

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

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

or add in the beginning of the document

```
\overfullrule=5pt
```

option The option `manuscript` is intended to facilitate the communications between
manuscript 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 The option `screen` is intended for the onscreen version of the article. If this
screen option is selected, the links are blue colored, and the margins are reduced.

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

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

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

options The size-changing options of `amsart` class (`8pt`, `9pt`, \dots , `12pt`) have no effect
8pt other than producing a warning in the log since the journal is designed for only
9pt one type size (roughly corresponding to `11pt` of `amsart`).

10pt Normally the scheme for MSC numbers is not printed. If the option
11pt `printscheme` is chosen, however, it is printed explicitly.
12pt

option
printscheme

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[{ShortTitle}]{{FullTitle}}
```

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 to the one of `amsart` [11] (and different from the standard L^AT_EX). For each author a separate command `\author` should be used, followed by `\address` and (optionally) `\curraddr`, `\email`, `\urladdr` and `\orcid`. Note that the house style of the *Annals of Mathematics* requires writing `\address` in the form *Institution, City, 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[{AbbrevName}]{{FullName}}
```

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 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 command `\contrib[{role}]{{name}}` for indicating these persons. Note that [*{role}*] 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` 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`
`\zblnumber`
`\arxivnumber`

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

about paper in four major reference databases: DOI (<http://www.doi.org/>), MathSciNet (<http://www.ams.org/mathscinet/>), Zentralblatt MATH (<http://www.zentralblatt-math.org/zmath/>) and arXiv (<https://www.arxiv.org>). 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.

2.4 Additional Macros

`eqnarray` 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 (internally loaded) package `yhmath` [8]: `\widetilde`, `\widehat`, `\widetriangle`, `\wideparen`, `\widering`, `\widebar`. See Table 1 for the example of the usage.

`\wideparen` The macro `\EditorialComment[⟨comments⟩]` typesets the comments on the margins in the `manuscript` mode, for example,

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

`\fullref` A set of macros is used to make more convenient clickable references in the on-
`\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

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

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 BibTeX 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.

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

2.9 Papers in languages other than English

The recommended way to typeset papers in languages other than English is *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,frenchb]{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 [2022/04/30 v1.27 Typesetting articles for the Annals of Mathematics]
```

And the driver code:

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

3.2 Options

The size-changing options produce a warning:

```
24 \long\def\aom@size@warning#1{%
25   \ClassWarning{aomart}{Size-changing option #1 will not be
26     honored}}%
27 \DeclareOption{8pt}{\aom@size@warning{\CurrentOption}}%
28 \DeclareOption{9pt}{\aom@size@warning{\CurrentOption}}%
29 \DeclareOption{10pt}{\aom@size@warning{\CurrentOption}}%
30 \DeclareOption{11pt}{\aom@size@warning{\CurrentOption}}%
31 \DeclareOption{12pt}{\aom@size@warning{\CurrentOption}}%
```

`\ifaom@manuscript@mode` Check whether we are in the manuscript mode

```
32 \newif\ifaom@manuscript@mode
33 \@aom@manuscript@modefalse
34 \DeclareOption{manuscript}{\@aom@manuscript@modetrue}
```

`\ifaom@screen@mode` Check whether we are in the screen mode

```
35 \newif\ifaom@screen@mode
36 \@aom@screen@modefalse
37 \DeclareOption{screen}{\@aom@screen@modetrue}
```

```

\if@aom@olddoi DOI processing is different in the “old” and new mode.
38 \newif\if@aom@olddoi
39 \@aom@olddoifalse
40 \DeclareOption{olddoi}{\@aom@olddoittrue}

\if@aom@doiMMXVI DOI processing is different in the 2016 and new mode
41 \newif\if@aom@doiMMXVI
42 \@aom@doiMMXVIfalse
43 \DeclareOption{doi2016}{\@aom@doiMMXVItrue}

\if@aom@oldkeywords Keywords processing is different in the “old” and new mode.
44 \newif\if@aom@oldkeywords
45 \@aom@oldkeywordsfalse
46 \DeclareOption{oldkeywords}{\@aom@oldkeywordstrue}

\if@aom@printscheme
47 \newif\if@aom@printscheme
48 \@aom@printschemefalse
49 \DeclareOption{printscheme}{\@aom@printschemetrue}

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

Now we read the configuration file
51 \InputIfFileExists{aomart.cfg}{%
52 \ClassInfo{aomart}{%
53 Loading configuration file aomart.cfg}}{%
54 \ClassInfo{aomart}{%
55 Configuration file aomart.cfg is not found}}

And process the options:
56 \ProcessOptions\relax

```

3.3 Loading Class and Packages

We start with the base class

