

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*

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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
`\mrnumber` about paper in four major reference databases: DOI (<http://www.doi.org/>),
`\zblnumber` MathSciNet (<http://www.ams.org/mathscinet/>), Zentralblatt MATH (<http://www.zentralblatt-math.org/zmath/>) and arXiv (<https://www.arxiv.org>).
`\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 `aomalphabet.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 [2026/10/27 v1.40 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}{\bgroup
170   \normalsize\normalfont
171   \@tempcnta\@ne\relax
172   \loop{\strut\underline{\scriptsize\the\@tempcnta}}\
173   \advance\@tempcnta by \@ne\ifnum\@tempcnta<43\repeat\egroup}}

```

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

```

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

```

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

```

189 \fancypagestyle{firstpage}{%
190   \fancyhf{}%
191   \if@aom@manuscript@mode
192     \lhead{\begin{picture}(0,0)%
193       \put(-21,-25){\@aom@linecount}%
194     \end{picture}}
195   \fi
196   \chead{\scriptsize%
197     \href{\@annalsurl}{Annals of Mathematics} \textbf{\currentvolume}
198     (\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.

```

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

```

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

```

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

```

3.8 Top Matter Macros

We make these macros allowed only in the preamble:

```

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

```

```

229 \@onlypreamble{\revised}
230 \@onlypreamble{\accepted}
231 \@onlypreamble{\published}
232 \@onlypreamble{\publishedonline}
233 \@onlypreamble{\proposed}
234 \@onlypreamble{\seconded}
235 \@onlypreamble{\corresponding}
236 \@onlypreamble{\editor}
237 \@onlypreamble{\version}
238 \@onlypreamble{\volumenumber}
239 \@onlypreamble{\issuenumber}
240 \@onlypreamble{\publicationyear}
241 \@onlypreamble{\copyrightnote}
242 \@onlypreamble{\copyrightyear}
243 \@onlypreamble{\papernumber}
244 \@onlypreamble{\startpage}
245 \@onlypreamble{\endpage}
246 \@onlypreamble{\doinumber}
247 \@onlypreamble{\mrnumber}
248 \@onlypreamble{\zblnumber}
249 \@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 250 \def\@names{}
\surname 251 \def\givenname#1{\g@addto@macro\@names{givenname=#1;}}
252 \def\surname#1{\g@addto@macro\@names{surname=#1;}}
253 \def\fulladdress#1{\g@addto@macro\@names{fulladdress=#1;}}

```

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

```

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

```

`\@currentcontribution` The current contribution

```

274 \def\@currentcontribution{}

\@currentcontributors The current contributors with the same contribution
275 \def\@currentcontributors{}

\contribs All contributors to the paper
276 \def\contribs{}

\if@startcontribgroup A switch whether the new group is started
277 \newif\if@startcontribgroup
278 \@startcontribgroupfalse

\@processcurrentcontribgroup Add current contributors to \contributors
279 \def\@processcurrentcontribgroup{%
280   \ifx\@currentcontributors\@empty\else
281     \def\@and{\upshape \@aom@and}%
282     \author@andify\@currentcontributors
283     \ifx\contribs\@empty\else
284       \g@addto@macro\contribs{\and}%
285     \fi
286     \expandafter\g@addto@macro\expandafter\contribs
287     \expandafter{\@currentcontribution}%
288     \g@addto@macro\contribs{\space}%
289     \expandafter\g@addto@macro\expandafter\contribs
290     \expandafter{\@currentcontributors}%
291   \fi
292 }

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

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

```

```

315 \fi
316 \g@addto@macro\@names{\and contributor=#2;}%
317 \g@addto@macro\@names{role=}%
318 \expandafter\g@addto@macro\expandafter%
319 \@names\expandafter{\@currentcontribution}%
320 \g@addto@macro\@names{;}%
321 \g@addto@macro\addresses{\author{#2}}%
322 }

