref` tries to figure out the name of the reference from the context. See the manual [4] for more information.

2.5 Theorems

`\newtheorem` You can use the commands of `amsthm` package [12] like `\newtheorem{lem}{Lemma}` for numbered theorems, or `\newtheorem*{KL}{Klein's Lemma}` for unnumbered theorems, or tune the numbering using the optional arguments of these commands.

To provide backward compatibility with some other classes used internally by the *Annals of Mathematics*, the class provides yet another optional argument for the command `\newtheorem`, allowing constructions like `\newtheorem[\it]{lem}{Lemma}`. This optional parameter is not used in our typesetting.

The class provides two theorem styles:

plain: This is the default theorem style. It is used for Theorem, Lemma, Proposition, Conjecture, Corollary and Claim.

definition: This style is used for Definition, Remark, Notation, Condition, Example etc.

Note that AMS classes define the third theorem style, **remark**. In our class remarks are typeset in the **definition** style. To make the authors' lives easier we define the theorem style **remark**, which is identical to the theorem style **definition**.

2.6 Illustrations and color

The authors can use the `graphics`, `graphicx`, `PSTricks`, `pgf/tikz`, `Metapost` or other tools to include illustrations (see [13] for a comprehensive discussion of $\LaTeX$ graphics possibilities).

`\includecolorgraphics` The printed edition of the journal cannot use color illustrations. The online version can, although we recommend against the reliance of color since it might not be accessible for people with color perception problems. If you want to use color illustrations for the online version, you need to prepare two versions, a color one, and a BW (or grayscale one) with *identical sizes and contents*. The command `\includecolorgraphics[options]{color_file}{bw_file}` can be used to select the proper illustration: in the screen mode the color one is chosen, and otherwise the bw one is chosen.

`\IfColorTF` Sometimes graphics is created inside `.tex` file with packages like `tikz`. The command `\IfColorTF{color_version}{bw_version}` can be used in this case. It has two arguments, the first one is used for the color version of the output, and the second one is used for the BW version. It is up to the author that both version produce the same output with the changes in the color only.

2.7 Funding

`\funding` There is a special command for showing the support for the paper, `\funding[<text>]{<sponsor>}{<grantid>}`. Normally it prints the name of the sponsor and in parentheses the id of the grant, if it is not empty. However, you can override this using the optional argument of the command. For example, the following text

AB is grateful to `\funding{NASA}{123GH456}`, while MJ was supported by `\funding{NIH}{}`. Both authors acknowledge `\funding[the generous help of other agencies]{Department of Defense}{Special project grant}`.

will expand to

```
% AB is grateful to NASA (123GH456), while MJ was supported
by NIH. Both authors acknowledge the generous
help of other agencies.
```

The command will save the information about the grants in the form suitable for automatic processing.

2.8 Bibliography

The authors are encouraged to use Bib_T_EX for uniform style of bibliography. The distribution includes the BST files `aomplain.bst` and `aomalpha.bst`. These files have several additional non-standard fields:

mrnumber: MathSciNet number for the article.

zblnumber: Zentralblatt number for the article.

doi: DOI number for the article.

jfmnumber: JFM number for the article.

arxiv: ArXiv reference for the ArXiv manuscript.

url: If the reference is available online, the corresponding url.

venue: (for `conference` entries) The place where the conference took place.

sortyear: Some entries do not have a year set up (e.g. some `unpublished` entries. If you have several entries from the same author, some with a year, and some without, you may want to put them in a certain order. The field `sortyear` overrides `year` for the sorting purposes.

titlenote: this field is like `note`, but is typeset immediately after a title. It should be used for additional information, for example,

```
@Book{Knuth94:TheTeXbook,
  author = {Knuth, Donald Ervin},
  title = {The \TeX book},
  publisher = {Addison-Wesley Publishing Company},
  year = 1994,
  series = {Computers \& Typesetting A},
  address = {Reading, MA},
  titlenote = {with illustrations by Duane Bibby}
}
```

totalpages: some articles (especially published in an electronic format) do not have start and end page numbers; instead you may put the total number of pages. If both `pages` and `totalpages` are present, `pages` take precedence. For books, dissertations, manuals and reports this field stores the total pages in the item, for example,

```

@Book{Arnold89:MathMethodsMechanics,
  author = {Arnold, V. I.},
  title = {Mathematical Methods of Classical Mechanics},
  publisher = {Springer},
  year = 1989,
  volume = 60,
  series = {Graduate Texts in Mathematics},
  address = {New York},
  edition = {Second},
  totalpages = {xvi+516}
}

```

`\doi` There are several databases routinely used in the science and mathematics communities. Among them are DOI, MathSciNet, Zentralblatt, Jahrbuch Database, `\zbl` ArXiv. Many bibliographies include references to these databases. The commands `\jfm` `\doi`, `\mr`, `\zbl`, `\jfm`, `\arxiv` are used to typeset these references. If you use `\arxiv` BibTeX, these commands are automatically used for the corresponding fields in your database entries.

2.9 Papers in languages other than English

The recommended way to typeset papers in languages other than English is the *babel* package [10]. For example, to typeset a paper in French (with an English abstract, see below), one puts in the preamble

```

\usepackage[utf8]{inputenc}
\usepackage[english,french]{babel}

```

Such papers often contain several abstracts: for example, in the language the paper is written *and* in English. Accordingly, *aomart* allows several abstracts. Each abstract must be put inside a group with the corresponding language selected using `\selectlanguage` command, for example

```

{\selectlanguage{french}%
  \begin{abstract}
    French abstract
  \end{abstract}}

{\selectlanguage{english}%
  \begin{abstract}
    English abstract
  \end{abstract}}

```

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{aomart.dtx}
4 </gobble>
5 <class>\ProvidesClass{aomart}
6 [2026/10/17 v1.39 Typesetting articles for the Annals of Mathematics]
```

And the driver code:

```
7 <*gobble>
8 \DocumentMetadata{
9   pdfversion=2.0,pdfstandard=ua-2,
10  tagging=on,
11  tagging-setup={math/setup=mathml-SE},
12  lang = en
13 }
14 \documentclass{ltxdoc}
15 \usepackage{array,booktabs,amsmath,graphics}
16 \let\widebar\overline
17 \usepackage{url}
18 \usepackage{amsfonts,yhmath}
19 \usepackage[breaklinks,colorlinks,linkcolor=black,citecolor=black,
20             pagecolor=black,urlcolor=black,hyperindex=false]{hyperref}
21 \PageIndex
22 \CodelineIndex
23 \RecordChanges
24 \EnableCrossrefs
25 \begin{document}
26   \DocInput{aomart.dtx}
27 \end{document}
28 </gobble>
29 <*class>
```

3.2 Options

The size-changing options produce a warning:

```
30 \long\def\@size@warning#1{%
31   \ClassWarning{aomart}{Size-changing option #1 will not be
32     honored}}%
33 \DeclareOption{8pt}{\@size@warning{\CurrentOption}}%
34 \DeclareOption{9pt}{\@size@warning{\CurrentOption}}%
35 \DeclareOption{10pt}{\@size@warning{\CurrentOption}}%
36 \DeclareOption{11pt}{\@size@warning{\CurrentOption}}%
37 \DeclareOption{12pt}{\@size@warning{\CurrentOption}}%
```

```
\if@aom@manuscript@mode Check whether we are in the manuscript mode
```

```
38 \newif\if@aom@manuscript@mode
```

```

39 \@aom@manuscript@modetrue
40 \DeclareOption{manuscript}{\@aom@manuscript@modetrue}

\if@aom@screen@mode Check whether we are in the screen mode
41 \newif\if@aom@screen@mode
42 \@aom@screen@modetrue
43 \DeclareOption{screen}{\@aom@screen@modetrue}

\if@aom@olddoi DOI processing is different in the “old” and new mode.
44 \newif\if@aom@olddoi
45 \@aom@olddoi@false
46 \DeclareOption{olddoi}{\@aom@olddoi@true}

\if@aom@doiMMXVI DOI processing is different in the 2016 and new mode
47 \newif\if@aom@doiMMXVI
48 \@aom@doiMMXVI@false
49 \DeclareOption{doi2016}{\@aom@doiMMXVI@true}

\if@aom@oldkeywords Keywords processing is different in the “old” and new mode.
50 \newif\if@aom@oldkeywords
51 \@aom@oldkeywords@false
52 \DeclareOption{oldkeywords}{\@aom@oldkeywords@true}

\if@aom@printscheme
53 \newif\if@aom@printscheme
54 \@aom@printscheme@false
55 \DeclareOption{printscheme}{\@aom@printscheme@true}

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

Now we read the configuration file
57 \InputIfFileExists{aomart.cfg}{%
58   \ClassInfo{aomart}{%
59     Loading configuration file aomart.cfg}{%
60     \ClassInfo{aomart}{%
61       Configuration file aomart.cfg is not found}}

And process the options:
62 \ProcessOptions\relax

```

3.3 Loading Class and Packages

```

\@makefnmark@kernel AMS redefines \@makefnmark. Here we return to the kernel version
63 \let\@makefnmark@kernel\@makefnmark

We start with the base class
64 \LoadClass[11pt]{amsart}

\@makefnmar Restoring the kernel version
65 \let\@makefnmark\@makefnmark@kernel

```

`\@citex` We redefine this macro early in case some package wants to patch it. Basically house style for repeated citations is not [1, 2, 3], but [1], [2], and [3].

Note that we do not want to use `\andify` since it requires fine control of expansion. Rather, we just count the number of commas. Below `\@tempcnta` is the total number of cites, and `\@tempcntb` is the current cite.