```

57 \LoadClass[11pt]{amsart}

A bunch of packages:
58 \RequirePackage{fancyhdr, lastpage, ifpdf}
59 \RequirePackage[breaklinks,colorlinks]{hyperref}
60 \if@aom@screen@mode
61 \hypersetup{linkcolor=blue,citecolor=blue,
62 urlcolor=blue}%
63 \else\if@aom@manuscript@mode
64 \hypersetup{linkcolor=blue,citecolor=blue,
65 urlcolor=blue}%
66 \else
67 \hypersetup{linkcolor=black,citecolor=black,
68 urlcolor=black}%
69 \fi\fi
70 \urlstyle{rm}

```

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

```

71 \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:
72 \def\@aom@by{By}
```

```
\@aom@and This is "and" in English:
73 \def\@aom@and{and}
```

Now we can define internationalization:

```
74 \AtBeginDocument{\@ifpackageloaded{babel}{%
75 \addto\captionsfrench{\def\@aom@by{Par}\def\@aom@and{et}}%
76 \addto\captionsgerman{\def\@aom@by{Von}\def\@aom@and{und}}%
77 \addto\captionsenglish{\def\@aom@by{By}\def\@aom@and{and}}}{}}
```

3.5 Fonts

We use `yhmath` for large symbols:

```
78 \RequirePackage{yhmath}
```

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

```
79 \DeclareSymbolFont{largesymbols}{OMX}{yhex}{m}{n}
```

```
\widehat The way \widehat and \widetilde are implemented in ymath is buggy, see
\widetilde https://www.reddit.com/r/LaTeX/comments/2j7mtn/usepackageamsmath\_vs\_
usepackageyhmath\_and\_the/. We use AMS definitions instead
```

```
80 \xdef\widehat#1{\noexpand\@mathmeasure\z@\textstyle{#1}%
81 \noexpand\ifdim\noexpand\wd\z@>\tw@ em%
82 \mathaccent"0\hexnumber@\symAMSb 5B{#1}%
83 \noexpand\else\mathaccent"0362{#1}\noexpand\fi}
84 \xdef\widetilde#1{\noexpand\@mathmeasure\z@\textstyle{#1}%
85 \noexpand\ifdim\noexpand\wd\z@>\tw@ em%
86 \mathaccent"0\hexnumber@\symAMSb 5D{#1}%
87 \noexpand\else\mathaccent"0365{#1}\noexpand\fi}
```

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

```
88 \IfFileExists{cmtiup.sty}{%
89 \RequirePackage{cmtiup}}{%
90 \ClassWarning{aomart}{The package mdputu is not found.\MessageBreak
91 You need this package to get italics with upright digits!}}
```

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

```
92 \def\specialdigits{}%
93 \let\sisshape=\itshape
94 \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` .

```
95 \def\@typesizes{%
96   \or{\@viipt}{9}\or{\@viiipt}{9}\or{\@ixpt}{12}%
97   \or{\@xpt}{13}%
98   \or{\@xipt}{14}% normalsize
99   \or{\@xiipt}{15}\or{13}{17}\or{\@xviipt}{20}%
100  \or{19}{23.2}\or{22}{27.8}}%
101 \normalsize \linespacing=\baselineskip
```

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

```
102 \let\widebar\overline
```

3.6 Page Dimensions and Paragraphing

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

```
\textheight 103 \setlength{\textwidth}{31pc}
104 \setlength{\textheight}{48pc}
```

`\evensidemargin` The margins:

```
\oddsidemargin 105 \oddsidemargin=.65in
106 \evensidemargin=.65in
```

`\footins` Some skips from `aomamlt2e`:

```
\topskip 107 \setlength{\topskip}{12pt}
\abovedisplayskip 108 \setlength{\abovedisplayskip}{6.95pt plus3.5pt minus 3pt}
\belowdisplayskip 109 \setlength{\belowdisplayskip}{6.95pt plus4.5pt minus 3pt}
110 \setlength{\skip\footins}{20pt}
111 \setlength{\dimen\footins}{3in}
```

`\footskip` Some space for footnotes:

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

`\parskip` Paragraph shape:

```
\parindent 113 \setlength{\parindent}{22pt}
114 \setlength{\parskip}{\z@}
```

`\widowpenalty` We suppress widows and clubs:

```
\clubpenalty 115 \widowpenalty=10000
116 \clubpenalty=10000
```

3.7 Headers

`\headsep` Separation between the header and the body

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

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

```
\footrulewidth 118 \renewcommand{\headrulewidth}{0pt}
119 \renewcommand{\footrulewidth}{0pt}
```


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

```
120 \if@aom@manuscript@mode
121   \newsavebox{\@aom@linecount}
122   \savebox{\@aom@linecount}[4em][t]{\parbox[t]{4em}{%
123     \@tempcnta\@ne\relax
124     \loop{\underline{\scriptsize\the\@tempcnta}}\@
125     \advance\@tempcnta by \@ne\ifnum\@tempcnta<43\repeat}}
126 \fi
```

