

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, Benjamin Byholm, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, 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, 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 customizatopn 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://>

¹<http://www.acm.org/>

github.com/borisveytsman/acmart. At this address you can file a bug report—or even contribute your own enhancement by making a pull request.

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` and `ACM-Reference-Format.bst` in places where \LaTeX 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>
- *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 and transactions, while formats starting with `sig` are intended for proceedings published as books.

Note that sometimes conference proceedings are published as a special issue (or issues) of an ACM journal. In this case, you should use the journal format for a conference paper. Please contact your conference committee if in doubt.

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 2.17).

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 Bib_T_EX style is based on `natbib`. In most cases you do not need to set it. See Section 2.11.

Table 1: The possible values for the format option

Value	Meaning
<code>manuscript</code>	A manuscript. This is the default.
<code>acmsmall</code>	Small single-column format. Used for CIE, CSUR, JACM, JDIQ, JEA, JERIC, JETC, PACMCGIT, PACMHCI, PACMPL, TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TDS, TEAC, TECS, TELO, THRI, TIIS, TIOT, TISSEC, TIST, TKDD, TMIS, TOCE, TOCHI, TOCL, TOCS, TOCT, TODAES, TODS, TOIS, TOIT, TOMACS, TOMM (formerly TOMCCAP), TOMPECS, TOMS, TOPC, TOPLAS, TOPS, TOS, TOSEM, TOSN, TQC, TRET, TSAS, TSC, TSLP and TWEB, including special issues.
<code>acmlarge</code>	Large single-column format. Used for DTRAP, HEALTH, IMWUT, JOCCH, POMACS and TAP, including special issues.
<code>acmtog</code>	Large double-column format. Used for TOG, including annual conference Technical Papers.
<code>sigconf</code>	Proceedings format for most ACM conferences (with the exceptions listed below) and all ICPS volumes.
<code>sigplan</code>	Proceedings format for SIGPLAN conferences.

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. Set it to `false` if you encounter compilation errors. Note that for one page documents `\balance` command might cause problems.

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.

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.

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 2.11)
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 or permission statements
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 2.7
balance	true	Whether to balance the last page in two column mode
urlbreakonhyphens	true	Whether to break urls on hyphens

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.

`\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 enter them in this order:

```
\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.

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}
  \streetaddress{1 Th{\o}rv{"a}ld Circle}
  \city{Hekla}
  \country{Iceland}}
\affiliation{%
  \institution{Institute for Clarity in Documentation}
  \streetaddress{P.O. Box 1212}
  \city{Dublin}
  \state{Ohio}}
```

```
\postcode{43017-6221}}
```

Here Trovato and Tobin share their affiliation with the Institute for Clarity in Documentation, but only Ben Trovato is affiliated with The Thørväld Group.

<pre>\position \institution \department \streetaddress \city \state \postcode \country</pre>	<p>The <code>\affiliation</code> and <code>\additionalaffiliation</code> commands are further structured to interact with the metadata extraction tools. Inside these commands you should use the <code>\position</code>, <code>\institution</code>, <code>\department</code>, <code>\city</code>, <code>\streetaddress</code>, <code>\state</code>, <code>\postcode</code> and <code>\country</code> 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 <i>are</i> necessary since they are used by the XML metadata extraction programs. Do <i>not</i> put commas or <code>\\</code> between the elements of <code>\affiliation</code>. They will be provided automatically.</p>
--	--

The fields `\institution`, `\city` and `\country` are mandatory. If they are not provided, the warning is issued. In the future ACM might decide to change the warning to the error.

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}  
  \streetaddress{Samuels Building (F25), Kensington Campus}  
  \city{Sidney}  
  \state{NSW}  
  \postcode{2052}  
  \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}}
```

The command `\affiliation` formats its output according to American conventions. This might be wrong for some cases. Consider, for example, a German address. In Germany, the postcode is put before the city and is not separated by a comma. We can handle this order using

```
\affiliation{%
  \institution{Fluginstitut}
  \streetaddress{Sonnenallee 17}
  \postcode{123456}
  \city{Helm}
  \country{Germany}}
```

However, the comma after the postcode is unfortunate: the address will be typeset (in some formats) as