```

66 \def\@citex[#1]#2{\leavevmode
67   \@tempcnta=0
68   \@for\@citeb:=#2\do{\advance\@tempcnta by 1}%
69   \@tempcntb=1
70   \let\@citea\@empty
71   \@cite{\@for\@citeb:=#2\do
72     {\@citea\def\@citea[], []%
73       \advance\@tempcntb by 1
74       \ifnum\@tempcnta=\@tempcntb\relax
75         \ifnum\@tempcnta=2\relax
76           \def\@citea[] and~[]%
77         \else
78           \def\@citea[], and~[]%
79         \fi
80       \fi
81     }\edef\@citeb{\expandafter\@firstofone\@citeb\@empty}%
82     \if@filesw\immediate\write\@auxout{\string\citation{\@citeb}}\fi
83     \ifundefined{b@\@citeb}{\hbox{\reset@font\bfseries ?}%
84       \G@refundefinedtrue
85       \@latex@warning
86         {Citation `'\@citeb' on page \thepage \space undefined}}%
87     {\@citeofmt{\csname b@\@citeb\endcsname}}}{#1}}

```

A bunch of packages:

```

88 \RequirePackage{fancyhdr, lastpage, ifpdf, graphicx}
89 \RequirePackage{zref-savepos}
90 \RequirePackage[breaklinks,colorlinks]{hyperref}
91 \if@aom@screen@mode
92 \hypersetup{linkcolor=blue,citecolor=blue,
93   urlcolor=blue}%
94 \else\if@aom@manuscript@mode
95 \hypersetup{linkcolor=blue,citecolor=blue,
96   urlcolor=blue}%
97 \else
98 \hypersetup{linkcolor=black,citecolor=black,
99   urlcolor=black}%
100 \fi\fi
101 \urlstyle{rm}

```

Amsart has `\collect@body` macro. However, we want the `\long` version, so we use `environ`

```

102 \RequirePackage{environ}

```

3.4 Internationalization

There are some papers published in languages other than English. The **Babel** is expected to be used for them. Here we add some macros extending captions for these languages.

First, let us define English defaults:

`\@aom@by` This is just “By” in English:

```
103 \def\@aom@by{By}
```

`\@aom@and` This is “and” in English:

```
104 \def\@aom@and{and}
```

Now we can define internationalization:

```
105 \AtBeginDocument{\@ifpackageloaded{babel}{%
106   \addto\captionsfrench{\def\@aom@by{Par}\def\@aom@and{et}}%
107   \addto\captionsgerman{\def\@aom@by{Von}\def\@aom@and{und}}%
108   \addto\captionsenglish{\def\@aom@by{By}\def\@aom@and{and}}{}}}
```

3.5 Fonts

We use `yhmath` for large symbols:

```
109 \RequirePackage{yhmath}
```

Since version 1.2 `yhmath` no longer makes its large symbols default. We override this

```
110 \DeclareSymbolFont{largesymbols}{OMX}{yhhex}{m}{n}
```

`\widehat` The way `\widehat` and `\widetilde` are implemented in `yhmath` is buggy, see `\widetilde` https://www.reddit.com/r/LaTeX/comments/2j7mtn/usepackageamsmath_vs_usepackageyhmath_and_the/. We use AMS definitions instead

```
111 \xdef\widehat#1{\noexpand\@mathmeasure\z@\textstyle{#1}%
112   \noexpand\ifdim\noexpand\wd\z@>\tw@ em%
113   \mathaccent"0\hexnumber@\symAMSb 5B{#1}%
114   \noexpand\else\mathaccent"0362{#1}\noexpand\fi}
115 \xdef\widetilde#1{\noexpand\@mathmeasure\z@\textstyle{#1}%
116   \noexpand\ifdim\noexpand\wd\z@>\tw@ em%
117   \mathaccent"0\hexnumber@\symAMSb 5D{#1}%
118   \noexpand\else\mathaccent"0365{#1}\noexpand\fi}
```

We need `cmtiup` package, but we may find out it is not installed.

```
119 \IfFileExists{cmtiup.sty}{%
120   \RequirePackage{cmtiup}}{%
121   \ClassWarning{aomart}{The package mdputu is not found.\MessageBreak
122     You need this package to get italics with upright digits!}}
```

`\specialdigits` A legacy macro. We do not need it anymore.

```
123 \def\specialdigits{}%
124 \let\sisshape=\itshape
125 \let\textsi=\textit
```

The `amsart` class defines several options for different font sizes (10pt, 11pt, etc). We have just one design size for the articles.

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

```
126 \def\@typesizes{%
127   \or{\@vipt}{9}\or{\@vipt}{9}\or{\@viipt}{9}\or{\@ixpt}{12}%
128   \or{\@xpt}{13}%
129   \or{\@xipt}{14}% normalsize
130   \or{\@xiipt}{15}\or{13}{17}\or{\@xviipt}{20}%
131   \or{19}{23.2}\or{22}{27.8}}%
132 \normalsize \linespacing=\baselineskip
```

`\widebar` The functionality of `\widebar` coincides with that of `amsmath \overline`:

```
133 \let\widebar\overline
```

3.6 Page Dimensions and Paragraphing

`\textwidth` These are from the old `aomamlt2e`:

```
\textheight 134 \setlength{\textwidth}{31pc}
135 \setlength{\textheight}{48pc}
```

`\evensidemargin` The margins:

```
\oddsidemargin 136 \oddsidemargin=.65in
137 \evensidemargin=.65in
```

`\footins` Some skips from `aomamlt2e`:

```
\topskip 138 \setlength{\topskip}{12pt}
\abovedisplayskip 139 \setlength{\abovedisplayskip}{6.95pt plus3.5pt minus 3pt}
\belowdisplayskip 140 \setlength{\belowdisplayskip}{6.95pt plus4.5pt minus 3pt}
141 \setlength{\skip\footins}{20pt}
142 \setlength{\dimen\footins}{3in}
```

`\footskip` Some space for footnotes:

```
143 \setlength\footskip{30pt}
```

`\parskip` Paragraph shape:

```
\parindent 144 \setlength{\parindent}{22pt}
145 \setlength{\parskip}{\z@}
```

`\widowpenalty` We suppress widows and clubs:

```
\clubpenalty 146 \widowpenalty=10000
147 \clubpenalty=10000
```

AMS defines the margins for lists `\AtBeginDocument`. Our lists are tighter

```
148 \AtBeginDocument{%
149   \labelsep=5pt\relax
150   \settowidth\leftmargini{\labelenumi\hskip\labelsep}%
151   \leftmargin=\leftmargini
152   \labelwidth=\leftmargini \advance\labelwidth-\labelsep
153   \@listi}
```

`\itemize`

```

154 \renewenvironment{itemize}{%
155   \ifnum\@itemdepth>3 \@toodeep
156   \else \advance\@itemdepth\@ne
157   \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
158   \list{\csname\@itemitem\endcsname}%
159   {\settowidth\leftmargin{\labelitemi\hskip\labelsep}%
160    \def\makelabel##1{\hss\llap{\upshape##1}}}%
161   \fi
162 }{%
163   \endlist
164 }
```

3.7 Headers

`\headsep` Separation between the header and the body

```
165 \setlength{\headsep}{14pt}
```

`\headheight` Slightly increasing head height

```
166 \setlength{\headheight}{18.0pt}
```

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

```
\footrulewidth 167 \renewcommand{\headrulewidth}{0pt}
```

```
168 \renewcommand{\footrulewidth}{0pt}
```

`\@aom@linecount` This is displayed in the manuscript mode

```

169 \newcommand\@aom@linecount{\parbox[t]{4em}{%
170   \@tempcnta\@ne\relax
171   \loop{\underline{\scriptsize\the\@tempcnta}}\@ne\@tempcnta<43\repeat}}
172   \advance\@tempcnta by \@ne\ifnum\@tempcnta<43\repeat}}
```

It is easy to set up headers with fancyhdr:

```

173 \pagestyle{fancy}
174 \fancyhead{}
175 \fancyfoot{}
176 \fancyhead[CO]{\scriptsize\shorttitle}
177 \fancyhead[RO,LE]{\footnotesize\thepage}
178 \if@aom@manuscript@mode
179   \fancyhead[LE]{\footnotesize\thepage\begin{picture}(0,0)%
180     \put(-26,-25){\@aom@linecount}%
181     \end{picture}}
182   \fancyhead[LO]{\begin{picture}(0,0)%
183     \put(-21,-25){\@aom@linecount}%
184     \end{picture}}
185   \fancyfoot[C]{\scriptsize Proof: page numbers may be temporary}
186 \fi
187 \fancyhead[CE]{\scriptsize\MakeUppercase\shortauthors}
```

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

```
188 \fancypagestyle{firstpage}{%
```

```

189 \fancyhf{}%
190 \if@om@manuscript@mode
191 \lhead{\begin{picture}(0,0)%
192 \put(-21,-25){\@om@linecount}%
193 \end{picture}}
194 \fi
195 \chead{\scriptsize%
196 \href{\@annalsurl}{Annals of Mathematics} \textbf{\currentvolume}
197 (\currentyear),

```

We always print the starting page. However, we print the last page only if it does not coincide with the first page. There are two cases here: first, the last page may still be `\pageref{LastPage}`. In this case we need to extract the numerical value of the counter—note that `hyperref` is in action! Second, we could redefine the last page, and it is no longer `\pageref{LastPage}`. In this case we need to compare the value with the first page.

```

198 \start@page%
199 \def\tempa{\pageref{LastPage}}%
200 \edef\tempb{\start@page}%
201 \ifx\tempa\end@page
202 \edef\tempa{\HyPsd@@\pageref{LastPage}}%
203 \else
204 \edef\tempa{\end@page}%
205 \fi
206 \ifx\tempa\tempb\else--\end@page\fi\
207 \ifx\@doinumber\@empty\else
208 \edef\@doinumber{\@doinumber}%
209 \expandafter\doi\expandafter{\@doinumber}\fi}%
210 \cfoot{\footnotesize\thepage}}%

```

`\annalsurl` The command to set up the URL of the journal

```

211 \def\annalsurl#1{\gdef\@annalsurl{#1}}
212 \annalsurl{http://annals.math.princeton.edu/about}

```

3.8 Top Matter Macros

We make these macros allowed only in the preamble:

```

213 \@onlypreamble{\title}
214 \@onlypreamble{\author}
215 \@onlypreamble{\contrib}
216 \@onlypreamble{\email}
217 \@onlypreamble{\address}
218 \@onlypreamble{\curraddr}
219 \@onlypreamble{\urladdr}
220 \@onlypreamble{\orcid}
221 \@onlypreamble{\givenname}
222 \@onlypreamble{\fulladdress}
223 \@onlypreamble{\surname}
224 \@onlypreamble{\thanks}
225 \@onlypreamble{\keyword}
226 \@onlypreamble{\subject}
227 \@onlypreamble{\received}
228 \@onlypreamble{\revised}

```

```

229 \@onlypreamble{\accepted}
230 \@onlypreamble{\published}
231 \@onlypreamble{\publishedonline}
232 \@onlypreamble{\proposed}
233 \@onlypreamble{\seconded}
234 \@onlypreamble{\corresponding}
235 \@onlypreamble{\editor}
236 \@onlypreamble{\version}
237 \@onlypreamble{\volumenumber}
238 \@onlypreamble{\issuenummer}
239 \@onlypreamble{\publicationyear}
240 \@onlypreamble{\copyrightnote}
241 \@onlypreamble{\copyrightyear}
242 \@onlypreamble{\papernumber}
243 \@onlypreamble{\startpage}
244 \@onlypreamble{\endpage}
245 \@onlypreamble{\doinumber}
246 \@onlypreamble{\mrnumber}
247 \@onlypreamble{\zblnumber}
248 \@onlypreamble{\arxivnumber}

```

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

`\fulladdress` We store the information to output it later in the `rpi` file

```

\givenname 249 \def\@names{}
\surname 250 \def\givenname#1{\g@addto@macro\@names{givenname=#1;}}
251 \def\surname#1{\g@addto@macro\@names{surname=#1;}}
252 \def\fulladdress#1{\g@addto@macro\@names{fulladdress=#1;}}

```

`\author` We add mangling of `\@names` to the `amsart` macro