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

```
127 \pagestyle{fancy}
128 \fancyhead{}
129 \fancyfoot{}
130 \fancyhead[CO]{\scriptsize\shorttitle}
131 \fancyhead[RO,LE]{\footnotesize\thepage}
132 \if@aom@manuscript@mode
133   \fancyhead[LE]{\footnotesize\thepage\begin{picture}(0,0)%
134     \put(-26,-25){\usebox{\@aom@linecount}}%
135     \end{picture}}
136   \fancyhead[L0]{\begin{picture}(0,0)%
137     \put(-21,-25){\usebox{\@aom@linecount}}%
138     \end{picture}}
139   \fancyfoot[C]{\scriptsize Proof: page numbers may be temporary}
140 \fi
141 \fancyhead[CE]{\scriptsize\MakeUppercase\shortauthors}
```

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

```
142 \fancypagestyle{firstpage}{%
143   \fancyhf{}%
144   \if@aom@manuscript@mode
145     \thead{\begin{picture}(0,0)%
146       \put(-21,-25){\usebox{\@aom@linecount}}%
147       \end{picture}}
148   \fi
149   \thead{\scriptsize%
150     \href{\@annalsurl}{Annals of Mathematics} \textbf{\currentvolume}
151     (\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.

```
152   \start@page%
153   \def\tempa{\pageref{LastPage}}%
154   \edef\tempb{\start@page}%
155   \ifx\tempa\end@page
156     \edef\tempa{\HyPsd@@@pageref{LastPage}}%
157   \else
158     \edef\tempa{\end@page}%
159   \fi
160   \ifx\tempa\tempb\else--\end@page\fi\fi
```

```

161 \ifx\@doinumber\@empty\else
162 \edef\@doinumber{\@doinumber}%
163 \expandafter\doi\expandafter{\@doinumber}\fi}%
164 \cfoot{\footnotesize\thepage}}%

```

```

\annalsurl The command to set up the URL of the journal
165 \def\annalsurl#1{\gdef\@annalsurl{#1}}
166 \annalsurl{http://annals.math.princeton.edu/about}

```

3.8 Top Matter Macros

We make these macros allowed only in the preamble:

```

167 \@onlypreamble{\title}
168 \@onlypreamble{\author}
169 \@onlypreamble{\contrib}
170 \@onlypreamble{\email}
171 \@onlypreamble{\address}
172 \@onlypreamble{\curraddr}
173 \@onlypreamble{\urladdr}
174 \@onlypreamble{\orcid}
175 \@onlypreamble{\givenname}
176 \@onlypreamble{\fulladdress}
177 \@onlypreamble{\surname}
178 \@onlypreamble{\thanks}
179 \@onlypreamble{\keyword}
180 \@onlypreamble{\subject}
181 \@onlypreamble{\received}
182 \@onlypreamble{\revised}
183 \@onlypreamble{\accepted}
184 \@onlypreamble{\published}
185 \@onlypreamble{\publishedonline}
186 \@onlypreamble{\proposed}
187 \@onlypreamble{\seconded}
188 \@onlypreamble{\corresponding}
189 \@onlypreamble{\editor}
190 \@onlypreamble{\version}
191 \@onlypreamble{\volumenumber}
192 \@onlypreamble{\issuenumber}
193 \@onlypreamble{\publicationyear}
194 \@onlypreamble{\copyrightnote}
195 \@onlypreamble{\copyrihyear}
196 \@onlypreamble{\papernumber}
197 \@onlypreamble{\startpage}
198 \@onlypreamble{\endpage}
199 \@onlypreamble{\doinumber}
200 \@onlypreamble{\mrnumber}
201 \@onlypreamble{\zblnumber}
202 \@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 203 \def\@names{}
\surname

```

```

204 \def\givenname#1{\g@addto@macro\@names{givenname=#1;}}
205 \def\surname#1{\g@addto@macro\@names{surname=#1;}}
206 \def\fulladdress#1{\g@addto@macro\@names{fulladdress=#1;}}

```

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

```

207 \renewcommand{\author}[2][]{%
208   \ifx\@empty\authors
209     \gdef\authors{#2}%
210     \g@addto@macro\@names{author=#2;}%
211   \else
212     \g@addto@macro\authors{\and#2}%
213     \g@addto@macro\@names{\and author=#2;}%
214     \g@addto@macro\addresses{\author{}}%
215   \fi
216   \@ifnotempty{#1}{%
217     \ifx\@empty\shortauthors
218       \gdef\shortauthors{#1}%
219     \else
220       \g@addto@macro\shortauthors{\and#1}%
221     \fi
222   }%
223 }
224 \edef\author{\@nx\@dblarg
225   \xp\@nx\curname\string\author\endcsname}

```

`\@currentcontribution` The current contribution