```
Fluginstitut
Sonnenallee 17
123456, Helm, Germany
```

To overcome this problem, the command `\affiliation` has an optional parameter `obeypunctuation`, which can be `false` (the default) or `true`. If this parameter is `true`, `\affiliation` obeys the author's command. Thus

```
\affiliation[obeypunctuation=true]{%
  \institution{Fluginstitut}}
```

```

\streetaddress{Sonnenallee 17}\
\postcode{123456}
\city{Helm},
\country{Germany}}

```

will be typeset as

```

Fluginstitut
Sonnenallee 17
123456 Helm, Germany

```

Note that you should *not* use this option for journals.

It is expected that these commands are inserted by the author of the manuscript.

`\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 2.10).

`\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 inserted by the editor and set the journal volume, issue, article number, year and month correspondingly. The arguments of all these commands, including `\acmMonth`, is numerical. For example,

```
\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*. It is used to vertically position the black blob on the first page of some formats. 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
```

Setting this number to zero suppresses the blob.

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

```
\acmSubmissionID{123-A56-BU3}
```

`\acmPrice` The macro `\acmPrice{price}` sets the price for the article, for example,

```
\acmPrice{25.00}
```

Note that you do not need to put the dollar sign here, just the amount. By default the price is \$15.00, unless the copyright is set to `usgov`, `rightsretained`, `iw3c2w3`, or `iw3c2w3g`, when it is suppressed. Note that to override the defaults you need to set the

	price <i>after</i> the <code>\setcopyright</code> command. Also, the command <code>\acmPrice{}</code> suppresses the printing of the price.
<code>\acmISBN</code>	Book-like volumes have ISBN numbers attached to them. The macro <code>\acmISBN{<ISBN>}</code> sets it. Normally it is set by the typesetter, for example, <pre>\acmISBN{978-1-4503-3916-2}</pre>
	Setting it to the empty string, as <code>\acmISBN{}</code> , suppresses printing the ISBN.
<code>\acmDOI</code>	The macro <code>\acmDOI{<DOI>}</code> sets the DOI of the article, for example, <pre>\acmDOI{10.1145/9999997.9999999}</pre>
	It is normally set by the typesetter. Setting it to the empty string, as <code>\acmDOI{}</code> , suppresses the DOI.
<code>\acmBadgeR</code> <code>\acmBadgeL</code>	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 commands to add these badges: <code>\acmBadgeR[<url>]{<graphics>}</code> and <code>\acmBadgeL[<url>]{<graphics>}</code> . The first command puts the badge to the right of the title, and the second one—to the left. The arguments have the following meaning: [<i><url></i>], if provided, sets the link to the badge authority in the screen version, while <code>{<graphics>}</code> 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 <code>ae-logo.pdf</code> , the command is <pre>\acmBadgeR[http://ctuning.org/ae/ppopp2016.html]{ae-logo}</pre>
<code>\startPage</code>	The macro <code>\startPage{<page>}</code> sets the first page of the article in a journal or book. It is used by the typesetter.
<code>\terms</code> <code>\keywords</code>	The command <code>\keywords{<keyword, keyword,...>}</code> sets keywords for the article. They must be separated by commas, for example, <pre>\keywords{wireless sensor networks, media access control, multi-channel, radio interference, time synchronization}</pre>
CCSXML <code>\ccsdesc</code>	ACM publications are classified according to the ACM Computing Classification Scheme (CCS). CCS codes are used both in the typeset version of the publications <i>and</i> in the metadata in various databases. Therefore you need to provide both TeX commands and XML metadata with the paper. <p>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:</p> <pre>\begin{CCSXML} <ccs2012> <concept> <concept_id>10010520.10010553.10010562</concept_id> <concept_desc>Computer systems organization~Embedded systems</concept_desc></pre>


```

    <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`.

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 transfer the rights to the ACM, license them 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}`.

