

L^AT_EX Class for the *Association for Computing Machinery**

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Abstract

This package provides a class for typesetting publications of the Association for Computing Machinery.

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1 Introduction

The Association for Computing Machinery¹ is the world’s largest educational and scientific computing society, which delivers resources that advance computing as a science and a profession. It was one of the early adopters of \TeX for its typesetting.

It provided several different classes for a number of journals and conference proceedings. Unfortunately during the years since these classes were written, the code was patched many times, and supporting different versions of the classes became difficult.

This package provides the uniform interface for all ACM publications. It is intended to replace all the different classes and packages and provide an up-to-date \LaTeX package.

This package uses only free \TeX packages and fonts included in \TeX Live, Mik \TeX and other popular \TeX distributions. It is intended to be published in these distributions itself, which minimizes users’ efforts in the installation and support of this package.

I am grateful to Michael D. Adams, Leif Andersen, Lawrence Christopher Angrave, Dirk Beyer, Andrew Black, Joachim Breitner, Yegor Bugayenko, Benjamin Byholm, John Collins, Roberto Di Cosmo, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, Ulrike Fischer, Jason Hemann, Peter Kemp, Luis Leiva, Ben Liblit, Rholais Lii, LianTze Lim, Kuldeep S. Meel, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Scott Pakin, Tobias Pape, Henning Pohl, Philip Quinn, Mathias Rav, Andreas Reichinger, Matteo Riondato, Craig Rodkin, Bernard Rous, Feras Saad, Kerry A. Seitz, Jr., David Shamma, Gabriel Scherer, Kartik Singhal, Christoph Sommer, Stephen Spencer, Shin Hwei Tan, Daniel Thomas, Shari Trewin, Zack Weinberg, John Wickerson and many others for their invaluable help.

The development version of the package is available at <https://github.com/borisveytsman/acmart>.

2 User’s guide

This class uses many commands and customization options, so it might appear intimidating for a casual user. Do not panic! Many of these commands and options can be safely left with their default values or the values recommended by your conference or journal editors. If you have problems or questions, do not hesitate to ask me directly or the community at <https://github.com/borisveytsman/acmart>, <https://tex.stackexchange.com> or the closest \TeX Users Group. The world-wide \TeX Users Group is at <https://tug.org/>; please consider joining us if you use \TeX regularly.

2.1 Installation

Most probably, you already have this package installed in your favorite \TeX distribution; if not, you may want to upgrade. You may need to upgrade it anyway since this package uses a number of relatively recent packages, especially the ones related to fonts.

The latest released version of this package can be found on CTAN: <https://www.ctan.org/pkg/acmart>. The development version can be found on GitHub: <https://github.com/borisveytsman/acmart>. At this address you can file a bug report—or even contribute your own enhancement by making a pull request.

¹<http://www.acm.org/>

Please note that the version on Github is a development (or experimental) version: please download it for testing new features. The production version is the one on CTAN and ACM sites.

Most users should not attempt to install this package themselves but should rather rely on their \TeX distributions to provide it. If you decide to install the package yourself, follow the standard rules:

1. Run `latex acmart.ins`. This will produce the file `acmart.cls`
2. Put the files `acmart.cls`, `acm-jdslogo.png`, and `ACM-Reference-Format.bst` in places where \TeX can find them (see [1] or the documentation for your \TeX system).
3. Update the database of file names. Again, see [1] or the documentation for your \TeX system for the system-specific details.
4. The file `acmart.pdf` provides the documentation for the package. (This is probably the file you are 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.

This class uses a number of other packages. They are included in all major \TeX distributions (\TeX Live, Mac \TeX , Mik \TeX) of 2015 and later, so you probably have them installed. Just in case here is the list of these packages:

- *amscs*, <http://www.ctan.org/pkg/amscs>
- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *balance*, <http://www.ctan.org/pkg/balance>
- *booktabs*, <http://www.ctan.org/pkg/booktabs>
- *caption*, <http://www.ctan.org/pkg/caption>
- *comment*, <http://www.ctan.org/pkg/comment>
- *cm-super*, <http://www.ctan.org/pkg/cm-super>
- *cmap*, <http://www.ctan.org/pkg/cmap>
- *doclicense*, <http://www.ctan.org/pkg/doclicense>
- *draftwatermark*, <http://www.ctan.org/pkg/draftwatermark>
- *environ*, <http://www.ctan.org/pkg/environ>
- *etoolbox*, <http://www.ctan.org/pkg/etoolbox>
- *fancyhdr*, <http://www.ctan.org/pkg/fancyhdr>
- *float*, <http://www.ctan.org/pkg/float>
- *fontaxes*, <http://www.ctan.org/pkg/fontaxes>

- *geometry*, <http://www.ctan.org/pkg/geometry>
- *graphics*, <http://www.ctan.org/pkg/graphics>
- *hyperref*, <http://www.ctan.org/pkg/hyperref>
- *hyperxmp*, <http://www.ctan.org/pkg/hyperxmp>
- *iftex*, <http://www.ctan.org/pkg/iftex>
- *inconsolata*, <http://www.ctan.org/pkg/inconsolata>
- *libertine*, <http://www.ctan.org/pkg/libertine>
- *manyfoot*, <http://www.ctan.org/pkg/manyfoot>
- *microtype*, <http://www.ctan.org/pkg/microtype>
- *mmap*, <http://www.ctan.org/pkg/mmap>
- *ms*, <http://www.ctan.org/pkg/ms>
- *mweights*, <http://www.ctan.org/pkg/mweights>
- *natbib*, <http://www.ctan.org/pkg/natbib>
- *nccfoots*, <http://www.ctan.org/pkg/nccfoots>
- *newtx*, <http://www.ctan.org/pkg/newtx>
- *oberdiek*, <http://www.ctan.org/pkg/oberdiek>
- *pdftex-def*, <http://www.ctan.org/pkg/pdftex-def>
- *refcount*, <http://www.ctan.org/pkg/refcount>
- *setspace*, <http://www.ctan.org/pkg/setspace>
- *textcase*, <http://www.ctan.org/pkg/textcase>
- *totpages*, <http://www.ctan.org/pkg/totpages>
- *trimspaces*, <http://www.ctan.org/pkg/trimspaces>
- *upquote*, <http://www.ctan.org/pkg/upquote>
- *url*, <http://www.ctan.org/pkg/url>
- *xcolor*, <http://www.ctan.org/pkg/xcolor>
- *xkeyval*, <http://www.ctan.org/pkg/xkeyval>
- *xstring*, <http://www.ctan.org/pkg/xstring>

2.2 Invocation and options

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

```
\documentclass[<options>]{acmart}
```

There are several options corresponding to the type of the document and its general appearance. They are described below. Generally speaking, the options have key=value forms, for example,

```
\documentclass[format=acmsmall, screen=true, review=false]{acmart}
```

The option `format` describes the format of the output. There are several possible values for this option, for example,

```
\documentclass[format=acmtog]{acmart}
```

Actually the words `format=` can be omitted, e.g.,

```
\documentclass[acmtog, review=false]{acmart}
```

The possible formats are listed in Table 1. Note that formats starting with `acm` are intended for journals, transactions, and course materials, while formats starting with `sig` are intended for proceedings published as books.

Sometimes conference proceedings are published as a special issue (or issues) of an ACM journal. In this case, you should use the journal format. The templates `sample-acmsmall-conf.tex` and `sample-acmtog-conf.tex` show how to enter conference information. Note that you need to comment out `\acmJournal{...}` line for such papers to get the conference information in the footers and headers.

Starting in 2020, ACM retired formats `sigchi` and `sigchi-a`. SIGCHI conferences now use `sigconf` format for their publications. If a file uses `sigchi` format, a warning is issued, and the format is automatically switched to `sigconf`. Format `sigchi-a` can be used for non-ACM documents only (see Section 2.23). The format `acmcp` is used for ACM cover pages discussed in Section 2.5.

There are several Boolean options that can take `true` or `false` values. They are listed in Table 2. The words `=true` can be omitted when setting a Boolean option, so instead of `screen=true` one can write just `screen`, for example,

```
\documentclass[acmsmall, screen, review]{acmart}
```

The option `review` is useful when combined with the `manuscript` format option. It provides a version suitable for reviewers and copy editors.

Two samples in the `samples` directory, `manuscript` and `acmsmall-submission`, show manuscripts formatted for submission to ACM.

The default for the option `screen` depends on the publication. At present it is `false` for all publications *but* PACM, since PACM is now electronic-only. Thus PACM titles (see Table 5) set this option to `true`. In the future this option may involve additional features suitable for on-screen versions of articles.

The option `natbib` is used when the corresponding BibTeX style is based on `natbib`. In most cases you do not need to set it. See Section 2.14.

Table 1: The possible values for the format option

Value	Meaning
manuscript	A manuscript. This is the default.
acmsmall	Small single-column format. Used for ACMJCSS, CIE, CSUR, DLT, FAC, GAMES, JACM, JATS, JDIQ, JDS, JEA, JERIC, JETC, JRC, PACM-CGIT, PACMHCI, PACMMOD, PACMNET, PACMPL, PACMSE, POMACS, TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TDS, TEAC, TECS, TELO, THRI, THS, TIOT, TISSEC, TIST, TKDD, TMIS, TOCE, TOCHI, TOCL, TOCS, TOCT, TODAES, TODS, TOIS, TOIT, TOMACS, TOMM (formerly TOMCCAP), TOMPECS, TOMS, TOPC, TOPLAS, TOPML, TOPS, TORS TOS, TOSEM, TOSN, TQC, TRET, TSAS, TSC, TSLP, and TWEB, including special issues.
acmlarge	Large single-column format. Used for DTRAP, HEALTH, IMWUT, JOCCH, and TAP, including special issues.
acmtog	Large double-column format. Used for TOG, including annual conference Technical Papers.
sigconf	Proceedings format for most ACM conferences (with the exception of SIGPLAN) and all ICPS volumes.
sigplan	Proceedings format for SIGPLAN conferences.
acmengage	ACM EngageCSEdu Course materials.
acmcp	ACM cover page.

The option `anonymous` is used for anonymous review processes and causes all author information to be obscured.

The option `timestamp` is used to include a time stamp in the footer of each page. When preparing a document, this can help avoid confusing different revisions. The footer also includes the page range of the document. This helps detect missing pages in hard copies.

The option `authordraft` is intended for author’s drafts that are not intended for distribution. It typesets a copyright block to give the author an idea of its size and the overall size of the paper but overprints it with the phrase “Unpublished working draft. Not for distribution”, which is also used as a watermark. This option sets `timestamp` and `review` to `true`, but these can be overridden by setting these options to `false` *after* setting `authordraft` to `true`.

The option `balance` determines whether the last page in the two column mode has balanced columns. By default it is `true`; however, it may lead to problems for some documents. When there are many figures near the end of the document, the attempts to balance columns may lead to the loss of the figures. Set this option to `false` if you encounter problems. An alternative is the (experimental) option `pbalance`, which uses the new package `pbalance`. You may want to try `pbalance=true` to see if you get better results.

The option `urlbreakonhyphens` determines whether URLs can be split between lines after hyphens. By default it is `true`. Set it to `false` to disallow these breaks.

The option `language` is used to define the languages for the multi-language papers. It is discussed in Section 2.6.

Table 2: Boolean options

Option	Default	Meaning
review	false	A review version: lines are numbered and hyperlinks are colored
screen	see text	A screen version: hyperlinks are colored
natbib	true	Whether to use the natbib package (see Section 2.14)
anonymous	false	Whether to make author(s) anonymous
authorversion	false	Whether to generate a special version for the authors' personal use or posting (see Section 2.3)
nonacm	false	Use the class typesetting options for a non-ACM document, which will not include the conference/journal header and footers. Currently such documents allow only a Creative Commons license.
timestamp	false	Whether to put a time stamp in the footer of each page
authordraft	false	Whether author's-draft mode is enabled
acmthm	true	Whether to define theorem-like environments, see Section 2.10
balance	true	Whether to balance the last page in two column mode
pbalance	false	Whether to balance the last page in two column mode using pbalance package
urlbreakonhyphens	true	Whether to break urls on hyphens

2.3 Top matter

A number of commands set up *top matter* or (in computer science jargon) *metadata* for an article. They establish the publication name, article title, authors, DOI and other data. Some of these commands, like `\title` and `\author`, should be put by the authors. Others, like `\acmVolume` and `\acmDOI`—by the editors. Below we describe these commands and mention who should issue them. These macros should be used *before* the `\maketitle` command. Note that in previous versions of ACM classes some of these commands should be used before `\maketitle`, and some after it. Now they all must be used before `\maketitle`.

This class internally loads the `amsart` class, so many top-matter commands are inherited from `amsart` [2].

`\acmJournal` The macro `\acmJournal{\shortName}` sets the name of the journal or transaction for journals and transactions. The argument is the short name of the publication in *uppercase*, for example,

```
\acmJournal{TOMS}
```

The currently recognized journals are listed in Table 5. Note that conference proceedings published in *book* form do not set this macro.

`\acmConference` The macro `\acmConference[\short name][\name][\date][\venue]` is used for conference proceedings published in the book form. The arguments are the following:

short name: the abbreviated name of the conference (optional).

name: the name of the conference.

date: the date(s) of the conference.

venue: the place of the conference.

Examples:

```
\acmConference[TD'15]{Technical Data Conference}{November  
12--16}{Dallas, TX, USA}  
\acmConference[SA'15 Art Papers]{November 02--06, 2015}{Kobe, Japan}
```

`\acmBooktitle` By default we assume that conference proceedings are published in the book named *Proceedings of CONFERENCE*, where CONFERENCE is the name of the conference inferred from the command `\acmConference` above. However, sometimes the book title is different. The command `\acmBooktitle` can be used to set this title, for example,

```
\acmBooktitle{Companion to the first International Conference on the  
Art, Science and Engineering of Programming (Programming '17)}
```

An ACM paper should have either `\acmJournal` or `\acmConference` command. If it has both (or more) commands, the last one takes precedence. Note that if you have the command `\acmConference` in a journal format like `acmsmall`, the class will use conference format for `bibstrip` and reference citation formatting. In the samples directory there is a file `sample-acmsmall-conf.tex` with the example of this usage.

An ACM Engage material should *not* use `\acmJournal` or `\acmConference` command. It may use `\acmBooktitle` to override the default *ACM EngageCSEdu*. It should use `\acmYear` to set the date of the material.

`\editor` In most cases, conference proceedings are edited. You can use the command `\editor{<editor>}` to set the editor of the volume. This command can be repeated, for example,

```
\editor{Jennifer B. Sartor}
\editor{Theo D'Hondt}
\editor{Wolfgang De Meuter}
```

`\title` The command `\title`, as in the `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.

It is expected that this command is inserted by the author of the manuscript.

`\subtitle` Besides title, ACM classes allow a subtitle, set with the `\subtitle{<subtitle>}` macro.

The commands for specifying authors are highly structured. The reason is they serve double duty: the authors' information is typeset in the manuscript *and* is used by the metadata extraction tools for indexing and cataloguing. Therefore it is very important to follow the guidelines exactly.

`\author` The basic commands are `\author`, `\orcid` (for the researchers registered with ORCID, <http://www.orcid.org/>), `\affiliation` and `\email`. In the simplest case, you

`\affiliation` enter them in this order:

```
\email
\author{...}
\orcid{...}
\affiliation{...}
\email{...}
```

Do *not* use the \LaTeX `\and` macro or commas, or `\\` between the authors! Each author deserves his or her own `\author` command. An attempt to list several authors or their e-mails in one command leads to a warning or an error. This is not a bug, but the expected behavior.

Note that some formats do not typeset e-mails or ORCID identifiers. Do not worry: the metadata tools will get them.

ACM strongly encourages that you include ORCIDs for all authors before compiling or submitting for review and/or production processing.

If you do not have an ORCID, you may get one for free by registering at <http://www.orcid.org/>.

Sometimes an author has several affiliations. In this case, the `\affiliation` command should be repeated:

```
\author{...}
\orcid{...}
\affiliation{...}
\affiliation{...}
\email{...}
```

Similarly you can repeat the `\email` command.

You may have several authors with the same affiliation, different affiliations, or overlapping affiliations (author A_1 is affiliated with institutions I_1 and I_2 , while author A_2 is affiliated with I_2 only, author A_3 is affiliated with I_1 and I_3 , etc.). The recommended solution is to put the `\affiliation` commands after each author, possibly repeating them:

```
\author{...}
\orcid{...}
\affiliation{...}
\affiliation{...}
\email{...}
\author{...}
\orcid{...}
\affiliation{...}
\email{...}
\author{...}
\orcid{...}
\affiliation{...}
\affiliation{...}
\email{...}
```

In some cases, when several authors share the same affiliation, you can try to save space using the format

```
\author{...}
\email{...}
\author{...}
\email{...}
\affiliation{...}
```

However, this format is not generally recommended.

`\additionalaffiliation` In some cases, too many affiliations can take too much space. The command `\additionalaffiliation{<affiliation>}` creates a footnote after an author's name with the words "Also with {<affiliation>}". You should use this command only as a last resort. An example of usage is:

```
\author{G. Tobin}
\author{Ben Trovato}
\additionalaffiliation{%
  \institution{The Th{\o}rv{\a}ld Group}
  \city{Hekla}
  \country{Iceland}}
\affiliation{%
  \institution{Institute for Clarity in Documentation}
  \city{Dublin}
  \state{Ohio}}
```

Here Trovato and Tobin share their affiliation with the Institute for Clarity in Documentation, but only Ben Trovato is affiliated with The Th{\o}rv{\a}ld Group.

`\position` The `\affiliation` and `\additionalaffiliation` commands are further structured to interact with the metadata extraction tools. Inside these commands you should use
`\institution`
`\department`
`\city`
`\state`
`\country`

the `\position`, `\institution`, `\department`, `\city`, `\state`, and `\country` macros to indicate the corresponding parts of the affiliation. Note that in some cases (for example, journals) these parts are not printed in the resulting copy, but they *are* necessary since they are used by the XML metadata extraction programs. Do *not* put commas or `\\` between the elements of `\affiliation`. They will be provided automatically.

The fields `\institution`, `\city` and `\country` are mandatory. If they are not provided, an error or a warning is issued. Currently the absence of `\country` produces an error; ACM may change this in the future.

Starting 2024, ACM no longer collects or print postal addresses of the authors. Thus the commands `\streetaddress` and `\postcode`, present in the previous versions of the class, now produce a warning.

An example of the author block:

```
\author{A. U. Thor}
\orcid{1234-4564-1234-4565}
\affiliation{%
  \institution{University of New South Wales}
  \department{School of Biomedical Engineering}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
\email{author@nsw.au.edu}
\author{A. N. Other}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
\author{C. O. Respondent}
\orcid{1234-4565-4564-1234}
\affiliation{%
  \institution{University of Pennsylvania}
  \city{Philadelphia}
  \state{PA}
  \country{USA}}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
```

Note that the old ACM conference formats did not allow more than six authors and required some effort from authors to achieve alignment. The new format is much better in this.

Sometimes an author works in several departments within the same institution. There could be two situations: the departments are independent, or one department is within another. In the first case, just repeat the command `\department` several times. To handle the second case the command has an optional numerical parameter. The departments with higher numbers are higher in the organizational chart. Compare

```
\affiliation{%
  \department[0]{Department of Lunar Studies} % 0 is the default
```

```

\department[1]{John Doe Institute} % higher than 0
\institution{University of San Serriffe}
\country{San Serriffe}

```

and

```

\affiliation{%
  \department{Department of Lunar Studies} % Not in the John Doe Institute!
  \department{John Doe Institute}
  \institution{University of San Serriffe}
  \country{San Serriffe}
}

```

`\thanks` Like `amsart` (and unlike standard \LaTeX), we allow `\thanks` only *outside* of the commands `\title` and `\author`. This command is obsolete and should *not* be used in most cases. Do not list your acknowledgments or grant sponsors here. Put this information in the `acks` environment (see Section 2.13).

`\authorsaddresses` In some formats, addresses are printed as a footnote on the first page. By default \LaTeX typesets them itself using the information you give it. However, you can override its choice using the command `\authorsaddresses{<contact addresses>}`, for example,

```

\authorsaddresses{%
  Authors' addresses: G.~Zhou, Computer Science Department, College of
  William and Mary, 104 Jameson Rd, Williamsburg, PA 23185, US;
  V.~B'eranger, Inria Paris-Rocquencourt, Rocquencourt, France;
  A.~Patel, Rajiv Gandhi University, Rono-Hills, Doimukh, Arunachal
  Pradesh, India; H.~Chan, Tsinghua University, 30 Shuangqing Rd,
  Haidian Qu, Beijing Shi, China; T.~Yan, Eaton Innovation Center,
  Prague, Czech Republic; T.~He, C.~Huang, J.~A.~Stankovic University
  of Virginia, School of Engineering Charlottesville, VA 22903, USA;
  T. F. Abdelzaher, (Current address) NASA Ames Research Center,
  Moffett Field, California 94035.}

```

You can *suppress* printing authors' addresses by setting them to an empty string: `\authorsaddresses{}`. Please note that authors' addresses are mandatory for journal articles.

`\titlenote` While the command `\thanks` generates a note without a footnote mark, sometimes
`\subtitlenote` the authors might need notes more tightly connected to the title, subtitle or author. The
`\authornote` commands `\titlenote`, `\subtitlenote` and `\authornote` that follow the corresponding
 commands (`\title`, `\subtitle` and `\author`) generate such notes. For example,

```

\title{This is a title}
\titlenote{This is a titlenote}
\author{A. U. Thor}
\authornote{This is an authornote}

```

Please never use a `\footnote` inside an `\author` or `\title` command since this confuses the metadata extraction software. (Actually these commands now produce errors.)

`\authornotemark` Sometimes one may need to have the same footnote connected to several authors. The command `\authornotemark[<number>]` adds just the footnote mark, for example,

```

\author{A. U. Thor}

```

```

\authornote{Both authors contributed equally to the paper}
...
\author{A. N. Other}
\authornotemark[1]

```

The correct numbering of these marks is the responsibility of the user.

```

\acmVolume    The macros \acmVolume, \acmNumber, \acmArticle, \acmYear and \acmMonth are
\acmNumber    inserted by the editor and set the journal volume, issue, article number, year and month
\acmArticle    correspondingly. The arguments of all these commands, including \acmMonth, is numer-
\acmYear       ical. For example,
\acmMonth
\acmVolume{9}
\acmNumber{4}
\acmArticle{39}
\acmYear{2010}
\acmMonth{3}

```

Note that `\acmArticle` is used not only for journals but also for some conference proceedings.

```

\acmArticleSeq    The articles in the same issue of a journal have a sequence number. By default it is
                  the same as the article number, but the command \acmArticleSeq{<n>} can be used to
                  change it:

```

```

\acmArticle{39} % The sequence number will be 39 by default
\acmArticleSeq{5} % We redefine it to 5

```

```

\acmSubmissionID    If your paper got a Submission ID from the Conference Management System, put it
                    here:

```

```

\acmSubmissionID{123-A56-BU3}

```

```

\acmISBN    Book-like volumes have ISBN numbers attached to them. The macro \acmISBN{<ISBN>}
            sets it. Normally it is set by the typesetter, for example,

```

```

\acmISBN{978-1-4503-3916-2}

```

Setting it to the empty string, as `\acmISBN{}`, suppresses printing the ISBN.

```

\acmDOI    The macro \acmDOI{<DOI>} sets the DOI of the article, for example,

```

```

\acmDOI{10.1145/9999997.9999999}

```

It is normally set by the typesetter. Setting it to the empty string, as `\acmDOI{}`, suppresses the DOI.

```

\acmBadge    Some conference articles get special distinctions, for example, the artifact evaluation
            for PPOPP 2016 (see http://ctuning.org/ae/ppopp2016.html). These articles display
            special badges supplied by the conference organizers. This class provides command to
            add these badges: \acmBadge[<url>]{<graphics>}. The arguments have the following
            meaning: [<url>], if provided, sets the link to the badge authority in the screen version,
            while {<graphics>} sets the graphics file with the badge image. The file must be a cropped

```

square, which is scaled to a standard size in the output. For example, if the badge image is `ae-logo.pdf`, the command is

```
\acmBadgeR[http://ctuning.org/ae/ppopp2016.html]{ae-logo}
```

The command can be repeated, if a paper has several badges.

`\startPage` The macro `\startPage{<page>}` sets the first page of the article in a journal or book. It is used by the typesetter.

`\terms` The command `\keywords{<keyword, keyword,...>}` sets keywords for the article.

`\keywords` They must be separated by commas, for example,

```
\keywords{wireless sensor networks, media access control,  
multi-channel, radio interference, time synchronization}
```

`CCSXML (env)` ACM publications are classified according to the ACM Computing Classification Scheme (CCS). CCS codes are used both in the typeset version of the publications *and* in the metadata in various databases. Therefore you need to provide both \TeX commands and XML metadata with the paper.

The tool at <http://dl.acm.org/ccs.cfm> can be used to generate CCS codes. After you select the topics, click on “Generate CCS codes” to get results like the following:

```
\begin{CCSXML}  
<ccs2012>  
  <concept>  
    <concept_id>10010520.10010553.10010562</concept_id>  
    <concept_desc>Computer systems organization~Embedded systems</concept_desc>  
    <concept_significance>500</concept_significance>  
  </concept>  
  <concept>  
    <concept_id>10010520.10010575.10010755</concept_id>  
    <concept_desc>Computer systems organization~Redundancy</concept_desc>  
    <concept_significance>300</concept_significance>  
  </concept>  
  <concept>  
    <concept_id>10010520.10010553.10010554</concept_id>  
    <concept_desc>Computer systems organization~Robotics</concept_desc>  
    <concept_significance>100</concept_significance>  
  </concept>  
  <concept>  
    <concept_id>10003033.10003083.10003095</concept_id>  
    <concept_desc>Networks~Network reliability</concept_desc>  
    <concept_significance>100</concept_significance>  
  </concept>  
</ccs2012>  
\end{CCSXML}
```

```
\ccsdesc[500]{Computer systems organization~Embedded systems}  
\ccsdesc[300]{Computer systems organization~Redundancy}  
\ccsdesc{Computer systems organization~Robotics}  
\ccsdesc[100]{Networks~Network reliability}
```

You just need to copy this code and paste it in your paper anywhere before `\maketitle`.

Table 3: Parameters for the `\setcopyright` command

Parameter	Meaning
<code>none</code>	The copyright and permission information is not typeset. (This is the option for some ACM conferences.)
<code>acmlicensed</code>	The authors retain the copyright but license the publication rights to ACM.
<code>rightsretained</code>	The authors retain the copyright and publication rights to themselves or somebody else.
<code>usgov</code>	All the authors are employees of the US government.
<code>usgovmixed</code>	Some authors are employees of the US government.
<code>cagov</code>	All the authors are employees of the Canadian government.
<code>cagovmixed</code>	Some authors are employees of the Canadian government.
<code>licensedusgovmixed</code>	Some authors are employees of the US government, and the publication rights are licensed to ACM.
<code>licensedcagov</code>	All the authors are employees of the Canadian government, and the publication rights are licensed to ACM.
<code>licensedcagovmixed</code>	Some authors are employees of the Canadian government, and the publication rights are licensed to ACM.
<code>othergov</code>	Authors are employees of a government other than the US or Canada.
<code>licensedothergov</code>	Authors are employees of a government other than the US or Canada, and the publication rights are licensed to ACM.
<code>iw3c2w3</code>	Special statement for conferences organized by IW3C2.
<code>iw3c2w3g</code>	Special statement for conferences organized by IW3C2, when some authors are approved Google employees.
<code>cc</code>	Creative Commons license. If this key is set, <i>doclicense</i> images are used to typeset the license. See also <code>\setccctype</code> command.
<code>acmcopyright</code>	The authors transfer the copyright to the ACM. This choice is no longer available for the non-commissioned authors and will trigger a warning.

CCS Concepts and user-defined keywords are required for all articles over two pages in length, and are optional for one- and two-page articles (or abstracts).

`\setcopyright` There are several possibilities for the copyright of the papers published by the ACM: the authors may license the paper to the ACM, some or all authors might be employees of the US or Canadian governments, etc. Accordingly the command `\setcopyright{...}` is introduced. Its argument is the copyright status of the paper, for example, `\setcopyright{acmcopyright}`. The possible values for this command are listed in Table 3. This command must be placed in the preamble, before `\begin{document}`. Additional information about ACM copyright rules is discussed in Section 2.18.

`\setccctype` If Creative Commons license is used, the package by default chooses CC-BY 4.0 Attribution 4.0 International license. You can override this choice by the command `\setccctype[version]{type}`, where [*version*] can be either 3.0 or 4.0 (4.0 by default), and {*type*} can be one of zero, by, by-sa, by-nd, by-nc, by-nc-sa, by-nc-nd (see <https://creativecommons.org/licenses/> for the explanation). This command

should be used in the preamble only.

Material published under Creative Commons license should include the corresponding icon. A modern T_EX distribution includes these icons in the package *doclicense*. In case your distribution does not have them, ACM provides a file `cciicons.zip` with these icons. Just unzip it in the same directory where your document is.

The ACM submission software should generate the right command for you to paste into your file.

`\copyrightyear` Each copyright statement must have the year of copyright. By default it is the same as `\acmYear`, but you can override this using the macro `\copyrightyear`, e.g.,

```
\acmYear{2016}
\copyrightyear{2015}
```

There is a special case for a personal copy that the authors may be allowed to generate for their use or a posting on a personal site (check the instructions for the specific journal or conference for the details). The document option `authorversion=true` produces a special form of the copyright statement for this case. Note that you still need the `\setcopyright` command and (optionally) `\copyrightyear` command to tell T_EX about the copyright owner and year. Also, you should be aware that due to the different sizes of the permission blocks for the printed version and authors' version, the page breaks might be different between them.

`abstract (env.)` The environment `abstract` must *precede* the `\maketitle` command. Again, this is different from the standard L^AT_EX. Putting `abstract` after `\maketitle` will trigger an error.

`teaserfigure (env.)` A special kind of figure is used for many two-column conference proceedings. This figure is placed just after the authors but before the main text. The environment `teaserfigure` is used for these figures. This environment must be used *before* `\maketitle`, for example,

```
\begin{teaserfigure}
  \includegraphics[width=\textwidth]{sampleteaser}
  \caption{This is a teaser}
  \label{fig:teaser}
\end{teaserfigure}
```

`\settopmatter` Some information in the top matter is printed for certain journals or proceedings and suppressed for others. You can override these defaults using the command `\settopmatter{<settings>}`. The settings and their meanings are listed in Table 4. For example,

```
\settopmatter{printacmref=false, printccs=true, printfolios=true}
```

The parameter `authorsperrow` requires some explanation. In conference proceedings authors' information is typeset in boxes, several boxes per row (see `sample-sigconf.pdf`, `sample-sigplan.pdf`, etc.). The number of boxes per row is determined automatically. If you want to override this, you can do it using this parameter, for example,

```
\settopmatter{authorsperrow=4}
```

Table 4: Settings for the `\settopmatter` command

Parameter	Values	Meaning
<code>printccs</code>	true/false	Whether to print CCS categories
<code>printacmref</code>	true/false	Whether to print the ACM bibliographic entry
<code>printfolios</code>	true/false	Whether to print page numbers (folios)
<code>authorsperrow</code>	numeric	Number of authors per row for the title page in conference proceedings formats

However, in most cases you should *not* do this and should use the default settings. Setting `authorsperrow` to 0 will revert it to the default settings.