```
226 \def\@currentcontribution{}
```

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

```
227 \def\@currentcontributors{}
```

`\contribs` All contributors to the paper

```
228 \def\contribs{}
```

`\if@startcontribgroup` A switch whether the new group is started

```
229 \newif\if@startcontribgroup
230 \@startcontribgroupfalse

```

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

```

231 \def\@processcurrentcontribgroup{%
232   \ifx\@currentcontributors\@empty\else
233     \def\@and{\upshape \@aom@and}%
234     \author@andify\@currentcontributors
235     \ifx\contribs\@empty\else
236       \g@addto@macro\contribs{\and}%
237     \fi
238     \expandafter\g@addto@macro\expandafter\contribs
239     \expandafter{\@currentcontribution}%
240     \g@addto@macro\contribs{\space}%
241     \expandafter\g@addto@macro\expandafter\contribs
242     \expandafter{\@currentcontributors}%
243   \fi
244 }

```

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

```

245 \renewcommand{\contrib}[2] [] {%
246   \def\@tempa{#1}%
247   \@startcontribgrouptrue
248   \ifx\@tempa\@empty\relax
249     \ifx\@currentcontribution\@empty\relax
250       \ClassError{aomart}{You must define contribution for
251         contributors}{The first \contrib command must have the
252         optional argument indicating the contribution}%
253     \else
254       \@startcontribgroupfalse
255     \fi
256   \fi
257   \ifx\@currentcontribution\@tempa\relax
258     \@startcontribgroupfalse
259   \fi
260   \if@startcontribgroup
261     \@processcurrentcontribgroup
262     \gdef\@currentcontribution{#1}%
263     \gdef\@currentcontributors{#2}%
264   \else
265     \g@addto@macro\@currentcontributors{\and#2}%
266   \fi
267   \g@addto@macro\@names{\and contributor=#2;}%
268   \g@addto@macro\@names{role=}%
269   \expandafter\g@addto@macro\expandafter%
270   \@names\expandafter{\@currentcontribution}%
271   \g@addto@macro\@names{;}%
272 }

```

`\email` We change amsart macro to output metadata

```

273 \renewcommand{\email}[2] [] {%
274   \g@addto@macro\addresses{\email{#1}{#2}}%
275   \g@addto@macro\@names{email=#2;}%
276 }

```

`\urladdr` We change amsart macro to output metadata

```

277 \renewcommand{\urladdr}[2] [] {%
278   \g@addto@macro\addresses{\urladdr{#1}{#2}}%
279   \g@addto@macro\@names{urladdr=#2;}%
280 }

```

`\orcid` Orcid also outputs metadata

```

281 \newcommand{\orcid}[2] [] {%
282   \g@addto@macro\addresses{\orcid{#1}{#2}}%
283   \g@addto@macro\@names{orcid=#2;}%
284 }

```

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

```

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

```

`\subject` Subjects.

```
287 \let\@primarysubjects\@empty
288 \let\@secondarysubjects\@empty
289 \let\@primaryscheme\@empty
290 \let\@secondaryscheme\@empty
291 \def\subject#1#2#3{%
292   \expandafter\ifx\csname @#1subjects\endcsname\@empty\relax
293     \expandafter\gdef\csname @#1subjects\endcsname{#3}%
294   \else
295     \expandafter\g@addto@macro\csname @#1subjects\endcsname{, #3}%
296   \fi
297   \if@aom@printscheme
298     \expandafter\g@addto@macro\csname @#1subjects\endcsname{%
299     ~(#2)}%
300   \fi}
```

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

```
301 \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.

```
302 \def\@formatdate#1-#2-#3\@endformatdate{%
303   \@tempcnta=#3\relax
304   \ifcase#2\or
305   January\or February\or March\or April\or May\or June\or
306   July\or August\or September\or October\or November\or December\fi
307   \space\the\@tempcnta,\space#1}
```

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

```
\revised 308 \def\received#1{\def\@received{#1}}
\accepted 309 \let\@received\@empty
\published 310 \def\revised#1{\def\@revised{#1}}
\publishedonline 311 \let\@revised\@empty
312 \def\accepted#1{\def\@accepted{#1}}
313 \let\@accepted\@empty
314 \def\published#1{\def\@published{#1}}
315 \let\@published\@empty
316 \def\publishedonline#1{\def\@publishedonline{#1}}
317 \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

```
318 \def\volumenumber#1{\def\currentvolume{#1}}
```

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

```
319 \def\issuenumber#1{\def\currentissue{#1}}
```

`\publicationyear` This sets the year of the paper