```

`\email` We change amsart macro to output metadata

```

323 \renewcommand{\email}[2] [] {%
324   \g@addto@macro\addresses{\email{#1}{#2}}%
325   \g@addto@macro\@names{email=#2;}%
326 }

```

`\urladdr` We change amsart macro to output metadata

```

327 \renewcommand{\urladdr}[2] [] {%
328   \g@addto@macro\addresses{\urladdr{#1}{#2}}%
329   \g@addto@macro\@names{urladdr=#2;}%
330 }

```

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

```

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

```

`\orcid` Orcid also outputs metadata

```

332 \newcommand{\orcid}[1] {%
333   \g@addto@macro\addresses{\orcid{#1}}%
334   \g@addto@macro\@names{orcid=#1;}%
335   \expandafter\g@addto@macro\aom@current@orcid@target{\aom@orcidlink{#1}}%
336 }

```

`\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

```

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

```

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

```

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

```

`\subject` Subjects.

```

340 \let\@primarysubjects\@empty
341 \let\@secondarysubjects\@empty
342 \let\@primaryscheme\@empty
343 \let\@secondaryscheme\@empty
344 \def\subject#1#2#3{%
345   \expandafter\ifx\csname @#1subjects\endcsname\@empty\relax

```

```

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

```

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

```

354 \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.

```

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

```

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

```

\revised 361 \def\received#1{\def\@received{#1}}
\accepted 362 \let\@received\@empty
\published 363 \def\revised#1{\def\@revised{#1}}
\publishedonline 364 \let\@revised\@empty
365 \def\accepted#1{\def\@accepted{#1}}
366 \let\@accepted\@empty
367 \def\published#1{\def\@published{#1}}
368 \let\@published\@empty
369 \def\publishedonline#1{\def\@publishedonline{#1}}
370 \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

```

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

```

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

```

372 \def\issuenumber#1{\def\currentissue{#1}}

```

`\publicationyear` This sets the year of the paper

```

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

```

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

```

374 \def\papernumber#1{\def\currentpaper{#1}}
375 \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...

```

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

```

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

```

381 \def\endpage#1{\def\@tempa{#1}%
382 \ifx\@tempa\@empty\def\end@page{\pageref{LastPage}}%
383 \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.

```

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

```

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

```

386 \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.

```

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

```

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

```

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

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

\seconded Or the seconder
418 \let\seconded\@gobble

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

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

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

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

\copyrightnote This is the copyrightnote. The default has some trickery with the year:
431 \def\copyrightnote#1{\def\@copyrightnote{#1}}
432 \copyrightnote{\textcopyright~%
433 \ifx\@empty\@copyrightyear\currentyear\else\@copyrightyear\fi~%
434 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:
435 \newwrite\@mainrpi

\@om@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
436 \def\@om@write@paper@info{%
437 \bgroup
438 \if@filesw
439 \openout\@mainrpi\jobname.rpi%
440 \def\and{\string\and\space}%
441 \ifx\r@LastPage\@undefined
442 \edef\@tempa{\start@page}%

```