The parameter `printacmref` specifies whether to print the ACM bibliographic entry (default), or not. Note that this entry is required for all articles over one page in length, and is optional for one-page articles (abstracts).

`\received` The command `\received[<stage>]{<date>}` sets the history of the publication. The [*<stage>*] argument is optional; the default is Received for the first date and revised for the subsequent ones. For example,

```
\received{20 February 2007}
\received[revised]{12 March 2009}
\received[accepted]{5 June 2009}
```

`\maketitle` The macro `\maketitle` must be the last command in the top-matter group. That is it must follow the commands defined in this section.

`\shortauthors` After the command `\maketitle`, the macro `\shortauthors` stores the names of the authors for the running head. You can redefine it if the list of author's name is too long, e.g.,

```
\maketitle
\renewcommand{\shortauthors}{Zhou et al.}
```

2.4 Top matter of ACM Engage materials

ACM Engage materials resemble conference proceedings, but have some special features. First, as a rule, they are released under a Creative Commons license. By default CC-BY is used. However, if you want to use another variant of CC license, use `\setcctype` command, for example, `\setcctype{by-nc}`. Second, abstract is called *synopsis*. Third, there are special top matter items used for the materials, such as *Course*, *Resource Type*, *Programming Language*, *CS Topics*.

`\setengagemetadata` These items are set with the command `\setengagemetadata{<name>}{<value>}`, for example,

```
\setengagemetadata{Course}{CS1}
\setengagemetadata{Programming Language}{Python}
\setengagemetadata{Knowledge Unit}{Programming Concepts}
\setengagemetadata{CS Topics}{Functions, Data Types, Expressions,
Mathematical Reasoning}
```

Note that the type of Creative Commons license, if such license is used, is automatically added to the metadata.

2.5 ACM cover page

ACM cover pages are forms of extended abstracts that are added to journals at the late stage. Authors prepare them as separate .tex files using acmcp format. At present only JDS uses them, but in the future this may change.

There are several top matter commands specific for this format.

`\acmArticleType` There are five article types accepted by JDS: *Research* (the default), *Review*, *Discussion*, *Invited*, and *Position*. The command `\acmArticleType{<type>}` sets the article type, for example

```
\acmArticleType{Review}
```

`\acmCodeLink` The commands `\acmCodeDataLink{<link>}` and `\acmDataLink{<link>}` set the links
`\acmDataLink` to the data and code accompanying the paper, for example,

```
\acmCodeLink{https://github.com/repository/code}  
\acmDataLink{https://datadryad.org/stash/dataset/doi:DOI}
```

You may repeat these commands if you have several repositories.

`\acmContributions` The command `\acmContributions{<contributions>}` sets the contributions of the authors, for example,

```
\acmContributions{AW designed the study, CD performed it, all  
authors contributed to the writing.}
```

ACM cover page should have the following obligatory sections:

- Problem statement,
- Methods,
- Results,
- Significance.

Sometimes the addresses extracted from the authors' data are too long to fit on the page. In this case the command `\authorsaddresses` can be use to override them, for example,

```
\authorsaddresses{Corresponding author: Ben Trovato,  
\href{mailto:trovato@corporation.com}{trovato@corporation.com};  
Institute for Clarity in Documentation, P.O. Box 1212, Dublin,  
Ohio, USA, 43017-6221}
```

The design of the cover page may require additional runs of latex to make the elements of the page align.

2.6 Internationalization

ACM accepts publications in languages other than English, as well as papers in English with translations of titles, subtitles, keywords and abstracts into other languages. Papers in languages other than English usually have titles, subtitles (if applicable), keywords and abstracts in English. Note that CCS concepts are always typeset in English.

To submit these papers you need to set the option `language` in the `\documentclass` command. This option can be repeated, for example,

```
\documentclass[sigconf, language=french, language=english]{acmart}
```

The last language in the list is the main language of the paper, i.e. the one for the main title, abstract, body, etc. The other languages are *secondary*, and used for translated titles, keywords, abstracts. Thus the paper above is written in English, and has a secondary abstract and a secondary title in French. On the other hand, a paper in French with secondary titles and abstracts in English and German should use, for example

```
\documentclass[sigconf,
               language=german,
               language=english,
               language=french]{acmart}
```

This key can use any language defined in *babel* package [3] (currently the package is tested with English, French, German and Spanish languages; other languages may require a translation of `\keywordsname` macro). Actually *acmart* loads *babel* internally, so you can use the facilities provided by this package.

If this key is set, you have access to several additional top matter commands.

`\translatedtitle` The commands `\translatedtitle{<language>}title`, `\translatedsubtitle{<language>}subtitle`
`\translatedsubtitle` and `\translatedkeywordslanguagekeywords` are used to set title, subtitle and key-
`\translatedkeywords` words in the secondary language. For example, a paper in English with French title and abstract may set

```
\title{A note on computational complexity}
\translatedtitle{french}{Remarque sur la complexit'e de calcul}
```

while a paper in French should set

```
\title{Remarque sur la complexit'e de calcul}
\translatedtitle{english}{A note on computational complexity}
```

`translatedabstract (env.)` Similarly, `translatedabstract` environment has a mandatory language argument, for example,

```
\begin{translatedabstract}{english}
  This is the English version of the abstract
\end{translatedabstract}
```

You can repeat these commands if a paper has more than one secondary language.

Use the standard commands (`\title`, `\subtitle`, `\keywords`, `abstract`) for the main language of the paper.

2.7 Algorithms

There are now several good packages for typesetting algorithms [4, 5, 6], and the authors are free to choose their favorite one.

2.8 Figures and tables

The new ACM styles use the standard L^AT_EX interface for figures and tables. There are some important items to be aware of, however.

1. The captions for figures must be entered *after* the figure bodies and for tables *before* the table bodies.
2. The ACM uses the standard types for figures and tables and adds several new ones. In total there are the following types:

figure, **table**: a standard figure or table taking a full text width in one-column formats and one column width in two-column formats.

figure*, **table*** in two-column formats, a special figure or table taking a full text width.

teaserfigure: a special figure before `\maketitle`.

3. Accordingly, when scaling images, one should use the following sizes:
 - (a) For `teaserfigure`, `figure` in one-column mode or `figure*` in two-column mode, use `\textwidth`. In one-column mode, you can also use `\columnwidth`, which coincides with `\textwidth` in this case.
 - (b) For `figure` in two-column mode, use `\columnwidth`.

It is strongly recommended to use the package `booktabs` [7] and follow its main principles of typography with respect to tables:

1. Never, ever use vertical rules.
2. Never use double rules.

It is also a good idea not to overuse horizontal rules.

For table *footnotes* you have several options described in the TeX FAQ [1]. The simplest one is to use a `\minipage` environment:

```
\begin{table}
\caption{Simulation Configuration}
\label{tab:conf}
\begin{minipage}{\columnwidth}
\begin{center}
\begin{tabular}{ll}
\toprule
TERRAIN\footnote{This is a table footnote. This is a
table footnote. This is a table footnote.} &
(200\,m$\times$200\,m) Square\\
Node Number & 289\\
Node Placement & Uniform\\
Application & Many-to-Many/Gossip CBR Streams\\
Payload Size & 32 bytes\end{tabular}
\end{center}
\end{minipage}
\end{table}
```

```

Routing Layer & GF\\
MAC Layer & CSMA/MMSN\\
Radio Layer & RADIO-ACCNOISE\\
Radio Bandwidth & 250Kbps\\
Radio Range & 20m--45m\\
\bottomrule
\end{tabular}
\end{center}
\bigskip
\footnotesize\emph{Source:} This is a table
sourcenote. This is a table sourcenote. This is a table
sourcenote.

\emph{Note:} This is a table footnote.
\end{minipage}
\end{table}

```

Tables and figures are by default centered. However, in some cases (for example, when you use several subimages per figure) you may need to override this. A good way to do so is to put the contents into a `\minipage` of the width `\columnwidth`.

2.9 Descriptions of images

`\Description` Some readers of ACM publications might be visually challenged. These readers might use a voice-over software to read aloud the papers. It is important to provide them a description of each image used in the paper.

The command `\Description[short description]{long description}` should be placed inside every figure, `teaserfigure` or `marginfigure` environment to provide a description of the image(s) used in the figure. Unlike `\caption`, which is used alongside the image, `\Description` is intended to be used instead of the image, for example,

```

\begin{figure}
\centering
\includegraphics{voltage}
\Description{A bell-like histogram centered at $0.5\text{V}$ with most
measurements between $0.2\text{V}$ and $0.8\text{V}$}
\caption{Histogram of the measurements of voltage}
\label{fig:voltage}
\end{figure}

```

At present the lack of descriptions generates a warning at compilation.

2.10 Theorems

The ACM classes define two theorem styles and several pre-defined theorem environments:

acmplain: this is the style used for theorem, conjecture, proposition, lemma and corollary, and

acmdefinition: this is the style used for example and definition.

These environments are defined by default. In the unusual circumstance that a user does not wish to have these environments defined, the option `acmthm=false` in the preamble will suppress them.

Sometimes authors want to define new theorem-like constructs that use theorem counters. These constructs must be defined either after `\begin{document}`, or delayed using `\AtEndPreamble` macro, for example,

```
\AtEndPreamble{%
  \theoremstyle{acmdefinition}
  \newtheorem{remark}[theorem]{Remark}}
```

2.11 Online-only and offline-only material

`printonly` (*env.*) Some supplementary material in ACM publications is put online but not in the printed `screenonly` (*env.*) version. The text inside the environment `screenonly` will be typeset only when the option `screen` (see Section 2.2) is set to `true`. Conversely, the text inside the environment `printonly` is typeset only when this option is set to `false`. For example,

```
\section{Supplementary materials}

\begin{printonly}
  Supplementary materials are available in the online version of this paper.
\end{printonly}

\begin{screenonly}
  (The actual supplementary materials.)
\end{screenonly}
```

We use the `comment` package for typesetting this code, so `\begin` and `\end` should start on a line of their own with no leading or trailing spaces.

2.12 Note about anonymous mode

`anonsuppress` (*env.*) When the option `anonymous` is selected, \TeX suppresses author information (including the number of authors) for an anonymous review. However, sometimes the information identifying the authors may be present in the body of the paper. For example,

```
\begin{anonsuppress}
  This is the continuation of the previous work by the author
  \cite{prev1, prev2}.
\end{anonsuppress}
```

As for the `printonly` and `screenonly` environments, `\begin{anonsuppress}` and `\end{anonsuppress}` should start on a line of their own with no leading or trailing spaces.

`\anon` To suppress short snippets of information, use the command `\anon[<substitute>]{<suppressed-text>}`. By default [*<substitute>*] is the word ANONYMOUS. Examples:

```
This work was performed at \anon{NSA}.
This work was performed at \anon[No Such Agency]{NSA}.
```

2.13 Acknowledgments

The traditional “Acknowledgments” section is conventionally used to thank persons and granting agencies for their help and support. However, there are several important considerations about this section.

First, in anonymous mode this section must be omitted: it gives too much information to reviewers. Second, data about grants is extracted and stored separately by the postprocessing software. ACM classes provide facilities for both these tasks.

`acks (env)` The environment `acks` starts an unnumbered section “Acknowledgments” unless the anonymous mode is chosen. Put all thanks inside this environment.

As for the `printonly` and `screenonly` environments, `\begin{acks}` and `\end{acks}` should start on a line of their own with no leading or trailing spaces.

`\grantsponsor` All financial support *must* be listed using the commands `\grantsponsor` and
`\grantnum` `\grantnum`. These commands tell the postprocessing software about the granting organization and grant. The format of these commands is the following:

```
\grantsponsor{\<sponsorID>}{\<name>}{\<url>}
\grantnum[\<url>]{\<sponsorID>}{\<number>}
```

Here `{\<sponsorID>}` is the unique ID used to match grants to sponsors, `{\<name>}` is the name of the sponsor, `{\<url>}` is its URL, and `{\<number>}` is the grant number. The `{\<sponsorID>}` of the `\grantnum` command must correspond to the `{\<sponsorID>}` of a `\grantsponsor` command. Some awards have their own web pages, which you can include using the optional argument of the `\grantnum` command.

At present `{\<sponsorID>}` is chosen by the authors and can be an arbitrary key in the same way the label of a `\cite` is arbitrarily chosen. There might be a change to this policy if the ACM decides to create a global database of sponsoring organizations.

Example:

```
\begin{acks}
  The authors would like to thank Dr. Yuhua Li for providing the
  matlab code of the \textit{BEPS} method.

  The authors would also like to thank the anonymous referees for
  their valuable comments and helpful suggestions. This work is
  supported by the \grantsponsor{GS501100001809}{National Natural
  Science Foundation of
  China}{https://doi.org/10.13039/501100001809} under Grant
  No. : ~\grantnum{GS501100001809}{61273304}
  and~\grantnum[http://www.nnsf.cn/youngscientists]{GS501100001809}{Young
  Scientists' Support Program}.
\end{acks}
```

2.14 Bibliography

The ACM lets you use either `BibTEX` or `BibLTEX` to process your references: they require slightly different setup of your `LTEX` file, as detailed in the following subsections.

2.14.1 Processing using `BibTEX`

This uses the `natbib` package for formatting references and the `BibTEX` style file `ACM-Reference-Format.bst` for `BibTEX` processing. You can disable loading of `natbib`

using the option `natbib=false` in `\documentclass`. However, it is not recommended, as well as the use of Bib \TeX styles other than `ACM-Reference-Format.bst`, and may delay the processing of the manuscript.

`\citestyle` If you use `natbib`, you can select one of two predefined citation styles using the command `\citestyle`: the author-year format `acmauthoryear` or the numeric format `acmnumeric`. For example,

```
\citestyle{acmauthoryear}
```

Note that numeric citations are the default mode for most formats.

`\setcitestyle` You can further customize `natbib` using the `\setcitestyle` command, for example,

```
\setcitestyle{numbers,sort&compress}
```

One of the more common versions is

```
\setcitestyle{nosort}
```

It is useful if you do not like the way `natbib` sorts citation lists.

If you use `natbib`, then commands like `\citep` and `\citeauthor` are automatically supported. The command `\shortcite` is the same as `\cite` in numerical mode and cites the year in author-date mode.

Note that before version 1.48 the command `\citeyear` put the year in parentheses. In version 1.48 and later it produces just the year; the command `\citeyearpar` can be used to emulate its old behavior.

There are several customized Bib \TeX entry types and fields in the ACM style file `ACM-Reference-Format.bst` that you may want to be aware of.

The style supports the fields `doi` and `url`, for example,

```
doi = "10.1145/1188913.1188915",
url = "http://ccrma.stanford.edu/~jos/bayes/bayes.pdf",
```

Normally the printing of URL is suppressed if DOI is present. However, there is a special field `distinctURL`. If it is present and is not zero, URL is printed even if DOI is present.

The style supports the arXiv-recommended fields `eprint` and (optionally) `primaryclass`, for example,

```
eprint = "960935712",
primaryclass = "cs",
```

See the examples at <https://arxiv.org/help/hypertex/bibstyles>.

There are several special entry types. Types `online` and `game` are used for Web pages and games, for example,

```
@online{Thornburg01,
  author = "Harry Thornburg",
  year = "2001",
  title = "Introduction to Bayesian Statistics",
  url = "http://ccrma.stanford.edu/~jos/bayes/bayes.html",
  month = mar,
  lastaccessed = "March 2, 2005",
}
```

Entry types `artifactsoftware`, `artifactdataset` (with synonyms `software` and `dataset`) can be used to cite software artifacts and datasets, for example,

```
@ArtifactSoftware{R,
  title = {R: A Language and Environment for Statistical Computing},
  author = {{R Core Team}},
  organization = {R Foundation for Statistical Computing},
  address = {Vienna, Austria},
  year = {2019},
  url = {https://www.R-project.org/},
}
@ArtifactDataset{UMassCitations,
  author = {Sam Anzaroot and Andrew McCallum},
  title = {{UMass} Citation Field Extraction Dataset},
  year = 2013,
  url =
    {http://www.iesl.cs.umass.edu/data/data-umasscitationfield},
  lastaccessed = {May 27, 2019}
}
```

For these entry types you can use the `lastaccessed` field to add the access date for the URL.

There are two ways to enter video or audio sources in the bibliography corresponding to two different possibilities. For standalone sources available online, you can use an online entry and set its `howpublished` field. For example,

```
@online{Obama08,
  author = "Barack Obama",
  year = "2008",
  title = "A more perfect union",
  howpublished = "Video",
  day = "5",
  url = "http://video.google.com/videoplay?docid=6528042696351994555",
  month = mar,
  lastaccessed = "March 21, 2008",
}
```

For sources available as attachments to conference proceedings and similar documents, you can use the usual `inproceedings` entry type and set its `howpublished` field:

```
@Inproceedings{Novak03,
  author = "Dave Novak",
  title = "Solder man",
  booktitle = "ACM SIGGRAPH 2003 Video Review on Animation theater Program",
  year = "2003",
  publisher = "ACM Press",
  address = "New York, NY",
  pages = "4",
  month = "March 21, 2008",
  doi = "10.9999/woot07-S422",
  howpublished = "Video",
}
```

Sometimes you need to cite a complete issue of a journal. The periodical entry type is intended for this:

```
@periodical{JCohen96,  
  key =      "Cohen",  
  editor =   "Jacques Cohen",  
  title =    "Special issue: Digital Libraries",  
  journal =  "Communications of the {ACM}",  
  volume =   "39",  
  number =   "11",  
  month =    nov,  
  year =     "1996",  
}
```

If you do not know the year of publication, the style will add “[n. d.]” (for “no date”) to the entry.

If you do not know the author (this is often the case for online entries), use the key field to add a key for sorting and citations, for example,

```
@online{TUGInstmem,  
  key =      {TUG},  
  year =     2017,  
  title =    "Institutional members of the {\TeX} Users Group",  
  url =      "http://wwtug.org/instmem.html",  
  lastaccessed = "May 27, 2017",  
}
```

A note about sorting. The current ACM bibliography styles always sort the entries according to authors names and publication year. There is a controversy about sorting names with “von” or “van” part: should Ludwig van Beethoven be sorted under “V” or under “B”? The American practice is to use “van” in sorting, i.e. to file van Beethoven under “V”. However, some authorities recommend to sort Dutch persons according to their last names (see e.g. https://www.ifla.org/files/assets/cataloguing/pubs/names-of-persons_1996.pdf). While I do not want to take a part in this dispute, I would like to point to the old “noopsort” trick by Oren Patashnik. Add to the .bib file the line

```
@PREAMBLE{"\providecommand{\noopsort}[1]{}"}
```

and then encode the author as

```
author = {Ludwig {\noopsort{Beethoven}}van Beethoven},
```

This will make the author to be sorted as “Beethoven” rather than “van Beethoven”.

The current bst style defines a number of macros for common journal names. In particular, all journals listed in Table 5 are included, so you can use strings like `journal = taccess` for *ACM Transactions on Accessible Computing*.

2.14.2 Processing using Bib \LaTeX

You will find in this package two sets of style files for Bib \LaTeX , `acmnumeric` and `acmauthoryear`, that mimic the behaviour of the `ACM-Reference-Format.bst` Bib \TeX style. They provide you access to all the power of Bib \LaTeX and already include support for advanced citation of software artefact from the `biblatex-software` package, also separately available on CTAN. Look at the `biblatex-software` documentation to learn more about what it offers.

There are a few key differences in how the \LaTeX sources are set up when using Bib \LaTeX instead of Bib \TeX , that we summarize briefly here (please refer to the official Bib \LaTeX documentation for more details).

In the preamble of your document you need to load the Bib \LaTeX package and select the appropriate bibliography style, as follows

```
\RequirePackage[
  datamodel=acmdatamodel,
  style=acmnumeric, % use style=acmauthoryear for publications that require it
]{biblatex}
```

Also in the preamble, you need to declare the bibliography sources files using the `\addbibresource` directive (one `\addbibresource` command per source file), e.g.:

```
\addbibresource{software.bib}
\addbibresource{sample-base.bib}
```

At the end of the document, where you want the bibliography to appear, you need to place the command `\printbibliography`.

Look at the `sample-*-biblatex.tex` files that can be found in the `samples` directory after running `make` for templates showcasing these Bib \LaTeX styles.

2.15 Colors

While printed ACM publications are usually black and white, screen mode allows the use of colors. The ACM classes pre-define several colors according to [8]: `ACMBlue`, `ACMYellow`, `ACMOrange`, `ACMRed`, `ACMLightBlue`, `ACMGreen`, `ACMPurple` and `ACMDarkBlue`. You can use them in color assignments.

The ACM provides the following recommendation on color use.

The most accessible approach would be to ensure that your article is still readable when printed in greyscale. The most notable reasons for this are:

1. The most common type of inherited Color Vision Deficiency (CVD) is red-green (in which similar-brightness colors that differ only in their amounts of red or green are often confused), and it affects up to 8% of males and 0.5% of females of Northern European descent.
2. The most common type of acquired Color Vision Deficiency (CVD) is blue-yellow (including mild cases for many older adults).
3. Most printing is in black and white.
4. Situational impairments (e.g., bright sunlight shining on a mobile screen) tend to reduce the entire color gamut, reducing color discriminability.

Note: It is *not* safe to encode information using only variations in color (i.e., only differences in hue and/or saturation) as there is bound to be someone affected!

To ensure that you are using the most accessible colors, the ACM recommends that you choose sets of colors to help ensure suitable variations in when printed in greyscale by using either of the following tools:

1. ColourBrewer: <http://colorbrewer2.org/>
2. ACE: The Accessible Colour Evaluator: <http://daprlab.com/ace/> for designing WCAG 2.0 compliant palettes.

2.15.1 Manual bibliography

Some people create bibliographies manually, writing down `\bibitem` commands explicitly. This approach is *not* recommended for ACM styles. The reason is, ACM submissions, besides being typeset, are also processed by special programs that extract metadata and references. Bibliographies created automatically with ACM styles contain customized macros for these programs, for example,

```
\bibitem[Ablamowicz and Fauser(2007)]%
  {Ablamowicz07}
\bibfield{author}{\bibinfo{person}{Rafal Ablamowicz} {and}
  \bibinfo{person}{Bertfried Fauser}.} \bibinfo{year}{2007}\natexlab{}.
\newblock \bibinfo{booktitle}{\emph{CLIFFORD: a Maple 11 Package for Clifford
  Algebra Computations, version 11}}.
\newblock
\urldef\tempurl%
\url{http://math.tntech.edu/rafal/cliff11/index.html}
\showURL{%
Retrieved February 28, 2008 from \tempurl}
```

Manual bibliographies without these macros may slow down the publication process, and thus are not recommended for ACM submissions.

2.16 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

The package `subcaption` [9] is recommended for complex figures with several subplots or subfigures that require separate subcaptioning. The packages `nomenc1` [10] and `glossaries` [11] can be used for the automatic creation of the lists of symbols and concepts used.

By default `acmart` prevents all widows and orphans (i.e., lonely lines at the beginning or end of the page) and hyphenation at the end of the page. This is done by the rather strict settings

```
\widowpenalty=10000
\clubpenalty=10000
\brokenpenalty=10000
```

However, this may lead to frustrating results when the authors must obey a page limit. Setting these penalties to smaller values may help if you absolutely need to.

Another problem might be the too strict line breaking rules. Again, a strategically placed `\sloppy` command or putting the problematic paragraph inside `sloppypar` environment might help—but beware, the results might be, well, sloppy.

Note that the uppercasing in section titles is done using the `textcase` package [12], so the command `\NoCaseChange` inside the title may help to prevent extraneous uppercasing.

2.17 Counting words

Some ACM conferences use word count limits for papers. The calculation of word number for a paper with math, tables and figures is not a trivial task. Currently the authoritative word count is done by translating the PDF to text and using `wc -w` on the output. Authors can use the package `texcount` (used by Overleaf) to get an estimate of the word count. To facilitate this one adds to the beginning of the package metacomments

```
%TC:macro \cite [option:text,text]
%TC:macro \citep [option:text,text]
%TC:macro \citet [option:text,text]
%TC:envir table 0 1
%TC:envir table* 0 1
%TC:envir tabular [ignore] word
%TC:envir displaymath 0 word
%TC:envir math 0 word
%TC:envir comment 0 0
```

and uses `\begin{math}... \end{math}` instead of dollar signs for math. Note that the count is in any case approximate, and the final decision of editors is based on PDF count.

The script `texcount` provides a report of word count in the document.

2.18 Creative Commons licenses for ACM publications

At present ACM does not allow the authors to typeset Creative Commons license for most ACM publications. These licenses can be used under an agreement with the ACM publishing office. In this case they are inserted by ACM itself.

The exceptions are ACM Engage format, which allows Creative Commons license, and conferences organized and copyrighted by IW3C2. In these cases the authors should use correspondingly `\setcopyright{cc}`, `\setcopyright{iw3c2w3}`, or `\setcopyright{iw3c2w3g}` (the latter should be used by Google employees).

Yet another case is the typesetting of non-ACM materials, when the option `nonacm` is used. This case is somewhat opposite, because for this case *only* Creative Common licenses are supported.

The command `\setcopyright{cc}` produces an error unless the format is `acmengage` or `nonacm` option is selected. On the other hand, if the option `nonacm` is selected, any argument of `\setcopyright` other than `cc` is treated as `none`.

2.19 Disabled or forbidden commands

The goal of `acmart` package is to provide a uniform look and feel for ACM publications. Accordingly, a number of commands is forbidden or disabled in `acmart`.

You may *not* put several authors or several e-mails into a `\author` or `\email` command. This may lead to errors or warning.

You cannot change `\baselinestretch` in your document: this produces an error.

You should not abuse the command `\vspace`: this command may disturb the typesetting of ACM papers.

You should not load `amssymb` package since the package `acmart` defines the corresponding symbols itself.

2.20 Notes for wizards

Sometimes you need to change the behavior of `acmart`. The usual way to do this is to redefine commands in the preamble. However, these definitions are executed *after* `acmart` is loaded and certain decisions are made. This presents a number of problems.

For example, one may want to use the `titletoc` package with `acmart`. This package should be loaded before `hyperref`. However, since `acmart` loads `hyperref` itself, the line `\usepackage{titletoc}` in the preamble will lead to grief (see <http://tex.stackexchange.com/questions/357265/using-titletoc-with-acm-acmart-style>).

Another example is passing options to a package. Suppose you want to use the `dvipsnames` option of the `xcolor` package. Normally you cannot do this because `acmart` loads this package itself without options.

The file `acmart-preload-hook.tex` can be used to solve these problems. If this file exists, it will be processed before any other package. You can use this file to load packages or pass options to them. For example, if you put in this file

```
\let\LoadClassOrig\LoadClass
\renewcommand\LoadClass[2][]{\LoadClassOrig[#1]{#2}%
\usepackage{titletoc}}
```

then `titletoc` will be loaded before `hyperref`. If you put in this file

```
\PassOptionsToPackage{dvipsnames}{xcolor}
```

you will pass `dvipsnames` to `xcolor`.

Important note. This hook makes it too easy to create a manuscript that is not acceptable by the ACM. It is even easier to create a file that cannot be compiled. So please do not use it *unless you know what you are doing*. And if you use it, *do not ask for support*. If you decide to use this hook, you are on your own.

`\AtBeginMaketitle` Another hook is `\AtBeginMaketitle`. The commands in this hook are executed before `\maketitle`.

2.21 Currently supported publications

Table 5: ACM publications and arguments of the `\acmJournal` command

Abbreviation	Publication
ACMJCSS	ACM Journal on Computing and Sustainable Societies
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DLT	Distributed Ledger Technologies: Research and Practice
DGOV	Digital Government: Research and Practice

Table 5: ACM publications and arguments of the \acmJournal command (continued)

Abbreviation	Publication
DTRAP	Digital Threats: Research and Practice
FAC	Formal Aspects of Computing
GAMES	ACM Games: Research and Practice
HEALTH	ACM Transactions on Computing for Healthcare
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JATS	ACM Journal on Autonomous Transportation Systems
JDIQ	ACM Journal of Data and Information Quality
JDS	ACM/IMS Journal of Data Science
JEA	ACM Journal of Experimental Algorithmics
JERIC	ACM Journal of Educational Resources in Computing
JETC	ACM Journal on Emerging Technologies in Computing Systems
JOCCH	ACM Journal on Computing and Cultural Heritage
JRC	ACM Journal on Responsible Computing
PACMCGIT	Proceedings of the ACM on Computer Graphics and Interactive Techniques
PACMHCI	PACM on Human-Computer Interaction
PACMOD	PACM on Management of Data
PACMNET	PACM on Networking
PACMPL	PACM on Programming Languages
PACMSE	PACM on Software Engineering
POMACS	PACM on Measurement and Analysis of Computing Systems
TAAS	ACM Transactions on Autonomous and Adaptive Systems
TACCESS	ACM Transactions on Accessible Computing
TACO	ACM Transactions on Architecture and Code Optimization
TALG	ACM Transactions on Algorithms
TALLIP	ACM Transactions on Asian and Low-Resource Language Information Processing
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TDS	ACM/IMS Transactions on Data Science
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
TELO	ACM Transactions on Evolutionary Learning and Optimization
THRI	ACM Transactions on Human-Robot Interaction
TIIS	ACM Transactions on Interactive Intelligent Systems
TIOT	ACM Transactions on Internet of Things
TISSEC	ACM Transactions on Information and System Security
TIST	ACM Transactions on Intelligent Systems and Technology
TKDD	ACM Transactions on Knowledge Discovery from Data
TMIS	ACM Transactions on Management Information Systems
TOCE	ACM Transactions on Computing Education
TOCHI	ACM Transactions on Computer-Human Interaction
TOCL	ACM Transactions on Computational Logic
TOCS	ACM Transactions on Computer Systems
TOCT	ACM Transactions on Computation Theory

Table 5: ACM publications and arguments of the `\acmJournal` command (continued)

Abbreviation	Publication
TODAES	ACM Transactions on Design Automation of Electronic Systems
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
TOMACS	ACM Transactions on Modeling and Computer Simulation
TOMM	ACM Transactions on Multimedia Computing, Communications and Applications
TOMPECS	ACM Transactions on Modeling and Performance Evaluation of Computing Systems
TOMS	ACM Transactions on Mathematical Software
TOPC	ACM Transactions on Parallel Computing
TOPLAS	ACM Transactions on Programming Languages and Systems
TOPML	ACM Transactions on Probabilistic Machine Learning
TOPS	ACM Transactions on Privacy and Security
TORS	ACM Transactions on Recommender Systems
TOS	ACM Transactions on Storage
TOSEM	ACM Transactions on Software Engineering and Methodology
TOSN	ACM Transactions on Sensor Networks
TQC	ACM Transactions on Quantum Computing
TRETS	ACM Transactions on Reconfigurable Technology and Systems
TSAS	ACM Transactions on Spatial Algorithms and Systems
TSC	ACM Transactions on Social Computing
TSLP	ACM Transactions on Speech and Language Processing
TWEB	ACM Transactions on the Web

Besides the publications listed in Table 5, there is a special “publication” type FACMP, a forthcoming ACM publication, reserved for new journals which are not assigned an ISSN yet.

2.22 Samples

There are several samples of `acmart` documents, that can serve as templates for the authors. Among them `sample-sig...` are templates for conference papers, while `sample-acm...` are templates for journal articles and special materials.