```
320 \def\publicationyear#1{\def\currentyear{#1}}
```

```

\papernumber This is absent from the \issueinfo.
321 \def\papernumber#1{\def\currentpaper{#1}}
322 \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...
323 \def\startpage#1{\pagenumbering{arabic}\setcounter{page}{#1}%
324 \def\start@page{#1}%
325 \ifnum\c@page<z@ \pagenumbering{roman}\setcounter{page}{-#1}%
326 \def\start@page{\romannumeral#1}%
327 \fi}

\endpage This macro again has a twist in it: if the argument is not set, it calculates the last
page number itself.
328 \def\endpage#1{\def\@tempa{#1}%
329 \ifx\@tempa\@empty\def\end@page{\pageref{LastPage}}%
330 \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.
331 \def\pagespan#1#2{\startpage{#1}\endpage{#2}}
332 \pagespan{1}{}

\g@addto@abstract Syntactic sugar around \g@addto@macro
333 \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.
334 \long\def\@aom@abstract{}
335 \long\def\@getabstract#1{%
336 \bgroup
337 \ifx\languagename\undefined
338 \def\languagename{english}%
339 \fi
340 \g@addto@abstract{<begin abstract }%
341 \expandafter\g@addto@abstract\expandafter{\languagename}%
342 \g@addto@macro\@aom@abstract{#1}%
343 \g@addto@abstract{<end abstract }%
344 \expandafter\g@addto@abstract\expandafter{\languagename}%
345 \egroup
346 \ifx\maketitle\relax
347 \ClassWarning{aomart}{Abstract should precede
348 \protect\maketitle\space in AMS derived classes}%
349 \fi
350 \global\setbox\abstractbox=\vtop\bgroup%
351 \box\abstractbox
352 \vglue1pc%
353 {\centering\normalfont\normalsize\bfseries\abstractname\par\vglue1pc}%
354 \list{}{\labelwidthz@%
355 \leftmargin3pc \rightmargin\leftmargin%
356 \listparindent\normalparindent \itemindent\normalparindent%
357 \parsep\z@ \@plus\p@%

```

```

358     \let\fullwidthdisplay\relax%
359   }%
360   \item[]\normalfont\Small#1
361 \endlist\egroup}

abstract This puts abstract in a box and in a macro. Wasteful, but backward compatible
362 \renewenvironment{abstract}{\Collect@Body\@getabstract}{%
363   \ifx\@setabstract\relax\@setabstracta\fi}

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

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

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

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

\doinumber Now databases' numbers of the article:
\mrnumber 368 \def\doinumber#1{\gdef\@doinumber{#1}}
\zblnumber 369 \doinumber{10.4007/annals.\currentyear.\currentvolume.\currentissue.\currentpaper}
\arxivnumber 370 \def\mrnumber#1{\gdef\@mrnumber{#1}}
371 \mrnumber{}
372 \def\zblnumber#1{\gdef\@zblnumber{#1}}
373 \zblnumber{}
374 \def\arxivnumber#1{\gdef\@arxivnumber{#1}}
375 \arxivnumber{}

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

\copyrightnote This is the copyrightnote. The default has some trickery with the year:
378 \def\copyrightnote#1{\def\@copyrightnote{#1}}
379 \copyrightnote{\textcopyright~%
380   \ifx\@empty\@copyrightyear\currentyear\else\@copyrightyear\fi~%
381   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:
382 \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
383 \def\@om@write@paper@info{%
384   \bgroup
385   \if@filesw

```

```

386 \openout\@mainrpi\jobname.rpi%
387 \def\and{\string\and\space}%
388 \ifx\r@LastPage\@undefined
389 \edef\@tempa{\start@page}%
390 \else
391 \def\@tempc##1##2##3##4##5{##2}%
392 \edef\@tempa{\expandafter\@tempc\r@LastPage}%
393 \fi
394 \ifx\languagename\undefined
395 \def\languagename{english}%
396 \fi
397 \protected@write\@mainrpi{}%
398 {\@percentchar authors=\authors}%
399 \protected@write\@mainrpi{}%
400 {\@percentchar authors.information={\@names}}%
401 \protected@write\@mainrpi{}%
402 {\@percentchar title=\@title}%
403 \protected@write\@mainrpi{}%
404 {\@percentchar year=\currentyear}%
405 \protected@write\@mainrpi{}%
406 {\@percentchar volume=\currentvolume}%
407 \protected@write\@mainrpi{}%
408 {\@percentchar issue=\currentissue}%
409 \protected@write\@mainrpi{}%
410 {\@percentchar paper=\currentpaper}%
411 \protected@write\@mainrpi{}%
412 {\@percentchar startpage=\start@page}%
413 \protected@write\@mainrpi{}%
414 {\@percentchar endpage=\@tempa}%
415 \protected@write\@mainrpi{}%
416 {\@percentchar doi=\@doinumber}%
417 \ifx\@zblnumber\@empty\else
418 \protected@write\@mainrpi{}%
419 {\@percentchar zbl=\@zblnumber}%
420 \fi
421 \ifx\@mrnumber\@empty\else
422 \protected@write\@mainrpi{}%
423 {\@percentchar mr=\@mrnumber}%
424 \fi
425 \ifx\@arxivnumber\@empty\else
426 \protected@write\@mainrpi{}%
427 {\@percentchar arxiv=\@arxivnumber}%
428 \fi
429 \protected@write\@mainrpi{}%
430 {\@percentchar subjects=Primary \@primarysubjects; Secondary:
431 \@secondarysubjects}%
432 \protected@write\@mainrpi{}%
433 {\@percentchar keywords=\@keywords}%
434 \protected@write\@mainrpi{}%
435 {\@percentchar abstract=\@aom@abstract}%
436 \protected@write\@mainrpi{}%
437 {\@percentchar articlelanguage=\languagename}%
438 \AtEndDocument{\closeout\@mainrpi}%
439 \fi

```