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

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>acmcopyright</code>	The authors transfer the copyright to the ACM (the “traditional” choice).
<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.

a special form of the copyright statement for this case. Note that you still need the `\setcopyright` command and (optionally) `\copyrightyear` command to tell TeX 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` 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` 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}
```

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

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

`\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 Algorithms

There are now several good packages for typesetting algorithms [3, 4, 5], and the authors are free to choose their favorite one.

2.5 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` [6] 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\\
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`.

2.6 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.

2.7 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.

2.8 Online-only and offline-only material

`printonly` Some supplementary material in ACM publications is put online but not in the printed
`screenonly` 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.

2.9 Note about anonymous mode

`anonsuppress` When the option `anonymous` is selected, \TeX suppresses author information (including the number of authors) for a blind 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.

2.10 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` 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`
`\grantnum` All financial support *must* be listed using the commands `\grantsponsor` and `\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 $\langle sponsorID \rangle$ 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}
```

2.11 Bibliography

The ACM uses the `natbib` package for formatting references and the Bib \TeX style file `ACM-Reference-Format.bst` for Bib \TeX 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 BibTeX 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",
```

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

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

See the examples at <http://arxiv.org/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”.

2.12 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 [7]: 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.

2.13 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

The package `subcaption` [8] is recommended for complex figures with several subplots or subfigures that require separate subcaptioning. The packages `nomencl` [9] and `glossaries` [10] 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 [11], so the command `\NoCaseChange` inside the title may help to prevent extraneous uppercasing.

2.14 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 type-setting of ACM papers.

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

2.15 A note for wizards: `acmart-preload-hook.tex`

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.

2.16 Currently supported publications

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DGOV	Digital Government: Research and Practice
DTRAP	Digital Threats: Research and Practice

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

Abbreviation	Publication
HEALTH	ACM Transactions on Computing for Healthcare
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JDIQ	ACM Journal of Data and Information Quality
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
PACMCGIT	Proceedings of the ACM on Computer Graphics and Interactive Techniques
PACMHCI	PACM on Human-Computer Interaction
PACMPL	PACM on Programming Languages
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
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
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

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

Abbreviation	Publication
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
TOPS	ACM Transactions on Privacy and Security
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.

2.17 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
marginfigure
margintable

This format has large margin uses for special figures and tables. This package provides three environments for this with optional captions:

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.

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>\ProvidesClass{acmart}
6 [2020/10/25 v1.74 Typesetting articles for the Association for Computing Machinery]
```

And the driver code:

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

3.2 Preload hook

We preload acmart-preload-hook:

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

3.3 Options

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

```
29 \RequirePackage{xkeyval}
```

We use xstring to check whether user input is valid

```
30 \RequirePackage{xstring}
```

We need iftex to check the engine

```
31 \RequirePackage{iftex}
```

format The possible formats

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

\if@ACM@screen Whether we use screen mode

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

\if@ACM@urlbreakonhyphens

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

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

```
65 \define@boolkey+{acmart.cls}[@ACM@]{acmthm}[true]{%
66 \if@ACM@acmthm
67 \PackageInfo{\@classname}{Requiring acmthm}%
68 \else
69 \PackageInfo{\@classname}{Suppressing acmthm}%
70 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
```

```

71     false}}
72 \ExecuteOptionsX{acmthm=true}

\if@ACM@review Whether we use review mode
73 \define@boolkey+{acmart.cls}[@ACM@]{review}[true]{%
74   \if@ACM@review
75     \PackageInfo{\@classname}{Using review mode}%
76     \AtBeginDocument{\@ACM@printfoliostrue}%
77   \else
78     \PackageInfo{\@classname}{Not using review mode}%
79   \fi}{\PackageError{\@classname}{The option review can be either true or
80     false}}
81 \ExecuteOptionsX{review=false}

\if@ACM@authorversion Whether we use author's-version mode
82 \define@boolkey+{acmart.cls}[@ACM@]{authorversion}[true]{%
83   \if@ACM@authorversion
84     \PackageInfo{\@classname}{Using authorversion mode}%
85   \else
86     \PackageInfo{\@classname}{Not using authorversion mode}%
87   \fi}{\PackageError{\@classname}{The option authorversion can be either true or
88     false}}
89 \ExecuteOptionsX{authorversion=false}

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

\if@ACM@balance Whether to balance the last page
102 \define@boolkey+{acmart.cls}[@ACM@]{balance}[true]{}%
103   \PackageError{\@classname}{The option balance can be either true or
104     false}}
105 \ExecuteOptionsX{balance}

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

\if@ACM@natbib Whether we use natbib mode
106 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
107   \if@ACM@natbib