Here is the list of the samples:

sample-manuscript: A proceedings paper in the manuscript format.

sample-acmsmall: A journal paper in the `acmsmall` format.

sample-acmsmall-biblatex: A journal paper using experimental *biblatex* bibliography processing.

sample-acmlarge: A journal paper in the `acmlarge` format.

sample-acmtog: A journal paper in the `acmtog` format.

sample-sigconf: A proceedings paper in the standard sigconf format.

sample-sigconf-biblatex: A proceedings paper in the sigconf format using experimental *biblatex* bibliography processing.

sample-sigconf-authordraft: A proceedings paper in the sigconf format with the authordraft option selected.

sample-sigconf-i13n: A proceedings paper in the sigconf format with multilanguage titles and abstract.

sample-sigconf-xelatex: A proceedings paper in the sigconf format, Xe \LaTeX version.

sample-sigconf-lualatex: A proceedings paper in the sigconf format, Lua \LaTeX version.

sample-sigplan: A proceedings paper in the sigplan format.

sample-acmsmall-conf: A proceedings paper in the acmsmall format for the publication in a journal using this option.

sample-acmtog-conf: A proceedings paper in the acmtog format for the publication in a journal using this option.

sample-acmcp: A sample of ACM Cover Page used by JDS.

sample-acmengage: A sample of ACM Engage publication.

2.23 A note about sigchi-a format

Starting in Spring 2020 ACM retired SIGCHI Extended Abstract format (sigchi-a). ACM will not, under any circumstances, accept documents in this format for publication and will not offer technical support to the authors who use this template.

You may use this format in the nonacm mode only, as in

```
\documentclass[sigchi-a, nonacm]{acmart}
```

`sidebar` (*env.*) This format has large margin uses for special figures and tables. This package provides three environments for this with optional captions:
`marginfigure` (*env.*)
`margintable` (*env.*)

sidebar: textual information in the margin,

marginfigure: a figure in the margin,

margintable: a table in the margin.

The environments `figure` and `table` produce figures and tables with the width of the text column. The environments `figure*` and `table*` produce “wide” figures and tables, which take a large part of the margin.

The horizontal sizes of figures are:

1. `figure`: `\columnwidth`,
2. `marginfigure`: `\marginparwidth`,
3. `figure*`: `\fulltextwidth`.

2.24 Experiments with tagging

ACM is firmly committed to produce fully tagged PDFs compliant with the accessibility standards. We use the developmental version of tagging code by L^AT_EX3 team, see the details at <https://www.latex-project.org/publications/indexbytopic/pdf/> and <https://tug.org/twg/accessibility/overview.html>.

At present this work is highly experimental. You may try the experiments by (1) using the class `acmart-tagged` in the document class line, and (2) adding the command `\DocumentMetadata[options]` in the preamble, see the file `sample-acmsmall-tagged.tex`. If you do this, please *do not ask ACM for support*. On the other hand, bug reports at <https://github.com/borisveytsman/acmart/issues> will be appreciated.

3 Implementation

3.1 Identification

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

```
1 <class>\NeedsTeXFormat{LaTeX2e}
2 <*gobble>
3 \ProvidesFile{acmart.dtx}
4 </gobble>
5 <class&!tagged>\ProvidesClass{acmart}
6 <tagged>\ProvidesClass{acmart-tagged}
7 [2024/08/25 v2.09 Typesetting articles for the Association for Computing Machinery]
```

And the driver code:

```
8 <*gobble>
9 \documentclass{ltxdoc}
10 \usepackage{array,booktabs,amsmath,graphicx,fancyvrb,tabularx, longtable}
11 \usepackage[tt=false, type1=true]{libertine}
12 \usepackage[varqu]{zi4}
13 \usepackage[libertine]{newtxmath}
14 \usepackage[tableposition=top]{caption}
15 \usepackage{hypdoc}
16 \PageIndex
17 \CodeLineIndex
18 \RecordChanges
19 \EnableCrossrefs
20 \begin{document}
21   \DocInput{acmart.dtx}
22 \end{document}
23 </gobble>
24 <*class>
25 <!tagged>\def\@classname{acmart}
26 <tagged>\def\@classname{acmart-tagged}
```

3.2 Preload hook

We preload acmart-preload-hook:

```
27 \InputIfFileExists{acmart-preload-hook.tex}{%
28   \ClassWarning{\@classname}{%
29     I am loading acmart-preload-hook.tex. You are fully responsible
30     for any problems from now on.}}{}
```

3.3 Options

We need xkeyval since some of our options may have values:

```
31 \RequirePackage{xkeyval}
   We use xstring to check whether user input is valid
32 \RequirePackage{xstring}
   We need iftex to check the engine
33 \RequirePackage{iftex}
```

format The possible formats

```
34 \define@choicekey*+{\@classname.cls}{format}[\ACM@format\ACM@format@nr]{%
35 manuscript, acmsmall, acmlarge, acmtog, sigconf, siggraph,
36 sigplan, sigchi, sigchi-a, acmengage, acmcp}[manuscript]{}{%
37 \ClassError{\@classname}{The option format must be manuscript,
38 acmsmall, acmlarge, acmtog, sigconf, siggraph,
39 sigplan, sigchi or sigchi-a}}
40 \def\DeclareACMFormat#1{\DeclareOptionX{#1}{\setkeys{\@classname.cls}{format=#1}}}
41 \@DeclareACMFormat{manuscript}
42 \@DeclareACMFormat{acmsmall}
43 \@DeclareACMFormat{acmlarge}
44 \@DeclareACMFormat{acmtog}
45 \@DeclareACMFormat{sigconf}
46 \@DeclareACMFormat{siggraph}
47 \@DeclareACMFormat{sigplan}
48 \@DeclareACMFormat{sigchi}
49 \@DeclareACMFormat{sigchi-a}
50 \@DeclareACMFormat{acmengage}
51 \@DeclareACMFormat{acmcp}
52 \ExecuteOptionsX{format}
```

\if@ACM@screen Whether we use screen mode

```
53 \define@boolkey+{\@classname.cls}[@ACM@]{screen}[true]{%
54 \if@ACM@screen
55 \PackageInfo{\@classname}{Using screen mode}%
56 \else
57 \PackageInfo{\@classname}{Not using screen mode}%
58 \fi}{\PackageError{\@classname}{The option screen can be either true or
59 false}}
60 \ExecuteOptionsX{screen=false}
```

\if@ACM@urlbreakonhyphens

```
61 \define@boolkey+{\@classname.cls}[@ACM@]{urlbreakonhyphens}[true]{%
62 \if@ACM@urlbreakonhyphens
63 \PackageInfo{\@classname}{Using breaking urls on hyphens}%
64 \else
65 \PackageInfo{\@classname}{Not breaking urls on hyphens}%
66 \fi}{\PackageError{\@classname}{The option urlbreakonhyphens can be either true or
67 false}}
68 \ExecuteOptionsX{urlbreakonhyphens=true}
```

\if@ACM@acmthm Whether we define theorem-like environments.

```
69 \define@boolkey+{\@classname.cls}[@ACM@]{acmthm}[true]{%
70 \if@ACM@acmthm
71 \PackageInfo{\@classname}{Requiring acmthm}%
72 \else
73 \PackageInfo{\@classname}{Suppressing acmthm}%
74 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
75 false}}
76 \ExecuteOptionsX{acmthm=true}
```

\if@ACM@review Whether we use review mode

```
77 \define@boolkey+{\@classname.cls}[@ACM@]{review}[true]{%
```

```

78 \if@ACM@review
79   \PackageInfo{\@classname}{Using review mode}%
80   \AtBeginDocument{\@ACM@printfoliostrue}%
81 \else
82   \PackageInfo{\@classname}{Not using review mode}%
83 \fi}{\PackageError{\@classname}{The option review can be either true or
84   false}}
85 \ExecuteOptionsX{review=false}

```

`\if@ACM@authorversion` Whether we use author's-version mode

```

86 \define@boolkey+{\@classname.cls}{@ACM@}{authorversion}[true]{%
87   \if@ACM@authorversion
88     \PackageInfo{\@classname}{Using authorversion mode}%
89   \else
90     \PackageInfo{\@classname}{Not using authorversion mode}%
91 \fi}{\PackageError{\@classname}{The option authorversion can be either true or
92   false}}
93 \ExecuteOptionsX{authorversion=false}

```

`\if@ACM@nonacm` Special option for non-ACM publications using the ACM typesetting options.

```

94 \define@boolkey+{\@classname.cls}{@ACM@}{nonacm}[true]{%
95   \if@ACM@nonacm
96     \PackageInfo{\@classname}{Using nonacm mode}%
97     \AtBeginDocument{\@ACM@printacmreffalse}%
98     % in 'nonacm' mode we disable the "ACM Reference Format"
99     % printing by default, but this can be re-enabled by the
100    % user using \settopmatter{printacmref=true}
101   \else
102     \PackageInfo{\@classname}{Not using nonacm mode}%
103 \fi}{\PackageError{\@classname}{The option nonacm can be either true or
104   false}}
105 \ExecuteOptionsX{nonacm=false}

```

`\if@ACM@balance` Whether to balance the last page

```

106 \define@boolkey+{\@classname.cls}{@ACM@}{balance}[true]{}%
107 \PackageError{\@classname}{The option balance can be either true or
108   false}}
109 \ExecuteOptionsX{balance}

```

`\if@ACM@pbalance` Whether to balance the last page

```

110 \define@boolkey+{\@classname.cls}{@ACM@}{pbalance}[true]{}%
111 \PackageError{\@classname}{The option pbalance can be either true or
112   false}}
113 \ExecuteOptionsX{pbalance=false}

```

`\if@ACM@natbib@override` This macro is no longer used.

`\if@ACM@natbib` Whether we use natbib mode

```

114 \define@boolkey+{\@classname.cls}{@ACM@}{natbib}[true]{%
115   \if@ACM@natbib
116     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
117   \else
118     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
119 \fi}{\PackageError{\@classname}{The option natbib can be either true or

```

```

120     false}}
121 \ExecuteOptionsX{natbib=true}

\if@ACM@anonymous Whether we use anonymous mode
122 \define@boolkey+{\@classname.cls}[@ACM@]{anonymous}[true]{%
123   \if@ACM@anonymous
124     \PackageInfo{\@classname}{Using anonymous mode}%
125   \else
126     \PackageInfo{\@classname}{Not using anonymous mode}%
127   \fi}{\PackageError{\@classname}{The option anonymous can be either true or
128     false}}
129 \ExecuteOptionsX{anonymous=false}

\if@ACM@timestamp Whether we use timestamp mode
130 \define@boolkey+{\@classname.cls}[@ACM@]{timestamp}[true]{%
131   \if@ACM@timestamp
132     \PackageInfo{\@classname}{Using timestamp mode}%
133   \else
134     \PackageInfo{\@classname}{Not using timestamp mode}%
135   \fi}{\PackageError{\@classname}{The option timestamp can be either true or
136     false}}
137 \ExecuteOptionsX{timestamp=false}

\if@ACM@authordraft Whether we use author-draft mode
138 \define@boolkey+{\@classname.cls}[@ACM@]{authordraft}[true]{%
139   \if@ACM@authordraft
140     \PackageInfo{\@classname}{Using authordraft mode}%
141     \@ACM@timestamptrue
142     \@ACM@reviewtrue
143   \else
144     \PackageInfo{\@classname}{Not using authordraft mode}%
145   \fi}{\PackageError{\@classname}{The option authordraft can be either true or
146     false}}
147 \ExecuteOptionsX{authordraft=false}

\ACM@fontsize The font size to pass to the base class
148 % \changes{v1.87}{2022/08/27}{Added fontsize 8pt}
149 \def\ACM@fontsize{}
150 \DeclareOptionX{8pt}{\edef\ACM@fontsize{\CurrentOption}}
151 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
152 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
153 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
154 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

\ACM@languages The languages of the document
155 \def\ACM@languages{}
156 \DeclareOptionX{language}{%
157   \ifx\ACM@languages\@empty
158     \gdef\ACM@languages{english}\fi
159   \g@addto@macro\ACM@languages{, #1}}

160 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
161 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
162 \ProcessOptionsX
163 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.4 Setting switches

`\if@ACM@manuscript` Whether we use manuscript mode

```
164 \newif\if@ACM@manuscript
```

`\if@ACM@journal` There are two kinds of publications: journals and books

```
165 \newif\if@ACM@journal
```

`\if@ACM@journal@bibstrip` Sometimes ACM wants a journal-like publication to have conference information in the bibstrip and vice versa, so we have an additional switch.

```
166 \newif\if@ACM@journal@bibstrip
```

`\if@ACM@journal@bibstrip@or@tog` ACM TOG sometimes uses journal-like bibstrip even for conference proceedings, so we need to set it separately

```
167 \newif\if@ACM@journal@bibstrip@or@tog
```

`\if@ACM@sigchiamode` The formatting of SIGCHI extended abstracts is quite unusual. We have a special switch for them.

```
168 \newif\if@ACM@sigchiamode
```

`\if@ACM@engage` ACM Engage course materials have special formatting

```
169 \newif\if@ACM@engage
```

```
170 \@ACM@engagefalse
```

`\if@ACM@acmcp` ACM cover page formatting

```
171 \newif\if@ACM@acmcp
```

```
172 \@ACM@acmcpfalse
```

Setting up switches

```
173 \ifnum\ACM@format@nr=5\relax % siggraph
```

```
174 \ClassWarning{\@classname}{%
```

```
175 The format siggraph is now obsolete.\MessageBreak
```

```
176 I am switching to sigconf.}
```

```
177 \setkeys{\@classname.cls}{format=sigconf}
```

```
178 \fi
```

```
179 \ifnum\ACM@format@nr=7\relax % sigchi
```

```
180 \ClassWarning{\@classname}{%
```

```
181 The format sigchi is now obsolete.\MessageBreak
```

```
182 I am switching to sigconf.}
```

```
183 \setkeys{\@classname.cls}{format=sigconf}
```

```
184 \fi
```

```
185 \ifnum\ACM@format@nr=8\relax % sigchi
```

```
186 \ClassWarning{\@classname}{%
```

```
187 ACM SIGCHI has retired the SIGCHI-A template\MessageBreak
```

```
188 effective immediately. ACM is keeping this template\MessageBreak
```

```
189 option available to authors who are working on legacy\MessageBreak
```

```
190 documents only. ACM will not, under any circumstances,\MessageBreak
```

```
191 accept documents in this format for publication and\MessageBreak
```

```
192 will not offer technical support to the authors who use\MessageBreak
```

```
193 this template.\MessageBreak
```

```
194 ACM SIGCHI is directing Conference leaders and\MessageBreak
```

```
195 authors to publish their articles using the SIGCONF\MessageBreak
```

```
196 template call.}
```



```

197 \fi
198 \ifnum\ACM@format@nr=0\relax
199 \@ACM@manuscripttrue
200 \else
201 \@ACM@manuscriptfalse
202 \fi
203 \@ACM@sigchiamodeffalse
204 \ifcase\ACM@format@nr
205 \relax % manuscript
206 \@ACM@journaltrue
207 \or % acmsmall
208 \@ACM@journaltrue
209 \or % acmlarge
210 \@ACM@journaltrue
211 \or % acmtog
212 \@ACM@journaltrue
213 \@ACM@journal@bibstrip@or@togtrue
214 \or % sigconf
215 \@ACM@journalfalse
216 \or % siggraph
217 \@ACM@journalfalse
218 \or % sigplan
219 \@ACM@journalfalse
220 \or % sigchi
221 \@ACM@journalfalse
222 \or % sigchi-a
223 \@ACM@journalfalse
224 \@ACM@sigchiamodetrue
225 \or % acmengage
226 \@ACM@journalfalse
227 \@ACM@engagetrue
228 \or % acmcp
229 \@ACM@journaltrue
230 \@ACM@acmcptrue
231 \AtBeginDocument{\@ACM@printacmreffalse}%
232 \fi
233 \if@ACM@journal
234 \@ACM@journal@bibstriptrue
235 \@ACM@journal@bibstrip@or@togtrue
236 \else
237 \@ACM@journal@bibstripfalse
238 \fi

```

3.5 Loading the base class and package

**tagged*; Before we load the base class we want to save the original definitions of sectioning commands since acmart redefines them, and we need the vanilla versions.

```

\@startsection@kernel
239 \let\@startsection@kernel\@startsection

\@xsect@kernel
240 \let\@xsect@kernel\@xsect

```

```

\@sect@kernel
241 \let\@sect@kernel\@sect

\@ssect@kernel
242 \let\@ssect@kernel\@ssect

;tagged;
At this point we either have \ACM@fontsize or use defaults
243 \ifx\ACM@fontsize\@empty
244 \ifcase\ACM@format@nr
245 \relax % manuscript
246 \def\ACM@fontsize{9pt}%
247 \or % acsmall
248 \def\ACM@fontsize{10pt}%
249 \or % acmlarge
250 \def\ACM@fontsize{10pt}%
251 \or % acmtog
252 \def\ACM@fontsize{9pt}%
253 \or % sigconf
254 \def\ACM@fontsize{9pt}%
255 \or % siggraph
256 \def\ACM@fontsize{9pt}%
257 \or % sigplan
258 \def\ACM@fontsize{10pt}%
259 \or % sigchi
260 \def\ACM@fontsize{9pt}%
261 \or % sigchi-a
262 \def\ACM@fontsize{10pt}%
263 \or % acmengage
264 \def\ACM@fontsize{10pt}%
265 \or % acmcp
266 \def\ACM@fontsize{9pt}%
267 \fi
268 \fi
269 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
270 \LoadClass[\ACM@fontsize, reqno]{amsart}
271 \RequirePackage{microtype}

We need etoolbox for delayed code
272 \RequirePackage{etoolbox}

Booktabs is now the default
273 \RequirePackage{booktabs}

We need totpages to calculate the number of pages and refcount to use that number
274 \RequirePackage{refcount}
275 \RequirePackage{totpages}

The \collect@body macro in amsmath is defined using \def. We load environ to
access the \long version of this command
276 \RequirePackage{environ}

We use setspace for double spacing
277 \if@ACM@manuscript

```

```

278 \RequirePackage{setspace}
279 \onehalfspacing
280 \fi

    We need textcase for better upcasing
281 \RequirePackage{textcase}

282 \if@ACM@acmcp
283 \RequirePackage{framed}
284 \RequirePackage{zref-savepos, zref-user}
285 \fi

```

\@ACM@acmcp@delta We need to store the dimen to store the insert length of amcp box

```

286 \newdimen\@ACM@acmcp@delta
287 \@ACM@acmcp@delta=0pt\relax

```

3.6 Citations

We patch `\setcitestyle` to allow, for example, `\setcitestyle{sort}` and `\setcitestyle{nosort}`. We patch `\citestyle` to warn about undefined citation styles.

```

288 \if@ACM@natbib
289 \RequirePackage{natbib}
290 \renewcommand{\bibsection}{%
291 \section*{\refname}%
292 \phantomsection\addcontentsline{toc}{section}{\refname}%
293 }
294 \renewcommand{\bibfont}{\bibliofont}
295 \renewcommand\setcitestyle[1]{
296 \@for\@tempa:=#1\do
297 {\def\@tempb{round}\ifx\@tempa\@tempb
298 \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
299 \def\@tempb{square}\ifx\@tempa\@tempb
300 \renewcommand\NAT@open{[]\renewcommand\NAT@close{[]}\fi
301 \def\@tempb{angle}\ifx\@tempa\@tempb
302 \renewcommand\NAT@open{<}\renewcommand\NAT@close{>}\fi
303 \def\@tempb{curly}\ifx\@tempa\@tempb
304 \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi
305 \def\@tempb{semicolon}\ifx\@tempa\@tempb
306 \renewcommand\NAT@sep{;}\fi
307 \def\@tempb{colon}\ifx\@tempa\@tempb
308 \renewcommand\NAT@sep{;}\fi
309 \def\@tempb{comma}\ifx\@tempa\@tempb
310 \renewcommand\NAT@sep{,}\fi
311 \def\@tempb{authoryear}\ifx\@tempa\@tempb
312 \NAT@numbersfalse\fi
313 \def\@tempb{numbers}\ifx\@tempa\@tempb
314 \NAT@numberstrue\NAT@superfalse\fi
315 \def\@tempb{super}\ifx\@tempa\@tempb
316 \NAT@numberstrue\NAT@supertrue\fi
317 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
318 \let\bibstyle=\@gobble\fi
319 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
320 \let\bibstyle=\@citestyle\fi
321 \def\@tempb{sort}\ifx\@tempa\@tempb

```

```

322     \def\NAT@sort{\@ne}\fi
323 \def\@tempb{nosort}\ifx\@tempa\@tempb
324     \def\NAT@sort{\z@}\fi
325 \def\@tempb{compress}\ifx\@tempa\@tempb
326     \def\NAT@cmprs{\@ne}\fi
327 \def\@tempb{nocompress}\ifx\@tempa\@tempb
328     \def\NAT@cmprs{\z@}\fi
329 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
330     \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
331 \def\@tempb{mcite}\ifx\@tempa\@tempb
332     \let\NAT@merge\@ne\fi
333 \def\@tempb{merge}\ifx\@tempa\@tempb
334     \ifnum{\NAT@merge<\tw@}{\let\NAT@merge\tw@}\fi
335 \def\@tempb{elide}\ifx\@tempa\@tempb
336     \ifnum{\NAT@merge<\thr@}{\let\NAT@merge\thr@}\fi
337 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
338     \NAT@longnamestrue\fi
339 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
340     \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
341 \expandafter\NAT@find@eq\@tempa=\relax\@nil
342 \if\@tempc\relax\else
343     \expandafter\NAT@rem@eq\@tempc
344     \def\@tempb{open}\ifx\@tempa\@tempb
345         \xdef\NAT@open{\@tempc}\fi
346     \def\@tempb{close}\ifx\@tempa\@tempb
347         \xdef\NAT@close{\@tempc}\fi
348     \def\@tempb{aysep}\ifx\@tempa\@tempb
349         \xdef\NAT@aysep{\@tempc}\fi
350     \def\@tempb{yysep}\ifx\@tempa\@tempb
351         \xdef\NAT@yrsep{\@tempc}\fi
352     \def\@tempb{notesep}\ifx\@tempa\@tempb
353         \xdef\NAT@cmt{\@tempc}\fi
354     \def\@tempb{citesep}\ifx\@tempa\@tempb
355         \xdef\NAT@sep{\@tempc}\fi
356     \fi
357 }%
358 \NAT@@setcites
359 }
360 \renewcommand\citestyle[1]{%
361     \ifcsname bibstyle@#1\endcsname%
362     \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
363     \else%
364     \@latex@error{Undefined `#1' citestyle}%
365     \fi
366 }%
367 \fi

```

`\bibstyle@acmauthoryear` The default author-year format:

```

368 \newcommand{\bibstyle@acmauthoryear}{%
369     \setcitestyle{%
370         authoryear,%
371         open={[]},close={}],citesep={;},%
372         aysep={},yysep={,},%
373         notesep={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```
374 \newcommand{\bibstyle@acmnumeric}{%
375   \setcitestyle{%
376     numbers,sort&compress,%
377     open={},close={}},citesep={,},%
378     notepsep={, }}}
```

The default is numeric:

```
379 \if@ACM@natbib
380 \citestyle{acmnumeric}
381 \fi
```

3.7 Internationalization

```
382 \if@ACM@journal
383   \renewcommand\keywordsname{Additional Key Words and Phrases}%
384 \else
385   \renewcommand\keywordsname{Keywords}%
386 \fi
387 \if@ACM@engage
388   \renewcommand\abstractname{Synopsis}%
389 \fi
390 \ifx\ACM@languages\@empty
391 \else
392   \RequirePackage[\ACM@languages]{babel}%
393   \addto\captionsenglish{%
394     \if@ACM@journal
395       \renewcommand\keywordsname{Additional Key Words and Phrases}%
396     \else
397       \renewcommand\keywordsname{Keywords}%
398     \fi
399     \renewcommand\acksname{Acknowledgements}%
400     \if@ACM@engage
401       \renewcommand\abstractname{Synopsis}%
402     \fi
403   }%
404   \addto\captionsfrench{%
405     \if@ACM@journal
406       \renewcommand\keywordsname{Mots Clés et Phrases Supplémentaires}%
407     \else
408       \renewcommand\keywordsname{Mots clés}%
409     \fi
410     \renewcommand\acksname{Remerciements}%
411   }%
412   \addto\captionsgerman{%
413     \if@ACM@journal
414       \renewcommand\keywordsname{Zusätzliche Schlagwörter und Phrasen}%
415     \else
416       \renewcommand\keywordsname{Schlagwörter}%
417     \fi
418     \renewcommand\acksname{Danksagungen}%
419   }%
420   \addto\captionsspanish{%
421     \if@ACM@journal
```

```

422     \renewcommand\keywordsname{Palabras y Frases Claves Adicionales}%
423     \else
424     \renewcommand\keywordsname{Palabras claves}%
425     \fi
426     \renewcommand\acksname{Expresiones de gratitud}%
427 }%
428 \fi

\ACM@lang@check Some commands should not be used if the document is monlingual
429 \newcommand\ACM@lang@check[1]{%
430   \ifx\ACM@languages\@empty\relax
431   \ClassError{\@classname}{%
432     Command \string#1 \MessageBreak is used in monlingual document}{%
433     You used a command (\string#1) \MessageBreak
434     that does not have a meaning \MessageBreak
435     unless are languages are defined. \MessageBreak
436     Please choose the languages in \string\documentclass
437     \MessageBreak
438     (e.g. \string\documentclass[languages={french, english}]{acmart}),
439     \MessageBreak
440     or delete the command.}%
441   \fi}

\@translatedtitle
442 \def\@translatedtitle{}

\translatedtitle The title of the paper in a different language
443 \newcommand\translatedtitle[2]{\ACM@lang@check{\translatedtitle}%
444 \g@addto@macro\@translatedtitle{\par\foreignlanguage{#1}{#2}}}

\@translatedsubtitle
445 \def\@translatedsubtitle{}

\translatedsubtitle The subtitle of the paper in a different language
446 \newcommand\translatedsubtitle[2]{\ACM@lang@check{\translatedsubtitle}%
447 \g@addto@macro\@translatedsubtitle{\par\foreignlanguage{#1}{#2}}}

\@translatedkeywords
448 \def\@translatedkeywords{}

\translatedkeywords Add keywords to the paper in the language specified
449 \newcommand\translatedkeywords[2]{\ACM@lang@check{\translatedkeywords}%
450 \g@addto@macro\@translatedkeywords{\@mktranslatedkeywords{#1}{#2}}}

\@translatedabstracts The container for translated abstracts.
451 \def\@translatedabstracts{}

translatedabstract We save translated abstracts into \@translatedabstracts
452 \newenvironment{translatedabstract}[1]{\Collect@Body
453   \@savetranslatedabstract\@mktranslatedabstract{#1}}{}
```

`\@savetranslatedabstract` And saving the abstract

```
454 \long\def\@savetranslatedabstract#1{\if@ACM@maketitle@typeset
455 \ClassError{\@classname}{Abstract must be defined before maketitle
456 command. Please move it!}\fi
457 \ACM@lang@check{translatedabstract}%
458 \g@addto@macro\@translatedabstracts{\bgroup#1\egroup}}
```

3.8 Sectioning

`\@startsection` Before we call `hyperref`, we redefine `\startsection` commands to their \LaTeX defaults since the `amsart` ones are too AMS-specific. We need to do this early since we want `hyperref` to have a chance to redefine them again:

```
459 </class>
460 <*tagged>
461 \let\@startsection\@startsection@kernel
462 \let\@sect\@sect@kernel
463 \let\@ssect\@ssect@kernel
464 \let\@xsect\@xsect@kernel
465 </tagged>
466 <*class&!tagged>
467 \def\@startsection#1#2#3#4#5#6{%
468 \ifnoskipsec \leavevmode \fi
469 \par
470 \@tempskipa #4\relax
471 \@afterindenttrue
472 \ifdim \@tempskipa <\z@
473 \@tempskipa -\@tempskipa \@afterindentfalse
474 \fi
475 \if@nobreak
476 \everypar{}%
477 \else
478 \addpenalty\@secpenalty\addvspace\@tempskipa
479 \fi
480 \@ifstar
481 {\@ssect{#3}{#4}{#5}{#6}}%
482 {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}%
483 \def\@sect#1#2#3#4#5#6[#7]#8{%
484 \edef\@toclevel{\ifnum#2=\@m 0\else\number#2\fi}%
485 \ifnum #2>\c@secnumdepth
486 \let\@svsec\@empty
487 \else
488 \refstepcounter{#1}%
489 \protected@edef\@svsec{\@secntformat{#1}\relax}%
490 \fi
491 \@tempskipa #5\relax
492 \ifdim \@tempskipa>\z@
493 \begingroup
494 #6{%
495 \@hangfrom{\hskip #3\relax\@svsec}%
496 \interlinepenalty \@M #8\@par}%
497 \endgroup
498 \csname #1mark\endcsname{#7}%
499 \ifnum #2>\c@secnumdepth \else
```

```

500     \@tochangmeasure{\csname the#1\endcsname}%
501     \fi
502     \addcontentsline{toc}{#1}{%
503       \ifnum #2>\c@secnumdepth \else
504         \protect\numberline{\csname the#1\endcsname}%
505       \fi
506       #7}%
507   \else
508     \def\@svsechd{%
509       #6{\hskip #3\relax
510         \svsec #8}%
511       \csname #1mark\endcsname{#7}%
512       \ifnum #2>\c@secnumdepth \else
513         \@tochangmeasure{\csname the#1\endcsname\space}%
514       \fi
515       \addcontentsline{toc}{#1}{%
516         \ifnum #2>\c@secnumdepth \else
517           \protect\numberline{\csname the#1\endcsname}%
518         \fi
519         #7}}%
520   \fi
521   \@xsect{#5}}
522 \def\@xsect#1{%
523   \@tempskipa #1\relax
524   \ifdim \@tempskipa>\z@
525     \par \nobreak
526     \vskip \@tempskipa
527     \@afterheading
528   \else
529     \@nobreakfalse
530     \global\@noskipsectrue
531     \everypar{%
532       \if@noskipsec
533         \global\@noskipsecfalse
534         {\setbox\z@\lastbox}%
535         \clubpenalty\@M
536         \begingroup \@svsechd \endgroup
537         \unskip
538         \@tempskipa #1\relax
539         \hskip -\@tempskipa
540       \else
541         \clubpenalty \@clubpenalty
542         \everypar{}%
543       \fi}%
544   \fi
545   \ignorespaces}
546 \def\@ssect#1#2#3#4#5{%
547   \@tempskipa #3\relax
548   \ifdim \@tempskipa>\z@
549     \begingroup
550     #4{%
551       \@hangfrom{\hskip #1}%
552       \interlinepenalty \@M #5\@par}%
553   \endgroup

```


`\@mpfootnotetext` We want the footnotes in minipages centered:

```
592 \long\def\@mpfootnotetext#1{%
593   \global\setbox\@mpfootins\vbox{%
594     \unvbox\@mpfootins
595     \reset@font\footnotesize
596     \hsize\columnwidth
597     \@parboxrestore
598     \protected@edef\@currentlabel
599       {\csname p@mpfootnote\endcsname\@thefnmark}%
600     \color@begingroup\centering
601     \@makefnmark{#1}
602     \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
603     \color@endgroup}}
```

`\@makefnmark` AMS classes use a buggy definition of `\makefnmark`. We revert to the standard one.