```

253 \renewcommand{\author}[2][]{%
254   \ifx\@empty\authors
255     \gdef\authors{#2}%
256     \g@addto@macro\@names{author=#2;}%
257   \else
258     \g@addto@macro\authors{\and#2}%
259     \g@addto@macro\@names{\and author=#2;}%
260   \fi
261   \gdef\@om@current@orcid@target{\authors}%
262   \@ifnotempty{#1}{%
263     \ifx\@empty\shortauthors
264       \gdef\shortauthors{#1}%
265     \else
266       \g@addto@macro\shortauthors{\and#1}%
267     \fi
268   }%
269   \g@addto@macro\addresses{\author{#2}}%
270 }
271 \edef\author{\@nx\@dblarg
272   \xp\@nx\csname\string\author\endcsname}

```

`\@currentcontribution` The current contribution

```

273 \def\@currentcontribution{}

```

`\@currentcontributors` The current contributors with the same contribution

```
274 \def\@currentcontributors{}
```

`\contributors` All contributors to the paper

```
275 \def\contributors{}
```

`\ifstartcontribgroup` A switch whether the new group is started

```
276 \newif\ifstartcontribgroup
```

```
277 \@startcontribgroupfalse
```

`\@processcurrentcontribgroup` Add current contributors to `\contributors`

```
278 \def\@processcurrentcontribgroup{%
279   \ifx\@currentcontributors\@empty\else
280     \def\@and{\upshape \@and}%
281     \author@andify\@currentcontributors
282     \ifx\contributors\@empty\else
283       \g@addto@macro\contributors{\and}%
284     \fi
285     \expandafter\g@addto@macro\expandafter\contributors
286     \expandafter{\@currentcontribution}%
287     \g@addto@macro\contributors{\space}%
288     \expandafter\g@addto@macro\expandafter\contributors
289     \expandafter{\@currentcontributors}%
290   \fi
291 }
```

`\contrib` The processing of contributors. Contributors are separated into groups with the same contribution. Within the group one can omit the contribution.

```
292 \renewcommand{\contrib}[2][{}]{%
293   \def\@tempa{#1}%
294   \gdef\@om@current@orcid@target{\@currentcontributors}%
295   \@startcontribgrouptrue
296   \ifx\@tempa\@empty\relax
297     \ifx\@currentcontribution\@empty\relax
298       \ClassError{aomart}{You must define contribution for
299         contributors}{The first \contrib command must have the
300         optional argument indicating the contribution}%
301     \else
302       \@startcontribgroupfalse
303     \fi
304   \fi
305   \ifx\@currentcontribution\@tempa\relax
306     \@startcontribgroupfalse
307   \fi
308   \ifstartcontribgroup
309     \@processcurrentcontribgroup
310     \gdef\@currentcontribution{#1}%
311     \gdef\@currentcontributors{#2}%
312   \else
313     \g@addto@macro\@currentcontributors{\and#2}%
314   \fi
315   \g@addto@macro\@names{\and contributor=#2;}%
```

```

316 \g@addto@macro\@names{role=}%
317 \expandafter\g@addto@macro\expandafter%
318 \@names\expandafter{\@currentcontribution}%
319 \g@addto@macro\@names{;}%
320 \g@addto@macro\addresses{\author{#2}}%
321 }

```

`\email` We change amsart macro to output metadata

```

322 \renewcommand{\email}[2] [] {%
323   \g@addto@macro\addresses{\email{#1}{#2}}%
324   \g@addto@macro\@names{email=#2;}%
325 }

```

`\urladdr` We change amsart macro to output metadata

```

326 \renewcommand{\urladdr}[2] [] {%
327   \g@addto@macro\addresses{\urladdr{#1}{#2}}%
328   \g@addto@macro\@names{urladdr=#2;}%
329 }

```

`\aom@current@orcid@target` Each new orcid can be added either to the authors or to the contributors. This macro defines where it goes

```

330 \def\aom@current@orcid@target{\authors}

```

`\orcid` Orcid also outputs metadata

```

331 \newcommand{\orcid}[1] {%
332   \g@addto@macro\addresses{\orcid{#1}}%
333   \g@addto@macro\@names{orcid=#1;}%
334   \expandafter\g@addto@macro\aom@current@orcid@target{\aom@orcidlink{#1}}%
335 }

```

`\aom@orcidlink` The package orcidlink [14] requires TikZ, so here we reproduce its functionality using our own version of orcid logo. Note that the original logo is licensed under CC0, see https://orcid.figshare.com/articles/figure/ORCID_id_icon_graphics/5008697

```

336 \newcommand\aom@orcidlink[1]{\kern0.2ex\href{https://orcid.org/#1}{\includecolorgraphics[height=1em]{orcid_logo}}

```

`\keyword` Actually amsart has `\keywords` macro. It redefines `\@keywords`. Our macro adds to the stack instead.

```

337 \def\keyword#1{\ifx\@keywords\@empty\gdef\@keywords{#1}\else
338   \g@addto@macro\@keywords{, #1}\fi}

```

`\subject` Subjects.

```

339 \let\@primarysubjects\@empty
340 \let\@secondarysubjects\@empty
341 \let\@primaryscheme\@empty
342 \let\@secondariescheme\@empty
343 \def\subject#1#2#3{%
344   \expandafter\ifx\csname @#1subjects\endcsname\@empty\relax
345     \expandafter\gdef\csname @#1subjects\endcsname{#3}%
346   \else

```

```

347 \expandafter\g@addto@macro\csname @#1subjects\endcsname{, #3}%
348 \fi
349 \if@aom@printscheme
350 \expandafter\g@addto@macro\csname @#1subjects\endcsname{%
351 ~(#2)}%
352 \fi}

```

`\formatdate` This just sends the date to the special macro `\@formatdate`

```

353 \def\formatdate#1{\@formatdate#1\endformatdate}

```

`\@formatdate` This macro takes date in the form YYYY-MM-DD and properly formats it. Note how we delete the leading zero in dates like April 02.

```

354 \def\@formatdate#1-#2-#3\endformatdate{%
355 \@tempcnta=#3\relax
356 \ifcase#2\or
357 January\or February\or March\or April\or May\or June\or
358 July\or August\or September\or October\or November\or December\fi
359 \space\the\@tempcnta,\space#1}

```

`\received` The following macros add stuff to the footnotes material:

```

\revised 360 \def\received#1{\def\@received{#1}}
\accepted 361 \let\@received\@empty
\published 362 \def\revised#1{\def\@revised{#1}}
\publishedonline 363 \let\@revised\@empty
364 \def\accepted#1{\def\@accepted{#1}}
365 \let\@accepted\@empty
366 \def\published#1{\def\@published{#1}}
367 \let\@published\@empty
368 \def\publishedonline#1{\def\@publishedonline{#1}}
369 \let\@publishedonline\@empty

```

The next macros mimic the functionality of `amsart \issueinfo` command. Note that `\issueinfo` still works.

`\volumenumber` This sets the volume of the paper

```

370 \def\volumenumber#1{\def\currentvolume{#1}}

```

`\issuenummer` This sets the issue of the paper:

```

371 \def\issuenummer#1{\def\currentissue{#1}}

```

`\publicationyear` This sets the year of the paper

```

372 \def\publicationyear#1{\def\currentyear{#1}}

```

`\papernumber` This is absent from the `\issueinfo`.

```

373 \def\papernumber#1{\def\currentpaper{#1}}
374 \papernumber{0000}

```

`\startpage` This defines the starting page of the paper. We have some nice features to set up roman page numbers for editorial stuff—probably not needed for this journal at this time...

```

375 \def\startpage#1{\pagenumbering{arabic}\setcounter{page}{#1}}

```

```

376 \def\start@page{#1}%
377 \ifnum\c@page<\z@ \pagenumbering{roman}\setcounter{page}{-#1}%
378 \def\start@page{\romannumeral#1}%
379 \fi}

```

`\endpage` This macro again has a twist in it: if the argument is not set, it calculates the last page number itself.

```

380 \def\endpage#1{\def\@tempa{#1}%
381 \ifx\@tempa\@empty\def\end@page{\pageref{LastPage}}%
382 \else\def\end@page{#1}\fi}

```

`\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.

```

383 \def\pagespan#1#2{\startpage{#1}\endpage{#2}}
384 \pagespan{1}{}

```

`\g@addto@abstract` Syntactic sugar around `\g@addto@macro`

```

385 \def\g@addto@abstract#1{\g@addto@macro{\@aom@abstract}{#1}}

```

`\@getabstract` `Amsart` typesets the abstract in a box. We preserve this peculiarity, but we need to put abstract in a macro to output in the `rpi` file.

```

386 \long\def\@aom@abstract{}
387 \long\def\@getabstract#1{%
388 \bgroup
389 \ifx\language\undefined
390 \def\language{english}%
391 \fi
392 \g@addto@abstract{<begin abstract >}%
393 \expandafter\g@addto@abstract\expandafter{\language}%
394 \g@addto@macro\@aom@abstract{#1}%
395 \g@addto@abstract{<end abstract >}%
396 \expandafter\g@addto@abstract\expandafter{\language}%
397 \egroup
398 \ifx\maketitle\relax
399 \ClassWarning{aomart}{Abstract should precede
400 \protect\maketitle\space in AMS derived classes}%
401 \fi
402 \global\setbox\abstractbox=\vtop\bgroup%
403 \box\abstractbox
404 \vglue1pc%
405 {\centering\normalfont\normalsize\bfseries\abstractname\par\vglue1pc}%
406 \list{}{\labelwidth\z@%
407 \leftmargin3pc \rightmargin\leftmargin%
408 \listparindent\normalparindent \itemindent\normalparindent%
409 \parsep\z@ \@plus\p@%
410 \let\fullwidthdisplay\relax%
411 }%
412 \item[]\normalfont\Small#1
413 \endlist\egroup}

```

`abstract` This puts abstract in a box *and* in a macro. Wasteful, but backward compatible