```

```

108 \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
109 \else
110 \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
111 \fi}{\PackageError{\@classname}{The option natbib can be either true or
112 false}}
113 \ExecuteOptionsX{natbib=true}

\if@ACM@anonymous Whether we use anonymous mode
114 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
115 \if@ACM@anonymous
116 \PackageInfo{\@classname}{Using anonymous mode}%
117 \else
118 \PackageInfo{\@classname}{Not using anonymous mode}%
119 \fi}{\PackageError{\@classname}{The option anonymous can be either true or
120 false}}
121 \ExecuteOptionsX{anonymous=false}

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

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

\ACM@fontsize The font size to pass to the base class
140 \def\ACM@fontsize{}
141 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
142 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
143 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
144 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

145 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
146 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
147 \ProcessOptionsX
148 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.4 Setting switches

<code>\if@ACM@manuscript</code>	Whether we use manuscript mode 149 <code>\newif\if@ACM@manuscript</code>
<code>\if@ACM@journal</code>	There are two kinds of publications: journals and books 150 <code>\newif\if@ACM@journal</code>
<code>\if@ACM@journal@bibstrip</code>	Sometimes ACM wants a journal-like publication to have conference information in the bibstrip and vice versa, so we have an additional switch. 151 <code>\newif\if@ACM@journal@bibstrip</code>
<code>\if@ACM@sigchiamode</code>	The formatting of SIGCHI extended abstracts is quite unusual. We have a special switch for them. 152 <code>\newif\if@ACM@sigchiamode</code>

Setting up switches

```
153 \ifnum\ACM@format@nr=5\relax % siggraph
154 \ClassWarning{\@classname}{%
155   The format siggraph is now obsolete.\MessageBreak
156   I am switching to sigconf.}
157   \setkeys{acmart.cls}{format=sigconf}
158 \fi
159 \ifnum\ACM@format@nr=7\relax % sigchi
160 \ClassWarning{\@classname}{%
161   The format sigchi is now obsolete.\MessageBreak
162   I am switching to sigconf.}
163   \setkeys{acmart.cls}{format=sigconf}
164 \fi
165 \ifnum\ACM@format@nr=8\relax % sigchi
166 \ClassWarning{\@classname}{%
167   ACM SIGCHI has retired the SIGCHI-A template\MessageBreak
168   effective immediately. ACM is keeping this template\MessageBreak
169   option available to authors who are working on legacy\MessageBreak
170   documents only. ACM will not, under any circumstances,\MessageBreak
171   accept documents in this format for publication and\MessageBreak
172   will not offer technical support to the authors who use\MessageBreak
173   this template.\MessageBreak
174   ACM SIGCHI is directing Conference leaders and\MessageBreak
175   authors to publish their articles using the SIGCONF\MessageBreak
176   template call.}
177 \fi
178 \ifnum\ACM@format@nr=0\relax
179   \@ACM@manuscripttrue
180 \else
181   \@ACM@manuscriptfalse
182 \fi
183 \@ACM@sigchiamodefalse
184 \ifcase\ACM@format@nr
```

```

185 \relax % manuscript
186 \ACM@journaltrue
187 \or % acmsmall
188 \ACM@journaltrue
189 \or % acmlarge
190 \ACM@journaltrue
191 \or % acmtog
192 \ACM@journaltrue
193 \or % sigconf
194 \ACM@journalfalse
195 \or % siggraph
196 \ACM@journalfalse
197 \or % sigplan
198 \ACM@journalfalse
199 \or % sigchi
200 \ACM@journalfalse
201 \or % sigchi-a
202 \ACM@journalfalse
203 \ACM@sigchiamodetrue
204 \fi
205 \ifACM@journal
206 \ACM@journal@bibstriptrue
207 \else
208 \ACM@journal@bibstripfalse
209 \fi

```

3.5 Loading the base class and package

At this point we either have \ACM@fontsize or use defaults

```

210 \ifx\ACM@fontsize\@empty
211 \ifcase\ACM@format@nr
212 \relax % manuscript
213 \def\ACM@fontsize{9pt}%
214 \or % acmsmall
215 \def\ACM@fontsize{10pt}%
216 \or % acmlarge
217 \def\ACM@fontsize{10pt}%
218 \or % acmtog
219 \def\ACM@fontsize{9pt}%
220 \or % sigconf
221 \def\ACM@fontsize{9pt}%
222 \or % siggraph
223 \def\ACM@fontsize{9pt}%
224 \or % sigplan
225 \def\ACM@fontsize{10pt}%
226 \or % sigchi
227 \def\ACM@fontsize{9pt}%
228 \or % sigchi-a
229 \def\ACM@fontsize{10pt}%

```