```
604 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}
```

3.9 Hyperxmp and hyperref

Adding hyperref

```
605 \let\@footnotemark@nolink\@footnotemark
606 \let\@footnotetext@nolink\@footnotetext
607 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
608 \RequirePackage{hyperxmp}
609 \pdfstringdefDisableCommands{%
610   \def\addtocounter#1#2{%
611     \def\unskip{%
612       \def\textbullet{- }%
613       \def\textrightarrow{-> }%
614       \def\footnotemark{}%
615     }
616     \urlstyle{rm}
617     \ifcase\ACM@format@nr
618     \relax % manuscript
619     \or % acsmall
620     \or % acmlarge
621     \or % acmtog
622     \or % sigconf
623     \or % siggraph
624     \or % sigplan
625     \urlstyle{sf}
626     \or % sigchi
627     \or % sigchi-a
628     \urlstyle{sf}
629     \or % acmengage
630     \or % acmcp
631     \fi
632   \AtEndPreamble{%
633     \if@ACM@urlbreakonhyphens
634       \def\do@url@hyp{\do\~}%
635     \fi
636     \if@ACM@screen
637       \hypersetup{colorlinks,
```

```

638     linkcolor=ACMPurple,
639     citecolor=ACMPurple,
640     urlcolor=ACMDarkBlue,
641     filecolor=ACMDarkBlue}
642   \else
643   \hypersetup{hidelinks}
644 \fi
645 \hypersetup{pdflang={en},
646   pdfdisplaydoctitle}}
  Bibliography mangling.
647 \if@ACM@natbib
648   \let\citeN\cite
649   \let\cite\citep
650   \let\citeANP\citeauthor
651   \let\citeNN\citeyearpar
652   \let\citeyearNP\citeyear
653   \let\citeNP\citealt
654   \DeclareRobustCommand\citeA
655     {\begingroup\NAT@swafalse
656       \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
657   \providecommand\newblock{}%
658 \else
659   \AtBeginDocument{%
660     \let\shortcite\cite%
661     \providecommand\citename[1]{#1}}
662 \fi
663 \newcommand\shortcite[2][{}]{%
664   \ifNAT@numbers\cite[#1]{#2}\else\citeyearpar[#1]{#2}\fi}

```

`\bibliographystyle` The `amsart` package redefines `\bibliographystyle` since it prefers the AMS bibliography style. We turn it back to the \LaTeX definition:

```

665 \def\bibliographystyle#1{%
666   \ifx\@begindocumenthook\undefined\else
667     \expandafter\AtBeginDocument
668   \fi
669   {\if@filesw
670     \immediate\write\@auxout{\string\bibstyle{#1}}%
671   \fi}}

```

3.10 Other packages

Graphics and color.

```

672 \RequirePackage{graphicx}
673 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [8]:

```

674 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
675 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
676 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
677 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
678 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
679 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
680 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
681 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode or sigchi-a mode

```
682 \if@ACM@authordraft
683   \RequirePackage{draftwatermark}
684   \SetWatermarkFontSize{0.5in}
685   \SetWatermarkColor[gray]{.9}
686   \SetWatermarkText{\parbox{12em}{\centering
687     Unpublished working draft. \\
688     Not for distribution.}}
689 \else
690   \if@ACM@sigchiamode
691     \if@ACM@nonacm\else
692       \RequirePackage{draftwatermark}
693       \SetWatermarkFontSize{0.5in}
694       \SetWatermarkColor[gray]{.9}
695       \SetWatermarkText{\parbox{12em}{\centering
696         Legacy document. \\
697         Not for publication in an ACM venue}}
698     \fi
699   \fi
700 \fi
```

3.11 Paper size and paragraphing

We use geometry for dimensions. Note that the present margins do not depend on the font size option—we might need to change this. See <https://github.com/borisveytsman/acmart/issues/5#issuecomment-272881329>.

```
701 \RequirePackage{geometry}
702 \ifcase\ACM@format@nr
703 \relax % manuscript
704   \geometry{letterpaper,head=13pt,
705     marginparwidth=6pc,heightrounded}%
706 \or % acmsmall
707   \geometry{twoside=true,
708     includeheadfoot, head=13pt, foot=2pc,
709     paperwidth=6.75in, paperheight=10in,
710     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
711     marginparwidth=2pc,heightrounded
712   }%
713 \or % acmlarge
714   \geometry{twoside=true, head=13pt, foot=2pc,
715     paperwidth=8.5in, paperheight=11in,
716     includeheadfoot,
717     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
718     marginparwidth=4pc,heightrounded
719   }%
720 \or % acmtog
721   \geometry{twoside=true, head=13pt, foot=2pc,
722     paperwidth=8.5in, paperheight=11in,
723     includeheadfoot, columnsep=24pt,
724     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
725     marginparwidth=2pc,heightrounded
726   }%
727 \or % sigconf
```

```

728 \geometry{twoside=true, head=13pt,
729   paperwidth=8.5in, paperheight=11in,
730   includeheadfoot, columnsep=2pc,
731   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
732   marginparwidth=2pc,heightrounded
733   }%
734 \or % siggraph
735 \geometry{twoside=true, head=13pt,
736   paperwidth=8.5in, paperheight=11in,
737   includeheadfoot, columnsep=2pc,
738   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
739   marginparwidth=2pc,heightrounded
740   }%
741 \or % sigplan
742 \geometry{twoside=true, head=13pt,
743   paperwidth=8.5in, paperheight=11in,
744   includeheadfoot=false, columnsep=2pc,
745   top=1in, bottom=1in, inner=0.75in, outer=0.75in,
746   marginparwidth=2pc,heightrounded
747   }%
748 \or % sigchi
749 \geometry{twoside=true, head=13pt,
750   paperwidth=8.5in, paperheight=11in,
751   includeheadfoot, columnsep=2pc,
752   top=66pt, bottom=73pt, inner=54pt, outer=54pt,
753   marginparwidth=2pc,heightrounded
754   }%
755 \or % sigchi-a
756 \geometry{twoside=false, head=13pt,
757   paperwidth=11in, paperheight=8.5in,
758   includeheadfoot, marginparsep=72pt,
759   marginparwidth=170pt, columnsep=20pt,
760   top=72pt, bottom=72pt, left=314pt, right=72pt
761   }%
762   \@mparswitchfalse
763   \reversemarginpar
764 \or % acmengage
765 \geometry{twoside=true, head=13pt,
766   paperwidth=8.5in, paperheight=11in,
767   includeheadfoot, columnsep=2pc,
768   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
769   marginparwidth=2pc,heightrounded
770   }%
771 \or % acmcp
772 \geometry{twoside=true,
773   includeheadfoot, head=13pt, foot=2pc,
774   paperwidth=6.75in, paperheight=10in,
775   top=58pt, bottom=44pt, inner=46pt, outer=46pt,
776   marginparwidth=2pc,heightrounded
777   }%
778 \fi

```

\parindent Paragraphing

```
\parskip 779 \setlength\parindent{10\p@}
```

```

780 \setlength\parskip{\z@}
781 \ifcase\ACM@format@nr
782 \relax % manuscript
783 \or % acmsmall
784 \or % acmlarge
785 \or % acmtog
786 \setlength\parindent{9\p@}%
787 \or % sigconf
788 \or % siggraph
789 \or % sigplan
790 \or % sigchi
791 \or % sigchi-a
792 \or % acmengage
793 \or % acmcp
794 \fi

```

`\normalparindent` The `amsart` package defines the `\normalparindent` length and initializes it to 12pt (the value of `\parindent` in `amsart`). It is later used to set the `\listparindent` length in the quotation environment and the `\parindent` length in the `\@footnotetext` command. We set `\normalparindent` to the value of `\parindent` as selected by `acmart` for consistent paragraph indents.

```
795 \setlength\normalparindent{\parindent}
```

Footnotes require some consideration. We have several layers of footnotes: front-matter footnotes, “regular” footnotes and the special insert for the bibstrip. In the old ACM classes, the bibstrip was a `\@float`. The problem with floats is that they tend to, well, float—and we want the guarantee they stay.

We use `manyfoot` for layered footnotes instead.

`copyrightpermissionfootnoterule` This is the footnote rule that separates the bibstrip from the rest of the paper. It is a full width rule.

```

796 \def\copyrightpermissionfootnoterule{\kern-3\p@
797 \hrule \@width \columnwidth \kern 2.6\p@}

798 \RequirePackage{manyfoot}
799 \SelectFootnoteRule[2]{copyrightpermission}
800 \DeclareNewFootnote{authorsaddresses}
801 \SelectFootnoteRule[2]{copyrightpermission}
802 \DeclareNewFootnote{copyrightpermission}

```

`\footnoterule` Tschichold’s rules:

```

803 \def\footnoterule{\kern-3\p@
804 \hrule \@width 4pc \kern 2.6\p@}

```

`\endminipage` We do not use footnote rules in minipages

```

805 \def\endminipage{%
806 \par
807 \unskip
808 \ifvoid\@mpfootins\else
809 \vskip\skip\@mpfootins
810 \normalcolor
811 \unvbox\@mpfootins
812 \fi

```

```

813 \@minipagefalse
814 \color@endgroup
815 \egroup
816 \expandafter\@iiparbox\@mpargs{\unvbox\@tempboxa}}

```

\@textbottom Add some stretch according to David Carlisle's advice at <http://tex.stackexchange.com/a/62318/5522>

```

817 \def\@textbottom{\vskip \z@ \@plus 1pt}
818 \let\@texttop\relax

```

In two-column layouts, force both columns to be the same height by inserting extra internal vertical space to fill out the page.

```

819 \ifcase\ACM@format@nr
820 \relax % manuscript
821 \or % acmsmall
822 \or % acmlarge
823 \or % acmtog
824 \flushbottom
825 \or % sigconf
826 \flushbottom
827 \or % siggraph
828 \flushbottom
829 \or % sigplan
830 \flushbottom
831 \or % sigchi
832 \flushbottom
833 \or % sigchi-a
834 \or % acmengage
835 \flushbottom
836 \or % acmcp
837 \flushbottom
838 \fi

```

3.12 Fonts

Somehow PDFTeX and XeTeX require different incantations to make a PDF compliant with the current Acrobat bugs. Xpdf is much better.

The code below is by Ross Moore.

```

839 \ifPDFTeX
840 \input{glyphtounicode}
841 \pdfglyphtounicode{f_f}{FB00}
842 \pdfglyphtounicode{f_f_i}{FB03}
843 \pdfglyphtounicode{f_f_l}{FB04}
844 \pdfglyphtounicode{f_i}{FB01}
845 \pdfglyphtounicode{t_t}{0074 0074}
846 \pdfglyphtounicode{f_t}{0066 0074}
847 \pdfglyphtounicode{T_h}{0054 0068}
848 \pdfgentounicode=1
849 \RequirePackage{cmap}
850 \fi

```

\if@ACM@newfonts Whether we load the new fonts

```

851 \newif\if@ACM@newfonts

```

```

852 \@ACM@newfontstrue
853 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
854   have the libertine package installed. Please upgrade your
855   TeX}\@ACM@newfontsfalse}
856 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
857   have the inconsolata (zi4.sty) package installed. Please upgrade your
858   TeX}\@ACM@newfontsfalse}
859 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
860   have the newtxmath package installed. Please upgrade your
861   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

862 \if@ACM@newfonts
863   \RequirePackage[T1]{fontenc}
864   % Note that the order in which packages are loaded matters,
865   % and the correct order depends on the LaTeX engine used.
866   % See https://github.com/borisveytsman/acmart/issues/402
867   % and https://github.com/borisveytsman/acmart/issues/410
868   \ifxetex
869     \RequirePackage[libertine]{newtxmath}
870     \RequirePackage[tt=false]{libertine}
871     \setmonofont[StylisticSet=3]{inconsolata}
872   \else
873     \ifluatex
874       \RequirePackage[libertine]{newtxmath}
875       \RequirePackage[tt=false]{libertine}
876       \setmonofont[StylisticSet=3]{inconsolata}
877     \else
878       \RequirePackage[tt=false, type1=true]{libertine}
879       \RequirePackage[varqu]{zi4}
880       \RequirePackage[libertine]{newtxmath}
881     \fi
882   \fi
883 \fi

```

`\liningnums` Libertine defines `\liningnums`, which makes `fontspec` unhappy. While we do not use `fontspec`, some users do.

```

884 \let\liningnums\@undefined
885 \AtEndPreamble{%
886   \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

887 \if@ACM@sigchiamode
888   \renewcommand{\familydefault}{\sfdefault}
889 \fi

```

3.13 Image descriptions

`\if@Description@present` A local switch: whether there is a description in the given figure

```

890 \newif\if@Description@present
891 \@Description@presenttrue

```

`\if@undescribed@images` A global switch whether some images were *not* described


```

892 \newif\if@undescrbed@images
893 \@undescrbed@imagesfalse

```

\Description The Description macro right now just sets switches

```

894 \newcommand\Description[2][\global\@Description@presenttrue\ignorespaces}

```

The global warning

```

895 \AtEndDocument{\if@undescrbed@images
896 \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}

```

Hooks for figures and tables. We also patch algorithm and algorithm* in case somebody uses them.

```

897 \AtBeginEnvironment{figure}{\@Description@presentfalse
898 \let\@vspace\@vspace@orig
899 \let\@vspacer\@vspacer@orig}
900 \AtBeginEnvironment{figure*}{\@Description@presentfalse
901 \let\@vspace\@vspace@orig
902 \let\@vspacer\@vspacer@orig}
903 \AtEndEnvironment{figure}{\if@Description@present\else
904 \global\@undescrbed@imagestrue
905 \ClassWarning{\@classname}{A possible image without description}\fi}
906 \AtEndEnvironment{figure*}{\if@Description@present\else
907 \global\@undescrbed@imagestrue
908 \ClassWarning{\@classname}{A possible image without description}\fi}
909 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
910 \let\@vspacer\@vspacer@orig}
911 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
912 \let\@vspacer\@vspacer@orig}
913 \AtBeginEnvironment{algorithm}{\let\@vspace\@vspace@orig
914 \let\@vspacer\@vspacer@orig}
915 \AtBeginEnvironment{algorithm*}{\let\@vspace\@vspace@orig
916 \let\@vspacer\@vspacer@orig}
917 \AtBeginEnvironment{lstlisting}{\let\@vspace\@vspace@orig
918 \let\@vspacer\@vspacer@orig}
919 \AtBeginEnvironment{lstlisting*}{\let\@vspace\@vspace@orig
920 \let\@vspacer\@vspacer@orig}
921 \AtBeginEnvironment{minted}{\let\@vspace\@vspace@orig
922 \let\@vspacer\@vspacer@orig}
923 \AtBeginEnvironment{minted*}{\let\@vspace\@vspace@orig
924 \let\@vspacer\@vspacer@orig}
925 \AtBeginEnvironment{listing}{\let\@vspace\@vspace@orig
926 \let\@vspacer\@vspacer@orig}
927 \AtBeginEnvironment{listing*}{\let\@vspace\@vspace@orig
928 \let\@vspacer\@vspacer@orig}
929

```

3.14 Floats

We use the caption package

```

930 \RequirePackage{caption, float}
931 \captionsetup[table]{position=top}
932 \if@ACM@journal
933 \captionsetup{labelfont={sf, small},
934 textfont={sf, small}, margin=\z@}

```

```

935 \captionsetup[figure]{name={Fig.}}
936 \else
937 \captionsetup{labelfont={bf},
938   textfont={bf}, labelsep=colon, margin=\z@}
939 \ifcase\ACM@format@nr
940 \relax % manuscript
941 \or % acmsmall
942 \or % acmlarge
943 \or % acmtog
944 \or % sigconf
945 \or % siggraph
946 \captionsetup{textfont={it}}
947 \or % sigplan
948 \captionsetup{labelfont={bf},
949   textfont={normalfont}, labelsep=period, margin=\z@}
950 \or % sigchi
951 \captionsetup[figure]{labelfont={bf, small},
952   textfont={bf, small}}
953 \captionsetup[table]{labelfont={bf, small},
954   textfont={bf, small}}
955 \or % sigchi-a
956 \captionsetup[figure]{labelfont={bf, small},
957   textfont={bf, small}}
958 \captionsetup[table]{labelfont={bf, small},
959   textfont={bf, small}}
960 \or % acmengage
961 \or % acmcp
962 \fi
963 \fi

```

sidebar The sidebar environment:

```

964 \newfloat{sidebar}{}{sbar}
965 \floatname{sidebar}{Sidebar}
966 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

967 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
968 \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
969 \marginpar{\small#1}\egroup}

```

marginfigure The marginfigure environment:

```

970 \newenvironment{marginfigure}{\Collect@Body\@marginfigure}{}

```

\@marginfigure The processing of the saved text

```

971 \long\def\@marginfigure#1{\bgroup
972 \let\@vspace\@vspace@orig
973 \let\@vspacer\@vspacer@orig
974 \captionsetup{type=figure}%
975 \marginpar{\@Description@presentfalse\centering
976 \small#1\if@Description@present\else
977 \global\@undescrbed@imagestrue
978 \ClassWarning{\@classname}{A possible image without description}
979 \fi}%
980 \egroup}

```

`margintable` The `margintable` environment:

```
981 \newenvironment{margintable}{\Collect@Body\@margintable}{}
```

`\@margintable` The processing of the saved text

```
982 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
983 \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
984 \marginpar{\centering\small#1}\egroup}
```

SIGCHI extended abstracts provide an interesting possibility to push into the margin. Here we use `figure*` and `table*` for this.

`\fulltextwidth` We define the width of the boxes as

```
985 \newdimen\fulltextwidth
986 \fulltextwidth=\dimexpr(\textwidth+\marginparwidth+\marginparsep)
```

`\@dblfloat` We redefine the double-float command. First, we make the size bigger. Second, our default position is going to be `tp` (to give marginalia a chance)

```
987 \if@ACM@sigchiamode
988 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
989 \let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
990 \let\@endfloatbox\@endwidefloatbox
991 \def\@fpsaddddefault{\def\@fps{tp}}%
992 \@float}
993 \fi
```

`\enddblfloat` And the end. Just adding a `\bgroup`.

```
994 \if@ACM@sigchiamode
995 \def\enddblfloat{%
996 \end@float\egroup}
997 \fi
```

`\@endwidefloatbox` This is the end of a wide box—we basically move everything to the left

```
998 \def\@endwidefloatbox{%
999 \par\vskip\z@skip
1000 \@minipagefalse
1001 \outer@nbreak
1002 \egroup
1003 \color@endbox
1004 \global\setbox\@currbox=\vbox{\moveleft
1005 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
1006 \wd\@currbox=\textwidth
1007 }
```

3.15 Lists

```
1008 \ifcase\ACM@format@nr
1009 \relax % manuscript
1010 \or % acmsmall
1011 \or % acmlarge
1012 \or % acmtog
1013 \or % sigconf
1014 \or % siggraph
1015 \or % sigplan
```

```

1016 \def\labelenumi{\theenumi.}
1017 \def\labelenumii{\theenumii.}
1018 \def\labelenumiii{\theenumiii.}
1019 \def\labelenumiv{\theenumiv.}
1020 \or % sigchi
1021 \or % sigchi-a
1022 \or % acmengage
1023 \or % acmcp
1024 \fi

```

The AMS uses generous margins for lists. Note that `amsart` defines `\leftmargin` values for list levels at the beginning of the document, so we must redefine them in the same manner. Also, note that `amsart` redefines the `enumerate` and `itemize` environments with a `\makeLabel` command that uses `\llap`, so the `\labelwidth` value is (effectively) irrelevant; nonetheless, we follow `amsart` and set `\labelwidth` to `\leftmargin` minus `\labelsep`.

```

1025 \newdimen\@ACM@labelwidth
1026 \AtBeginDocument{%
1027   \setlength\labelsep{4pt}
1028   \setlength{\@ACM@labelwidth}{6.5pt}
1029
1030   %% First-level list: when beginning after the first line of an
1031   %% indented paragraph or ending before an indented paragraph, labels
1032   %% should not hang to the left of the preceding/following text.
1033   \setlength\leftmargini{\z@}
1034   \addtolength\leftmargini{\parindent}
1035   \addtolength\leftmargini{2\labelsep}
1036   \addtolength\leftmargini{\@ACM@labelwidth}
1037
1038   %% Second-level and higher lists.
1039   \setlength\leftmarginii{\z@}
1040   \addtolength\leftmarginii{0.5\labelsep}
1041   \addtolength\leftmarginii{\@ACM@labelwidth}
1042   \setlength\leftmarginiii{\leftmarginii}
1043   \setlength\leftmarginiv{\leftmarginiii}
1044   \setlength\leftmarginv{\leftmarginiv}
1045   \setlength\leftmarginvi{\leftmarginv}
1046   \@listi}
1047 \newskip\listisep
1048 \listisep\smallskipamount
1049 \def\@listI{\leftmargin\leftmargini
1050   \labelwidth\leftmargini \advance\labelwidth-\labelsep
1051   \listparindent\z@
1052   \topsep\listisep}
1053 \let\@listi\@listI
1054 \def\@listii{\leftmargin\leftmarginii
1055   \labelwidth\leftmarginii \advance\labelwidth-\labelsep
1056   \topsep\z@skip}
1057 \def\@listiii{\leftmargin\leftmarginiii
1058   \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
1059 \def\@listiv{\leftmargin\leftmarginiv
1060   \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
1061 \def\@listv{\leftmargin\leftmarginv
1062   \labelwidth\leftmarginv \advance\labelwidth-\labelsep}

```

```

1063 \def\@listvi{\leftmargin\leftmarginvi
1064 \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}
\descriptionlabel We do not use a colon by default like amsart does:
1065 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
1066 \renewenvironment{description}{\list{}}{%
1067 \labelwidth\@ACM@labelwidth
1068 \let\makelabel\descriptionlabel}%
1069 }{
1070 \endlist
1071 }
1072 \let\enddescription=\endlist % for efficiency

```

3.16 Top-matter data

`\if@ACM@maketitle@typeset` The switch to check whether `\maketitle` is already typeset. It is initially false, and setting top matter when it is true is wrong.

```

1073 \newif\if@ACM@maketitle@typeset
1074 \@ACM@maketitle@typesetfalse

```

We use the `xkeyval` interface to define journal titles and the relevant information

```

1075 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
1076 ACMJCSS,%
1077 CIE,%
1078 CSUR,%
1079 DGOV,%
1080 DLT,%
1081 DTRAP,%
1082 FAC,%
1083 GAMES,%
1084 HEALTH,%
1085 IMWUT,%
1086 JACM,%
1087 JATS,%
1088 JDIQ,%
1089 JDS,%
1090 JEA,%
1091 JERIC,%
1092 JETC,%
1093 JOCCH,%
1094 JRC,%
1095 PACMCGIT,%
1096 PACMHCI,%
1097 PACMMOD,%
1098 PACMNET,%
1099 PACMPL,%
1100 PACMSE,%
1101 POMACS,%
1102 TAAS,%
1103 TACCESS,%
1104 TACO,%

```

1105 TALG,%
1106 TALLIP,%
1107 TAP,%
1108 TCPS,%
1109 TDS,%
1110 TEAC,%
1111 TECS,%
1112 TELO,%
1113 THRI,%
1114 TIIS,%
1115 TIOT,%
1116 TISSEC,%
1117 TIST,%
1118 TKDD,%
1119 TMIS,%
1120 TOCE,%
1121 TOCHI,%
1122 TOCL,%
1123 TOCS,%
1124 TOCT,%
1125 TODAES,%
1126 TODS,%
1127 TOG,%
1128 TOIS,%
1129 TOIT,%
1130 TOMACS,%
1131 TOMM,%
1132 TOMPECS,%
1133 TOMS,%
1134 TOPC,%
1135 TOPLAS,%
1136 TOPML,%
1137 TOPS,%
1138 TORS,%
1139 TOS,%
1140 TOSEM,%
1141 TOSN,%
1142 TQC,%
1143 TRETTS,%
1144 TSAS,%
1145 TSC,%
1146 TSLP,%
1147 TWEB,%
1148 FACMP%
1149 }{%
1150 \ifcase\@journalCode@nr
1151 \relax % ACMJCSS
1152 \def\@journalName{ACM Journal on Computing and Sustainable Societies}%
1153 \def\@journalNameShort{ACM J. Comput. Sustain. Soc.}%
1154 \def\@permissionCodeOne{2834-5533}%
1155 \def\@permissionCodeTwo{2834-5533}%
1156 \or % CIE
1157 \def\@journalName{ACM Computers in Entertainment}%
1158 \def\@journalNameShort{ACM Comput. Entertain.}%

```

1159 \def\@permissionCodeOne{1544-3574}%
1160 \or % CSUR
1161 \def\@journalName{ACM Computing Surveys}%
1162 \def\@journalNameShort{ACM Comput. Surv.}%
1163 \def\@permissionCodeOne{0360-0300}%
1164 \def\@permissionCodeTwo{1557-7341}%
1165 \or % DGOV
1166 \def\@journalName{Digital Government: Research and Practice}%
1167 \def\@journalNameShort{Digit. Gov. Res. Pract.}%
1168 \def\@permissionCodeOne{2639-0175}%
1169 \def\@permissionCodeTwo{2639-0175}%
1170 \or % DLT
1171 \def\@journalName{Distributed Ledger Technologies: Research and Practice}%
1172 \def\@journalNameShort{Distrib. Ledger Technol.}%
1173 \def\@permissionCodeOne{2769-6472}%
1174 \def\@permissionCodeTwo{2769-6480}%
1175 \or % DTRAP
1176 \def\@journalName{Digital Threats: Research and Practice}%
1177 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
1178 \def\@permissionCodeOne{2576-5337}%
1179 \def\@permissionCodeTwo{2576-5337}%
1180 \or % FAC
1181 \def\@journalName{Formal Aspects of Computing}%
1182 \def\@journalNameShort{Form. Asp. Comput.}%
1183 \def\@permissionCodeOne{0934-5043}%
1184 \def\@permissionCodeTwo{1433-299X}%
1185 \or % GAMES
1186 \def\@journalName{ACM Games: Research and Practice}%
1187 \def\@journalNameShort{ACM Games}%
1188 \def\@permissionCodeOne{2832-5516}%
1189 \def\@permissionCodeTwo{2832-5516}%
1190 \or % HEALTH
1191 \def\@journalName{ACM Transactions on Computing for Healthcare}%
1192 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
1193 \def\@permissionCodeOne{2637-8051}%
1194 \def\@permissionCodeTwo{2637-8051}%
1195 \or % IMWUT
1196 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
1197     Wearable and Ubiquitous Technologies}%
1198 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
1199 \def\@permissionCodeOne{2474-9567}%
1200 \def\@permissionCodeTwo{2474-9567}%
1201 \@ACM@screentruer
1202 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1203 \or % JACM
1204 \def\@journalName{Journal of the ACM}%
1205 \def\@journalNameShort{J. ACM}%
1206 \def\@permissionCodeOne{0004-5411}%
1207 \def\@permissionCodeTwo{1557-735X}%
1208 \or % JATS
1209 \def\@journalName{Journal on Autonomous Transportation Systems}%
1210 \def\@journalNameShort{ACM J. Auton. Transport. Syst.}%
1211 \def\@permissionCodeOne{2833-0528}%
1212 \def\@permissionCodeTwo{2833-0528}%

```

```

1213 \or % JDIQ
1214 \def\@journalName{ACM Journal of Data and Information Quality}%
1215 \def\@journalNameShort{ACM J. Data Inform. Quality}%
1216 \def\@permissionCodeOne{1936-1955}%
1217 \def\@permissionCodeTwo{1936-1963}%
1218 \or % JDS
1219 \def\@journalName{ACM/IMS Journal of Data Science}%
1220 \def\@journalNameShort{ACM/IMS J. Data Sci.}%
1221 \def\@permissionCodeOne{2831-3194}%
1222 \def\@permissionCodeTwo{2831-3194}%
1223 \or % JEA
1224 \def\@journalName{ACM Journal of Experimental Algorithmics}%
1225 \def\@journalNameShort{ACM J. Exp. Algor.}%
1226 \def\@permissionCodeOne{1084-6654}%
1227 \def\@permissionCodeTwo{1084-6654}%
1228 \or % JERIC
1229 \def\@journalName{ACM Journal of Educational Resources in Computing}%
1230 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
1231 \def\@permissionCodeOne{1073-0516}%
1232 \or % JETC
1233 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
1234 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
1235 \def\@permissionCodeOne{1550-4832}%
1236 \def\@permissionCodeTwo{1550-4840}%
1237 \or % JOCCH
1238 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
1239 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
1240 \def\@permissionCodeOne{1556-4673}%
1241 \def\@permissionCodeTwo{1556-4711}%
1242 \or % JRC
1243 \def\@journalName{ACM Journal on Responsible Computing}%
1244 \def\@journalNameShort{ACM J. Responsib. Comput.}%
1245 \def\@permissionCodeOne{2832-0565}%
1246 \def\@permissionCodeTwo{2832-0565}%
1247 \or % PACMCGIT
1248 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
1249 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
1250 \def\@permissionCodeOne{2577-6193}%
1251 \def\@permissionCodeTwo{2577-6193}%
1252 \@ACM@screentruer
1253 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1254 \or % PACMHCI
1255 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
1256 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
1257 \def\@permissionCodeOne{2573-0142}%
1258 \def\@permissionCodeTwo{2573-0142}%
1259 \@ACM@screentruer
1260 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1261 \or % PACMMOD
1262 \def\@journalName{Proceedings of the ACM on Management of Data}%
1263 \def\@journalNameShort{Proc. ACM Manag. Data}%
1264 \def\@permissionCodeOne{2836-6573}%
1265 \def\@permissionCodeTwo{2836-6573}%
1266 \or % PACMNET

```



```

1267 \def\@journalName{Proceedings of the ACM on Networkng}%
1268 \def\@journalNameShort{Proc. ACM Netw.}%
1269 \def\@permissionCodeOne{2834-5509}%
1270 \def\@permissionCodeTwo{2834-5509}%
1271 \or % PACMPL
1272 \def\@journalName{Proceedings of the ACM on Programming Languages}%
1273 \def\@journalNameShort{Proc. ACM Program. Lang.}%
1274 \def\@permissionCodeOne{2475-1421}%
1275 \def\@permissionCodeTwo{2475-1421}%
1276 \@ACM@screentru
1277 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1278 \or % PACMSE
1279 \def\@journalName{Proceedings of the ACM on Software Engineering}%
1280 \def\@journalNameShort{Proc. ACM Softw. Eng.}%
1281 \def\@permissionCodeOne{2994-970X}%
1282 \def\@permissionCodeTwo{2994-970X}%
1283 \@ACM@screentru
1284 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1285 \or % POMACS
1286 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
1287 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
1288 \def\@permissionCodeOne{2476-1249}%
1289 \def\@permissionCodeTwo{2476-1249}%
1290 \@ACM@screentru
1291 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1292 \or % TAAS
1293 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
1294 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
1295 \def\@permissionCodeOne{1556-4665}%
1296 \def\@permissionCodeTwo{1556-4703}%
1297 \or % TACCESS
1298 \def\@journalName{ACM Transactions on Accessible Computing}%
1299 \def\@journalNameShort{ACM Trans. Access. Comput.}%
1300 \def\@permissionCodeOne{1936-7228}%
1301 \def\@permissionCodeTwo{1936-7236}%
1302 \or % TACO
1303 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
1304 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
1305 \def\@permissionCodeOne{1544-3566}%
1306 \def\@permissionCodeTwo{1544-3973}%
1307 \or % TALG
1308 \def\@journalName{ACM Transactions on Algorithms}%
1309 \def\@journalNameShort{ACM Trans. Algor.}%
1310 \def\@permissionCodeOne{1549-6325}%
1311 \def\@permissionCodeTwo{1549-6333}%
1312 \or % TALLIP
1313 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
1314 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
1315 \def\@permissionCodeOne{2375-4699}%
1316 \def\@permissionCodeTwo{2375-4702}%
1317 \or % TAP
1318 \def\@journalName{ACM Transactions on Applied Perception}%
1319 \def\@journalNameShort{ACM Trans. Appl. Percept.}%
1320 \def\@permissionCodeOne{1544-3558}%

```