```

414 \renewenvironment{abstract}{\Collect@Body\@getabstract}{%
415 \ifx\@setabstract\relax\@setabstracta\fi}

```

`\proposed` We do not typeset the name of the proposer
416 `\let\proposed\@gobble`

`\seconded` Or the seconder
417 `\let\seconded\@gobble`

`\corresponding` This is the corresponding author—again not typeset
418 `\let\corresponding\@gobble`

`\version` We do not typeset the current version of the manuscript either...
419 `\let\version\@gobble`

`\doinumber` Now databases' numbers of the article:
`\mrnumber` 420 `\def\doinumber#1{\gdef\@doinumber{#1}}`
`\zblnumber` 421 `\doinumber{10.4007/annals.\currentyear.\currentvolume.\currentissue.\currentpaper}`
`\arxivnumber` 422 `\def\mrnumber#1{\gdef\@mrnumber{#1}}`
423 `\mrnumber{}`
424 `\def\zblnumber#1{\gdef\@zblnumber{#1}}`
425 `\zblnumber{}`
426 `\def\arxivnumber#1{\gdef\@arxivnumber{#1}}`
427 `\arxivnumber{}`

`\copyrightyear` This is the copyright year in case it does not coincide with the publication year:
428 `\def\copyrightyear#1{\def\@copyrightyear{#1}}`
429 `\copyrightyear{}`

`\copyrightnote` This is the copyrightnote. The default has some trickery with the year:
430 `\def\copyrightnote#1{\def\@copyrightnote{#1}}`
431 `\copyrightnote{\textcopyright~%`
432 `\ifx\@empty\@copyrightyear\currentyear\else\@copyrightyear\fi~%`
433 `Department of Mathematics, Princeton University}`

3.9 Typesetting Top Matter

`\@mainrpi` We write the information about the paper into file.rpi (the The stream for the rpi file:
434 `\newwrite\@mainrpi`

`\aom@write@paper@info` This writes the information about the paper into the file jobname.rpi. Note that hyperref makes our life a little bit more complex
435 `\def\aom@write@paper@info{%`
436 `\bgroup`
437 `\if@filesw`
438 `\openout\@mainrpi\jobname.rpi%`
439 `\def\and{\string\and\space}%`
440 `\ifx\r@LastPage\@undefined`
441 `\edef\@tempa{\start@page}%`
442 `\else`
443 `\def\@tempc##1##2##3##4##5{##2}%`
444 `\edef\@tempa{\expandafter\@tempc\r@LastPage}%`

```

445 \fi
446 \ifx\language\undefined
447   \def\language{english}%
448 \fi
449 \protected@write\@mainrpi{%
450   {\@percentchar authors=\authors}%
451 \protected@write\@mainrpi{%
452   {\@percentchar authors.information={\@names}}%
453 \protected@write\@mainrpi{%
454   {\@percentchar title=\@title}%
455 \protected@write\@mainrpi{%
456   {\@percentchar year=\currentyear}%
457 \protected@write\@mainrpi{%
458   {\@percentchar volume=\currentvolume}%
459 \protected@write\@mainrpi{%
460   {\@percentchar issue=\currentissue}%
461 \protected@write\@mainrpi{%
462   {\@percentchar paper=\currentpaper}%
463 \protected@write\@mainrpi{%
464   {\@percentchar startpage=\start@page}%
465 \protected@write\@mainrpi{%
466   {\@percentchar endpage=\@tempa}%
467 \protected@write\@mainrpi{%
468   {\@percentchar doi=\@doinumber}%
469 \ifx\@zblnumber\@empty\else
470 \protected@write\@mainrpi{%
471   {\@percentchar zbl=\@zblnumber}%
472 \fi
473 \ifx\@mrnumber\@empty\else
474 \protected@write\@mainrpi{%
475   {\@percentchar mr=\@mrnumber}%
476 \fi
477 \ifx\@arxivnumber\@empty\else
478 \protected@write\@mainrpi{%
479   {\@percentchar arxiv=\@arxivnumber}%
480 \fi
481 \protected@write\@mainrpi{%
482   {\@percentchar subjects=Primary \@primarysubjects; Secondary:
483     \@secondarysubjects}%
484 \protected@write\@mainrpi{%
485   {\@percentchar keywords=\@keywords}%
486 \protected@write\@mainrpi{%
487   {\@percentchar abstract=\@aom@abstract}%
488 \protected@write\@mainrpi{%
489   {\@percentchar articlelanguage=\language}%
490 \def\paperUrl{https://annals.math.princeton.edu/\currentyear/\currentvolume-
\currentissue/p\currentpaper}%
491 \protected@write\@mainrpi{%
492   {\@percentchar paperUrl=\paperUrl}%
493 \AtEndDocument{\closeout\@mainrpi}%
494 \fi
495 \egroup}

```

\@maketitle@hook We add writing the information to the hook:

```
496 \def\@maketitle@hook{\aom@write@paper@info\global\let\@maketitle@hook\@empty}
```

\@settitle We do not uppercase title. Also, we use this occasion to set PDF information:

```
497 \def\@settitle{\begin{center}%
498   \baselineskip20\p@\relax
499   \bfseries\LARGE
500   \@title
501   \ifpdf
502     \hypersetup{pdftitle=\@title}%
503   \fi
504   \end{center}}%
505 }
```

\@setauthors Now we typeset authors according to our specs. Again, we use this occasion to set some PDF information:

```
506 \def\@setauthors{%
507   \ifx\authors\@empty\relax\else
508     \begin{group}
509       \def\thanks{\protect\thanks@warning}%
510       \trivlist
511       \centering\footnotesize \@topsep30\p@\relax
512       \advance\@topsep by -\baselineskip
513       \item\relax
514       \def\@and{\upshape \@aom@and}}%
515       \author@andify\authors
516       \ifpdf
517         \bgroup
518           \def\@aom@orcidlink##1{%
519             \xdef\@tempa{\authors}%
520           \egroup
521           \hypersetup{pdfauthor=\@tempa}%
522         \fi
523       \def\@{\protect\linebreak}%
524       \small \@aom@by{} \scshape\authors%
525       \@processcurrentcontribgroup
526       \ifx\@empty\contribs
527         \else
528           ,\penalty-3 \space \@setcontribs
529         \fi
530       \endtrivlist
531       \endgroup
532     \fi}
```

\@setcontribs Contributors are set up in the same way as authors:

```
533 \def\@setcontribs{%
534   \def\@and{\upshape \@aom@and}}%
535   \author@andify\contribs
536   \contribs
537 }
```

\@adminfootnotes We do not typeset keywords, so we change the definition:

```
538 \def\@adminfootnotes{%
```

```

539 \let\@makefnmark\relax \let\@thefnmark\relax
540 \ifx\@empty\@date\else \@footnotetext{\@setdate}\fi
541 \ifx\@empty\@subjclass\else \@footnotetext{\@setsubjclass}\fi
542 \ifx\@empty\@keywords\else\@setkeywords\fi
543 \ifx\@empty\@primarysubjects
544     \ifx\@empty\@secondarysubjects
545     \else\@setsubjects\fi
546 \else\@setsubjects\fi
547 \ifx\@empty\@thanks\else \@footnotetext{%
548     \def\par{\let\par\@par}\@setthanks}%
549 \fi
550 \ifx\@empty\@copyrightnote\else \@footnotetext{%
551     \def\par{\let\par\@par}\@copyrightnote\@addpunct.}%
552 \fi
553 }

```

\@setkeywords Typesetting keywords

```

554 \def\@setkeywords{%
555     \ifpdf
556     \hypersetup{pdfkeywords=\@keywords}%
557     \fi
558     \if@aom@oldkeywords\else
559     \@footnotetext{Keywords: \@keywords}%
560     \fi
561 }

```

\@setsubjects Setting subjects

```

562 \def\@setsubjects{%
563     \let\@subjects\@empty
564     \ifx\@primarysubjects\@empty\else
565     \edef\@subjects{Primary:~\@primarysubjects}%
566     \fi
567     \ifx\@secondarysubjects\@empty\else
568     \ifx\@primarysubjects\@empty
569     \edef\@subjects{Secondary:~\@secondarysubjects}%
570     \else
571     \edef\@subjects{\@subjects; Secondary:~\@secondarysubjects}%
572     \fi
573     \fi
574     \ifpdf
575     \hypersetup{pdfsubject=\@subjects}%
576     \fi
577     \if@aom@oldkeywords\else
578     \@footnotetext{AMS Classification:~\@subjects.}%
579     \fi
580 }

```

\@@and We want “and” in the footers to be lowercase. Since there is some uppercase involved, we protect it:

```

581 \def\@@and{\MakeLowercase{\@aom@and}}

```

3.10 Typesetting End Matter

End matter is typeset at the end of the paper.

`\enddoc@text` This is the main macro for typesetting endmatter.

```
582 \def\enddoc@text{%
583   \ifx\@empty\@translators \else\@settranslators\fi
584   \ifx\@empty\@received \else\@setreceived\fi
585   \ifx\@empty\@revised \else\@setrevised\fi
586   \ifx\@empty\addresses \else\@setaddresses\fi}
```

`\@setreceived` A bunch of macros for setting centered dates

```
\@setrevised 587 \def\@setreceived{\centering(Received: \@received)\par}}
\@setaccepted 588 \def\@setrevised{\centering(Revised: \@revised)\par}}
\@setpublished 589 \def\@setaccepted{\centering(Accepted: \@accepted)\par}}
\@setpublishedonline 590 \def\@setpublished{\centering(Published: \@published)\par}}
591 \def\@setpublishedonline{\centering(Published online: \@publishedonline)\par}}
```

`\emailaddrname` We do not want the word “address” here:

```
592 \def\emailaddrname{\itshape E-mail}}
```

`\@setaddresses` The difference between our definition and the one in `amsart` is that we want the e-mail and URL to be clickable

```
593 \def\@setaddresses{\par
594   \nobreak \begingroup
595   \footnotesize
596   \def\author##1{\goodbreak\addvspace\bigskipamount{\scshape##1\par\nobreak}}%
597   \def\{\unskip, \ignorespaces}%
598   \interlinepenalty\@M
599   \def\address##1##2{\begingroup\nobreak
600     \par\hangindent=22pt\hangafter=0\parindent=0pt
601     \@ifnotempty{##1}{(\ignorespaces##1\unskip) }%
602     {\ignorespaces##2}\par\endgroup}%
603   \def\curraddr##1##2{\begingroup
604     \@ifnotempty{##2}{\nobreak\par
605       \par\hangindent=22pt\hangafter=0\parindent=0pt\curraddrname
606       \@ifnotempty{##1}{, \ignorespaces\scshape##1\unskip}\hskip0.2em:\space
607       ##2\par}\endgroup}%
608   \def\email##1##2{\begingroup
609     \@ifnotempty{##2}{\nobreak
610       \par\hangindent=22pt\hangafter=0\parindent=0pt\emailaddrname
611       \@ifnotempty{##1}{, \ignorespaces##1\unskip}\hskip0.2em:\space
612       \href{mailto:##2}{\nolinkurl{##2}}\par\nobreak}\endgroup}%
613   \def\urladdr##1##2{\begingroup
614     \@ifnotempty{##2}{\nobreak
615       \par\hangindent=22pt\hangafter=0\parindent=0pt%
616       \@ifnotempty{##1}{, \ignorespaces##1\unskip}%
617       \url{##2}\par\nobreak}\endgroup}%
618   \def\orcid##1{\begingroup
619     \@ifnotempty{##1}{\nobreak
620       \par\hangindent=22pt\hangafter=0\parindent=0pt%
621       \url{https://orcid.org/##1}\par\nobreak}\endgroup}%
622   \addresses
623   \endgroup
624 }
```

3.11 Sectioning

`\contentsnamefont` This is the font for the word “Contents”:

```
625 \renewcommand\contentsnamefont{\bfseries}
```

`\section` We want our sections to be centered and bold:

```
626 \def\section{\@startsection{section}{1}%
627   \z@{.7\linespacing\@plus\linespacing}{.5\linespacing}%
628   {\normalfont\bfseries\centering}}
```

`\subsection` We want our subsections to be indented and italic:

```
629 \def\subsection{\@startsection{subsection}{2}%
630   {\parindent}{.5\linespacing}{-.5em}%
631   {\normalfont\itshape}}
```

`\oldsubsections` This macro restores the values for `\subsection` spacing prior to v1.1.