```

443 \else
444 \def\@tempc##1##2##3##4##5{##2}%
445 \edef\@tempa{\expandafter\@tempc\r@LastPage}%
446 \fi
447 \ifx\language\undefined
448 \def\language{english}%
449 \fi
450 \protected@write\@mainrpi{%
451 {\@percentchar authors=\authors}%
452 \protected@write\@mainrpi{%
453 {\@percentchar authors.information={\@names}}%
454 \protected@write\@mainrpi{%
455 {\@percentchar title=\@title}%
456 \protected@write\@mainrpi{%
457 {\@percentchar year=\currentyear}%
458 \protected@write\@mainrpi{%
459 {\@percentchar volume=\currentvolume}%
460 \protected@write\@mainrpi{%
461 {\@percentchar issue=\currentissue}%
462 \protected@write\@mainrpi{%
463 {\@percentchar paper=\currentpaper}%
464 \protected@write\@mainrpi{%
465 {\@percentchar startpage=\startpage}%
466 \protected@write\@mainrpi{%
467 {\@percentchar endpage=\@tempa}%
468 \protected@write\@mainrpi{%
469 {\@percentchar doi=\@doinumber}%
470 \ifx\@zblnumber\@empty\else
471 \protected@write\@mainrpi{%
472 {\@percentchar zbl=\@zblnumber}%
473 \fi
474 \ifx\@mrnumber\@empty\else
475 \protected@write\@mainrpi{%
476 {\@percentchar mr=\@mrnumber}%
477 \fi
478 \ifx\@arxivnumber\@empty\else
479 \protected@write\@mainrpi{%
480 {\@percentchar arxiv=\@arxivnumber}%
481 \fi
482 \protected@write\@mainrpi{%
483 {\@percentchar subjects=Primary \@primarysubjects; Secondary:
484 \@secondarysubjects}%
485 \protected@write\@mainrpi{%
486 {\@percentchar keywords=\@keywords}%
487 \protected@write\@mainrpi{%
488 {\@percentchar abstract=\@aom@abstract}%
489 \protected@write\@mainrpi{%
490 {\@percentchar articlename=\@articlename}%
491 \def\paperUrl{https://annals.math.princeton.edu/\currentyear/\currentvolume-
\currentissue/p\currentpaper}%
492 \protected@write\@mainrpi{%
493 {\@percentchar paperUrl=\paperUrl}%
494 \AtEndDocument{\closeout\@mainrpi}%
495 \fi

```

496 \egroup}

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

497 \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:

```

498 \def\@settitle{\begin{center}%
499   \baselineskip20\p@\relax
500   \bfseries\LARGE
501   \@title
502   \ifpdf
503     \hypersetup{pdftitle=\@title}%
504   \fi
505   \end{center}}%
506 }
```

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

```

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

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

```

534 \def\@setcontribs{%
535   \def\@and{\upshape \aom@and}%
536   \author@andify\contribs
537   \contribs
538 }
```

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

```

539 \def\@adminfootnotes{%
540   \let\@makefnmark\relax \let\@thefnmark\relax
541   \ifx\@empty\@date\else \@footnotetext{\@setdate}\fi
542   \ifx\@empty\@subjclass\else \@footnotetext{\@setsubjclass}\fi
543   \ifx\@empty\@keywords\else\@setkeywords\fi
544   \ifx\@empty\@primarysubjects
545     \ifx\@empty\@secondarysubjects
546       \else\@setsubjects\fi
547   \else\@setsubjects\fi
548   \ifx\@empty\thankses\else \@footnotetext{%
549     \def\par{\let\par\@par}\@setthanks}%
550   \fi
551   \ifx\@empty\@copyrightnote\else \@footnotetext{%
552     \def\par{\let\par\@par}\@copyrightnote\@addpunct.}%
553   \fi
554 }
```

`\@setkeywords` Typesetting keywords

```

555 \def\@setkeywords{%
556   \ifpdf
557     \hypersetup{pdfkeywords=\@keywords}%
558   \fi
559   \if@aom@oldkeywords\else
560     \@footnotetext{Keywords: \@keywords}%
561   \fi
562 }
```

`\@setsubjects` Setting subjects

```

563 \def\@setsubjects{%
564   \let\@subjects\@empty
565   \ifx\@primarysubjects\@empty\else
566     \edef\@subjects{Primary:~\@primarysubjects}%
567   \fi
568   \ifx\@secondarysubjects\@empty\else
569     \ifx\@primarysubjects\@empty
570       \edef\@subjects{Secondary:~\@secondarysubjects}%
571     \else
572       \edef\@subjects{\@subjects; Secondary:~\@secondarysubjects}%
573     \fi
574   \fi
575   \ifpdf
576     \hypersetup{pdfsubject=\@subjects}%
577   \fi
578   \if@aom@oldkeywords\else
579     \@footnotetext{AMS Classification:~\@subjects.}%
580   \fi
581 }
```