```

1321 \def\@permissionCodeTwo{1544-3965}%
1322 \or % TCPS
1323 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1324 \def\@journalNameShort{ACM Trans. Cyber-Phys. Syst.}%
1325 \def\@permissionCodeOne{2378-962X}%
1326 \def\@permissionCodeTwo{2378-9638}%
1327 \or % TDS
1328 \def\@journalName{ACM/IMS Transactions on Data Science}%
1329 \def\@journalNameShort{ACM/IMS Trans. Data Sci.}%
1330 \def\@permissionCodeOne{2577-3224}%
1331 \or % TEAC
1332 \def\@journalName{ACM Transactions on Economics and Computation}%
1333 \def\@journalNameShort{ACM Trans. Econ. Comput.}%
1334 \def\@permissionCodeOne{2167-8375}%
1335 \def\@permissionCodeTwo{2167-8383}%
1336 \or % TECS
1337 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1338 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1339 \def\@permissionCodeOne{1539-9087}%
1340 \def\@permissionCodeTwo{1558-3465}%
1341 \or % TELO
1342 \def\@journalName{ACM Transactions on Evolutionary Learning and Optimization}%
1343 \def\@journalNameShort{ACM Trans. Evol. Learn. Optim.}%
1344 \def\@permissionCodeOne{2688-299X}%
1345 \def\@permissionCodeTwo{2688-3007}%
1346 \or % THRI
1347 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1348 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
1349 \def\@permissionCodeOne{2573-9522}%
1350 \def\@permissionCodeTwo{2573-9522}%
1351 \or % TIIS
1352 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
1353 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1354 \def\@permissionCodeOne{2160-6455}%
1355 \def\@permissionCodeTwo{2160-6463}%
1356 \or % TIOT
1357 \def\@journalName{ACM Transactions on Internet of Things}%
1358 \def\@journalNameShort{ACM Trans. Internet Things}%
1359 \def\@permissionCodeOne{2577-6207}%
1360 \def\@permissionCodeTwo{2577-6207}%
1361 \or % TISSEC
1362 \def\@journalName{ACM Transactions on Information and System Security}%
1363 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1364 \def\@permissionCodeOne{1094-9224}%
1365 \or % TIST
1366 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1367 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1368 \def\@permissionCodeOne{2157-6904}%
1369 \def\@permissionCodeTwo{2157-6912}%
1370 \or % TKDD
1371 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1372 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1373 \def\@permissionCodeOne{1556-4681}%
1374 \def\@permissionCodeTwo{1556-472X}%

```

1375 \or % TMIS
1376 \def\@journalName{ACM Transactions on Management Information Systems}%
1377 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1378 \def\@permissionCodeOne{2158-656X}%
1379 \def\@permissionCodeTwo{2158-6578}%
1380 \or % TOCE
1381 \def\@journalName{ACM Transactions on Computing Education}%
1382 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1383 \def\@permissionCodeOne{1946-6226}%
1384 \def\@permissionCodeTwo{1946-6226}%
1385 \or % TOCHI
1386 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1387 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1388 \def\@permissionCodeOne{1073-0516}%
1389 \def\@permissionCodeTwo{1557-7325}%
1390 \or % TOCL
1391 \def\@journalName{ACM Transactions on Computational Logic}%
1392 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1393 \def\@permissionCodeOne{1529-3785}%
1394 \def\@permissionCodeTwo{1557-945X}%
1395 \or % TOCS
1396 \def\@journalName{ACM Transactions on Computer Systems}%
1397 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1398 \def\@permissionCodeOne{0734-2071}%
1399 \def\@permissionCodeTwo{1557-7333}%
1400 \or % TOCT
1401 \def\@journalName{ACM Transactions on Computation Theory}%
1402 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1403 \def\@permissionCodeOne{1942-3454}%
1404 \def\@permissionCodeTwo{1942-3462}%
1405 \or % TODAES
1406 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1407 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1408 \def\@permissionCodeOne{1084-4309}%
1409 \def\@permissionCodeTwo{1557-7309}%
1410 \or % TODS
1411 \def\@journalName{ACM Transactions on Database Systems}%
1412 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1413 \def\@permissionCodeOne{0362-5915}%
1414 \def\@permissionCodeTwo{1557-4644}%
1415 \or % TOG
1416 \def\@journalName{ACM Transactions on Graphics}%
1417 \def\@journalNameShort{ACM Trans. Graph.}%
1418 \def\@permissionCodeOne{0730-0301}%
1419 \def\@permissionCodeTwo{1557-7368}%
1420 \or % TOIS
1421 \def\@journalName{ACM Transactions on Information Systems}%
1422 \def\@journalNameShort{ACM Trans. Inf. Syst.}%
1423 \def\@permissionCodeOne{1046-8188}%
1424 \def\@permissionCodeTwo{1558-2868}%
1425 \or % TOIT
1426 \def\@journalName{ACM Transactions on Internet Technology}%
1427 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1428 \def\@permissionCodeOne{1533-5399}%

```

1429 \def\@permissionCodeTwo{1557-6051}%
1430 \or % TOMACS
1431 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1432 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1433 \def\@permissionCodeOne{1049-3301}%
1434 \def\@permissionCodeTwo{1558-1195}%
1435 \or % TOMM
1436 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1437 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1438 \def\@permissionCodeOne{1551-6857}%
1439 \def\@permissionCodeTwo{1551-6865}%
1440 \or % TOMPECS
1441 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1442 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1443 \def\@permissionCodeOne{2376-3639}%
1444 \def\@permissionCodeTwo{2376-3647}%
1445 \or % TOMS
1446 \def\@journalName{ACM Transactions on Mathematical Software}%
1447 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1448 \def\@permissionCodeOne{0098-3500}%
1449 \def\@permissionCodeTwo{1557-7295}%
1450 \or % TOPC
1451 \def\@journalName{ACM Transactions on Parallel Computing}%
1452 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1453 \def\@permissionCodeOne{2329-4949}%
1454 \def\@permissionCodeTwo{2329-4957}%
1455 \or % TOPLAS
1456 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1457 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1458 \def\@permissionCodeOne{0164-0925}%
1459 \def\@permissionCodeTwo{1558-4593}%
1460 \or % TOPML
1461 \def\@journalName{ACM Transactions on Probabilistic Machine Learning}%
1462 \def\@journalNameShort{ACM Trans. Probab. Mach. Learn.}%
1463 \def\@permissionCodeOne{2836-8924}%
1464 \def\@permissionCodeTwo{2836-8924}%
1465 \or % TOPS
1466 \def\@journalName{ACM Transactions on Privacy and Security}%
1467 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1468 \def\@permissionCodeOne{2471-2566}%
1469 \def\@permissionCodeTwo{2471-2574}%
1470 \or % TORS
1471 \def\@journalName{ACM Transactions on Recommender Systems}%
1472 \def\@journalNameShort{ACM Trans. Recomm. Syst.}%
1473 \def\@permissionCodeOne{2770-6699}%
1474 \def\@permissionCodeTwo{2770-6699}%
1475 \or % TOS
1476 \def\@journalName{ACM Transactions on Storage}%
1477 \def\@journalNameShort{ACM Trans. Storage}%
1478 \def\@permissionCodeOne{1553-3077}%
1479 \def\@permissionCodeTwo{1553-3093}%
1480 \or % TOSEM
1481 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1482 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%

```

```

1483 \def\@permissionCodeOne{1049-331X}%
1484 \def\@permissionCodeTwo{1557-7392}%
1485 \or % TOSN
1486 \def\@journalName{ACM Transactions on Sensor Networks}%
1487 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1488 \def\@permissionCodeOne{1550-4859}%
1489 \def\@permissionCodeTwo{1550-4867}%
1490 \or % TQC
1491 \def\@journalName{ACM Transactions on Quantum Computing}%
1492 \def\@journalNameShort{ACM Trans. Quantum Comput.}%
1493 \def\@permissionCodeOne{2643-6817}%
1494 \def\@permissionCodeTwo{2643-6817}%
1495 \or % TRET
1496 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1497 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1498 \def\@permissionCodeOne{1936-7406}%
1499 \def\@permissionCodeTwo{1936-7414}%
1500 \or % TSAS
1501 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1502 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1503 \def\@permissionCodeOne{2374-0353}%
1504 \def\@permissionCodeTwo{2374-0361}%
1505 \or % TSC
1506 \def\@journalName{ACM Transactions on Social Computing}%
1507 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1508 \def\@permissionCodeOne{2469-7818}%
1509 \def\@permissionCodeTwo{2469-7826}%
1510 \or % TSLP
1511 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1512 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1513 \def\@permissionCodeOne{1550-4875}%
1514 \def\@permissionCodeTwo{2329-9304}%
1515 \or % TWEB
1516 \def\@journalName{ACM Transactions on the Web}%
1517 \def\@journalNameShort{ACM Trans. Web}%
1518 \def\@permissionCodeOne{1559-1131}%
1519 \def\@permissionCodeTwo{1559-114X}%
1520 \else % FACMP, a dummy journal
1521 \def\@journalName{ACM Just Accepted}%
1522 \def\@journalNameShort{ACM Accepted}%
1523 \def\@permissionCodeOne{XXXX-XXXX}%
1524 \fi
1525 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1526 }{%
1527 \ClassError{\@classname}{Incorrect journal #1}%
1528 }%

```

\acmJournal And the syntactic sugar around it

```

1529 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1530 \global\@ACM@journal@bibstriptrue
1531 \global\@ACM@journal@bibstrip@or@totrue}

```

The defaults:

```

1532 \def\@journalCode@nr{0}

```

```

1533 \def\@journalName{}%
1534 \def\@journalNameShort{\@journalName}%
1535 \def\@permissionCodeOne{XXXX-XXXX}%
1536 \def\@permissionCodeTwo{\@permissionCodeOne}%

```

`\acmConference` This is the conference command

```

1537 \newcommand\acmConference[4][{}%
1538   \gdef\acmConference@shortname{#1}%
1539   \gdef\acmConference@name{#2}%
1540   \gdef\acmConference@date{#3}%
1541   \gdef\acmConference@venue{#4}%
1542   \ifx\acmConference@shortname\@empty
1543     \gdef\acmConference@shortname{#2}%
1544   \fi
1545   \global\@ACM@journal@bibstripfalse
1546   \ifx\@acmBooktitle\@empty\relax
1547     \acmBooktitle{Proceedings of \acmConference@name
1548       \ifx\acmConference@name\acmConference@shortname\else
1549         \ (\acmConference@shortname)\fi}%
1550   \fi
1551 }
1552 \if@ACM@journal\else
1553 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1554 DC, USA}%
1555 \fi

```

`\acmBooktitle` The book title of the conference:

```

\@acmBooktitle 1556 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1557 \acmBooktitle{}

```

`\@editorsAbbrev` How to abbreviate editors

```

1558 \def\@editorsAbbrev{(Ed.)}

```

`\@acmEditors` The list of editors

```

1559 \def\@acmEditors{}

```

`\editor` Add a new editor to the list

```

1560 \def\editor#1{\ifx\@acmEditors\@empty
1561   \gdef\@acmEditors{#1}%
1562 \else
1563   \gdef\@editorsAbbrev{(Eds.)}%
1564   \g@addto@macro\@acmEditors{\and#1}%
1565 \fi}

```

`\subtitle` The subtitle macro

```

1566 \def\subtitle#1{\def\@subtitle{#1}}
1567 \subtitle{}

```

`\num@authorgroups` The total number of “groups”. Each group is several authors with the same affiliations(s)

```

1568 \newcount\num@authorgroups
1569 \num@authorgroups=0\relax

```

`\num@authors` The total number of authors

```
1570 \newcount\num@authors
1571 \num@authors=0\relax
```

`\if@insideauthorgroup` Whether we are continuing an author group

```
1572 \newif\if@insideauthorgroup
1573 \@insideauthorgroupfalse
```

`\author` Adding an author to the list of authors and addresses.

Note that we want to typeset the link to the author's orcid if known. The problem is, we know the orcid only after the author is entered. The trick is based on the idea that `\csname... \endcsname` is `\relax` unless defined. Therefore we typeset authors by the special macro `\csname typeset@author\the\num@authors\endcsname`, which is defined by `\orcid` command.

```
1574 \renewcommand\author[2][]{%
1575   \IfSubStr{\detokenize{#2}}{,}{\ClassWarning{\@classname}{Do not put several
1576     authors in the same \string\author\space macro!}}}%
1577   \global\advance\num@authors by 1\relax
1578   \if@insideauthorgroup\else
1579     \global\advance\num@authorgroups by 1\relax
1580     \global\@insideauthorgrouptrue
1581   \fi
1582   \ifx\addresses\@empty
1583     \if@ACM@anonymous
1584       \gdef\addresses{\author{Anonymous Author(s)%
1585         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1586           \@acmSubmissionID\fi}}%
1587       \gdef\authors{Anonymous Author(s)%
1588     \else
1589       \expandafter\gdef\expandafter\addresses\expandafter{%
1590         \expandafter\@author\expandafter{%
1591           \csname typeset@author\the\num@authors\endcsname{#2}}}%
1592       \gdef\authors{#2}%
1593     \fi
1594   \else
1595     \if@ACM@anonymous\else
1596       \expandafter\g@addto@macro\expandafter\addresses\expandafter{%
1597         \expandafter\and\expandafter\@author\expandafter{%
1598           \csname typeset@author\the\num@authors\endcsname{#2}}}%
1599       \g@addto@macro\authors{\and#2}%
1600     \fi
1601   \fi
1602   \if@ACM@anonymous
1603     \ifx\shortauthors\@empty
1604       \gdef\shortauthors{Anon.
1605         \ifx\@acmSubmissionID\@empty\else Submission Id:
1606           \@acmSubmissionID\fi}%
1607     \fi
1608   \else
1609     \def\@tempa{#1}%
1610     \ifx\@tempa\@empty
1611       \ifx\shortauthors\@empty
1612         \gdef\shortauthors{#2}%
```

```

1613     \else
1614         \g@addto@macro\shortauthors{\and#2}%
1615     \fi
1616 \else
1617     \ifx\shortauthors\@empty
1618         \gdef\shortauthors{#1}%
1619     \else
1620         \g@addto@macro\shortauthors{\and#1}%
1621     \fi
1622 \fi
1623 \fi}

```

`\affiliation` The macro `\affiliation` mimics `\address` from `amsart`. Note that it has an optional argument, which we use differently from `amsart`.

```

1624 \newcommand{\affiliation}[2][{}]{%
1625     \global\@insideauthorgroupfalse
1626     \if@ACM@anonymous\else
1627         \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1628     \fi}

```

`\ACM@affiliation@obeypunctuation` Whether to use the author's punctuation (false by default, which adds American-style address punctuation)

```

1629 \define@boolkey+{@ACM@affiliation@}{@ACM@affiliation@}{obeypunctuation}%
1630 [true]{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1631 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

`\@additionalaffiliation` Process `\additionalaffiliation` inside `\authornote`

```

1632 \def\@additionalaffiliation#1{\bgroup
1633     \def\position##1{\ignorespaces}%
1634     \def\institution##1{##1\ignorespaces}%
1635     \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1636     \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1637     \let\city\position
1638     \let\state\position
1639     \let\country\position
1640     Also with #1\unskip.\egroup}

```

`\email` The macro `\email` mimics `\email` from `amsart`. Again, it has an optional argument that we do not currently need but keep for possible future use.

```

1641 \renewcommand{\email}[2][{}]{%
1642     \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1643         addresses in the same \string\email\space macro!}}{%
1644     \if@ACM@anonymous\else
1645         \g@addto@macro\addresses{\email{#1}{#2}}%
1646     \fi}

```

`\orcid` We redefine the command to typeset the current author

```

1647 \def\orcid#1{\unskip\ignorespaces%
1648     \IfBeginWith{#1}{http}{%
1649         \expandafter\gdef\csname
1650             typeset@author\the\@num@authors\endcsname##1{%

```



```

1651         \href{#1}{##1}}}{%
1652     \expandafter\gdef\csname
1653         typeset@author\the\num@authors\endcsname##1{%
1654         \href{https://orcid.org/#1}{##1}}}}

```

`\authorsaddresses` Setting up authors' addresses

```

1655 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1656 \authorsaddresses{\mkauthorsaddresses}

```

`\mktranslatedkeywords` We have two argument: the language to typeset keywords and the keywords.

```

1657 \newcommand\mktranslatedkeywords[2]{\bgroup
1658     \selectlanguage{#1}%
1659     {\@specialsection{\keywordsname}%
1660     \noindent#2\par}\egroup}

```

`\@titlenotes` The title notes

```

1661 \def\@titlenotes{}

```

`\titlenote` Adding a note to the title

```

1662 \def\titlenote#1{%
1663     \g@addto@macro\@title{\footnotemark}%
1664     \if@ACM@anonymous
1665         \g@addto@macro\@titlenotes{%
1666             \stepcounter{footnote}\footnotetext{Title note}}%
1667     \else
1668         \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1669     \fi}

```

`\@subtitlenotes` The subtitle notes

```

1670 \def\@subtitlenotes{}

```

`\subtitlenote` Adding a note to the subtitle

```

1671 \def\subtitlenote#1{%
1672     \g@addto@macro\@subtitle{\footnotemark}%
1673     \if@ACM@anonymous
1674         \g@addto@macro\@subtitlenotes{%
1675             \stepcounter{footnote}\footnotetext{Subtitle note}}%
1676     \else
1677         \g@addto@macro\@subtitlenotes{%
1678             \stepcounter{footnote}\footnotetext{#1}}%
1679     \fi}

```

`\@authornotes` The author notes

```

1680 \def\@authornotes{}

```

`\authornote` Adding a note to the author

```

1681 \def\authornote#1{%
1682     \if@ACM@anonymous\else
1683         \g@addto@macro\addresses{\@authornotemark}%
1684         \g@addto@macro\@authornotes{%
1685             \stepcounter{footnote}\footnotetext{#1}}%
1686     \fi}

```

```

\authornotemark Adding a footnote mark to the authors
1687 \newcommand\authornotemark[1][\relax]{%
1688   \ifx#1\relax\relax\relax
1689   \g@addto@macro\addresses{\@authornotemark}%
1690   \else
1691   \g@addto@macro\addresses{\@authornotemark{#1}}%
1692   \fi}

\acmVolume The current volume
1693 \def\acmVolume#1{\def\@acmVolume{#1}}
1694 \acmVolume{1}

\acmNumber The current number
1695 \def\acmNumber#1{\def\@acmNumber{#1}}
1696 \acmNumber{1}

\acmArticle The current article
1697 \def\acmArticle#1{\def\@acmArticle{#1}}
1698 \acmArticle{}

\acmArticleSeq The sequence number
1699 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
1700 \acmArticleSeq{\@acmArticle}

\acmYear The current year
1701 \def\acmYear#1{\def\@acmYear{#1}}
1702 \acmYear{\the\year}

\acmMonth The current month
1703 \def\acmMonth#1{\def\@acmMonth{#1}}
1704 \acmMonth{\the\month}

\@acmPubDate The publication date
1705 \def\@acmPubDate{\ifcase\@acmMonth\or
1706   January\or February\or March\or April\or May\or June\or
1707   July\or August\or September\or October\or November\or
1708   December\fi`\@acmYear}

\acmPrice The price—obsolete
1709 \def\acmPrice#1{\ClassWarning{\@classname}{The macro \string\acmPrice
1710   is obsolete. ACM no longer prints the price in bibstrip.}}

\acmSubmissionID The submission ID
1711 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}
1712 \acmSubmissionID{}

\acmISBN The book ISBN
1713 \def\acmISBN#1{\def\@acmISBN{#1}}
1714 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}

\acmDOI The paper DOI
1715 \def\acmDOI#1{\def\@acmDOI{#1}}
1716 \acmDOI{10.1145/nnnnnnn.nnnnnnn}

```

```

\if@ACM@badge

\@ACM@badge@width The width of the badge
1717 \newlength\@ACM@badge@width
1718 \setlength\@ACM@badge@width{3pc}

\@ACM@title@width The width of the title
1719 \newlength\@ACM@title@width

\@ACM@badge@skip The spacing between badges
1720 \newlength\@ACM@badge@skip
1721 \setlength\@ACM@badge@skip{1pt}

\@acmBadgeR
1722 \def\@acmBadgeR{}

\@acmBadgeL
1723 \def\@acmBadgeL{}

\acmBadgeR Setting the right badge
1724 \newcommand\acmBadgeR[2][{}]{%
1725 \ifx\@acmBadgeR\@empty
1726 \gdef\@acmBadgeR{%
1727 \smash{%
1728 \raisebox{0.5\height}{%
1729 \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}%
1730 \else
1731 \g@addto@macro{\@acmBadgeR}{%
1732 \hspace{\@ACM@badge@skip}%
1733 \smash{%
1734 \raisebox{0.5\height}{%
1735 \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}}}%
1736 \fi}

\acmBadgeL Setting the left badge
1737 \newcommand\acmBadgeL[2][{}]{%
1738 \ifx\@acmBadgeL\@empty
1739 \gdef\@acmBadgeL{%
1740 \smash{%
1741 \raisebox{0.5\height}{%
1742 \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}}}%
1743 \else
1744 \g@addto@macro{\@acmBadgeL}{%
1745 \hspace{\@ACM@badge@skip}%
1746 \smash{%
1747 \raisebox{0.5\height}{%
1748 \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}}}%
1749 \fi}

\acmBadge Just a syntax sugar for \acmBadgeR
1750 \let\acmBadge=\acmBadgeR

```

`\startPage` The start page of the paper

```
1751 \def\startPage#1{\def\@startPage{#1}}
1752 \startPage{}
```

`\terms` Terms are obsolete. We use CCS now.

```
1753 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1754   obsolete. I am going to ignore it}}
```

`\keywords` Keywords are mostly obsolete. We use CCS now. Still it makes sense to keep them for compatibility.

```
1755 \def\keywords#1{\def\@keywords{#1}}
1756 \let\@keywords\@empty

1757 \AtEndDocument{\if@ACM@nonacm\else\ifx\@keywords\@empty
1758   \ifnum\getrefnumber{TotPages}>2\relax
1759   \ClassWarningNoLine{\@classname}{ACM keywords are mandatory
1760     for papers over two pages}%
1761   \fi\fi\fi}
```

`abstract` The `amsart` package puts `abstract` in a box. Since we do not know whether we will use two-column mode, we prefer to save the text

```
1762 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
```

`\@saveabstract` And saving the abstract

```
1763 \long\def\@saveabstract#1{\if@ACM@maketitle@typeset
1764   \ClassError{\@classname}{Abstract must be defined before maketitle
1765     command. Please move it!}\fi
1766   \long\gdef\@abstract{#1}}
1767 \@saveabstract{}
```

`\@empty` The long version of `\@empty` (to compare with `\@abstract`)

```
1768 \long\def\@empty{}
```

`\if@ACM@printccs` Whether to print CCS

```
1769 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1770   \if@ACM@printccs
1771     \ClassInfo{\@classname}{Printing CCS}%
1772   \else
1773     \ClassInfo{\@classname}{Suppressing CCS}%
1774   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}
```

`\if@ACM@printacmref` Whether to print the ACM bibstrip

```
1775 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1776   \if@ACM@printacmref
1777     \ClassInfo{\@classname}{Printing bibformat}%
1778   \else
1779     \ClassInfo{\@classname}{Suppressing bibformat}%
1780   \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

1781 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@printacmref\else
1782   \ifnum\getrefnumber{TotPages}>1\relax
1783   \ClassWarningNoLine{\@classname}{%
1784     ACM reference format is mandatory \MessageBreak
```

```

1785     for papers over one page. \MessageBreak
1786     Please add printacmref=true to the \MessageBreak
1787     \string\settopmatter\space command.}%
1788 \fi\fi\fi}

```

`\if@ACM@printfolios` Whether to print folios

```

1789 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1790 \if@ACM@printfolios
1791   \ClassInfo{\@classname}{Printing folios}%
1792 \else
1793   \ClassInfo{\@classname}{Suppressing folios}%
1794 \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}

```

`\@ACM@authorssperrow` The number of authors per row. 0 means use the default algorithm.

```

1795 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorssperrow}[0]{%
1796 \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorssperrow to
1797   #1}}{\ClassWarning{\@classname}{The parameter authorssperrow must be
1798   numerical. Ignoring the input #1}}\gdef\@ACM@authorssperrow{0}}

```

`\settopmatter` The usual syntactic sugar

```

1799 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

```

Now the settings

```

1800 \settopmatter{printccs=true, printacmref=true}
1801 \if@ACM@manuscript
1802   \settopmatter{printfolios=true}
1803 \else
1804   \if@ACM@journal
1805     \settopmatter{printfolios=true}
1806   \else
1807     \settopmatter{printfolios=false}
1808   \fi
1809 \fi
1810 \settopmatter{authorssperrow=0}

```

`\@received` The container for the paper history

```

1811 \def\@received{}

```

`\received` The `\received` command

```

1812 \newcommand\received[2][\def\@tempa{#1}%
1813 \ifx\@tempa\@empty
1814   \ifx\@received\@empty
1815     \gdef\@received{Received #2}%
1816   \else
1817     \g@addto@macro{\@received}{; revised #2}%
1818   \fi
1819 \else
1820   \ifx\@received\@empty
1821     \gdef\@received{#1 #2}%
1822   \else
1823     \g@addto@macro{\@received}{; #1 #2}%
1824   \fi
1825 \fi}

```

```

1826 \AtEndDocument{%
1827   \ifx\@received\@empty\else
1828     \par\bigskip\noindent\small\normalfont\@received\par
1829   \fi}

```

`\acmArticleType` Article type. We set up the color.

```

1830 \define@choicekey+{ACM}{articletype}[\ACM@ArticleType\ACM@ArticleType@nr]{%
1831   Research,Review,Discussion,Invited,Position}[Review]{%
1832   \ifcase\ACM@ArticleType@nr
1833     \relax % Research
1834     \colorlet{@ACM@Article@color}{ACMBlue}%
1835     \or % Review
1836     \colorlet{@ACM@Article@color}{ACMOrange}%
1837     \or % Discussion
1838     \colorlet{@ACM@Article@color}{ACMGreen}%
1839     \or % Invited
1840     \colorlet{@ACM@Article@color}{ACMPurple}%
1841     \or % Position
1842     \colorlet{@ACM@Article@color}{ACMRed}%
1843   \fi
1844 }{%
1845   \ClassError{\@classname}{Article Type must be Research, Review,\MessageBreak
1846     Discussion, Invited, or Position}}
1847 \def\acmArticleType#1{\setkeys{ACM}{articletype=#1}}
1848 \if@ACM@acmcp
1849 \acmArticleType{Research}%
1850 \fi
1851

```

`\@ACM@color@frame` The colored frame for the acmcp

```

1852 \newenvironment{@ACM@color@frame}{%
1853   \def\FrameCommand{\hspace*{-6.5pc}}%
1854   \colorbox{@ACM@Article@color!10!white}}%
1855 \MakeFramed {\advance\hsize
1856   -6.5pc\relax\FrameRestore}}{\zsaveposy{@ACM@acmcpframe@y}}%
1857 \endMakeFramed}

```

`\acmCodeDataLink` The code link

```

1858 \def\acmCodeLink#1{%
1859   \ifx\@acmCodeDataLink\@empty
1860     \gdef\@acmCodeDataLink{\url{#1}}%
1861   \else
1862     \g@addto@macro{\@acmCodeDataLink}{\ \url{#1}}%
1863   \fi}
1864 \def\@acmCodeDataLink{}

```

`\acmContributions` The authors' contribution statement

```

1865 \def\acmContributions#1{\gdef\@acmContributions{#1}}
1866 \acmContributions{}

```

`\acmDataLink` The code link

```

1867 \let\acmDataLink\acmCodeLink

```

3.17 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```
1868 \RequirePackage{comment}
1869 \excludecomment{CCSXML}
```

`\@concepts` This is the storage macro and counter for concepts

```
1870 \let\@concepts\@empty
1871 \newcounter{@concepts}
```

`\ccsdesc` The first argument is the significance, the second is the concept(s)

```
1872 \newcommand\ccsdesc[2][100]{%
1873 \ccsdesc@parse#1~#2~\ccsdesc@parse@end}
```

`\ccsdesc@parse` The parser of the expression Significance~General~Specific (we need `textcomp` for `\textrightarrow`). Note that Specific can be empty!

```
1874 \def\textrightarrow{\rightarrow}
1875 \def\ccsdesc@parse#1~#2~#3~{%
1876 \stepcounter{@concepts}%
1877 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1878 \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1879 \textbf{#2}}%
1880 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
1881 \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1882 \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1883 \csname CCS@Punctuation@#2\endcsname
1884 \csname CCS@Specific@#2\endcsname}%
1885 \fi
1886 \ifx#3\relax\relax\else
1887 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1888 \textrightarrow\ }%
1889 \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1890 \addtocounter{@concepts}{-1}%
1891 \ifnum#1>499\textbf{#3}\else
1892 \ifnum#1>299\textit{#3}\else
1893 #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1894 \fi
1895 \ccsdesc@parse@finish}

1896 \AtEndDocument{\if@ACM@nonacm\else\ifx\@concepts\@empty\relax
1897 \ifnum\getrefnumber{TotPages}>2\relax
1898 \ClassWarningNoLine{\@classname}{CCS concepts are mandatory
1899 for papers over two pages}%
1900 \fi\fi\fi}
```

`\ccsdesc@parse@finish` Gobble everything to `\ccsdesc@parse@end`

```
1901 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}
```

3.18 Copyright system

This is from `acmcopyright.sty`

`\if@printcopyright` Whether to print a copyright symbol

```
1902 \newif\if@printcopyright
1903 \@printcopyrighttrue
```

`\if@printpermission` Whether to print the permission block

```
1904 \newif\if@printpermission
1905 \@printpermissiontrue
```

`\if@acmowned` Whether the ACM owns the rights to the paper

```
1906 \newif\if@acmowned
1907 \@acmownedtrue
```

Keys:

```
1908 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1909 \acm@copyrightinput\acm@copyrightmode]{none,%
1910 acmcopyright,acmlicensed,rightsretained,%
1911 usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1912 licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1913 iw3c2w3,iw3c2w3g,cc}{%
1914 \@printpermissiontrue
1915 \@printcopyrighttrue
1916 \@acmownedtrue
1917 \ifnum\acm@copyrightmode=0\relax % none
1918 \@printpermissionfalse
1919 \@printcopyrightfalse
1920 \@acmownedfalse
1921 \fi
1922 \ifnum\acm@copyrightmode=2\relax % acmlicensed
1923 \@acmownedfalse
1924 \fi
1925 \ifnum\acm@copyrightmode=3\relax % rightsretained
1926 \@acmownedfalse
1927 \fi
1928 \ifnum\acm@copyrightmode=4\relax % usgov
1929 \@printpermissiontrue
1930 \@printcopyrightfalse
1931 \@acmownedfalse
1932 \fi
1933 \ifnum\acm@copyrightmode=6\relax % cagov
1934 \@acmownedfalse
1935 \fi
1936 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1937 \@acmownedfalse
1938 \fi
1939 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1940 \@acmownedfalse
1941 \fi
1942 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1943 \@acmownedfalse
1944 \fi
1945 \ifnum\acm@copyrightmode=11\relax % othergov
1946 \@acmownedtrue
1947 \fi
1948 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1949 \@acmownedfalse
1950 \fi
1951 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1952 \@acmownedfalse
```



```

1953 \fi
1954 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1955 \@acmownedfalse
1956 \fi
1957 \ifnum\acm@copyrightmode=15\relax % cc
1958 \@acmownedfalse
1959 \fi}

```

`\setcopyright` This is the syntactic sugar around setting keys.