```

440 \egroup}

\@maketitle@hook We add writing the information to the hook:
441 \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:
442 \def\@settitle{\begin{center}}%
443 \baselineskip20\p@\relax
444 \bfseries\LARGE
445 \@title
446 \ifpdf
447 \hypersetup{pdftitle=\@title}%
448 \fi
449 \end{center}}%
450 }

\@setauthors Now we typeset authors according to our specs. Again, we use this occasion to
set some PDF information:
451 \def\@setauthors{%
452 \ifx\authors\@empty\relax\else
453 \begin{group}
454 \def\thanks{\protect\thanks@warning}}%
455 \trivlist
456 \centering\footnotesize \@topsep30\p@\relax
457 \advance\@topsep by -\baselineskip
458 \item\relax
459 \def\@and{\upshape \@aom@and}}%
460 \author@andify\authors
461 \ifpdf
462 \hypersetup{pdfauthor=\authors}}%
463 \fi
464 \def\{\protect\linebreak}}%
465 \small \@aom@by{} \scshape\authors%
466 \@processcurrentcontribgroup
467 \ifx\@empty\contribs
468 \else
469 ,\penalty-3 \space \@setcontribs
470 \fi
471 \endtrivlist
472 \endgroup
473 \fi}

\@setcontribs Contributors are set up in the same way as authors:
474 \def\@setcontribs{%
475 \def\@and{\upshape \@aom@and}}%
476 \author@andify\contribs
477 \contribs
478 }

\@adminfootnotes We do not typeset keywords, so we change the definition:
479 \def\@adminfootnotes{%
480 \let\@makefnmark\relax \let\@thefnmark\relax
481 \ifx\@empty\@date\else \@footnotetext{\@setdate}\fi

```

```

482 \ifx\@empty\@subjclass\else \@footnotetext{\@setsubjclass}\fi
483 \ifx\@empty\@keywords\else\@setkeywords\fi
484 \ifx\@empty\@primarysubjects
485     \ifx\@empty\@secondarysubjects
486     \else\@setsubjects\fi
487 \else\@setsubjects\fi
488 \ifx\@empty\@thankses\else \@footnotetext{%
489     \def\par{\let\par\@par}\@setthanks}%
490 \fi
491 \ifx\@empty\@copyrightnote\else \@footnotetext{%
492     \def\par{\let\par\@par}\@copyrightnote\@addpunct.}%
493 \fi
494 }

```

`\@setkeywords` Typesetting keywords

```

495 \def\@setkeywords{%
496     \ifpdf
497         \hypersetup{pdfkeywords=\@keywords}%
498     \fi
499     \if@aom@oldkeywords\else
500     \@footnotetext{Keywords: \@keywords}%
501     \fi
502 }

```

`\@setsubjects` Setting subjects

```

503 \def\@setsubjects{%
504     \let\@subjects\@empty
505     \ifx\@primarysubjects\@empty\else
506         \edef\@subjects{Primary:~\@primarysubjects}%
507     \fi
508     \ifx\@secondarysubjects\@empty\else
509         \ifx\@primarysubjects\@empty
510             \edef\@subjects{Secondary:~\@secondarysubjects}%
511         \else
512             \edef\@subjects{\@subjects; Secondary:~\@secondarysubjects}%
513         \fi
514     \fi
515     \ifpdf
516         \hypersetup{pdfsubject=\@subjects}%
517     \fi
518     \if@aom@oldkeywords\else
519     \@footnotetext{AMS Classification:~\@subjects.}%
520     \fi
521 }

```

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