```
632 \def\oldsubsections{%
633   \gdef\subsection{\@startsection{subsection}{2}%
634     {\parindent}{.5\linespacing\@plus.7\linespacing}{-.5em}%
635     {\normalfont\itshape}}
```

`\subsubsection` Subsubsections are formatted exactly like subsections:

```
636 \def\subsubsection{\@startsection{subsubsection}{3}%
637   {\parindent}{.5\linespacing}{-.5em}%
638   {\normalfont\itshape}}
```

`\Hy@AlphNoErr` The newer (circa 2012) `hyperref` defines this command. However, older versions do not. Here we provide it:

```
639 \providecommand\Hy@AlphNoErr[1]{%
640   \ifnum\value{#1}>26 %
641     Alph\number\value{#1}%
642   \else
643     \ifnum\value{#1}<1 %
644       Alph\number\value{#1}%
645     \else
646       \Alph{#1}%
647     \fi
648   \fi
649 }%
```

`\appendix` We redefine appendix to ensure the letter in section number is always upright:

```
650 \def\appendix{\par\c@section\z@ \c@subsection\z@
651   \gdef\theHsection{\Hy@AlphNoErr{section}}%
652   \let\sectionname\appendixname
653   \def\thesection{\upshape\@Alph\c@section}}
```

3.12 Figures and Tables

`\@captionheadfont` This is the font for the words “Figure” or “Table” in captions. Unlike `amsmath` with its small caps, we want just plain Roman font:

```
654 \def\@captionheadfont{\normalfont}
```

3.13 Theorems

Here we redefine three main style of `amsart`. Here are the arguments of `\newtheoremstyle` from [3]:

```

#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”) is in small caps, the number is in normal font, the optional note is also in normal font, and the text is italics.

```

655 \newtheoremstyle{plain}{0.5\linespacing}{0.5\linespacing}{\sishape}%
656 {\parindent}{\scshape}{.}{0.5em}%
657 {\thmname{#1}\thmnumber{ #2}\thmnote{\normalfont{} ( #3)}}

```

In the `definition` style the name is italics, and the body font is upright:

```

658 \newtheoremstyle{definition}{0.5\linespacing}{0.5\linespacing}%
659 {\upshape}{\parindent}%
660 {\sishape}{.}{0.5em}%
661 {\thmname{#1}\thmnumber{ #2}\thmnote{\normalfont{} ( #3)}}

```

In our class there is no difference between `remark` and `definition` theorem styles:

```

662 \newtheoremstyle{remark}{0.5\linespacing}{0.5\linespacing}%
663 {\upshape}{\parindent}%
664 {\sishape}{.}{0.5em}%
665 {\thmname{#1}\thmnumber{ #2}\thmnote{\normalfont{} ( #3)}}

```

`\newtheorem` For compatibility reasons we need to accept `\newtheorem` with optional first argument—and silently drop it. The problem is, there is `\newtheorem*`, so we need to check which one we deal with... The command `\@xnthm` here is from `amsthm`; it does the real work with the real parameters.

```

666 \renewcommand{\newtheorem}{\@ifstar{\@aom@newthm@star}{\@aom@newthm}}
667 \def\@aom@newthm@star{\@ifnextchar[{\@aom@newthm@star@}{\@aom@newthm@star@[]}}
668 \def\@aom@newthm@star@{\@ifnextchar[{\@aom@newthm@star@}{\@aom@newthm@star@[]}}
669 \def\@aom@newthm@star@[ #1]{\@xnthm *}
670 \def\@aom@newthm@[ #1]{\@xnthm \relax}

```

proof We want our proofs to be indented:

```

671 \renewenvironment{proof}[1][\proofname]{\par
672 \pushQED{\qed}%
673 \normalfont \topsep6\p@\@plus6\p@\relax
674 \trivlist
675 \item[\hskip\labelsep\hskip\parindent
676 \itshape
677 #1\@addpunct{.}]\ignorespaces
678 }{%
679 \popQED\endtrivlist\@endpfalse
680 }

```

3.14 Bibliography Macros

`\repeatedauthors` When the authors are repeated, we used change them to `\bysame`; we no more do this:

```
681 \def\repeatedauthors#1{\ClassWarning{aomart}{The command is obsolte}#1}
```

`\bysame` We no longer use `\bysame`

```
682 \let\bysame@@orig=\bysame
683 \def\bysame{\ClassWarning{aomart}{We no longer omit
684   repeated authors}\bysame@@orig}
```

`\doi` Typesetting doi...

```
685 \def\doi#1{%
686   \if@aom@doiMMXVI
687     \url{http://dx.doi.org/#1}%
688   \else
689     \if@aom@olddoi
690       \href{http://dx.doi.org/#1}{doi: \path{#1}}%
691     \else
692       \url{https://doi.org/#1}%
693     \fi
694   \fi}
```

`\mr` Typesetting urls

```
\zbl 695 \def\mr#1{\href{https://mathscinet.ams.org/mathscinet/relay-station?mr=#1}{MR~\path{#1}}}
\arxiv 696 \def\zbl#1{\href{http://www.zentralblatt-math.org/zmath/en/search/?q=an:#1}{Zbl~\path{#1}}}
\jfm 697 \def\arxiv#1{\href{http://www.arxiv.org/abs/#1}{arXiv~\path{#1}}}
698 \def\jfm#1{\href{http://www.emis.de/cgi-bin/JFM-item?#1}{JFM~\path{#1}}}
```

`\bibliofont` We make this `\small` rather than `\Small` in amsart

```
699 \renewcommand{\bibliofont}{\small}
```

3.15 Additional Macros

`\c@aom@EC@counter` The counter for editorial comments

```
700 \newcounter{aom@EC@counter}
```

`\EditorialComment` This macro is tiny marginpar in manuscript mode

```
701 \NewDocumentCommand\EditorialComment{O{default} +m O{Opt}}{%
702   \if@aom@manuscript@mode\bgroup
703   \expandafter\ifx\csname EditorialComment@#1\endcsname\relax\else
704     \stepcounter{aom@EC@counter}%
705     \setlength\unitlength{1sp}%
706     \zsavepos{aom@EC@position\arabic{aom@EC@counter}}%
707     \begin{picture}(0,0)%
708       \put(\the\dimexpr
709         -\zposx{aom@EC@position\arabic{aom@EC@counter}}sp + 15pt,#3){%
710         \parbox{80pt}{\raggedright
711           \normalfont\scriptsize\raggedright\expandafter\color\expandafter{%
712             \csname EditorialComment@#1\endcsname}#2}}%
713     \end{picture}%
}
```

```

714 \fi
715 \egroup
716 \fi}

\ECSelect
717 \newcommand\ECSelect[2][black]{\if@aom@manuscript@mode
718 \expandafter\gdef\csname
719 EditorialComment@#2\endcsname{#1}%
720 \fi}
721 \AtBeginDocument{\ECSelect{default}}

\Highlight
722 \newcommand\Highlight[2][default]{%
723 \expandafter\ifx\csname Highlight@#1\endcsname\relax
724 #2\else
725 \csname Highlight@#1\endcsname{#2}\fi}

\HSelect
726 \newcommand\HSelect[2][red]{\if@aom@manuscript@mode
727 \@for\TC@level:=#2\do{\expandafter
728 \gdef\csname Highlight@\TC@level\endcsname##1{\bgroup
729 \Hy@colorlinksfalse
730 \def\Hy@colorlink####1{\begingroup}%
731 \def\Hy@endcolorlink{\endgroup}%
732 \color{#1}##1\egroup}}%
733 \fi}
734 \AtBeginDocument{\HSelect{default}}

\@fullref This macro creates a wide link for the reference. It has four parameters: the
word (theorem, equation,...), the “pre” punctuation, the reference and the “post”
punctuation.
735 \def\@fullref#1#2#3#4{\hyperref[#3]{#1~#2\ref*{#3}#4}}

\fullref A reference without parentheses:
736 \newcommand{\fullref}[2]{\@fullref{#1}{-}{#2}{-}}

\pfullref A reference with parentheses:
737 \newcommand{\pfullref}[2]{\@fullref{#1}{(}{#2}{)}}

\bfullref A reference with brackets:
738 \newcommand{\bfullref}[2]{\@fullref{#1}{[}{#2}{]}}

\eqfullref Here we do not use the standard common \@fullref because we want \eqref to
work...
739 \newcommand{\eqfullref}[2]{\hyperref[#2]{#1~\textup{\tagform@{\ref*{#2}}}}}

\fullpageref A wide link for page reference. Note that the word “page” can be omitted
740 \newcommand{\fullpageref}[2][page]{\hyperref[#2]{#1~\pageref*{#2}}}
```

`\eqnarray` While we do *not* recommend the use of `eqnarray`, we still would like to correct the ugly spacing around it...

```

741 \def\eqnarray{%
742   \stepcounter{equation}%
743   \def\@currentlabel{\p@equation\theequation}%
744   \global\@eqnswtrue
745   \m@th
746   \global\@eqcnt\z@
747   \tabskip\@centering
748   \let\\\@eqncr
749   $$\arraycolsep1\p@
750   \everycr{}\halign to\displaywidth\bgroup
751     \hskip\@centering$\displaystyle\tabskip\z@skip{##}$\@eqnse
752     &\global\@eqcnt\@ne\hskip \tw@arraycolsep \hfil${##}$\hfil
753     &\global\@eqcnt\tw@ \hskip \tw@arraycolsep
754     $\displaystyle{##}$\hfil\tabskip\@centering
755     &\global\@eqcnt\thr@@ \hbxt@\z@\bgroup\hss##\egroup
756     \tabskip\z@skip
757   \cr
758 }
```

`\includecolorgraphics` Color graphics: select either the first or the second argument.

```

759 \newcommand\includecolorgraphics[3][]{\if@aom@screen@mode
760   \includegraphics[#1]{#2}\else
761   \includegraphics[#1]{#3}\fi}
```

`\IfColorTF` A slight generalization of the previous macro

```

762 \newcommand\IfColorTF[2]{\if@aom@screen@mode
763   #1\else
764   #2\fi}
```

`\@aom@sponsors` The list of sponsors, separated by `\and`

```

765 \def\@aom@sponsors{}
766 \AtEndDocument{%
767   \ifx\@aom@sponsort\@empty\else
768     \protected@write\@mainrpi{%
769       {\@percentchar grants=\@aom@sponsors}%
770     \fi}
```