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

```

582 \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.

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

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

`\@setrevised` 588 \def\@setreceived{\centering(Received: \@received)\par}}

`\@setaccepted` 589 \def\@setrevised{\centering(Revised: \@revised)\par}}

`\@setpublished` 590 \def\@setaccepted{\centering(Accepted: \@accepted)\par}}

`\@setpublishedonline` 591 \def\@setpublished{\centering(Published: \@published)\par}}

592 \def\@setpublishedonline{\centering(Published online: \@publishedonline)\par}}

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

```
593 \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

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

```
624 \endgroup
625 }
```

3.11 Sectioning

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

```
626 \renewcommand\contentsnamefont{\bfseries}
```

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

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

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

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

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

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

`\subsubsection` Subsubsections are formatted exactly like subsections:

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

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

```
640 \providecommand\Hy@AlphNoErr[1]{%
641 \ifnum\value{#1}>26 %
642 Alph\number\value{#1}%
643 \else
644 \ifnum\value{#1}<1 %
645 Alph\number\value{#1}%
646 \else
647 \Alph{#1}%
648 \fi
649 \fi
650 }%
```

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

```
651 \def\appendix{\par\c@section\z@ \c@subsection\z@
652 \gdef\theHsection{\Hy@AlphNoErr{section}}%
653 \let\sectionname\appendixname
654 \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 is small caps, we want just plain Roman font:

```
655 \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.

```

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

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

```

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

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

```

663 \newtheoremstyle{remark}{0.5\linespacing}{0.5\linespacing}%
664 {\upshape}{\parindent}%
665 {\sishape}{.}{0.5em}%
666 {\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.

```

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

`proof` We want our proofs to be indented:

```
672 \renewenvironment{proof}[1][\proofname]{\par
```

```

673 \pushQED{\qed}%
674 \normalfont \topsep6\p@\@plus6\p@\relax
675 \trivlist
676 \item[\hskip\labelsep\hskip\parindent
677       \itshape
678       #1\@addpunct{.}]\ignorespaces
679 }{%
680 \popQED\endtrivlist\@endpefalse
681 }

```

3.14 Bibliography Macros

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

```

682 \def\repeatedauthors#1{\ClassWarning{aomart}{The command is obsolete}#1}

```

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

```

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

```

`\doi` Typesetting doi...

```

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

```

`\mr` Typesetting urls

```

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

```

`\biblio`font We make this `\small` rather than `\Small` in `amsart`

```

700 \renewcommand{\biblio}{\small}

```

3.15 Additional Macros

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

```

701 \newcounter{aom@EC@counter}

```

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

```

702 \NewDocumentCommand\EditorialComment{0{default} +m 0{0pt}}{%
703   \if@aom@manuscript@mode\bgroup

```

```

704 \expandafter\ifx\csname EditorialComment@#1\endcsname\relax\else
705 \stepcounter{aom@EC@counter}%
706 \setlength\unitlength{1sp}%
707 \zsavapos{aom@EC@position\arabic{aom@EC@counter}}%
708 \begin{picture}(0,0)%
709 \put(\the\dimexpr
710 -\zposx{aom@EC@position\arabic{aom@EC@counter}}sp + 15pt,#3){%
711 \parbox{80pt}{\raggedright
712 \normalfont\scriptsize\raggedright\expandafter\color\expandafter{%
713 \csname EditorialComment@#1\endcsname}#2}}%
714 \end{picture}%
715 \fi
716 \egroup
717 \fi}

```

\ECSelect

```

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

```

\Highlight

```

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

```

\HSelect

```

727 \newcommand\HSelect[2][red]{\if@aom@manuscript@mode
728 \@for\TC@level:=#2\do{\expandafter
729 \gdef\csname Highlight@TC@level\endcsname##1{\bgroup
730 \Hy@colorlinksfalse
731 \def\Hy@colorlink####1{\begingroup}%
732 \def\Hy@endcolorlink{\endgroup}%
733 \color{#1}##1\egroup}}%
734 \fi}
735 \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.