```

522 \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.
523 \def\enddoc@text{%
524   \ifx\@empty\@translators \else\@settranslators\fi
525   \ifx\@empty\@received \else\@setreceived\fi
526   \ifx\@empty\@revised \else\@setrevised\fi
527   \ifx\@empty\addresses \else\@setaddresses\fi

\@setreceived A bunch of macros for setting centered dates
\@setrevised 528 \def\@setreceived{\centering(Received: \@received)\par}}
\@setaccepted 529 \def\@setrevised{\centering(Revised: \@revised)\par}}
\@setpublished 530 \def\@setaccepted{\centering(Accepted: \@accepted)\par}}
\@setpublishedonline 531 \def\@setpublished{\centering(Published: \@published)\par}}
532 \def\@setpublishedonline{\centering(Published online: \@publishedonline)\par}}

\emailaddrname We do not want the word “address” here:
533 \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
534 \def\@setaddresses{\par
535   \nobreak \begingroup
536   \footnotesize
537   \def\author##1{\nobreak\addvspace\bigskipamount}%
538   \def\{\unskip, \ignorespaces}%
539   \interlinepenalty\@M
540   \def\address##1##2{\begingroup
541     \par\addvspace\bigskipamount\indent
542     \@ifnotempty{##1}{(\ignorespaces##1\unskip) }%
543     {\scshape\ignorespaces##2}\par\endgroup}%
544   \def\curraddr##1##2{\begingroup
545     \@ifnotempty{##2}{\nobreak\indent\curraddrname
546       \@ifnotempty{##1}{, \ignorespaces\scshape##1\unskip}\hskip0.2em:\space
547       \scshape##2\par}\endgroup}%
548   \def\email##1##2{\begingroup
549     \@ifnotempty{##2}{\nobreak\indent\emailaddrname
550       \@ifnotempty{##1}{, \ignorespaces##1\unskip}\hskip0.2em:\space
551       \href{mailto:##2}{\nolinkurl{##2}}\par}\endgroup}%
552   \def\urladdr##1##2{\begingroup
553     \@ifnotempty{##2}{\nobreak\indent
554       \@ifnotempty{##1}{, \ignorespaces##1\unskip}%
555       \url{##2}\par}\endgroup}%
556   \def\orcid##1##2{\begingroup
557     \@ifnotempty{##2}{\nobreak\indent
558       \@ifnotempty{##1}{, \ignorespaces##1\unskip}%
559       ORCID: ##2\par}\endgroup}%
560   \addresses
561   \endgroup
562 }

```

3.11 Sectioning

```

\contentsnamefont This is the font for the word “Contents”:
563 \renewcommand\contentsnamefont{\bfseries}

```

```

\section We want our sections to be centered and bold:
564 \def\section{\@startsection{section}{1}%
565 \z@{.7\linespacing\@plus\linespacing}{.5\linespacing}%
566 {\normalfont\bfseries\centering}}

\subsection We want our subsections to be indented and italic:
567 \def\subsection{\@startsection{subsection}{2}%
568 {\parindent}{.5\linespacing}{-.5em}%
569 {\normalfont\itshape}}

\oldsubsections This macro restores the values for \subsection spacing prior to v1.1.
570 \def\oldsubsections{%
571 \gdef\subsection{\@startsection{subsection}{2}%
572 {\parindent}{.5\linespacing\@plus.7\linespacing}{-.5em}%
573 {\normalfont\itshape}}

\subsubsection Subsubsections are formatted exactly like subsections:
574 \def\subsubsection{\@startsection{subsubsection}{3}%
575 {\parindent}{.5\linespacing}{-.5em}%
576 {\normalfont\itshape}}

\Hy@AlphNoErr The newer (circa 2012) hyperref defines this command. However, older versions
do not. Here we provide it:
577 \providecommand\Hy@AlphNoErr[1]{%
578 \ifnum\value{#1}>26 %
579 \Alph\number\value{#1}%
580 \else
581 \ifnum\value{#1}<1 %
582 \Alph\number\value{#1}%
583 \else
584 \Alph{#1}%
585 \fi
586 \fi
587 }%

\appendix We redefine appendix to ensure the letter in section number is always upright:
588 \def\appendix{\par\c@section\z@ \c@subsection\z@
589 \gdef\theHsection{\Hy@AlphNoErr{section}}%
590 \let\sectionname\appendixname
591 \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:
592 \def\@captionheadfont{\normalfont}

```

3.13 Theorems

Here we redefine three main style of amsmath. 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.