`\funding` The macro to print grants. It adds to the rpi file the information about grants

```

771 \newcommand\funding[3][]{%
772   \ifx\@aom@sponsors\@empty
773     \gdef\@aom@sponsors{sponsor=#2, grantid=#3}%
774   \else
775     \g@addto@macro{\@aom@sponsors}{\protect\and sponsor=#2, grantid=#3}%
776   \fi
777   \def\@tempa{#1}\relax%
778   \ifx\@tempa\@empty\relax
779     \def\@tempb{#3}%
780     #2%
781     \ifx\@tempb\@empty\relax\else\ (grant~#3)\fi
782   \else
```

```
783      #1
784      \fi}
```

3.16 End of Class

```
785 </class>
```

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Change History

v0.10	General: Bibliography styles update 2 Documentation update 2 Screen mode triggers special URL settings 16 <code>\ifaom@screen@mode</code> : Added screen mode 15 <code>\jfm</code> : Added macro 33	Made remark theorem style identical to definition theorem style 32 Made Roman font the default URL font 16 <code>\@fullref</code> : Added macro 34 <code>\@setaddresses</code> : Deleted the word URL 30 E-mail is now in Roman font . . 30 <code>\@setpublishedonline</code> : Decreased font 30 <code>\@typesizes</code> : Corrected typo in the definition of Small 18 Increased LARGE from 16 pt to 17 pt 18 <code>\bfullref</code> : Added macro 34 <code>\emailaddrname</code> : Changed macro 30 <code>\eqfullref</code> : Added macro 34 <code>\fullref</code> : Added macro 34 <code>\pfullref</code> : Added macro 34 <code>proof</code> : Redefined macro 32 <code>\subsection</code> : Redefined macro . . 31
v0.2	General: First fully functional version 2	
v0.3	General: Added DOI number in headers 19 Added package mdputu 17 Documentation update 2 <code>\arxiv</code> : Added macro 33 <code>\corresponding</code> : Added macro . . 26 <code>\doinumber</code> : Added macro 26 <code>\EditorialComment</code> : Added macro 33 <code>\ifaom@manuscript@mode</code> : Added manuscript mode 14 <code>\mr</code> : Added macro 33 <code>\mrnumber</code> : Added macro 26 <code>\newtheorem</code> : Redefined macro . . 32 <code>\proposed</code> : Added macro 26 <code>\seconded</code> : Added macro 26 <code>\version</code> : Added macro 26 <code>\zbl</code> : Added macro 33 <code>\zblnumber</code> : Added macro 26	v0.6 General: Changes to bst files 2 Fullref.pl is much less aggressive now 2 <code>\@setauthors</code> : 'By' and 'and' are in Roman font now 28 <code>\belowdisplayskip</code> : Changed belowdisplayskip 18 <code>\biblio font</code> : Changed default . . 33 <code>\zbl</code> : Changed capitalization . . . 33
v0.4	General: Changed definition theorem style 32 Changed plain theorem style . . 32 Deleted lineno package dependence 16 Deleted remark theorem style . . 32 Documentation update 2 Switched to upright digits in italics everywhere 17 Used line numbers for headings 19 <code>\@aom@linecount</code> : Added macro . . 19 <code>\enddoc@text</code> : Deleted many dates. 30	v0.7 General: Bibliography styles changed 2
v0.5	General: Added extra footer in manuscript mode 19 Corrected the byg with math in headers 19	v0.8 General: Added yhmath 17 Bibliography styles update 2 Changed authors in header . . . 19 Documentation update 2 Switched to cmtiup 17 <code>\specialdigits</code> : Redefined to noop 17
		v0.9 General: Bibliography styles update 2 Changed font for the folio on the first page 19 Documentation update 2 <code>\@and</code> : Redefined macro 29

\@setaddresses: Deleted spurious space in urladdress	30	\aom@write@paper@info: Added macro	26
\@setpublishedonline: Increased font	30	v1.14a \annalsurl: New url	20
abstract: Added parindent for the first par	25	v1.15 \doi: Doi according to the new Crossref recommendations . . .	33
\eqnarray: Redefined standard macro	35	\if@aom@doiMMXVI: Added another options	15
v1.0 General: Top matter macros are now only in preamble	2	v1.16 General: We require environ package	16
\doinumber: Added default	26	\aom@write@paper@info: Added names, abstract, subjects, keywords, zblnumber, ...	26
\papernumber: Added macro	24	Corrected the endpage bug . . .	26
v1.1 General: In manuscript mode the links are always blue	16	\arxivnumber: Added macro	26
v1.10 \@@and: Added internationalization	29	\author: Redefined amsart definition	21
\@aom@and: Added macro	17	abstract: Redefined using environ	25
\@aom@by: Added macro	17	\email: Redefined amsart definition	23
\@setauthors: Internationalization	28	\fulladdress: Redefined	21
\doi: Introduced the logic for old doi formatting	33	\givenname: Redefined	21
\if@aom@olddoi: Added old DOI processing	15	\surname: Redefined	21
v1.11 General: Added \fulladdress	2	\urladdr: Redefined amsart definition	23
Added new commands for copyright statement	2	v1.17 General: Added new field totalpages to the bibliography	2
Bibliography change: titlenote, deleted bysame	2	v1.17a General: Bug fixed in aomplain.bst	2
Deleted \repeatedauthors from the documentation	2	v1.18 General: New option oldkeywords and printing keywords and subjects by default	2
\@adminfootnotes: Added copyright statement	28	\@setaddresses: Added orcid . . .	30
\@setaddresses: Changed email handling	30	\@setkeywords: Now we print keywords	29
\bysame: Made the macro obsolete	33	\@setsubjects: Now we print subjects	29
\copyrightnote: Added macro . . .	26	\if@aom@oldkeywords: Added keywords processing	15
\copyrightyear: Added macro . . .	26	\orcid: Added macro	23
\fulladdress: Added macro	21	\subject: Drop scheme and primary/secondary	23
\repeatedauthors: Now this command is obsolete	33	v1.19 General: Bibliography changes . . .	2
v1.12 \appendix: Added hyperref definition	31	v1.2 General: Bibliography styles update	2
v1.13 \Hy@AlphNoErr: Added macro for older installations	31	\@setaddresses: Changed font for current address	30
v1.14 \@mainrpi: Added macro	26		
\@maketitle@hook: Added macro	27		

\arxiv: Now we properly treat numbers with underscores ...	33	\contribs: Introduced macro ...	22
\doi: Now we properly treat numbers with underscores ...	33	\ifstartcontribgroup: Introduced macro	22
\jfm: Now we properly treat numbers with underscores ...	33	v1.27 \aom@write@paper@info: Keep the .rpi file open till the end of document	26
\mr: Now we properly treat numbers with underscores ...	33	\funding: Added macro	35
\oldsubsections: Introduced macro	31	v1.28 \setauthors: Added treatment of orcid	28
\subsection: Decreased vertical spacing	31	\aom@current@orcid@target: Added macro	23
\zbl: Now we properly treat numbers with underscores ...	33	\aom@orcidlink: Added macro ..	23
v1.20 \adminfootnotes: Make primary and secondary subjects separated	28	\contrib: Added typesetting orcid	22
\setsubjects: Make primary and secondary subjects separated ..	29	\orcid: Added typesetting orcid ..	23
\aom@write@paper@info: Make primary and secondary subjects separated	26	v1.29 \setaddresses: Reformatted ..	30
\subject: Make primary and secondary subjects separated ..	23	v1.3 General: Corrected bug with doinumber	19
v1.21 \getabstract: Added multilanguage abstracts	25	v1.30 \citex: Redefined macro	16
\aom@write@paper@info: Added main language	26	\makefnmar: Use kernel version of footnote marks	15
\g@addto@abstract: Added macro ..	25	\makefnmark@kernel: Use kernel version of footnote marks	15
v1.22 General: In screen mode we no longer crop pages	16	v1.31 \setaddresses: Reformatted ..	30
v1.23 General: Made ymath large symbols default	17	v1.32 \citex: Added ‘and’ and oxford comma	16
\widetilde: We are taking wide hat and wide tilde from amsfonts	17	\ECSelect: Added macro	34
v1.24 \if@aom@printscheme: Added optional printing of scheme ..	15	\EditorialComment: Rewrote macro, adding levels	33
\subject: Added scheme	23	\Highlight: Added macro	34
v1.25 \fullpageref: Added macro	34	\HSelect: Added macro	34
v1.26 \@currentcontribution: Introduced macro	21	\includecolorgraphics: Added macro	35
\@currentcontributors: Introduced macro	22	v1.33 \setaddresses: No break after author name	30
\@processcurrentcontribgroup: Introduced macro	22	v1.34 General: We need zref for margin notes	16
\contrib: Redefined amsart macro ..	22	\c@aom@EC@counter: Added macro ..	33
		\ECSelect: Added colors	34
		\EditorialComment: Rewrote the macro	33
		v1.35 \aom@sponsors: Added macro ..	35
		\aom@write@paper@info: Added paper url	26

v1.37		Added sortyear to the styles . . .	2
\@setaddresses:	Updated	\arxiv: Typo corrected	33
\curraddr	 30	v1.6	
v1.38		General: Bibliography change:	
\IfColorTF:	Added macro 35	aomalpha now respects key	
v1.39		field in the bib file	2
General:	Moved from boxes 19	\appendix: Redefined the macro .	31
\@aom@linecount:	Deleted extra	v1.7	
boxing	 19	General: Suppressed page number	
\@setauthors:	Added alt text for	in the header for one-page	
orcid	 28	articles	20
\mr:	Moved to relaystation format	v1.9	
v1.4		\doi: Changed doi look	33
General:	Deleted noamsfonts	v2.28	
option	 15	\headheight: Increased	19
\subsection:	Deleted stretch in	v2.30	
vertical spacing	 31	General: Changed the margins for	
\subsubsection:	Introduced the	enumerate	18
macro	 31	v2.32	
v1.5		\itemize: Changed the margins	
General:	Added noopsort to the	for itemize	19
styles, corrected typo	 2		