```

1960 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1961 \setcopyright{acmlicensed}

```

`\setcctype` The type of Creative Commons license used

```

1962 \newcommand\setcctype[2][4.0]{%
1963 \def\ACM@cc@version{#1}%
1964 \def\ACM@cc@type{#2}}
1965 \setcctype{by}

```

`\@copyrightowner` Here is the owner of the copyright

```

1966 \def\@copyrightowner{%
1967 \ifcase\acm@copyrightmode\relax % none
1968 \or % acmcopyright
1969 ACM\@.
1970 \or % acmlicensed
1971 Copyright held by the owner/author(s). Publication rights licensed to
1972 ACM\@.
1973 \or % rightsretained
1974 Copyright held by the owner/author(s).
1975 \or % usgov
1976 \or % usgovmixed
1977 Copyright held by the owner/author(s).
1978 \or % cagov
1979 Copyright Crown in Right of Canada.
1980 \or %cagovmixed
1981 Copyright held by the owner/author(s).
1982 \or %licensedusgovmixed
1983 Copyright held by the owner/author(s). Publication rights licensed to
1984 ACM\@.
1985 \or % licensedcagov
1986 Copyright held by the owner/author(s).
1987 \or %licensedcagovmixed
1988 Copyright held by the owner/author(s). Publication rights licensed to
1989 ACM\@.
1990 \or % othergov
1991 Copyright held by the owner/author(s).
1992 \or % licensedothergov
1993 Copyright held by the owner/author(s). Publication rights licensed to
1994 ACM\@.
1995 \or % ic2w3www
1996 IW3C2 (International World Wide Web Conference Committee), published
1997 under Creative Commons CC-BY~4.0 License.
1998 \or % ic2w3wwwgoogle
1999 IW3C2 (International World Wide Web Conference Committee), published
2000 under Creative Commons CC-BY-NC-ND~4.0 License.

```

2001 \or % cc
2002 Copyright held by the owner/author(s).
2003 \fi}

\@formatdoi Print a clickable DOI

2004 \def\@formatdoi#1{\url{https://doi.org/#1}}

\@ACM@copyright@check@cc This macro is no longer needed due to the change in ACM policy.

\@copyrightpermission The canned permission block.

2005 \def\@copyrightpermission{%
2006 \ifcase\acm@copyrightmode\relax % none
2007 \or % acmcopyright
2008 Permission to make digital or hard copies of all or part of this
2009 work for personal or classroom use is granted without fee provided
2010 that copies are not made or distributed for profit or commercial
2011 advantage and that copies bear this notice and the full citation on
2012 the first page. Copyrights for components of this work owned by
2013 others than ACM must be honored. Abstracting with credit is
2014 permitted. To copy otherwise, or republish, to post on servers or
2015 to redistribute to lists, requires prior specific permission
2016 and\hspace*{.5pt}/or
2017 a fee. Request permissions from permissions@acm.org.
2018 \or % acmlicensed
2019 Permission to make digital or hard copies of all or part of this
2020 work for personal or classroom use is granted without fee provided
2021 that copies are not made or distributed for profit or commercial
2022 advantage and that copies bear this notice and the full citation on
2023 the first page. Copyrights for components of this work owned by
2024 others than the author(s) must be honored. Abstracting with credit
2025 is permitted. To copy otherwise, or republish, to post on servers
2026 or to redistribute to lists, requires prior specific permission
2027 and\hspace*{.5pt}/or a fee. Request permissions from
2028 permissions@acm.org.
2029 \or % rightsretained
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2031 work for personal or classroom use is granted without fee provided
2032 that copies are not made or distributed for profit or commercial
2033 advantage and that copies bear this notice and the full citation on
2034 the first page. Copyrights for third-party components of this work
2035 must be honored. For all other uses, contact the
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2124 disseminate the work on their personal and corporate Web sites with
2125 the appropriate attribution.
2126 \or % iw3c2w3g
2127 This paper is published under the Creative Commons
2128 Attribution-NonCommercial-NoDerivs~4.0 International
2129 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
2130 disseminate the work on their personal and corporate Web sites with
2131 the appropriate attribution.
2132 \or % CC
2133 \IfEq{\ACM@cc@type}{zero}{%
2134 \def\ACM@CC@Url{https://creativecommons.org/publicdomain/zero/1.0/legalcode}}{%
2135 \edef\ACM@CC@Url{https://creativecommons.org/licenses/\ACM@cc@type/\ACM@cc@version/legalcode}}%
2136 \href{\ACM@CC@Url}{\includegraphics[height=5ex]{doclicense-CC-\ACM@cc@type-88x31}}\\
2137 \href{\ACM@CC@Url}{%
2138 This work is licensed under a Creative Commons
2139 \IfEq{\ACM@cc@type}{zero}{CC0 1.0 Universal}{%
2140 \IfEq{\ACM@cc@type}{by}{Attribution}{}%
2141 \IfEq{\ACM@cc@type}{by-sa}{Attribution-ShareAlike}{}%
2142 \IfEq{\ACM@cc@type}{by-nd}{Attribution-NoDerivatives}{}%
2143 \IfEq{\ACM@cc@type}{by-nc}{Attribution-NonCommercial}{}%
2144 \IfEq{\ACM@cc@type}{by-nc-sa}{Attribution-NonCommercial-ShareAlike}{}%
2145 \IfEq{\ACM@cc@type}{by-nc-nd}{Attribution-NonCommercial-NoDerivatives}{}%
2146 ~\IfEq{\ACM@cc@version}{4.0}{4.0 International}{3.0 Unported}%
2147 }
2148 License.}%
2149 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:

2150 \def\copyrightyear#1{\def\@copyrightyear{#1}}
2151 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container

2152 \def\@teaserfigures{}

```

teaserfigure The teaser figure
2153 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
2154 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amstex \thanks so the anonymous key works
2155 \renewcommand{\thanks}[1]{%
2156   \ifnotempty{#1}{%
2157     \if@ACM@anonymous
2158       \g@addto@macro\thankses{\thanks{A note}}%
2159     \else
2160       \g@addto@macro\thankses{\thanks{#1}}%
2161     \fi}}

\anon We provide \anon command, which obscures parts of the text if the package option
anonymous is set
2162 \newcommand{\anon}[2][ANONYMIZED]{%
2163   \if@ACM@anonymous%
2164     {\color{ACMOrange}#1}%
2165   \else%
2166     #2%
2167   \fi}

```

3.19 Maketitle hook

The current \LaTeX provides a nice lthooks mechanism. However, since it is relatively new, we will use oldfashioned approach—at least for now.

```

\@beginmaketitlehook The hook
2168 \ifx\@beginmaketitlehook\undefined
2169   \let\@beginmaketitlehook\empty
2170 \fi

\AtBeginMaketitle Adding to the hook
2171 \def\AtBeginMaketitle{\g@addto@macro\@beginmaketitlehook}

```

3.20 ACM Engage top matter

```

\@acmengagemetadadata The special metadata for ACM engage course materials
2172 \def\@acmengagemetadadata{}

\setengagemetadadata Adding topic to engage metadata
2173 \def\setengagemetadadata#1#2{%
2174   \g@addto@macro{\@acmengagemetadadata}{%
2175     \@setengagemetadadata{#1}{#2}}}

```

3.21 Typesetting top matter

`\mktitle@bx` Some of our formats use a two-column design. Some use a one-column design. In all cases we use a wide title. Thus we typeset the top matter in a special box to be used in the construction `\twocolumn[⟨box⟩]`.

```
2176 \newbox\mktitle@bx
```

`\maketitle` The (in)famous `\maketitle`. Note that in `sigchi-a` mode, authors are *not* in the title box.

Another note: there is a subtle difference between author notes, title notes and thanks. The latter two refer to the paper itself and therefore belong to the copyright/permission block. By the way, this was the default behavior of the old ACM classes.

```
2177 \def\maketitle{\@beginmaketitlehook
2178 \@ACM@maketitle@typesettrue
2179 \if@ACM@anonymous
2180 % Anonymize omission of \author-s
2181 \ifnum\num@authorgroups=0\author{ }\fi
2182 \fi
2183 \begingroup
2184 \let\@vspace\@vspace@orig
2185 \let\@vspacer\@vspacer@orig
2186 \let\@footnotemark\@footnotemark@nolink
2187 \let\@footnotetext\@footnotetext@nolink
2188 \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
2189 \hsize=\textwidth
2190 \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
2191 \@mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
2192 \@printtopmatter
2193 \if@ACM@sigchiamode\mkauthors\fi
2194 \setcounter{footnote}{0}%
2195 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
2196 \@titlenotes
2197 \@subtitlenotes
2198 \@authornotes
2199 \let\@makefnmark\relax
2200 \let\@thefnmark\relax
2201 \let\@makefntext\noindent
2202 \ifx\@empty\thankses\else
2203 \footnotetextauthorsaddresses{%
2204 \def\par{\let\par\@par}\parindent\z@\@setthanks}%
2205 \fi
2206 \if@ACM@acmcp\else
2207 \ifx\@empty\@authorsaddresses\else
2208 \if@ACM@anonymous\else
2209 \if@ACM@journal@bibstrip@or@tog
2210 \footnotetextauthorsaddresses{%
2211 \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
2212 \fi
2213 \fi
2214 \fi
2215 \fi
2216 \if@ACM@nonacm
2217 \ifnum\acm@copyrightmode=15\relax % cc
2218 \footnotetextcopyrightpermission{\@copyrightpermission}%
```

```

2219 \fi
2220 \else
2221 \if@ACM@acmcp\else
2222 \footnotetextcopyrightpermission{%
2223 \if@ACM@authordraft
2224 \raisebox{-2ex}[\z@][\z@]{\makebox[0pt][l]{\large\bfseries
2225 Unpublished working draft. Not for distribution.}}%
2226 \color[gray]{0.9}%
2227 \fi
2228 \parindent\z@\parskip0.1\baselineskip
2229 \if@ACM@authorversion\else
2230 \if@printpermission\@copyrightpermission\par\fi
2231 \fi
2232 \if@ACM@manuscript\else
2233 \if@ACM@journal@bibstrip\else % Print the conference information
2234 \if@ACM@engage
2235 {\itshape \@acmBooktitle, \@acmYear.}\par
2236 \else
2237 {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
2238 \fi
2239 \fi
2240 \fi
2241 \if@printcopyright
2242 \copyright\ \@copyrightyear\ \@copyrightowner\
2243 \else
2244 \@copyrightyear.\
2245 \fi
2246 \if@ACM@manuscript
2247 Manuscript submitted to ACM\
2248 \else
2249 \if@ACM@authorversion
2250 This is the author's version of the work. It is posted here for
2251 your personal use. Not for redistribution. The definitive Version
2252 of Record was published in
2253 \if@ACM@journal@bibstrip
2254 \emph{\@journalName}%
2255 \else
2256 \emph{\@acmBooktitle}%
2257 \fi
2258 \ifx\@acmDOI\@empty
2259 .
2260 \else
2261 , \@formatdoi{\@acmDOI}.
2262 \fi\
2263 \else
2264 \if@ACM@nonacm\else
2265 \if@ACM@journal@bibstrip
2266 ACM~\@permissionCodeTwo/\@acmYear/\@acmMonth-ART\@acmArticle\
2267 \@formatdoi{\@acmDOI}%
2268 \else % Conference
2269 \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN\\\fi
2270 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
2271 \fi
2272 \fi

```

```

2273     \fi
2274     \fi}%
2275     \fi
2276     \fi
2277 \endgroup
2278 \if@ACM@engage\@typesetengagemetadata\fi
2279 \setcounter{footnote}{0}%
2280 \@mkabstract
2281 \ifx\@translatedabstracts\@empty\else
2282 \@translatedabstracts\fi
2283 \if@ACM@printccs
2284 \ifx\@concepts\@empty\else\bgroup
2285     {\@specialsection{CCS Concepts}%
2286     \noindent\@concepts\par}\egroup
2287     \fi
2288 \fi
2289 \if@ACM@acmcp\else
2290     \ifx\@keywords\@empty\else\bgroup
2291         {\@specialsection{\keywordsname}%
2292         \noindent\@keywords\par}\egroup
2293         \fi
2294     \ifx\@translatedkeywords\@empty\else
2295         \@translatedkeywords
2296     \fi
2297 \fi
2298 \let\metadata@authors=\authors
2299 \nxandlist{, }{, }{\, }metadata@authors
2300 \def\@ACM@checkaffil{}%
2301 \hypersetup{%
2302     pdfauthor={\metadata@authors},
2303     pdftitle={\@title},
2304     pdfsubject={\@concepts},
2305     pdfkeywords={\@keywords},
2306     pdfcreator={LaTeX with acmart
2307         \csname ver@\@classname.cls\endcsname\space
2308         and hyperref
2309         \csname ver@hyperref.sty\endcsname}}%
2310 \andify\authors
2311 \andify\shortauthors
2312 \global\let\authors=\authors
2313 \global\let\shortauthors=\shortauthors
2314 \if@ACM@printacmref
2315     \@mkbibcitation
2316 \fi
2317 \global\@topnum\z@ % this prevents floats from falling
2318                   % at the top of page 1
2319 \global\@botnum\z@ % we do not want them to be on the bottom either
2320 \@printendtopmatter
2321 \@afterindentfalse
2322 \@afterheading
2323 \if@ACM@acmcp
2324     \set@ACM@acmcpbox
2325     \AtEndDocument{\end@ACM@color@frame}%
2326     \@ACM@color@frame

```



```

2327 \fi
2328 }

```

\set@ACM@acmcpbox Setting infobox for acmcp

```

2329 \newbox\@ACM@acmcpbox
2330 \def\set@ACM@acmcpbox{%
2331   \bgroup
2332   \hsize=5pc
2333   \global\setbox\@ACM@acmcpbox=\vbox{%
2334     \setlength{\parindent}{\z@}%
2335     {\includegraphics[width=\hsize]{acm-jdslogo}\par}%
2336     \scriptsize
2337     \ifnum\getrefnumber{TotPages}>1\else
2338       \zrefused{@ACM@acmcpbox@y}%
2339       \zrefused{@ACM@acmcpframe@y}%
2340       \@tempdima=\dimexpr\zposy{@ACM@acmcpbox@y}sp -
2341       \zposy{@ACM@acmcpframe@y}sp+0.3\FrameSep+
2342       \@ACM@acmcp@delta\relax
2343       \ifdim\@tempdima>0pt\relax
2344         \vspace*{\@tempdima}%
2345         \protected@write\@auxout{%
2346           {\string\global\@ACM@acmcp@delta=\the\@tempdima\relax}%
2347         \fi
2348         \fi
2349         \ifx\@acmCodeDataLink\@empty\else\bigskip
2350         Code and data links:\\ \@acmCodeDataLink\par\bigskip
2351         \fi
2352         \ifx\@keywords\@empty\else\bigskip
2353         Keywords: \@keywords\par
2354         \fi
2355         \ifx\@acmContributions\@empty\else\bigskip
2356         \@acmContributions\par
2357         \fi
2358         \ifx\@empty\@authorsaddresses\else\bigskip\@setauthorsaddresses\fi
2359         \zsaveposy{@ACM@acmcpbox@y}%
2360       }
2361   \egroup}

```

\@specialsection This macro starts sections for proceedings and uses \small for journals

```

2362 \def\@specialsection#1{%
2363   \let\@vspace\@vspace@orig
2364   \let\@vspacer\@vspacer@orig
2365   \ifcase\ACM@format@nr
2366   \relax % manuscript
2367     \par\medskip\small\noindent#1: %
2368   \or % acsmall
2369     \par\medskip\small\noindent#1: %
2370   \or % acmlarge
2371     \par\medskip\small\noindent#1: %
2372   \or % acmtog
2373     \par\medskip\small\noindent#1: %
2374   \or % sigconf
2375     \section*{#1}%
2376   \or % siggraph

```

```

2377 \section*{#1}%
2378 \or % sigplan
2379 \noindentparagraph*{#1:~}%
2380 \or % sigchi
2381 \section*{#1}%
2382 \or % sigchi-a
2383 \section*{#1}%
2384 \or % acmengage
2385 \section*{#1}%
2386 \or % acmcp
2387 \section*{#1}%
2388 \fi
2389 \let\@vspace\@vspace@acm
2390 \let\@vspacer\@vspacer@acm
2391 }

```

`\@printtopmatter` The printing of top matter starts a new page and uses the given title box.

Note that if there are too many authors, `\mktitle@bx` might overflow the page. Therefore we start with checking this and if this happens, we split the box and print it page by page.

```

2392 \def\@printtopmatter{%
2393 \ifx\@startPage\@empty
2394 \gdef\@startPage{1}%
2395 \else
2396 \setcounter{page}{\@startPage}%
2397 \fi
2398 \@tempdima=\ht\mktitle@bx
2399 \advance\@tempdima by \dp\mktitle@bx
2400 \ifdim\@tempdima>0.9\textheight
2401 \loop
2402 \setbox\@tempboxa=\vsplit \mktitle@bx to 0.9\textheight
2403 \thispagestyle{firstpagestyle}%
2404 \noindent\unvbox\@tempboxa
2405 \clearpage
2406 \@tempdima=\ht\mktitle@bx
2407 \advance\@tempdima by \dp\mktitle@bx
2408 \ifdim\@tempdima>0.9\textheight\repeat
2409 \fi
2410 \thispagestyle{firstpagestyle}%
2411 \noindent
2412 \ifcase\ACM@format@nr
2413 \relax % manuscript
2414 \box\mktitle@bx\par
2415 \or % acmsmall
2416 \box\mktitle@bx\par
2417 \or % acmlarge
2418 \box\mktitle@bx\par
2419 \or % acmtog
2420 \twocolumn[\box\mktitle@bx]%
2421 \or % sigconf
2422 \twocolumn[\box\mktitle@bx]%
2423 \or % siggraph
2424 \twocolumn[\box\mktitle@bx]%
2425 \or % sigplan

```

```

2426   \twocolumn[\box\mktitle@bx]%
2427   \or % sigchi
2428   \twocolumn[\box\mktitle@bx]%
2429   \or % sigchi-a
2430   \par\box\mktitle@bx\par\bigskip
2431   \or % acmengage
2432   \twocolumn[\box\mktitle@bx]%
2433   \or % acmcp
2434   \box\mktitle@bx\par
2435   \fi
2436 }

```

`\@mktitle` The title of the article

```

2437 \def\@mktitle{%
2438   \ifcase\ACM@format@nr
2439   \relax % manuscript
2440   \@mktitle@i
2441   \or % acmsmall
2442   \@mktitle@i
2443   \or % acmlarge
2444   \@mktitle@i
2445   \or % acmtog
2446   \@mktitle@i
2447   \or % sigconf
2448   \@mktitle@iii
2449   \or % siggraph
2450   \@mktitle@iii
2451   \or % sigplan
2452   \@mktitle@iii
2453   \or % sigchi
2454   \@mktitle@iii
2455   \or % sigchi-a
2456   \@mktitle@iv
2457   \or % acmengage
2458   \@mktitle@iii
2459   \or % acmcp
2460   \@mktitle@i
2461   \fi
2462 }

```

`\@titlefont` The font to typeset the title

```

2463 \def\@titlefont{%
2464   \ifcase\ACM@format@nr
2465   \relax % manuscript
2466   \LARGE\sffamily\bfseries
2467   \or % acmsmall
2468   \LARGE\sffamily\bfseries
2469   \or % acmlarge
2470   \LARGE\sffamily\bfseries
2471   \or % acmtog
2472   \Huge\sffamily
2473   \or % sigconf
2474   \Huge\sffamily\bfseries
2475   \or % siggraph

```

```

2476 \Huge\sffamily\bfseries
2477 \or % sigplan
2478 \Huge\bfseries
2479 \or % sigchi
2480 \Huge\sffamily\bfseries
2481 \or % sigchi-a
2482 \Huge\bfseries
2483 \or % acmengage
2484 \Huge\sffamily\bfseries
2485 \or % acmcp
2486 \LARGE\sffamily\bfseries
2487 \fi}

```

`\@subtitlefont` The font to typeset the subtitle

```

2488 \def\@subtitlefont{\normalsize
2489 \ifcase\ACM@format@nr
2490 \relax % manuscript
2491 \mdseries
2492 \or % acmsmall
2493 \mdseries
2494 \or % acmlarge
2495 \mdseries
2496 \or % acmtog
2497 \LARGE
2498 \or % sigconf
2499 \LARGE\mdseries
2500 \or % siggraph
2501 \LARGE\mdseries
2502 \or % sigplan
2503 \LARGE\mdseries
2504 \or % sigchi
2505 \LARGE\mdseries
2506 \or % sigchi-a
2507 \mdseries
2508 \or % acmengage
2509 \LARGE\mdseries
2510 \or % acmcp
2511 \mdseries
2512 \fi}

```

`\@mktitle@i` The version of `\mktitle` for most journals

```

2513 \def\@mktitle@i{\hsize=\textwidth
2514 \if@ACM@acmcp
2515 \advance\hsize by -6pc%
2516 \fi
2517 \@ACM@title@width=\hsize
2518 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
2519 \parbox[t]{\@ACM@title@width}{\raggedright
2520 \@titlefont\noindent
2521 \@title\@translatedtitle%
2522 \ifx\@subtitle\@empty\else
2523 \par\noindent{\@subtitlefont\@subtitle\@translatedsubtitle}%
2524 \fi}%
2525 \par\bigskip}}%

```

`\mktitle@ii` The version of `\mktitle` for TOG. Since v1.06, this is subsumed by the `\mktitle@i` macro

`\mktitle@iii` The version of `\mktitle` for SIG proceedings.

```
2526 \def\mktitle@iii{\hsize=\textwidth
2527   \setbox\mktitle@bx=\vbox{\@titlefont\centering
2528     \@ACM@title@width=\hsize
2529     \parbox[t]{\@ACM@title@width}{\centering\@titlefont
2530       \@title\@translatedtitle%
2531       \ifx\@subtitle\@empty\else
2532         \par\noindent{\@subtitlefont\@subtitle\@translatedsubtitle}
2533       \fi
2534     }%
2535   \par\bigskip}}%
```

`\mktitle@iv` The version of `\mktitle` for sigchi-a

```
2536 \def\mktitle@iv{\hsize=\textwidth
2537   \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
2538     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
2539     \noindent\@title\@translatedtitle%
2540     \ifx\@subtitle\@empty\else
2541       \par\noindent\@subtitlefont\@subtitle\@translatedsubtitle%
2542     \fi
2543   \par\bigskip}}%
```

`\@ACM@addtoaddress` This macro adds an item to the address using the following rules:

1. If we start a paragraph, add the item
2. Otherwise, add a comma and the item
3. However, the comma is deleted if it is at the end of a line. We use the magic `\cleaders` trick for this.

```
2544 \newbox\@ACM@commabox
2545 \def\@ACM@addtoaddress#1{%
2546   \ifvmode\else
2547     \if@ACM@affiliation@obeypunctuation\else
2548       \setbox\@ACM@commabox=\hbox{, }%
2549       \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
2550     \fi\fi
2551   #1}
```

`\institution` Theoretically we can define the macros for `\affiliation` inside the `\mkauthors`-style `\position` commands. However, this would lead to a strange error if an author uses them outside `\department` `\affiliation`. Of course we can make them produce an error message, but...

```
\streetaddress 2552 \def\streetaddress#1{\ClassWarning{\@classname}{ACM no longer collects
  \city 2553 authors' postal addresses. I am ignoring your street
  \state 2554 address}\unskip\ignorespaces}
\postcode 2555 \def\postcode#1{\ClassWarning{\@classname}{ACM no longer collects
\country 2556 authors' postal addresses. I am ignoring your postal
  2557 code}\unskip\ignorespaces}
  2558 \if@ACM@journal
  2559 \def\position#1{\unskip\ignorespaces}
```

```

2560 \def\institution#1{\global\@ACM@instpresenttrue
2561 \unskip~#1\ignorespaces}
2562 \def\city#1{\global\@ACM@citypresenttrue\unskip\ignorespaces}
2563 \def\state#1{\unskip\ignorespaces}
2564 \newcommand\department[2][0]{\unskip\ignorespaces}
2565 \def\country#1{\StrDel{#1}{ }[\@tempa]%
2566 \ifx\@tempa\@empty\else
2567 \global\@ACM@countrypresenttrue\fi
2568 \if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
2569 \else
2570 \def\position#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2571 \def\institution#1{\global\@ACM@instpresenttrue
2572 \if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2573 \newcommand\department[2][0]{\if@ACM@affiliation@obeypunctuation
2574 #2\else#2\par\fi}%
2575 \def\city#1{\global\@ACM@citypresenttrue\@ACM@addtoaddress{#1}}%
2576 \let\state\@ACM@addtoaddress
2577 \def\country#1{\global\@ACM@countrypresenttrue\@ACM@addtoaddress{#1}}%
2578 \fi

```

\@mkauthors Typesetting the authors

```

2579 \def\@mkauthors{\begingroup
2580 \hsize=\textwidth
2581 \ifcase\ACM@format@nr
2582 \relax % manuscript
2583 \@mkauthors@i
2584 \or % acsmall
2585 \@mkauthors@i
2586 \or % acmlarge
2587 \@mkauthors@i
2588 \or % acmtog
2589 \@mkauthors@i
2590 \or % sigconf
2591 \@mkauthors@iii
2592 \or % siggraph
2593 \@mkauthors@iii
2594 \or % sigplan
2595 \@mkauthors@iii
2596 \or % sigchi
2597 \@mkauthors@iii
2598 \or % sigchi-a
2599 \@mkauthors@iv
2600 \or % acmengage
2601 \@mkauthors@iii
2602 \or % acmcp
2603 \@mkauthors@i
2604 \fi
2605 \endgroup
2606 }

```

\@authorfont Somehow different conferences use different fonts for author names. Why?

```

2607 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont Font for affiliations

```
2608 \def\@affiliationfont{\normalsize\normalfont}
```

Adjusting fonts for different formats

```
2609 \ifcase\ACM@format@nr
2610 \relax % manuscript
2611 \or % acmsmall
2612 \def\@authorfont{\large\sffamily}
2613 \def\@affiliationfont{\small\normalfont}
2614 \or % acmlarge
2615 \or % acmtog
2616 \def\@authorfont{\LARGE\sffamily}
2617 \def\@affiliationfont{\large}
2618 \or % sigconf
2619 \def\@authorfont{\LARGE}
2620 \def\@affiliationfont{\large}
2621 \or % siggraph
2622 \def\@authorfont{\normalsize\normalfont}
2623 \def\@affiliationfont{\normalsize\normalfont}
2624 \or % sigplan
2625 \def\@authorfont{\Large\normalfont}
2626 \def\@affiliationfont{\normalsize\normalfont}
2627 \or % sigchi
2628 \def\@authorfont{\bfseries}
2629 \def\@affiliationfont{\mdseries}
2630 \or % sigchi-a
2631 \def\@authorfont{\bfseries}
2632 \def\@affiliationfont{\mdseries}
2633 \or % acmengage
2634 \def\@authorfont{\LARGE}
2635 \def\@affiliationfont{\large}
2636 \or % acmcp
2637 \def\@authorfont{\large\sffamily}
2638 \def\@affiliationfont{\small\normalfont}
2639 \fi
```

\@typeset@author@line At this point we have \@currentauthors and \@currentaffiliations. We typeset them in the journal style

```
2640 \def\@typeset@author@line{%
2641 \andify\@currentauthors\par\noindent
2642 \@currentauthors\def\@currentauthors{}%
2643 \ifx\@currentaffiliations\@empty\else
2644 \andify\@currentaffiliations
2645 \unskip, {\@currentaffiliations}\par
2646 \fi
2647 \def\@currentaffiliations{}}
```

\if@ACM@instpresent Whether the given affiliation has institution

```
2648 \newif\if@ACM@instpresent
2649 \@ACM@instpresenttrue
```

\if@ACM@citypresent Whether the given affiliation has city

```
2650 \newif\if@ACM@citypresent
2651 \@ACM@citypresenttrue
```

```

\if@ACM@countrypresent Whether the given affiliation has country
2652 \newif\if@ACM@countrypresent
2653 \@ACM@countrypresenttrue

\@ACM@resetaffil Reset affiliation flags
2654 \def\@ACM@resetaffil{%
2655 \global\@ACM@instpresentfalse
2656 \global\@ACM@citypresentfalse
2657 \global\@ACM@countrypresentfalse
2658 }

\@ACM@checkaffil Check affiliation flags
2659 \def\@ACM@checkaffil{%
2660 \if@ACM@instpresent\else
2661 \ClassWarningNoLine{\@classname}{No institution present for an affiliation}%
2662 \fi
2663 \if@ACM@citypresent\else
2664 \ClassWarningNoLine{\@classname}{No city present for an affiliation}%
2665 \fi
2666 \if@ACM@countrypresent\else
2667 \ClassError{\@classname}{No country present for an affiliation}{ACM
2668 requires each author to indicate their country using country macro.}%
2669 \fi
2670 }

\@mkauthors@i This version is used in most journal formats. Note that \and between authors with the
same affiliation becomes _and_:
2671 \def\@mkauthors@i{%
2672 \def\@currentauthors{}%
2673 \def\@currentaffiliations{}%
2674 \global\let\and\@typeset@author@line
2675 \def\@author##1{%
2676 \ifx\@currentauthors@empty
2677 \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2678 \else
2679 \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
2680 \fi
2681 \gdef\and{}}%
2682 \def\email##1##2{%
2683 \def\affiliation##1##2{%
2684 \def\@tempa{##2}\ifx\@tempa@empty\else
2685 \ifx\@currentaffiliations@empty
2686 \gdef\@currentaffiliations{%
2687 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2688 \setkeys{@ACM@affiliation@}{##1}%
2689 \@ACM@resetaffil
2690 \@affiliationfont##2\@ACM@checkaffil}%
2691 \else
2692 \g@addto@macro{\@currentaffiliations}{\and
2693 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2694 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2695 ##2\@ACM@checkaffil}%
2696 \fi

```



```

2697   \fi
2698   \global\let\and\@typeset@author@line}%
2699 \if@ACM@acmcp
2700   \advance\hsize by -6pc%
2701 \fi
2702 \global\setbox\mktitle@bx=\vbox{\noindent\unvbox\mktitle@bx\par\medskip
2703   \noindent\addresses\@typeset@author@line
2704   \par\medskip}%
2705 }

```

`\@mkauthors@ii` The `\@mkauthors@ii` command was the version used in `acmtog`. It is no longer necessary.