```

593 \newtheoremstyle{plain}{0.5\linespacing}{0.5\linespacing}{\sishape}%
594   {\parindent}{\scshape}{.}{0.5em}%
595   {\thmname{#1}\thmnumber{ #2}\thmnote{\normalfont{} ( #3)}}

```

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

```

596 \newtheoremstyle{definition}{0.5\linespacing}{0.5\linespacing}%
597   {\upshape}{\parindent}%
598   {\sishape}{.}{0.5em}%
599   {\thmname{#1}\thmnumber{ #2}\thmnote{\normalfont{} ( #3)}}

```

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

```

600 \newtheoremstyle{remark}{0.5\linespacing}{0.5\linespacing}%
601   {\upshape}{\parindent}%
602   {\sishape}{.}{0.5em}%
603   {\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.

```

604 \renewcommand{\newtheorem}{\@ifstar{\@aom@newthm@star}{\@aom@newthm}}
605 \def\@aom@newthm@star{\@ifnextchar[\@aom@newthm@star@]{\@aom@newthm@star@[]}}
606 \def\@aom@newthm@star@{\@ifnextchar[\@aom@newthm@star@]{\@aom@newthm@star@[]}}
607 \def\@aom@newthm@star@[#1]{\@xnthm * }
608 \def\@aom@newthm@[#1]{\@xnthm \relax}

```

`proof` We want our proofs to be indented:

```

609 \renewenvironment{proof}[1][\proofname]{\par
610   \pushQED{\qed}%
611   \normalfont \topsep6\p@\@plus6\p@\relax
612   \trivlist
613   \item[\hskip\labelsep\hskip\parindent
614     \itshape
615     #1\@addpunct{.}]{\ignorespaces
616   }{%
617   \popQED\endtrivlist\endpfalse
618 }

```

3.14 Bibliography Macros

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

```

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

```

```

\bysame We no longer use \bysame
620 \let\bysame@@orig=\bysame
621 \def\bysame{\ClassWarning{aomart}{We no longer omit
622   repeated authors}\bysame@@orig}

\doi Typesetting doi...
623 \def\doi#1{%
624   \if@aom@doiMMXVI
625     \url{http://dx.doi.org/#1}%
626   \else
627     \if@aom@olddoi
628       \href{http://dx.doi.org/#1}{doi: \path{#1}}%
629     \else
630       \url{https://doi.org/#1}%
631     \fi
632   \fi}

\mr Typesetting urls
\zbl 633 \def\mr#1{\href{http://www.ams.org/mathscinet-getitem?mr=#1}{MR~\path{#1}}}
\arxiv 634 \def\zbl#1{\href{http://www.zentralblatt-math.org/zmath/en/search/?q=an:#1}{Zbl~\path{#1}}}
\jfm 635 \def\arxiv#1{\href{http://www.arxiv.org/abs/#1}{arXiv~\path{#1}}}
636 \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
637 \renewcommand{\bibliofont}{\small}

```

3.15 Additional Macros

```

\EditorialComment This macro is noop in normal mode, but is a tiny marginpar in the manuscript
mode
638 \def\EditorialComment#1{\if@aom@manuscript@mode\bgroup
639   \marginparwidth=75pt\marginpar{\scriptsize\raggedright#1}\egroup\fi}

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

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

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

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

\eqfullref Here we do not use the standard common \@fullref because we want \eqref to
work...
644 \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
645 `\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...

```
646 \def\eqnarray{%
647   \stepcounter{equation}%
648   \def\@currentlabel{\p@equation\theequation}%
649   \global\@eqnswtrue
650   \m@th
651   \global\@eqcnt\z@
652   \tabskip\@centering
653   \let\\\@eqnrcr
654   $$\arraycolsep1\p@
655   \everycr{}\halign to\displaywidth\bgroup
656     \hskip\@centering$\displaystyle\tabskip\z@skip{##}$\@eqnse1
657     &\global\@eqcnt\@ne\hskip \tw@\arraycolsep \hfil$##$\hfil
658     &\global\@eqcnt\tw@ \hskip \tw@\arraycolsep
659     $\displaystyle{##}$\hfil\tabskip\@centering
660     &\global\@eqcnt\thr@@ \hb@xt@\z@\bgroup\hss##\egroup
661     \tabskip\z@skip
662   \cr
663 }
```

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

```
664 \newcommand\funding[3][]{%
665   \protected@write\@mainrpi{%
666     {\@percentchar sponsor=#2, grantid=#3}%
667     \def\@tempa{#1}\relax%
668     \ifx\@tempa\@empty\relax
669       \def\@tempb{#3}%
670       #2%
671       \ifx\@tempb\@empty\relax\else\ (grant~#3)\fi
672     \else
673       #1
674     \fi}
```

3.16 End of Class

```
675 </class>
```

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Change History

v0.10		<code>\@setpublishedonline</code> : Decreased font 27
	<code>\ifaom@screen@mode</code> : Added screen mode 13	<code>\@typesizes</code> : Corrected typo in the definition of Small 16
	<code>\jfm</code> : Added macro 30	Increased LARGE from 16 pt to 17 pt 16
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