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		\@auxout 82	\@footnotetext
\@and 280, 514, 534, <u>581</u>	\@captionheadfont . 654	 540, 541, 547, 550, 559, 578	
\@Alph 653	\@centering 747, 751, 754	\@for 68, 71, 727	\@formatdate . 353, <u>354</u>
\@M 598	\@cite 71	\@fullref	. <u>735</u> , 736, 737, 738
\@accepted 364, 365, 589	\@citeofmt 87	\@getabstract . <u>386</u> , 414	\@gobble
\@addpunct . . . 551, 677	\@citea . . . 70, 72, 76, 78	. 416, 417, 418, 419	\@ifnextchar . 667, 668
\@adminfootnotes . . <u>538</u>	\@citeb 68, 71, 81, 82, 83, 86, 87	\@ifnotempty 262, 601, 604, 606, 609, 611, 614, 616, 619	\@ifpackageloaded . 105
\@annalsurl . . 196, 211	\@citex <u>66</u>	\@ifstar 666	\@ifundefined 83
\@aom@abstract 385, 386, 394, 487	\@copyrightnote 430, 550, 551	\@itemdepth 155, 156, 157	\@itemitem . . . 157, 158
\@aom@and <u>104</u> , 106, 107, 108, 280, 514, 534, 581	\@copyrightyear 428, 432	\@ixpt 127	\@keywords 337, 338, 485, 542, 556, 559
\@aom@by <u>103</u> , 106, 107, 108, 524	\@currentcontribution <u>273</u> , 286, 297, 305, 310, 318	\@latex@warning 85	\@listi 153
\@aom@doiMMXVifalse 48	\@currentcontributors . . <u>274</u> , 279, 281, 289, 294, 311, 313	\@mainrpi	. <u>434</u> , 438, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 470, 474, 478, 481, 484, 486, 488, 491, 493, 768
\@aom@doiMMXVtrue . 49	\@currentlabel . . . 743	\@makefnmar <u>65</u>	\@makefnmark 63, 65, 539
\@aom@linecount <u>169</u> , 180, 183, 192	\@date 540	\@makefnmark@kernel <u>63</u> , 65	\@maketitle@hook . . <u>496</u>
\@aom@manuscript@modelfalse 39	\@dblarg 271	\@mathmeasure . 111, 115	\@mrnumber 422, 473, 475
\@aom@manuscript@modetrue 40	\@doinumber . . . 207, 208, 209, 420, 468	\@names 249, 250, 251, 252, 256, 259, 315, 316, 318, 319, 324, 328, 333, 452	\@ne . 156, 170, 172, 752
\@aom@newthm . 666, 668	\@empty	. 271, 272	\@onlypreamble 213, 214,
\@aom@newthm@ . 668, 670	. 70, 81, 207, 254, 263, 279, 282, 296, 297, 337, 339, 340, 341, 342, 344, 361, 363, 365, 367, 369, 381, 432, 469, 473, 477, 496, 507, 526, 540, 541, 542, 543, 544, 547, 550, 563, 564, 567, 568, 583, 584, 585, 586, 767, 772, 778, 781		
\@aom@newthm@star 666, 667	\@endformatdate 353, 354		
\@aom@newthm@star@ 667, 669	\@endpfalse 679		
\@aom@olddoifalse . . 45	\@eqcnt 746, 752, 753, 755		
\@aom@olddoittrue . . 46	\@eqncr 748		
\@aom@oldkeywordsfalse 51	\@eqnsel 751		
\@aom@oldkeywordstrue 52	\@eqnswtrue 744		
\@aom@printschemefalse 54	\@firstofone 81		
\@aom@printschemetrue 55			
\@aom@screen@modelfalse 42			
\@aom@screen@modetrue 43			
\@aom@sponsors <u>765</u> , 772, 773, 775			
\@aom@sponsort 767			
\@arxivnumber 426, 477, 479			

215, 216, 217,	\@settitle 497	\addresses
218, 219, 220,	\@settranslators .. 583	. 269, 320, 323,
221, 222, 223,	\@startcontribgroupfalse	327, 332, 586, 622
224, 225, 226,	 277, 302, 306	\addto 106, 107, 108
227, 228, 229,	\@startcontribgrouptrue	\addvspace 596
230, 231, 232,	 295	\advance 68, 73,
233, 234, 235,	\@startsection	152, 156, 172, 512
236, 237, 238,	. 626, 629, 633, 636	\Alph 646
239, 240, 241,	\@subjclass 541	\and 258, 259, 266, 283,
242, 243, 244,	\@subjects 563, 565,	313, 315, 439, 775
245, 246, 247, 248	569, 571, 575, 578	\annalsurl 211
\@par 548, 551	\@tempa ... 293, 296,	\aom@current@orcid@target
\@percentchar	305, 380, 381,	. 261, 294, 330, 334
. 450, 452, 454,	441, 444, 466,	\aom@orcidlink
456, 458, 460,	519, 521, 777, 778	 334, 336, 518
462, 464, 466,	\@tempb 779, 781	\aom@size@warning 30,
468, 471, 475,	\@tempc 443, 444	33, 34, 35, 36, 37
479, 482, 485,	\@tempcnta 67,	\aom@write@paper@info
487, 489, 492, 769	68, 74, 75, 170,	 435, 496
\@plus 409, 627, 634, 673	171, 172, 355, 359	\appendix 650
\@primaryscheme ... 341	\@tempcntb .. 69, 73, 74	\appendixname 652
\@primarysubjects .	\@thefnmark 539	\arabic 706, 709
.... 339, 482,	\@title ... 454, 500, 502	\arraycolsep
543, 564, 565, 568	\@toodeep 155	 749, 752, 753
\@processcurrentcontribgroup	\@topsep 511, 512	\arxiv 13, 695
.... 278, 309, 525	\@translators 583	\arxivnumber 8, 248, 420
\@published 366, 367, 590	\@typesizes 126	\AtBeginDocument ..
\@publishedonline .	\@undefined 440	. 105, 148, 721, 734
.... 368, 369, 591	\@viipt 127	\AtEndDocument 493, 766
\@received	\@viipt 127	\author 5,
. 360, 361, 584, 587	\@viipt 127	214, 253, 320, 596
\@revised	\@xipt 130	\author@andify
. 362, 363, 585, 588	\@xipt 129	 281, 515, 535
\@secondaryscheme .. 342	\@xnthm 669, 670	\authors 254, 255, 258,
\@secondarysubjects	\@xp 272	261, 330, 450,
.... 340, 483,	\@xpt 128	507, 515, 519, 524
544, 567, 569, 571	\@xvipt 130	
\@setabstract 415	\@zblnumber 424, 469, 471	
\@setabstracta 415	\\ 171, 206, 523, 597, 748	B
\@setaccepted 587	_ 781	\baselineskip
\@setaddresses 586, 593	10pt (option) 4	 132, 498, 512
\@setauthors 506	11pt (option) 4	\begin 25, 179,
\@setcontribs . 528, 533	12pt (option) 4	182, 191, 497, 707
\@setdate 540	8pt (option) 4	\begingroup ... 508,
\@setkeywords . 542, 554	9pt (option) 4	594, 599, 603,
\@setpublished 587		608, 613, 618, 730
\@setpublishedonline	A	\belowdisplayskip . 138
..... 587	\abovedisplayskip . 138	\bfseries 83,
\@setreceived . 584, 587	\abstract 414	405, 499, 625, 628
\@setrevised . 585, 587	abstract (env.) 6	\bfullref 9, 738
\@setsubjclass 541	\abstractbox . 402, 403	\bgroup 388,
\@setsubjects	\abstractname 405	402, 436, 517,
.... 545, 546, 562	\accepted .. 7, 229, 360	702, 728, 750, 755
\@setthanks 548	\address ... 5, 217, 599	\biblio font 699
		\bigskipamount 596

\box	403	\currentyear 197, 372, 421, 432, 456, 490	\DocumentMetadata . . . 8
\bysame	<u>682</u>		\doi 13, 209, <u>685</u>
\bysame@@orig . 682, 684			doi2016 (option) 4
			\doinumber . 8, 245, <u>420</u>
			draft (option) 4
C		D	E
\c@aom@EC@counter . 700		\DeclareOption 33, 34, 35, 36, 37, 40, 43, 46, 49, 52, 55, 56	\ECSelect 9, <u>717</u>
\c@page	377	\DeclareSymbolFont 110	\edef 81, 157, 200, 202, 204, 208, 271, 441, 444, 565, 569, 571
\c@section . . . 650, 653		\def 30, 66, 72, 76, 78, 103, 104, 106, 107, 108, 123, 126, 160, 199, 211, 249, 250, 251, 252, 273, 274, 275, 278, 280, 293, 330, 337, 343, 353, 354, 360, 362, 364, 366, 368, 370, 371, 372, 373, 375, 376, 378, 380, 381, 382, 383, 385, 386, 387, 390, 420, 422, 424, 426, 428, 430, 435, 439, 443, 447, 490, 496, 497, 506, 509, 514, 518, 523, 533, 534, 538, 548, 551, 554, 562, 581, 582, 587, 588, 589, 590, 591, 592, 593, 596, 597, 599, 603, 608, 613, 618, 626, 629, 632, 636, 650, 653, 654, 667, 668, 669, 670, 681, 683, 685, 695, 696, 697, 698, 730, 731, 735, 741, 743, 765, 777, 779	\editor 7, 235
\c@subsection 650			\EditorialComment 8, <u>701</u>
\captionsenglish . . 108			\egroup 397, 413, 495, 520, 715, 732, 755
\captionsfrench . . . 106			\else 77, 94, 97, 114, 118, 156, 203, 206, 207, 257, 265, 279, 282, 301, 312, 337, 346, 382, 432, 442, 469, 473, 477, 507, 527, 540, 541, 542, 545, 546, 547, 550, 558, 564, 567, 570, 577, 583, 584, 585, 586, 642, 645, 688, 691, 703, 724, 760, 763, 767, 774, 781, 782
\captionsgerman . . . 107			\email . . 5, 216, <u>322</u> , 608
\centering 405, 511, 587, 588, 589, 590, 591, 628			\emailaddrname <u>592</u> , 610
\cfoot	210		\EnableCrossrefs . . . 24
\thead	195		\end 27, 181, 184, 193, 504, 713
\citation	82		\end@page 201, 204, 206, 381, 382
\ClassError	298		\endcsname 87, 158, 272, 344, 345, 347, 350, 703, 712, 719, 723, 725, 728
\ClassInfo 58, 60			\enddoc@text <u>582</u>
\ClassWarning . . . 31, 121, 399, 681, 683			\endgroup 531, 602, 607, 612, 617, 621, 623, 731
\closeout	493		\endlist 163, 413
\clubpenalty	<u>146</u>		\endpage 7, 244, <u>380</u> , 383
\CodelineIndex	22		\endtrivlist . 530, 679
\Collect@Body	414		environments: abstract 6
\color	711, 732		
\contentsnamefont . 625			
\contrib 5, 215, <u>292</u>			
\contribs . 275, 282, 283, 285, 287, 288, 526, 535, 536			
\copyrightnote 6, 240, <u>430</u>			
\copyrightyear . . 7, <u>428</u>			
\copyrighyear	241		
\corresponding 7, 234, <u>418</u>			
\cr	757		
\csname 87, 158, 272, 344, 345, 347, 350, 703, 712, 718, 723, 725, 728			
\curraddr . . 5, 218, 603			
\curraddrname	605		
\currentissue 371, 421, 460, 490			
\CurrentOption . . 33, 34, 35, 36, 37, 56			
\currentpaper 373, 421, 462, 490			
\currentvolume . 196, 370, 421, 458, 490			
		\dimen 142	
		\dimexpr 708	
		\displaystyle . 751, 754	
		\displaywidth 750	
		\do 68, 71, 727	
		\DocInput 26	
		\documentclass 14	