`\author@bx` The box to put an individual author in

```
2706 \newbox\author@bx
```

`\author@bx@wd` The width of the author box

```
2707 \newdimen\author@bx@wd
```

`\author@bx@sep` The separation between author boxes

```
2708 \newskip\author@bx@sep
2709 \author@bx@sep=1pc\relax
```

`\@typeset@author@bx` Typesetting the box with authors. Note that in `sigchi-a` the box is not centered.

```

2710 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd
2711   \def\and{\par}\normalbaselines
2712   \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2713     \@authorfont\@currentauthors\par\@affiliationfont
2714     \@currentaffiliation}\egroup
2715   \box\author@bx\hspace{\author@bx@sep}%
2716   \gdef\@currentauthors{}}%
2717   \gdef\@currentaffiliation{}}

```

`\@mkauthors@iii` The `sigconf` version. Here we use a centered design with each author in a separate box.

```
2718 \def\@mkauthors@iii{%
```

First, we need to determine the design of the author strip. The boxes are separated by `\author@bx@sep` plus two `\author@bx@sep` margins. This means that each box must be of width $(\text{\textwidth} - \text{\author@bx@sep})/N - \text{\author@bx@sep}$, where N is the number of boxes per row.

```

2719 \author@bx@wd=\textwidth\relax
2720 \advance\author@bx@wd by -\author@bx@sep\relax
2721 \ifnum\@ACM@authorsperrow>0\relax
2722   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2723 \else
2724   \ifcase\@num@authorgroups
2725     \relax % 0?
2726     \or % 1=one author per row
2727     \or % 2=two authors per row
2728     \divide\author@bx@wd by \@num@authorgroups\relax
2729     \or % 3=three authors per row
2730     \divide\author@bx@wd by \@num@authorgroups\relax
2731     \or % 4=two authors per row (!)
2732     \divide\author@bx@wd by 2\relax

```

```

2733 \else % three authors per row
2734 \divide\author@bx@wd by 3\relax
2735 \fi
2736 \fi
2737 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2738 \gdef\@currentauthors{}%
2739 \gdef\@currentaffiliation{}%
2740 \def\@author##1{\ifx\@currentauthors\@empty
2741 \gdef\@currentauthors{\par##1}%
2742 \else
2743 \g@addto@macro\@currentauthors{\par##1}%
2744 \fi
2745 \gdef\and{}}%
2746 \def\email##1##2{\ifx\@currentaffiliation\@empty
2747 \gdef\@currentaffiliation{\bgroup
2748 \mathchardef\UrbreakPenalty=10000\nolinkurl{##2}\egroup}%
2749 \else
2750 \g@addto@macro\@currentaffiliation{\par\bgroup
2751 \mathchardef\UrbreakPenalty=10000\nolinkurl{##2}\egroup}%
2752 \fi}%
2753 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2754 \gdef\@currentaffiliation{%
2755 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2756 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2757 ##2\@ACM@checkaffil}%
2758 \else
2759 \g@addto@macro\@currentaffiliation{\par
2760 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2761 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2762 ##2\@ACM@checkaffil}%
2763 \fi
2764 \global\let\and\@typeset@author@bx
2765 }%

```

Actual typesetting is done by the \and macro:

```

2766 \hsize=\textwidth
2767 \global\setbox\mktitle@bx=\vbox{\noindent
2768 \unvbox\mktitle@bx\par\medskip\leavevmode
2769 \lineskip=1pc\relax\centering\hspace*{-1em}%
2770 \addresses\let\and\@typeset@author@bx\and\par\bigskip}}

```

\@mkauthors@iv The sigchi-a version. We put authors in the main text with no more than 2 authors per line, unless overridden.

```

2771 \def\@mkauthors@iv{%

```

First, we need to determine the design of the author strip. The boxes are separated by \author@bx@sep plus two \author@bx@sep margins. This means that each box must be of width $(\text{textwidth} - \text{author@bx@sep})/N - \text{author@bx@sep}$, where N is the number of boxes per row.

```

2772 \author@bx@wd=\columnwidth\relax
2773 \advance\author@bx@wd by -\author@bx@sep\relax
2774 \ifnum\@ACM@authorsperrow>0\relax
2775 \divide\author@bx@wd by \@ACM@authorsperrow\relax

```

```

2776 \else
2777 \ifcase\num@authorgroups
2778 \relax % 0?
2779 \or % 1=one author per row
2780 \else % 2=two authors per row
2781 \divide\author@bx@wd by 2\relax
2782 \fi
2783 \fi
2784 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2785 \gdef\@currentauthors{%
2786 \gdef\@currentaffiliation{%
2787 \def\@author##1{\ifx\@currentauthors\@empty
2788 \gdef\@currentauthors{\par##1}%
2789 \else
2790 \g@addto@macro\@currentauthors{\par##1}%
2791 \fi
2792 \gdef\and{}}%
2793 \def\email##1##2{\ifx\@currentaffiliation\@empty
2794 \gdef\@currentaffiliation{\nolinkurl{##2}}%
2795 \else
2796 \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2797 \fi}%
2798 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2799 \gdef\@currentaffiliation{%
2800 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2801 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2802 ##2\@ACM@checkaffil}%
2803 \else
2804 \g@addto@macro\@currentaffiliation{\par
2805 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2806 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2807 ##2\@ACM@checkaffil}%
2808 \fi
2809 \global\let\and\@typeset@author@bx}%
2810 %

```

Actual typesetting is done by the \and macro

```

2811 \bgroup\hsize=\columnwidth
2812 \par\raggedright\leftskip=\z@
2813 \lineskip=1pc\noindent
2814 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2815 \def\@mkauthorsaddresses{%
2816 \ifnum\num@authors>1\relax
2817 Authors' \else Author's \fi
2818 Contact Information:
2819 \bgroup
2820 \def\streetaddress##1{\ClassWarning{\@classname}{ACM no longer collects
2821 authors' postal addresses. I am ignoring your street
2822 address}\unskip\ignorespaces}%
2823 \def\postcode##1{\ClassWarning{\@classname}{ACM no longer collects
2824 authors' postal addresses. I am ignoring your postal

```

```

2825 code}\unskip\ignorespaces}%
2826 \def\position##1{\unskip\ignorespaces}%
2827 \gdef\@ACM@institution@separator{, }%
2828 \def\institution##1{\unskip\@ACM@institution@separator ##1\gdef\@ACM@institution@separator{ and }%
2829 \def\city##1{\unskip, ##1}%
2830 \def\state##1{\unskip, ##1}%
2831 \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2832 \def\country##1{\unskip, ##1}%
2833 \def\and{\unskip; \gdef\@ACM@institution@separator{, }}%
2834 \def\@author##1{##1}%
2835 \def\email##1##2{\unskip, \nolinkurl{##2}}%
2836 \addresses
2837 \egroup}

2838 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@journal
2839 \ifx\@authorsaddresses\empty
2840 \ClassWarningNoLine{\@classname}{Authors'
2841 addresses are mandatory for ACM journals}%
2842 \fi\fi\fi}

```

\@setaddresses This is an amsart macro that we do not need.

```
2843 \def\@setaddresses{}
```

\@authornotemark Adding a footnote mark to authors. This version adds a “normal” footnote mark.

```
2844 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}
```

\@@authornotemark Adding a footnote mark to authors with a given number

```
2845 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}
```

\@mkteasers Typesetting the teasers

```

2846 \def\@mkteasers{%
2847 \ifx\@teaserfigures\empty\else
2848 \def\@teaser##1{\par\bigskip\bgroup
2849 \captionsetup{type=figure}##1\egroup\par}
2850 \global\setbox\mkttitle@bx=\vbox{\noindent\unvbox\mkttitle@bx\par
2851 \noindent\@Description@presentfalse
2852 \@teaserfigures\par\if@Description@present\else
2853 \global\@undescrbed@imagestrue
2854 \ClassWarning{\@classname}{A possible image without
2855 description}\fi
2856 \medskip}%
2857 \fi}

```

\@mkabstract Typesetting the abstract

```

2858 \def\@mkabstract{\bgroup
2859 \ifx\@abstract\empty\else
2860 {\phantomsection\addcontentsline{toc}{section}{\abstractname}%
2861 \if@ACM@journal
2862 \everypar{\setbox\z@\lastbox\everypar{}}\small
2863 \else
2864 \section*{\abstractname}%
2865 \fi
2866 \ignorespaces\@abstract\par}%
2867 \fi\egroup}

```

`\@mktranslatedabstract` Typesetting a translated abstract

```
2868 \def\@mktranslatedabstract#1{\selectlanguage{#1}%
2869   \if@ACM@journal
2870     \everypar{\setbox\z@\lastbox\everypar{}}\small
2871   \else
2872     \section*{\abstractname}%
2873   \fi
2874   \ignorespaces}
```

`\@mkbibcitation` Print the bibcitation format

```
2875 \def\@mkbibcitation{\bgroup
2876   \let\@vspace\@vspace@orig
2877   \let\@vspacer\@vspacer@orig
2878   \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2879   \def\footnotemark{}%
2880   \def\unskip{\ignorespaces}%
2881   \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2882     inside a \string\title{} or \string\author{} command! Use
2883     \string\titlenote{} or \string\authornote{} instead!}}%
2884   \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2885     Article~\@acmArticle\ \fi}%
2886   \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2887   \noindent\bgroup
2888     \def\unskip{\ignorespaces}\authors\egroup. \@acmYear. \@title
2889     \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2890     \if@ACM@nonacm\else
2891       % The 'nonacm' option disables 'printacmref' by default,
2892       % and the present \@mkbibcitation definition is never used
2893       % in this case. The conditional remains useful if the user
2894       % explicitly sets \settopmatter{printacmref=true}.
2895       \if@ACM@journal@bibstrip
2896         \textit{\@journalNameShort}
2897         \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2898         \ref{TotPages}~\@pages@word.
2899       \else
2900         In \textit{\@acmBooktitle}%
2901         \ifx\@acmEditors\@empty\textit{.}\else
2902           \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2903         \fi\
2904         ACM, New York, NY, USA%
2905         \@article@string\unskip, \ref{TotPages}~\@pages@word.
2906       \fi
2907     \fi
2908     \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2909   \par\egroup}
```

`\@printendtopmatter` End the top matter

```
2910 \def\@printendtopmatter{%
2911   \let\@vspace\@vspace@orig
2912   \let\@vspacer\@vspacer@orig
2913   \par\bigskip
2914   \let\@vspace\@vspace@acm
2915   \let\@vspacer\@vspacer@acm
2916 }
```

```
\@setthanks We redefine \@setthanks using \long
2917 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}
```

```
\@setauthorsaddresses
```

```
2918 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}
```

```
\@typesetengagemetadata Typesetting special metadata for ACM Engage
```

```
2919 \def\@typesetengagemetadata{%
2920 \def\@setengagemetadata##1##2{\par\noindent\textbf{##1} ##2\par}%
2921 \@acmengagemetadata}
```

```

i*tagged; We stop tagging inside maketitle for now. Ulrike's code again.
```

```
2922 \ExplSyntaxOn
2923 \AddToHook{cmd/maketitle/before}
2924 {\tagstructbegin{tag=Title}\tagmcbegin{} \tag_stop;}
2925 \AddToHook{cmd/maketitle/after}
2926 {\tag_start:\tagmcbegin\tagstructend }
2927 \ExplSyntaxOff

;tagged;
```

3.22 Headers and Footers

We use fancyhdr for our headers and footers:

```
2928 \RequirePackage{fancyhdr}
```

\ACM@restore@pagestyle The following code by Ross Moore protects against changes by the totpages package:

```
2929 \let\ACM@ps@plain\ps@plain
2930 \let\ACM@ps@myheadings\ps@myheadings
2931 \let\ACM@ps@headings\ps@headings
2932 \def\ACM@restore@pagestyle{%
2933 \let\ps@plain\ACM@ps@plain
2934 \let\ps@myheadings\ACM@ps@myheadings
2935 \let\ps@headings\ACM@ps@headings}
2936 \AtBeginDocument{\ACM@restore@pagestyle}
```

\ACM@linecount@bx This is the box displayed in review mode

```
2937 \if@ACM@review
2938 \newsavebox{\ACM@linecount@bx}
2939 \newlength\ACM@linecount@bxht
2940 \newcount\ACM@linecount
2941 \ACM@linecount\@ne\relax
2942 \def\ACM@mk@linecount{%
2943 \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{\normalfont
2944 \normalsize
2945 \setlength{\ACM@linecount@bxht}{0pt}%
2946 \loop{\color{red}\scriptsize\the\ACM@linecount}\@
2947 \global\advance\ACM@linecount by \@ne
2948 \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2949 \ifdim\ACM@linecount@bxht<\textheight\repeat
2950 {\color{red}\scriptsize\the\ACM@linecount}\hfill
2951 \global\advance\ACM@linecount by \@ne}}
2952 \fi
```

`\ACM@linecountL` How to display the box on the left

```
2953 \def\ACM@linecountL{%
2954   \if@ACM@review
2955   \ACM@mk@linecount
2956   \begin{picture}(0,0)%
2957     \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2958   \end{picture}%
2959 \fi}
```

`\ACM@linecountR` How to display the box on the right. In one column formats we do not step the numbers.

```
2960 \def\ACM@linecountR{%
2961   \if@ACM@review
2962     \ifcase\ACM@format@nr
2963       \relax % manuscript
2964       \relax
2965       \or % acmsmall
2966       \relax
2967       \or % acmlarge
2968       \relax
2969       \or % acmtog
2970       \ACM@mk@linecount
2971       \or % sigconf
2972       \ACM@mk@linecount
2973       \or % siggraph
2974       \ACM@mk@linecount
2975       \or % sigplan
2976       \ACM@mk@linecount
2977       \or % sigchi
2978       \ACM@mk@linecount
2979       \or % sigchi-a
2980       \ACM@mk@linecount
2981       \or % acmengage
2982       \ACM@mk@linecount
2983       \or % acmcp
2984       \relax
2985   \fi
2986   \begin{picture}(0,0)%
2987     \put(20,-22){\usebox{\ACM@linecount@bx}}%
2988   \end{picture}%
2989 \fi}
```

`\ACM@timestamp` The timestamp system

```
2990 \if@ACM@timestamp
2991 % Subtracting 30 from \time gives us the effect of rounding down despite
2992 % \numexpr rounding to nearest
2993 \newcounter{ACM@time@hours}
2994 \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2995 \newcounter{ACM@time@minutes}
2996 \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2997 \newcommand\ACM@timestamp{%
2998   \footnotesize%
2999   \ifx\@acmSubmissionID\empty\relax\else
3000   Submission ID: \@acmSubmissionID.{ }%
3001 \fi}
```

```

3002   \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
3003   \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
3004   Page \thepage\ of \@startPage--\pageref*{TotPages}.%
3005 }
3006 \fi

```

\@shortauthors Even if the author redefined \@shortauthors, we do not print it in the headers when in anonymous mode:

```

3007 \def\@shortauthors{%
3008   \if@ACM@anonymous
3009     Anon.
3010     \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
3011   \else\@shortauthors\fi}

```

\@headfootfont The font to typeset header and footer text.

```

3012 \def\@headfootfont{\sffamily\footnotesize}

```

standardpagestyle The page style for all pages but the first one The page style for all pages but the first one

```

3013 \AtBeginDocument{%
3014   \fancypagestyle{standardpagestyle}{%
3015     \fancyhf{}%
3016     \renewcommand{\headrulewidth}{\z@}%
3017     \renewcommand{\footrulewidth}{\z@}%
3018     \def\@acmArticlePage{%
3019       \ifx\@acmArticle\@empty%
3020         \if@ACM@printfolios\thepage\fi%
3021       \else%
3022         \@acmArticle\if@ACM@printfolios:\thepage\fi%
3023       \fi%
3024     }%
3025     \if@ACM@journal@bibstrip@or@tog
3026       \ifcase\ACM@format@nr
3027         \relax % manuscript
3028         \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
3029         \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
3030         \fancyhead[RE]{\@shortauthors}%
3031         \fancyhead[LO]{\ACM@linecountL\shorttitle}%
3032         \if@ACM@nonacm\else%
3033           \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
3034         \fi%
3035       \or % acmsmall
3036         \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
3037         \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
3038         \fancyhead[RE]{\@headfootfont\@shortauthors}%
3039         \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3040         \if@ACM@nonacm\else%
3041           \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3042             \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
3043         \fi
3044       \or % acmlarge
3045         \fancyhead[LE]{\ACM@linecountL\@headfootfont
3046           \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
3047         \fancyhead[LO]{\ACM@linecountL}%

```



```

3048 \fancyhead[RO]{\@headfootfont
3049 \shorttitle\quad\textbullet\quad\@acmArticlePage}%
3050 \if@ACM@nonacm\else%
3051 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3052 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
3053 \fi
3054 \or % acmtog
3055 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3056 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
3057 \fancyhead[LO]{\ACM@linecountL}%
3058 \fancyhead[RE]{\ACM@linecountR}%
3059 \fancyhead[RO]{\@headfootfont
3060 \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
3061 \if@ACM@nonacm\else
3062 \if@ACM@journal@bibstrip
3063 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort,
3064 Vol. \@acmVolume, No.~\@acmNumber, Article \@acmArticle.
3065 Publication date: \@acmPubDate.}%
3066 \else
3067 \fancyfoot[RO,LE]{\footnotesize \acmConference@shortname,
3068 \acmConference@date, \acmConference@venue.}%
3069 \fi
3070 \fi
3071 \else % Proceedings
3072 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3073 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3074 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
3075 \if@ACM@nonacm
3076 \fancyhead[LE]{\ACM@linecountL}%
3077 \fancyhead[RO]{\ACM@linecountR}%
3078 \else%
3079 \if@ACM@engage
3080 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
3081 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi}%
3082 \fancyhead[RO]{\@headfootfont
3083 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
3084 \ACM@linecountR}%
3085 \else
3086 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
3087 \acmConference@shortname,
3088 \acmConference@date, \acmConference@venue}%
3089 \fancyhead[RO]{\@headfootfont
3090 \acmConference@shortname,
3091 \acmConference@date, \acmConference@venue\ACM@linecountR}%
3092 \fi
3093 \fi
3094 \fi
3095 \else % Proceedings
3096 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3097 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3098 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
3099 \if@ACM@nonacm
3100 \fancyhead[LE]{\ACM@linecountL}%
3101 \fancyhead[RO]{\ACM@linecountR}%

```

```

3102 \else%
3103 \if@ACM@engage
3104 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3105 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi}%
3106 \fancyhead[RO]{\@headfootfont
3107 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
3108 \ACM@linecountR}%
3109 \else
3110 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3111 \acmConference@shortname,
3112 \acmConference@date, \acmConference@venue}%
3113 \fancyhead[RO]{\@headfootfont
3114 \acmConference@shortname,
3115 \acmConference@date, \acmConference@venue\ACM@linecountR}%
3116 \fi
3117 \fi
3118 \fi
3119 \if@ACM@sigchiamode
3120 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
3121 \fi
3122 \if@ACM@timestamp
3123 \fancyfoot[LO,RE]{\ACM@timestamp}
3124 \fi
3125 \if@ACM@acmcp
3126 \renewcommand{\footrulewidth}{0.1\p@}%
3127 \fancyheadoffset[L]{46pt}%
3128 \fancyhead[L]{\makebox[\z@][l]{%
3129 \raisebox{-\dimexpr(0.2\textheight*(\ACM@ArticleType@nr-2))}{%
3130 \rotatebox{90}{\colorbox{@ACM@Article@color}{\color{white}%
3131 \strut\ACM@ArticleType~Article}}}}}%
3132 \ACM@linecountL}%
3133 \fancyhead[R]{\makebox[\z@][r]{\box\@ACM@acmcpbox}}%
3134 \fancyfoot[L,C]{}%
3135 \fancyfoot[R]{\footnotesize
3136 \@journalName, Volume~\@acmVolume, Issue~\@acmNumber,
3137 \ifx\@acmArticle\@empty\else Article~\@acmArticle\fi\space
3138 (\@acmPubDate)\ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi}
3139 \fi
3140 }%
3141 \pagestyle{standardpagestyle}
3142 }

```

\@folio@wd Folio blob width, height, offsets and max number

\@folio@ht

\@folio@blob The macro to typeset the folio blob.

\@folio@max

firstpagestyle The page style for the first page only.

```

3143 \AtBeginDocument{%
3144 \fancypagestyle{firstpagestyle}{%
3145 \fancyhf{}%
3146 \renewcommand{\headrulewidth}{\z@}%
3147 \renewcommand{\footrulewidth}{\z@}%
3148 \if@ACM@journal@bibstrip@or@tog
3149 \ifcase\ACM@format@nr

```

```

3150 \relax % manuscript
3151 \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3152 \fancyhead[R]{\@acmBadgeR}%
3153 \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
3154 \if@ACM@nonacm\else%
3155 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
3156 \fi%
3157 \or % acmsmall
3158 \if@ACM@nonacm\else%
3159 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3160 \@acmNumber, Article \@acmArticle. Publication date:
3161 \@acmPubDate.}%
3162 \fi%
3163 \fancyhead[LE]{\ACM@linecountL\@acmBadgeL}%
3164 \fancyhead[LO]{\ACM@linecountL\@acmBadgeL}%
3165 \fancyhead[RO]{\@acmBadgeR}%
3166 \fancyhead[RE]{\@acmBadgeR}%
3167 \or % acmlarge
3168 \if@ACM@nonacm\else%
3169 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3170 \@acmNumber, Article \@acmArticle. Publication date:
3171 \@acmPubDate.}%
3172 \fi%
3173 \fancyhead[RO]{\@acmBadgeR}%
3174 \fancyhead[RE]{\@acmBadgeR}%
3175 \fancyhead[LE]{\ACM@linecountL\@acmBadgeL}%
3176 \fancyhead[LO]{\ACM@linecountL\@acmBadgeL}%
3177 \or % acmtog
3178 \if@ACM@nonacm\else%
3179 \if@ACM@journal@bibstrip
3180 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort,
3181 Vol. \@acmVolume, No.\@acmNumber, Article \@acmArticle.
3182 Publication date: \@acmPubDate.}%
3183 \else
3184 \fancyfoot[RO,LE]{\footnotesize \acmConference@shortname,
3185 \acmConference@date, \acmConference@venue.}%
3186 \fi
3187 \fi%
3188 \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3189 \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3190 \else % Conference proceedings
3191 \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3192 \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3193 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3194 \fi
3195 \else
3196 \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3197 \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3198 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3199 \fi
3200 \if@ACM@timestamp
3201 \ifnum\ACM@format@nr=0\relax % Manuscript
3202 \fancyfoot[LO,RE]{\ACM@timestamp\quad
3203 \if@ACM@nonacm\else

```

```

3204     \footnotesize Manuscript submitted to ACM
3205     \fi}
3206     \else
3207     \fancyfoot[LO,RE]{\ACM@timestamp}
3208     \fi
3209 \fi
3210 \if@ACM@acmcp
3211 \renewcommand{\footrulewidth}{0.1\p@}%
3212 \fancyheadoffset[L]{46pt}%
3213 \fancyhead[L]{\makebox[\z@][l]{%
3214     \raisebox{-\dimexpr(0.2\textheight*(\ACM@ArticleType@nr-2))}{%
3215     \rotatebox{90}{\colorbox{@ACM@Article@color}{\color{white}%
3216     \strut\ACM@ArticleType~Article}}}}}%
3217     \ACM@linecountL@acmBadgeL}%
3218 \fancyhead[R]{\@acmBadgeR\makebox[\z@][r]{\box\@ACM@acmcpbox}}%
3219 \fancyfoot[L,C]{}%
3220 \fancyfoot[R]{\footnotesize
3221     \@journalName, Volume~\@acmVolume, Issue~\@acmNumber,
3222     \ifx\@acmArticle\@empty\else Article~\@acmArticle\fi\space
3223     (\@acmPubDate)\ifx\@acmDOI\@empty\else\\@formatdoi{\@acmDOI}\fi}
3224 \fi
3225 }}

```

3.23 Sectioning

\ACM@NRadjust Ross Moore's macro.

Initially \ACM@sect@format@ just passes through its #1 argument unchanged. When a sectioning macro such as \section occurs, the \ACM@NRadjust redefines \ACM@sect@format@ to expand into the styling commands; e.g., \@secfont. Then \Sectionformat is temporarily redefined to produce \realSectionformat{\ACM@sect@format{#1}}{#2}, which ultimately becomes \Sectionformat{\@secfont{#1}}{#2}. This is done to allow \Sectionformat to be variable, as may be needed in particular circumstances. Its current expansion is saved as \realSectionformat which is used with the modified 1st argument, then \Sectionformat is reverted to its former expansion.

To style the section-number, the line #1{} is used at the end of \ACM@NRadjust. This imposes style-changing commands for fonts and sizes, but any \MakeUppercase acts on just the {}. It's a bit hacky, by essentially assuming that only numbers occur here, not letters to be case-changed. (This should be acceptable in a class-file, as it ought to be possible to change the case elsewhere, if that was ever desired.) Also, it can result in \@adddotafter being called too soon, so a slight adjustment is made, via \ACM@adddotafter, which now tests whether its argument is empty. But the coding has to allow for other packages to have also patched \@adddotafter.

```

3226 \def\ACM@NRadjust#1{%
3227 \begingroup
3228 \expandafter\ifx\csname Sectionformat\endcsname\relax
3229 % do nothing when \Sectionformat is unknown
3230 \def\next{\endgroup #1}%
3231 \else
3232 \def\next{\endgroup

```

```

3233 \let\realSectionformat\Sectionformat
3234 \def\ACM@sect@format{#1}%
3235 \let\Sectionformat\ACM@NR@adjustedSectionformat
3236 %% next lines added 2018-06-17 to ensure section number is styled
3237 \let\real@adddotafter\@adddotafter
3238 \let\@adddotafter\ACM@adddotafter
3239 #1{ }% imposes the styles, but nullifies \MakeUppercase
3240 \let\@adddotafter\real@adddotafter
3241 }%
3242 \fi \next
3243 }

```

\ACM@NR@adjustedSectionformat

```

3244 \def\ACM@NR@adjustedSectionformat#1#2{%
3245 \realSectionformat{\ACM@sect@format{#1}}{#2}%
3246 \let\Sectionformat\realSectionformat}
3247 \DeclareRobustCommand{\ACM@sect@format}{\ACM@sect@format@}
3248 \def\ACM@sect@format@null#1{#1}
3249 \let\ACM@sect@format\ACM@sect@format@null
3250 \AtBeginDocument{%
3251 \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
3252 \let\LTX@adddotafter\@adddotafter
3253 \fi
3254 }

```

\ACM@adddotafter

```

3255 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}

```

Sectioning is different for different levels

```

3256 \renewcommand\section{\def\@toclevel{1}%
3257 \@startsection{section}{1}{\z@}%
3258 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3259 {.25\baselineskip}%
3260 {\ACM@NRadjust\@secfont}}
3261 \renewcommand\subsection{\def\@toclevel{2}%
3262 \@startsection{subsection}{2}{\z@}%
3263 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3264 {.25\baselineskip}%
3265 {\ACM@NRadjust\@subsecfont}}
3266 \renewcommand\subsubsection{\def\@toclevel{3}%
3267 \@startsection{subsubsection}{3}{\z@}%
3268 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3269 {-3.5\p@}%
3270 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}
3271 \renewcommand\paragraph{\def\@toclevel{4}%
3272 \@startsection{paragraph}{4}{\parindent}%
3273 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3274 {-3.5\p@}%
3275 {\ACM@NRadjust{\@parfont\@adddotafter}}}
3276 \newcommand\noindentparagraph{\def\@toclevel{4}%
3277 \@startsection{paragraph}{4}{\z@}%
3278 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3279 {-3.5\p@}%
3280 {\ACM@NRadjust{\@parfont}}}

```

```

3281 \renewcommand\part{\def\@toclevel{9}%
3282 \@startsection{part}{9}{\z@}%
3283 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
3284 {4\p@}%
3285 {\ACM@NRadjust\@parfont}}

```

`\section@raggedright` Special version of `\raggedright` compatible with `\MakeUppercase`

```

3286 \def\section@raggedright{\@rightskip\@flushglue
3287 \rightskip\@rightskip
3288 \leftskip\z@skip
3289 \parindent\z@}

```

`\@secfont` Fonts for sections etc. are different for different formats.

```

\@subsecfont 3290 \def\@secfont{\sffamily\bfseries\section@raggedright}
\@subsubsecfont 3291 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 3292 \def\@subsubsecfont{\sffamily\itshape}
3293 \def\@parfont{\itshape}
3294 \setcounter{secnumdepth}{3}
3295 \ifcase\ACM@format@nr
3296 \relax % manuscript
3297 \or % acmsmall
3298 \or % acmlarge
3299 \def\@secfont{\sffamily\large\section@raggedright}
3300 \def\@subsecfont{\sffamily\large\section@raggedright}
3301 \or % acmtog
3302 \def\@secfont{\sffamily\large\section@raggedright}
3303 \def\@subsecfont{\sffamily\large\section@raggedright}
3304 \or % sigconf
3305 \def\@secfont{\bfseries\Large\section@raggedright}
3306 \def\@subsecfont{\bfseries\Large\section@raggedright}
3307 \or % siggraph
3308 \def\@secfont{\sffamily\bfseries\Large\section@raggedright}
3309 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
3310 \or % sigplan
3311 \def\@secfont{\bfseries\Large\section@raggedright}
3312 \def\@subsecfont{\bfseries\section@raggedright}
3313 \def\@subsubsecfont{\bfseries\section@raggedright}
3314 \def\@parfont{\bfseries\itshape}
3315 \def\@subparfont{\itshape}
3316 \or % sigchi
3317 \setcounter{secnumdepth}{1}
3318 \def\@secfont{\sffamily\bfseries\section@raggedright}
3319 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
3320 \or % sigchi-a
3321 \setcounter{secnumdepth}{0}
3322 \def\@secfont{\sffamily\bfseries\section@raggedright}
3323 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
3324 \or % acmengage
3325 \def\@secfont{\bfseries\Large\section@raggedright}
3326 \def\@subsecfont{\bfseries\Large\section@raggedright}
3327 \or % acmcp
3328 \fi

```

`\@adddotafter` Add punctuation after a sectioning command

```
3329 \def\@adddotafter#1{#1\@addpunct{.}}
```

`\@addspaceafter` Add space after a sectioning command

```
3330 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

```
3331 \if@ACM@acmcp
```

```
3332   \setcounter{secnumdepth}{-1}%
```

```
3333 \fi
```

3.24 TOC lists

`\@dotsep` Related to the `\tableofcontents` are all the horizontal fillers. Base \LaTeX defines `\@dottedtocline`, which we should not disable. Yet, this command expects `\@dotsep` to be defined but leaves this to the class implementation. Since `amsart` does not provide this, we copy the standard variant from `article` here.

```
3334 \providecommand*\@dotsep{4.5}
```

3.25 Theorems

`\@acmplainbodyfont` The font to typeset the body of the `acmplain` theorem style.

```
3335 \def\@acmplainbodyfont{\itshape}
```

`\@acmplainindent` The amount to indent the `acmplain` theorem style.

```
3336 \def\@acmplainindent{\parindent}
```

`\@acmplainheadfont` The font to typeset the head of the `acmplain` theorem style.

```
3337 \def\@acmplainheadfont{\scshape}
```

`\@acmplainnotefont` The font to typeset the note of the `acmplain` theorem style.