```

736 \def\@fullref#1#2#3#4{\hyperref[#3]{#1~#2\ref*{#3}#4}}

```

\fullref A reference without parentheses:

```

737 \newcommand{\fullref}[2]{\@fullref{#1}{#2}{}}

```

\pfullref A reference with parentheses:

```

738 \newcommand{\pfullref}[2]{\@fullref{#1}{({#2}{})}}

```

\bfullref A reference with brackets:

```

739 \newcommand{\bfullref}[2]{\@fullref{#1}{[{#2}{}]}}

```

`\eqfullref` Here we do not use the standard common `\@fullref` because we want `\eqref` to work...

```
740 \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

```
741 \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...

```
742 \def\eqnarray{%
743   \stepcounter{equation}%
744   \def\@currentlabel{\p@equation\theequation}%
745   \global\@eqnswtrue
746   \m@th
747   \global\@eqcnt\z@
748   \tabskip\@centering
749   \let\\\@eqnocr
750   $$\arraycolsep1\p@
751   \everycr{}\halign to\displaywidth\bgroup
752     \hskip\@centering$\displaystyle\tabskip\z@skip{##}$\@eqnsele
753     &\global\@eqcnt\@ne\hskip \tw@\arraycolsep \hfil${##}$\hfil
754     &\global\@eqcnt\tw@ \hskip \tw@\arraycolsep
755     $\displaystyle{##}$\hfil\tabskip\@centering
756     &\global\@eqcnt\thr@@ \hb@xt@\z@\bgroup\hss##\egroup
757     \tabskip\z@skip
758   \cr
759 }
```

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

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

`\IfColorTF` A slight generalization of the previous macro

```
763 \newcommand\IfColorTF[2]{\if@aom@screen@mode
764   #1\else
765   #2\fi}
```

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

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

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

```
772 \newcommand\funding[3][]{%
773   \ifx\@aom@sponsors\@empty
774     \gdef\@aom@sponsors{sponsor=#2, grantid=#3}%
775   \else
```

```

776     \g@addto@macro{\@aom@sponsors}{\protect\and sponsor=#2, grantid=#3}%
777 \fi
778     \def\@tempa{#1}\relax%
779     \ifx\@tempa\@empty\relax
780         \def\@tempb{#3}%
781         #2%
782         \ifx\@tempb\@empty\relax\else\ (grant~#3)\fi
783     \else
784         #1
785     \fi}

```

3.16 End of Class

```

786 \endclass

```

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Change History

v0.10	General: Bibliography styles update 2 Documentation update 2 Screen mode triggers special URL settings 16 \if@aom@screen@mode: Added screen mode 15 \jfm: Added macro 33	Made remark theorem style identical to definition theorem style 32 Made Roman font the default URL font 16 \@fullref: Added macro 34 \@setaddresses: Deleted the word URL 30 E-mail is now in Roman font .. 30 \@setpublishedonline: Decreased font 30 \@typesizes: Corrected typo in the definition of Small 18 Increased LARGE from 16 pt to 17 pt 18 \bfullref: Added macro 34 \emailaddrname: Changed macro 30 \eqfullref: Added macro 35 \fullref: Added macro 34 \pfullref: Added macro 34 proof: Redefined macro 32 \subsection: Redefined macro .. 31
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v0.3	General: Added DOI number in headers 19 Added package mdputu 17 Documentation update 2 \arxiv: Added macro 33 \corresponding: Added macro .. 26 \doinumber: Added macro 26 \EditorialComment: Added macro 33 \if@aom@manuscript@mode: Added manuscript mode 14 \mr: Added macro 33 \mrnumber: Added macro 26 \newtheorem: Redefined macro .. 32 \proposed: Added macro 26 \seconded: Added macro 26 \version: Added macro 26 \zbl: Added macro 33 \zblnumber: Added macro 26	v0.6 General: Changes to bst files 2 Fullref.pl is much less aggressive now 2 \@setauthors: 'By' and 'and' are in Roman font now 28 \belowdisplayskip: Changed belowdisplayskip 18 \bibliofont: Changed default .. 33 \zbl: Changed capitalization ... 33
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