<code>\interlinepenalty</code> . 598	<code>\maketitle</code> . 6, 398, 400	<code>olddoi</code> 4
<code>\issuenum</code> 7, 238, <u>371</u>	<code>\MakeUppercase</code> 187	<code>oldkeywords</code> 4
<code>\item</code> 412, 513, 675	<code>manuscript (option)</code> . . . 4	<code>printscheme</code> 4
<code>\itemindent</code> 408	<code>\mathaccent</code>	<code>screen</code> 4
<code>\itemize</code> <u>154</u>	. 113, 114, 117, 118	<code>\or</code> 127, 128, 129, 130,
<code>\itshape</code> . . 124, 592,	<code>\MessageBreak</code> 121	131, 356, 357, 358
631, 635, 638, 676	<code>\mr</code> 13, <u>695</u>	<code>\orcid</code> . . 5, 220, <u>331</u> , 618
	<code>\mrnumber</code> . . 8, 246, <u>420</u>	<code>\overline</code> 16, 133
J		
<code>\jfm</code> 13, <u>695</u>	N	
<code>\jobname</code> 438	<code>\NeedsTeXFormat</code> 1	P
K		
<code>\kern</code> 336	<code>\newcommand</code> . . . 169,	<code>\p@</code> 409, 498, 511, 673, 749
<code>\keyword</code> . . . 6, 225, <u>337</u>	331, 336, 717,	<code>\p@equation</code> 743
L		
<code>\labelenumi</code> 150	722, 726, 736,	<code>\PageIndex</code> 21
<code>\labelitemi</code> 159	737, 738, 739,	<code>\pagenumbering</code> 375, 377
<code>\labelsep</code> 149,	740, 759, 762, 771	<code>\pageref</code> . . 199, 381, 740
150, 152, 159, 675	<code>\newcounter</code> 700	<code>\pagespan</code> <u>383</u>
<code>\labelwidth</code> . . 152, 406	<code>\NewDocumentCommand</code> 701	<code>\pagestyle</code> 173
<code>\language</code>	<code>\newif</code> 38, 41,	<code>\papernumber</code> 7, 242, 373
. 389, 390, 393,	44, 47, 50, 53, 276	<code>\paperUrl</code> 490, 492
396, 446, 447, 489	<code>\newtheorem</code> . . . 11, <u>666</u>	<code>\par</code> 405, 548, 551, 587,
<code>\LARGE</code> 499	<code>\newtheoremstyle</code> . .	588, 589, 590,
<code>\leavevmode</code> 66	 655, 658, 662	591, 593, 596,
<code>\leftmargin</code> 151, 159, 407	<code>\newwrite</code> 434	600, 602, 604,
<code>\leftmargini</code>	<code>\nobreak</code> 594, 596, 599,	605, 607, 610,
. 150, 151, 152	604, 609, 612,	612, 615, 617,
<code>\let</code> . 16, 63, 65, 70,	614, 617, 619, 621	620, 621, 650, 671
124, 125, 133,	<code>\noexpand</code> . 111, 112,	<code>\parbox</code> 169, 710
339, 340, 341,	114, 115, 116, 118	<code>\parindent</code>
342, 361, 363,	<code>\nolinkurl</code> 612	. <u>144</u> , 600, 605,
365, 367, 369,	<code>\normalfont</code> 405, 412,	610, 615, 620,
410, 416, 417,	628, 631, 635,	630, 634, 637,
418, 419, 496,	638, 654, 657,	656, 659, 663, 675
539, 548, 551,	661, 665, 673, 711	<code>\parsep</code> 409
563, 652, 682, 748	<code>\normalparindent</code> . . 408	<code>\parskip</code> <u>144</u>
<code>\lhead</code> 191	<code>\normalsize</code> . . 132, 405	<code>\PassOptionsToClass</code> 56
<code>\linebreak</code> 523	<code>\number</code> 641, 644	<code>\path</code> 690,
<code>\linespacing</code> . . 132,	O	
627, 630, 634,	<code>\oddsidemargin</code> <u>136</u>	695, 696, 697, 698
637, 655, 658, 662	<code>olddoi (option)</code> 4	<code>\penalty</code> 528
<code>\list</code> 158, 406	<code>oldkeywords (option)</code> . . 4	<code>\pfullref</code> 9, <u>737</u>
<code>\listparindent</code> 408	<code>\oldsubsections</code> . 8, <u>632</u>	<code>\popQED</code> 679
<code>\llap</code> 160	<code>\openout</code> 438	<code>printscheme (option)</code> . . 4
<code>\LoadClass</code> 64	options:	<code>\ProcessOptions</code> 62
<code>\long</code> 30, 386, 387	10pt 4	<code>\proof</code> <u>671</u>
<code>\loop</code> 171	11pt 4	<code>\proofname</code> 671
M		
<code>\m@th</code> 745	12pt 4	<code>\proposed</code> . . 7, 232, <u>416</u>
<code>\makelabel</code> 160	8pt 4	<code>\protect</code>
<code>\MakeLowercase</code> 581	9pt 4	. 400, 509, 523, 775
	<code>doi2016</code> 4	<code>\protected@write</code> . .
	<code>draft</code> 4	. 449, 451, 453,
	<code>final</code> 4	455, 457, 459,
	<code>manuscript</code> 4	461, 463, 465,
		467, 470, 474,
		478, 481, 484,
		486, 488, 491, 768

<code>\providecommand</code> ... 639	<code>\setlength</code> 134, 135, 138,	<code>\thmname</code> .. 657, 661, 665
<code>\ProvidesClass</code> 5	139, 140, 141,	<code>\thmnote</code> .. 657, 661, 665
<code>\ProvidesFile</code> 3	142, 143, 144,	<code>\thmnumber</code> 657, 661, 665
<code>\publicationyear</code> 7, 239, <u>372</u>	145, 165, 166, 705	<code>\thr@@</code> 755
<code>\published</code> . 7, 230, <u>360</u>	<code>\settowidth</code> .. 150, 159	<code>\title</code> 5, 213
<code>\publishedonline</code> 7, 231, <u>360</u>	<code>\shortauthors</code> ... 6, 187, 263, 264, 266	<code>\topsep</code> 673
<code>\pushQED</code> 672	<code>\shorttitle</code> 176	<code>\topskip</code> <u>138</u>
<code>\put</code> . 180, 183, 192, 708	<code>\sisshape</code> 124, 655, 660, 664	<code>\trivlist</code> 510, 674
Q		<code>\tw@</code> . 112, 116, 752, 753
<code>\qed</code> 672	<code>\skip</code> 141	U
R		<code>\undefined</code> ... 389, 446
<code>\r@LastPage</code> .. 440, 444	<code>\Small</code> 412	<code>\underline</code> 171
<code>\raggedright</code> . 710, 711	<code>\small</code> 524, 699	<code>\unitlength</code> 705
<code>\received</code> .. 7, 227, <u>360</u>	<code>\space</code> 86, 287, 359, 400, 439, 528, 606, 611	<code>\unskip</code> 597, 601, 606, 611, 616
<code>\RecordChanges</code> 23	<code>\specialdigits</code> <u>123</u>	<code>\upshape</code> 160, 280, 514, 534, 653, 659, 663
<code>\ref</code> 735, 739	<code>\start@page</code> 198, 200, 376, 378, 441, 464	<code>\url</code> . 617, 621, 687, 692
<code>\relax</code> ... 62, 74, 75, 149, 170, 296, 297, 305, 344, 355, 398, 410, 415, 498, 507, 511, 513, 539, 670, 673, 703, 723, 777, 778, 781	<code>\startpage</code> 7, 243, <u>375</u> , 383	<code>\urladdr</code> 5, 219, <u>326</u> , 613
<code>\renewcommand</code> 167, 168, 253, 292, 322, 326, 625, 666, 699	<code>\stepcounter</code> . 704, 742	<code>\urlstyle</code> 101
<code>\renewenvironment</code> 154, 414, 671	<code>\string</code> 82, 272, 439	<code>\usepackage</code> 15, 17, 18, 19
<code>\repeat</code> 172	<code>\subject</code> ... 7, 226, <u>339</u>	V
<code>\repeatedauthors</code> .. <u>681</u>	<code>\subsection</code> .. <u>629</u> , 633	<code>\value</code> 640, 641, 643, 644
<code>\RequirePackage</code> . 88, 89, 90, 102, 109, 120	<code>\subsubsection</code> <u>636</u>	<code>\version</code> ... 7, 236, <u>419</u>
<code>\reset@font</code> 83	<code>\surname</code> ... 5, 223, <u>249</u>	<code>\vglue</code> 404, 405
<code>\revised</code> ... 7, 228, <u>360</u>	<code>\symAMSb</code> 113, 117	<code>\volumenumber</code> 7, 237, <u>370</u>
<code>\rightmargin</code> 407	T	<code>\vtop</code> 402
<code>\romannumeral</code> . 157, 378	<code>\tabskip</code> 747, 751, 754, 756	W
S		<code>\wd</code> 112, 116
<code>screen</code> (option) 4	<code>\tagform@</code> 739	<code>\widebar</code> 9, 16, <u>133</u>
<code>\scriptsize</code> 171, 176, 185, 187, 195, 711	<code>\TC@level</code> 727, 728	<code>\widehat</code> 9, <u>111</u>
<code>\scshape</code> 524, 596, 606, 656	<code>\tempa</code> 199, 201, 202, 204, 206	<code>\wideparen</code> 9
<code>\seconded</code> .. 7, 233, <u>417</u>	<code>\tempb</code> 200, 206	<code>\widering</code> 9
<code>\section</code> <u>626</u>	<code>\textbf</code> 196	<code>\widetilde</code> 9, <u>111</u>
<code>\sectionname</code> 652	<code>\textcopyright</code> 431	<code>\widetriangle</code> 9
<code>\setbox</code> 402	<code>\textheight</code> <u>134</u>	<code>\widowpenalty</code> <u>146</u>
<code>\setcounter</code> .. 375, 377	<code>\textit</code> 125	<code>\write</code> 82
	<code>\textsi</code> 125	X
	<code>\textstyle</code> ... 111, 115	<code>\xdef</code> 111, 115, 519
	<code>\textup</code> 739	Z
	<code>\textwidth</code> <u>134</u>	<code>\z@</code> 111, 112, 115, 116, 145, 377, 406, 409, 627, 650, 746, 755
	<code>\thanks</code> 6, 224, 509	<code>\z@skip</code> 751, 756
	<code>\thanks@warning</code> ... 509	<code>\zbl</code> <u>13</u> , <u>695</u>
	<code>\thankses</code> 547	<code>\zblnumber</code> . 8, 247, <u>420</u>
	<code>\the</code> . 157, 171, 359, 708	<code>\zposx</code> 709
	<code>\theequation</code> 743	<code>\zsavapos</code> 706
	<code>\theHsection</code> 651	
	<code>\thepage</code> 86, 177, 179, 210	
	<code>\thesection</code> 653	