```
3338 \def\@acmplainnotefont{\@empty}
```

Customization of the `acmplain` theorem style:

```
3339 \ifcase\ACM@format@nr
```

```
3340 \relax % manuscript
```

```
3341 \or % acmsmall
```

```
3342 \or % acmlarge
```

```
3343 \or % acmtog
```

```
3344 \or % sigconf
```

```
3345 \or % siggraph
```

```
3346 \or % sigplan
```

```
3347   \def\@acmplainbodyfont{\itshape}
```

```
3348   \def\@acmplainindent{\z@}
```

```
3349   \def\@acmplainheadfont{\bfseries}
```

```
3350   \def\@acmplainnotefont{\normalfont}
```

```
3351 \or % sigchi
```

```
3352 \or % sigchi-a
```

```
3353 \or % acmengage
```

```
3354 \or % acmcp
```

```
3355 \fi
```

acmplain The acmplain theorem style

```
3356 \newtheoremstyle{acmplain}%
3357   {.5\baselineskip\@plus.2\baselineskip
3358     \@minus.2\baselineskip}% space above
3359   {.5\baselineskip\@plus.2\baselineskip
3360     \@minus.2\baselineskip}% space below
3361   {\@acmplainbodyfont}% body font
3362   {\@acmplainindent}% indent amount
3363   {\@acmplainheadfont}% head font
3364   {.%} punctuation after head
3365   {.5em}% spacing after head
3366   {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont{#3}}}}% head spec
```

\@acmdefinitionbodyfont The font to typeset the body of the acmdefinition theorem style.

```
3367 \def\@acmdefinitionbodyfont{\normalfont}
```

\@acmdefinitionindent The amount to indent the acmdefinition theorem style.

```
3368 \def\@acmdefinitionindent{\parindent}
```

\@acmdefinitionheadfont The font to typeset the head of the acmdefinition theorem style.

```
3369 \def\@acmdefinitionheadfont{\itshape}
```

\@acmdefinitionnotefont The font to typeset the note of the acmdefinition theorem style.

```
3370 \def\@acmdefinitionnotefont{\@empty}
```

Customization of the acmdefinition theorem style:

```
3371 \ifcase\ACM@format@nr
3372 \relax % manuscript
3373 \or % acmsmall
3374 \or % acmlarge
3375 \or % acmtog
3376 \or % sigconf
3377 \or % siggraph
3378 \or % sigplan
3379 \def\@acmdefinitionbodyfont{\normalfont}
3380 \def\@acmdefinitionindent{\z@}
3381 \def\@acmdefinitionheadfont{\bfseries}
3382 \def\@acmdefinitionnotefont{\normalfont}
3383 \or % sigchi
3384 \or % sigchi-a
3385 \or % acmengage
3386 \or % acmcp
3387 \fi
```

acmdefinition The acmdefinition theorem style

```
3388 \newtheoremstyle{acmdefinition}%
3389   {.5\baselineskip\@plus.2\baselineskip
3390     \@minus.2\baselineskip}% space above
3391   {.5\baselineskip\@plus.2\baselineskip
3392     \@minus.2\baselineskip}% space below
3393   {\@acmdefinitionbodyfont}% body font
3394   {\@acmdefinitionindent}% indent amount
3395   {\@acmdefinitionheadfont}% head font
```



```

3396 {.}% punctuation after head
3397 {.5em}% spacing after head
3398 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont(#3)}}}% head spec

```

Make `acmplain` the default theorem style.

```
3399 \theoremstyle{acmplain}
```

Delay defining the theorem environments until after other packages have been loaded. In particular, the `cleveref` package must be loaded before the theorem environments are defined in order to show the correct environment name (see <https://github.com/borisveytsman/acmart/issues/138>). The `acmthm` option is used to suppress the definition of any theorem environments. Also, to avoid obscure errors arising from these environment definitions conflicting with environments defined by the user or by user-loaded packages, we only define environments that have not yet been defined.

```

3400 \AtEndPreamble{%
3401   \if@ACM@acmthm
3402   \theoremstyle{acmplain}
3403   \@ifundefined{theorem}{%
3404     \newtheorem{theorem}{Theorem}[section]
3405   }{}
3406   \@ifundefined{conjecture}{%
3407     \newtheorem{conjecture}[theorem]{Conjecture}
3408   }{}
3409   \@ifundefined{proposition}{%
3410     \newtheorem{proposition}[theorem]{Proposition}
3411   }{}
3412   \@ifundefined{lemma}{%
3413     \newtheorem{lemma}[theorem]{Lemma}
3414   }{}
3415   \@ifundefined{corollary}{%
3416     \newtheorem{corollary}[theorem]{Corollary}
3417   }{}
3418   \theoremstyle{acmdefinition}
3419   \@ifundefined{example}{%
3420     \newtheorem{example}[theorem]{Example}
3421   }{}
3422   \@ifundefined{definition}{%
3423     \newtheorem{definition}[theorem]{Definition}
3424   }{}
3425   \fi
3426   \theoremstyle{acmplain}
3427 }

```

`\@proofnamefont` The font to typeset the proof name.

```
3428 \def\@proofnamefont{\scshape}
```

`\@proofindent` Whether or not to indent proofs.

```
3429 \def\@proofindent{\indent}
```

Customization of the proof environment.

```

3430 \ifcase\ACM@format@nr
3431 \relax % manuscript

```

```

3432 \or % acsmall
3433 \or % acmlarge
3434 \or % acmtog
3435 \or % sigconf
3436 \or % siggraph
3437 \or % sigplan
3438 \def\@proofnamefont{\itshape}
3439 \def\@proofindent{\noindent}
3440 \or % sigchi
3441 \or % sigchi-a
3442 \or % acmengage
3443 \or % acmcp
3444 \fi

```

proof We want some customization of the proof environment.

```

3445 \renewenvironment{proof}[1][\proofname]{\par
3446 \pushQED{\qed}%
3447 \normalfont \topsep6\p@\@plus6\p@\relax
3448 \trivlist
3449 \item[\@proofindent\hskip\labelsep
3450 \quad\@proofnamefont #1\@addpunct{.}]\ignorespaces
3451 }{%
3452 \popQED\endtrivlist\endpfalse
3453 }

```

3.26 Balancing columns

We need balancing only if the user did not disable it, and we use a two column format. Note that pbalance uses a different mechanism.

```

3454 \AtEndPreamble{%
3455 \if@ACM@pbalance
3456 \global\@ACM@balancefalse
3457 \ifcase\ACM@format@nr
3458 \relax % manuscript
3459 \or % acsmall
3460 \or % acmlarge
3461 \or % acmtog
3462 \RequirePackage{pbalance}%
3463 \or % sigconf
3464 \RequirePackage{pbalance}%
3465 \or % siggraph
3466 \RequirePackage{pbalance}%
3467 \or % sigplan
3468 \RequirePackage{pbalance}%
3469 \or % sigchi
3470 \RequirePackage{pbalance}%
3471 \or % sigchi-a
3472 \or % acmengage
3473 \RequirePackage{pbalance}%
3474 \or % acmcp
3475 \fi
3476 \fi
3477 \if@ACM@balance

```

```

3478 \ifcase\ACM@format@nr
3479 \relax % manuscript
3480 \global\@ACM@balancefalse
3481 \or % acmsmall
3482 \global\@ACM@balancefalse
3483 \or % acmlarge
3484 \global\@ACM@balancefalse
3485 \or % acmtog
3486 \RequirePackage{balance}%
3487 \or % sigconf
3488 \RequirePackage{balance}%
3489 \or % siggraph
3490 \RequirePackage{balance}%
3491 \or % sigplan
3492 \RequirePackage{balance}%
3493 \or % sigchi
3494 \RequirePackage{balance}%
3495 \or % sigchi-a
3496 \global\@ACM@balancefalse
3497 \or % acmengage
3498 \RequirePackage{balance}%
3499 \or % acmcp
3500 \global\@ACM@balancefalse
3501 \fi
3502 \fi
3503 }
3504 \AtEndDocument{%
3505 \if@ACM@balance
3506 \if@twocolumn
3507 \balance
3508 \fi\fi}

```

3.27 Acknowledgments

`\acksname`

```
3509 \newcommand\acksname{Acknowledgments}
```

`\acks` This is a comment-like structure

```

3510 \specialcomment{acks}{%
3511 \begingroup
3512 \section*{\acksname}
3513 \phantomsection\addcontentsline{toc}{section}{\acksname}
3514 }{%
3515 \endgroup
3516 }

```

`\grantsponsor` We just typeset the name of the sponsor

```
3517 \def\grantsponsor#1#2#3{#2}
```

`\grantnum`

```

3518 \newcommand\grantnum[3][]{#3%
3519 \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}

```

3.28 Conditional typesetting

We use the comment package for conditional typesetting:

```
3520 \AtEndPreamble{%
3521 \if@ACM@screen
3522 \includecomment{screenonly}
3523 \excludecomment{printonly}
3524 \else
3525 \excludecomment{screenonly}
3526 \includecomment{printonly}
3527 \fi
3528 \if@ACM@anonymous
3529 \excludecomment{anonsuppress}
3530 \excludecomment{acks}
3531 \else
3532 \includecomment{anonsuppress}
3533 \fi}
```

3.29 Additional bibliography commands

`\showeprint` The command `\showeprint` has two arguments: the (optional) prefix and the eprint number. Right now the only prefix we understand is the (lowercase) word ‘arxiv’.

```
3534 \newcommand\showeprint[2][arxiv]{%
3535 \def\@tempa{#1}%
3536 \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
3537 \def\@tempb{arxiv}%
3538 \ifx\@tempa\@tempb\relax
3539 arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3540 \else
3541 \def\@tempb{arXiv}%
3542 \ifx\@tempa\@tempb\relax
3543 arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3544 \else
3545 #1:#2%
3546 \fi
3547 \fi}
```

3.30 Index

`\theindex` Standard `amsart` uses plain page style in index pages. This clashes with line numbering for review option, so we redefine it.

```
3548 \def\theindex{\@restonecoltrue\if@twocolumn\@restonecolfalse\fi
3549 \columnseprule\z@ \columnsep 35\p@
3550 \@indextitlestyle
3551 \let\item\@idxitem
3552 \parindent\z@ \parskip\z@\@plus.3\p@\relax
3553 \raggedright
3554 \hyphenpenalty\@M
3555 \footnotesize}
```

3.31 End of Class

`\vspace` We do not disable `\vspace`, but add warning to it

```

3556 \let\@vspace@orig=\@vspace
3557 \let\@vspacer@orig=\@vspacer
3558 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
3559   only be used to provide space above/below surrounding
3560   objects}}{}}
3561 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should
3562   only be used to provide space above/below surrounding
3563   objects}}{}}
3564 \let\@vspace@acm=\@vspace
3565 \let\@vspacer@acm=\@vspacer

```

\ACM@origbaselinestretch We produce an error if the user tries to change \baselinestretch

```

3566 \let\ACM@origbaselinestretch\baselinestretch
3567 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
3568   \ClassError{\@classname}{An attempt to redefine
3569     \string\baselinestretch\space detected. Please do not do this for
3570     ACM submissions!}\fi}

3571 \normalsize\normalfont\frenchspacing
3572 </class>

```

References

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Change History

1.48	General: Added prologue option to xcolor	51	\ccsdesc@parse: Added warning for missing concepts	79
	Bib code cleanup (Zack Weinberg)	36	\if@ACM@printacmref: Added warning for longer papers	76
	Documentation update (siggraph)	36	\keywords: Added warning for missing keywords	76
1.49	General: New journal: DTRAP	36	1.69	\vspace: Added the changed command to avoid grouping
1.53	General: New journals: PACMCGIT, TIOT, TDSCI	36	1.70	General: Name change for TDS
	Rearranged docs	36	1.71	General: Bibliography change: volume for @inproceedings is now in brackets together with series
1.54	General: Moved footnote stuff before hyperref call (Ross Moore)	36		LuaTeX now uses the OTF versions of fonts
1.56	General: Documented \Description	36		Retired sigchi and sigchi-a
1.57	General: Booktabs package is now the default	36	1.75	General: Documentation update
1.58	General: Changes in samples (Enrico Gregorio)	36	1.78	General: Documentation update: Word count
	New journal: HEALTH. TDS is renamed to TDSCI	36	1.79	General: Updated indormation for TAP, TCPS, TEAC
1.60	General: New option: urlbreakonhyphens	36	1.80	General: Added DLT and FAC
	\if@ACM@urlbreakonhyphens: introduced macro	37	1.82	General: Updated abbreviations and codes for several journals
1.62	General: New journal: TELO	36	1.84	General: New journals: JDS, GAMES
1.63	General: New journal: FACMP	36	1.85	General: Added CC licenses
	New journal: TQUANT	36		Added: acmengage
1.63a	General: Move: TQUANT to TQC	36		New journal: JRC
1.64	General: Putting abstract after \maketitle now causes an error	36		\@mkauthors: Added: acmengage
1.65	General: New journal: DGOV	36		\@mktitle: Added: acmengage
1.66	General: ACM reference format is now mandatory for papers over one page; CCS concepts and keywords are now mandatory for papers over two pages	36		\@parfont: Added: acmengage
	Authors' addresses are mandatory for journal articles	36		\@printtopmatter: Added: acmengage
	\@mkauthorsaddresses: Added warning for missing addresses	100		\@specialsection: Added: acmengage
				\@subtitlefont: Added: acmengage
				\@titlefont: Added: acmengage
				\ACM@linecountR: Added: acmengage
				format: New format: acmengage
				\parskip: Added: acmengage

1.87		//github.com/borisveytsman/acmart/issues/5)	36
	General: New journals: ACMJCSS, JATS, TORS	v1.02	
	format: New format: acmcp	General: Added TOPS and TSC (closes https://github.com/borisveytsman/acmart/issues/12)	36
1.88	General: Added ISSN for ACMJCSS	Added ISSN for GAMES	61
	Added PACMNET	Documentation changes (closes https://github.com/borisveytsman/acmart/issues/13)	36
1.89	General: Added PACMMOD	v1.03	
	Added TOPML	General: Added anonsuppress environment	36
	\@printtopmatter: Moved badges to top header	Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	36
1.90	General: Added TOPML eISSN	\@formatdoi: Added macro	82
1.90a	General: Changes in the sample keywords and concepts	\if@ACM@authorversion: Added macro	38
1.92	General: Documentation update: use of 'anonymous' throughout	\maketitle: Added special case of authorversion	86
	Moved hyperxmp again due to kernel update	v1.04	
2.04	General: Deleted loading ifdraft due to the new release of hyperxmp	General: Updated bibliography for siggraph	36
	Explicitly load ifdraft since hyperxmp tries to load it inside a group	\acmArticleSeq: Name change by Matthew Fluet	74
2.05	General: New data for TELO	\acmDOI: Name change by Matthew Fluet	74
2.06	General: Added eISSN for a number of journals	\acmISBN: Name change by Matthew Fluet	74
2.07	General: Another change for TELO	v1.05	
2.08	\@parfont: Deleted uppercasing	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	36
v1.00	General: First released version	Patched \setcitestyle command; closes https://github.com/borisveytsman/acmart/issues/19	36
v1.01	General: Changed hyperref colors in screen mode (closes https://github.com/borisveytsman/acmart/issues/1)	v1.06	
	Defined ACM colors	\@ACM@badge@skip: Added macro	75
	Explicitly put draft option (closes https://github.com/borisveytsman/acmart/issues/4)	\@ACM@badge@width: Added macro	75
	Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/acmart/issues/4)	\@ACM@title@width: Added macro	75
		\@mktitle@i: Added processing badges	92
		Made generic	92
		\@mktitle@ii: Now this macro is obsolete	93
		\@mktitle@iii: Added processing badges	93
		Made more generic	93
		\@mktitle@iv: Made more generic	93

\@printtopmatter: Added processing badges	90	v1.13	General: Font adjustments for acmsmall	95
\@subtitlefont: Added macro	92		Increased font size for ACM Large	41
\@titlefont: Added macro	91		Print bibliographic information by default for the proceedings	77
\acmBadgeL: Added macro	75		\@mpfootnotetext: Made minipage footnotes centered	50
\acmBadgeR: Added macro	75		\bibliographystyle: Redefined macro	51
\if@ACM@badge: Added macro	75		\bibstyle@acmauthoryear: Added macro	44
v1.07			\bibstyle@acmnumeric: Added macro	45
\maketitle: Corrected a bug with abstract footnotes	86		\if@ACM@printfolios: Added macro	77
Corrected a bug with permission and footnotes order	86		standardpagestyle: Added headers for sigs	104
v1.08			Expanded headers for sigchi-a	104
General: SIGPLAN reformatting by Matthew Fluet	36		Suppressed folios if sig	104
Typos corrected (Tobias Pape)	36		v1.14	
v1.09			General: \citestyle updates (Matthew Fluet)	36
General: Revert SIGPLAN caption rules	36		Patched \citestyle	43
v1.10			\bibstyle@acmauthoryear: Moved def of \bibstyle@acmauthoryear before use	44
General: Changes of 'licensedothergov' wording	80		\bibstyle@acmnumeric: Moved def of \bibstyle@numeric before use	45
\maketitle: Corrected a bug with doi in manuscript and author version, https://github.com/borisveytsman/acmart/issues/36	86		v1.15	
standardpagestyle: Reversed folios location	104		\@ACM@addtoaddress: Added macro	93
v1.11			\@mkauthors@iii: New authors system	97
General: Customization of ACM theorem styles and proof environment by Matthew Fluet	36		\@shortauthors: Introduced macro	104
v1.12			\@typeset@author@bx: Moved to separate macro	97
General: Added graceful behavior when libertine fonts are absent	55		\acks: Added macro	115
Documentation updates	36		\affiliation: Added code for author groups	72
\@marginfigure: Now centering by default	58		\author: Added code for author groups	71
\@margintable: Now centering by default	59		\city: Added macro	93
\@parfont: Moved to \section@raggedright	110		\country: Added macro	93
\copyrightpermissionfootnoterule: Added macro	54		\department: Added macro	93
\descriptionlabel: Redefined	61		\grantnum: Added macro	115
\footnoterule: Made shorter	54		\grantsponsor: Added macro	115
\if@ACM@natbib@override: Added macro	38		\if@insideauthorgroup: Introduced macro	71
\if@ACM@newfonts: Added macro	55		\institution: Added macro	93
\maketitle: Moved thankses to copyrightpermission box	86		\num@authorgroups: Renamed	70
\section@raggedright: Introduced macro	110		\orcid: Introduced macro	72
			\position: Added macro	93
			\postcode: Added macro	93
			\state: Added macro	93
			\streetaddress: Added macro	93

standardpagestyle: Better handling of anonymous mode	104	\mkabstract: Deleted spurious space	100
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General: Formatting header/footer (Matthew Fluet)	36	\showeprint: Added macro	116
\@headfootfont: Added macro	104	v1.22	
standardpagestyle: Customize header/footer text font	104	General: More bibliography changes for Aptara	36
v1.17		v1.23	
General: Slightly decreased margins for sigs	52	General: Add PACMPL journal option	36
\@makefnmark: Redefined	50	v1.24	
\@mkauthors: TOG now uses the same authors block as other journals	94	General: Add IMWUT journal option	61
\@mkauthors@ii: Deleted	97	v1.25	
\@mkbibcitation: Added \nobreak	101	General: Updated PACMPL	61
\@mkbibcitation: Changed format for sigs	101	v1.26	
\acmArticle: The default is now numerical	74	General: Corrected \shortcite bug	36
\acmMonth: The default must be numerical. Closes #50.	74	Documentation typos fixed (thanks to Stephen Spencer)	36
\acmNumber: The default is now numerical	74	v1.27	
\acmVolume: The default is now numerical	74	\if@ACM@printccs: Typo corrected	76
\acmYear: The default is now numerical	74	v1.28	
\description: Decreased indent	61	General: Corrected option natbib behavior	45
\grantnum: Added url	115	Got rid of warnings in pdf keywords	50
\grantsponsor: Renamed	115	\ccsdesc@parse: Change from \to to \textrightarrow (Matteo Riondato)	79
\if@ACM@printacmref: Renamed from \if@ACM@printbib	76	v1.29	
standardpagestyle: Added paper title to sigs	104	General: Increased head to 13pt	52
v1.18		\mkabstract: Removed spurious indentation (John Wickerson)	100
General: Natbib is now the default for all formats	36	\ccsdesc@parse: Add spacing after bullet and around rightrightarrow; semicolon separators no longer in bold/italic (John Wickerson)	79
\@mkauthors@i: Now we andify affiliations	96	standardpagestyle: Corrected printfolios (Matthew Fluet)	104
\@typeset@author@line: Added macro	95	v1.30	
v1.19		General: Added \frenchspacing	117
General: Include 'Abstract', 'Acknowledgements', and 'References' in PDF bookmarks (Matthew Fluet)	36	Bibtex style now recognizes https:// in doi	36
Include 'References' in PDF bookmarks (Matthew Fluet)	43	Switched to T1: looks like libertine has problems with \l in OT1	56
\@mkabstract: Include 'Abstract' in PDF bookmarks (Matthew Fluet)	100	Updated IMWUT and PACMPL	61
\acks: Include 'Acknowledgements' in PDF bookmarks (Matthew Fluet)	115	\department: Added optional parameter	93
v1.20		v1.31	
General: Bug fixes for bst	36	General: Documentation changes	36
		\@additionalaffiliation: Added macro	72
		\@mkbibcitation: Disabled linebreak	101
		\@startsection: Added \tochangmeasure	47
		\@starttoc: Redefined macro	49
		\@textbottom: Redefined	55

<code>\acmMonth</code> : The default now is the current month (Matteo Riondato) . . .	74	<code>\if@ACM@timestamp</code> : Added macro (Michael D. Adams)	39
<code>\acmYear</code> : The default now is the current year (Matteo Riondato) . .	74	<code>\institution</code> : Added obeypunctuation code	93
<code>\additionalaffiliation</code> : Added macro	72	<code>firstpagestyle</code> : Added right linecount for two-column formats	106
<code>\l@section</code> : Redefined macro . .	49	Added timestamp (Michael D. Adams)	106
<code>\l@subsection</code> : Redefined macro	49	<code>\maketitle</code> : Fixed the bug with figures on top and bottom of the title page, thanks to David Epstein	86
v1.32		<code>\position</code> : Added obeypunctuation code	93
General: Added POMACS journal option	36	<code>\postcode</code> : Added obeypunctuation code	93
Format siggraph is now obsolete . .	36	<code>\state</code> : Added obeypunctuation code	93
<code>\@formatdoi</code> : New doi format	82	<code>\streetaddress</code> : Added obeypunctuation code	93
v1.33		<code>standardpagestyle</code> : Added right linecount for two-column formats	104
General: Added <code>acmart-preload-hook</code>	36	Added timestamp (Michael D. Adams)	104
Added <code>cmap</code> and <code>glyptounicode</code> . .	55	v1.34	
BibTeX comma before <code>articleno</code> bug corrected	36	<code>\@mkbibcitation</code> : Deleted DOI from doi numbers	101
BibTeX <code>crossref</code> bug corrected . . .	36	<code>\ACM@linecount@bx</code> : Rulers now are continuous	102
BibTeX <code>numpages</code> bug corrected . .	36	<code>\ACM@linecountL</code> : Rulers now are continuous	103
Documentation updates	36	<code>\ACM@linecountR</code> : Rulers now are continuous	103
Moved <code>\citename</code> definition for non-natbib bibliography, so a package may redefine it	51	<code>\maketitle</code> : Added date to the bibstrip in conf proceedings	86
Switched to Type 1 fonts for libertine even if OTF-capable engine is used (Kai Mindermann) . .	56	Deleted 'DOI' from doi numbers . .	86
<code>\@ACM@addtoaddress</code> : Added obeypunctuation code	93	Rearranged bibstrip	86
<code>\@mkauthors@i</code> : Added obeypunctuation code	96	The <code>\terms</code> command is now obsolete	86
<code>\@mkauthors@iii</code> : Added obeypunctuation code	97	<code>\terms</code> : The <code>\terms</code> command now just produces a warning	76
<code>\@mkauthors@iv</code> : Added obeypunctuation code	98	v1.35	
<code>\@subtitlefont</code> : Added <code>\normalsize</code>	92	General: BibTeX bug fixed: <code>et al.</code>	36
<code>\ACM@linecountL</code> : Renamed macro . .	103	If the copyright is set to <code>usgov</code> or <code>rigtsretained</code> , the price is suppressed	80
<code>\ACM@linecountR</code> : Added macro . . .	103	<code>\bibstyle@acmauthoryear</code> : Square brackets for author-year style . . .	44
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Added macro (Michael D. Adams) . .	103	General: Added PACMHCI journal options	61
Added submission id	103	Added the possibility to adjust number of author boxes per row in conference formats	36
<code>\acmSubmissionID</code> : Added macro . .	74	<code>\@ACM@authorsperrow</code> : Added macro	77
<code>\city</code> : Added obeypunctuation code	93		
<code>\country</code> : Added obeypunctuation code	93		
<code>\department</code> : Added obeypunctuation code	93		
<code>\if@ACM@affiliation@obeypunctuation</code> : Added macro	72		
<code>\if@ACM@authordraft</code> : Added macro	39		
<code>\if@ACM@natbib@override</code> : Deleted macro	38		

\@mkauthors@iii: Added		\state: We now do not print this even	
authorsperrow override	97	in SIG	93
\@mkauthors@iv: Added		\streetaddress: We now do not	
authorsperrow override	98	print this even in SIG	93
\if@ACM@authordraft: Corrected		v1.41	
typo, thanks to bargteil	39	General: Added new badges	36
v1.37		v1.42	
General: Reduce list indentation		General: Deleted ACM badges	36
(Matthew Fluet)	60	v1.43	
Set \normalparindent; Reduce list		\@starttoc: Added \makeatletter	49
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\description: Reduce list		country for journals	93
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Fluet)	54	\@acmEditors: Added macro	70
v1.38		\@editorsAbbrev: Added macro	70
General: Increase default font size for		\@folioblob: Suppress the blob if	
SIGPLAN	36, 41	acmArticleSeq is empty	106
v1.39		\@mkbibcitation: If the paper has	
\@@authornotemark: Added macro	100	just one page, use 'page' instead of	
\authornotemark: Added macro	74	'pages'	101
v1.40		\ACM@restore@pagestyle: Added	
General: Added 'textcase' package	43	macro	102
Added heightrounded to geometry	52	\acmArticle: The default is now	
Added new copyright version:		empty	74
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Added package cleveref	36	might be empty	74
Added Ross Moore code for		\acmBooktitle: Added macro	70
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\@copyrightowner: Added new		\maketitle: Empty DOI or ISBN are	
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\@copyrightpermission: Added new		v1.45	
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\@mkauthors@i: Switched to		\bfeseries\sffamily to	
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\@parfont: Switched to		\@parfont: Switched	
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macro	79	v1.46	
\city: We now do not print this even		General: Added etoolbox	36
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\country: Fixed bugs with extra		calculated correctly	36
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\l@section: Redefined macro	49	options may change screen mode	50
\postcode: We now do not print this		PACM now set screen to true	61
even in SIG	93	Restore theorem defs to class file	36

\@mkauthorsaddresses: Introduced macro	99	v1.50	\@copyrightpermission: New copyright statements for iw3c2w3[g]	82
\@mkbibcitation: Added subtitle	101			
\@printendtopmatter: Made it \par\bigskip uniformly	101	v1.51	General: Corrected the bug with price suppression	80
\@printtopmatter: Deleted rule	90		Suppress price if the copyright is set to iw3c2w3 or iw3c2w3g	80
\@setauthorsaddresses: Introduced macro	102		XeTeX now uses OTF fonts (Joachim Breitner)	56
\ACM@linecount@bx: Rearranged the code to get rid of spurious underfull messages (Benjamin Byholm)	102		firstpagestyle: We now use journal abbreviation for footers	106
\author: Started counting authors	71		standardpagestyle: We now use journal abbreviation for footers	104
\authorsaddresses: Introduced macro	73	v1.52	\@copyrightowner: Rewording of licenses	81
\country: Corrected spacing for institution	93		\@copyrightpermission: Another rewording of copyright statements for iw3c2w3[g]	82
\if@ACM@acmthm: Modified description	37	v1.53	General: Added PACMCGIT, TIOT, TDSCI	61
\liningnums: Workaround for compatibility with fontspec	56			
\maketitle: Added authors' addresses Thankses go before authors' addresses	86	v1.54	General: Added Ross's patch for sectioning	109
\num@author: Introduced macro	71		Deleted indent for subsection	109
v1.47			XeTeX now uses T1 encoding	56
General: New journal: THRI	36		\@mkbibcitation: Bug corrected (Ross Moore)	101
v1.48			\@shortauthors: Added submission id in anonymous mode	104
General: \citeyear no longer behaves like \citeyearpar	51		\ACM@adddotafter: Added macro	109
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Initial support for Biblatex (Daniel Thomas)	36		\ACM@NRadjust: Added macro	108
Misc entries in the bibliography no longer produce a separate date	36		\author: Added submission id in anonymous mode	71
Typos fixed (Jamie Davis)	36		\if@ACM@nonacm: Added macro	38
\@headfootfont: Deleted unnecessary switch (Michael D. Adams)	104	v1.55	General: Now we use purple color for links	50
\@mkabstract: Removed spurious indentation if abstract is followed by an empty line	100		Table captions for SIGCHI now use the same font size as figure captions (Luis Leiva)	57
\ACM@timestamp: Formatting change (Michael D. Adams)	103		Typo corrected (Zack Weinberg)	43
\if@ACM@review: Review mode now switches on folios	37		\@mkbibcitation: Bug corrected	101
\maketitle: Added acmart and version info to pdfcreator tag	86		\maketitle: Fixes topnum	86
Added language and doctitle attributes to PDF (Andreas Reichinger)	86	v1.56	General: Looks like XeTeX requires explicit monotype font declaration	56
Suppressed empty DOI (Serguei Mokhov)	86		Make two-column layouts flush (Philip Quinn)	52

\@marginfigure: Added checking for description	58	firstpagestyle: Added logic for conference papers using journal format	106
\@mkteasers: Added check for description	100	Moved page styles to \AtBeginDocument	106
\acksname: Added macro (Philip Quinn)	115	standardpagestyle: Added logic for conference papers using journal format	104
\ccsdesc@parse: End the concepts list with a period (Philip Quinn)	79	Moved page styles to \AtBeginDocument	104
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\if@Description@present: Added macro	56	\@headfootfont: Moved to footnotesize	104
\if@undescribed@images: Added macro	56	v1.61	
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\ACM@origbaselinestretch: Added check whether the user changed \baselinestretch	117	v1.64	
\author: Added warning if \author has comma	71	\ACM@linecount@bx: Bug fix: made the spacing on the left and the right size equal	102
\email: Added warning if \author has comma	72	\if@ACM@maketitle@typeset: Introduced macro	61
\if@ACM@balance: Added macro	38	\maketitle: Added a switch setting to show that \maketitle is typeset	86
\vspace: Added warning	116	v1.65	
v1.58		\@mkauthorsaddresses: Deleted cs@addpunct	99
General: Added HEALTH. TDSCI is renamed to TDS	61	v1.66	
Suppressed \addtocounter in pdf subject	50	General: Patching algorithm and algorithm* to prevent spurious space warnings	57
\@dblfloat: Deleted spurious \vspace warning	59	\@specialsection: Suppress warnings about \vspace	89
\@marginfigure: Deleted spurious \vspace warning	58	v1.67	
\@marginfigure: Deleted spurious \vspace warning	59	General: Patching lstlisting and lstlisting* to prevent spurious space warnings	57
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\vspace: Preserved old versions as \@vspace@orig and \@vspace@orig	116	\@specialsection: Deleted grouping altogether	89
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