```

230 \fi
231 \fi
232 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
233 \LoadClass[\ACM@fontsize, reqno]{amsart}
234 \RequirePackage{microtype}
    We need etoolbox for delayed code
235 \RequirePackage{etoolbox}
    Booktabs is now the default
236 \RequirePackage{booktabs}
    We need totpages to calculate the number of pages and refcount to use that number
237 \RequirePackage{refcount}
238 \RequirePackage{totpages}
    The \collect@body macro in amsmath is defined using \def. We load environ to
    access the \long version of this command
239 \RequirePackage{environ}
    We use setspace for double spacing
240 \if@ACM@manuscript
241 \RequirePackage{setspace}
242 \onehalfspacing
243 \fi
    We need textcase for better upcasing
244 \RequirePackage{textcase}

```

3.6 Citations

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

```

245 \if@ACM@natbib
246 \RequirePackage{natbib}
247 \renewcommand{\bibsection}{%
248 \section*{\refname}%
249 \phantomsection\addcontentsline{toc}{section}{\refname}%
250 }
251 \renewcommand{\bibfont}{\bibliofont}
252 \renewcommand\setcitestyle[1]{
253 \@for\@tempa:=#1\do
254 {\def\@tempb{round}\ifx\@tempa\@tempb
255 \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
256 \def\@tempb{square}\ifx\@tempa\@tempb
257 \renewcommand\NAT@open{[]\renewcommand\NAT@close{]}}\fi
258 \def\@tempb{angle}\ifx\@tempa\@tempb
259 \renewcommand\NAT@open{<}\renewcommand\NAT@close{>}\fi
260 \def\@tempb{curly}\ifx\@tempa\@tempb
261 \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi

```

```

262 \def\@tempb{semicolon}\ifx\@tempa\@tempb
263   \renewcommand\NAT@sep{;} \fi
264 \def\@tempb{colon}\ifx\@tempa\@tempb
265   \renewcommand\NAT@sep{;} \fi
266 \def\@tempb{comma}\ifx\@tempa\@tempb
267   \renewcommand\NAT@sep{,} \fi
268 \def\@tempb{authoryear}\ifx\@tempa\@tempb
269   \NAT@numbersfalse \fi
270 \def\@tempb{numbers}\ifx\@tempa\@tempb
271   \NAT@numberstrue\NAT@superfalse \fi
272 \def\@tempb{super}\ifx\@tempa\@tempb
273   \NAT@numberstrue\NAT@supertrue \fi
274 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
275   \let\bibstyle=\@gobble \fi
276 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
277   \let\bibstyle=\@citestyle \fi
278 \def\@tempb{sort}\ifx\@tempa\@tempb
279   \def\NAT@sort{\@ne} \fi
280 \def\@tempb{nosort}\ifx\@tempa\@tempb
281   \def\NAT@sort{\z@} \fi
282 \def\@tempb{compress}\ifx\@tempa\@tempb
283   \def\NAT@cmprs{\@ne} \fi
284 \def\@tempb{nocompress}\ifx\@tempa\@tempb
285   \def\NAT@cmprs{\z@} \fi
286 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
287   \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne} \fi
288 \def\@tempb{mcite}\ifx\@tempa\@tempb
289   \let\NAT@merge\@ne \fi
290 \def\@tempb{merge}\ifx\@tempa\@tempb
291   \@ifnum{\NAT@merge<\tw@}{\let\NAT@merge\tw@}{} \fi
292 \def\@tempb{elide}\ifx\@tempa\@tempb
293   \@ifnum{\NAT@merge<\thr@@}{\let\NAT@merge\thr@@}{} \fi
294 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
295   \NAT@longnamestrue \fi
296 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
297   \def\NAT@nmfmt#1{\mbox{\NAT@up#1}} \fi
298 \expandafter\NAT@find@eq\@tempa=\relax\@nil
299 \if\@tempc\relax\else
300   \expandafter\NAT@rem@eq\@tempc
301   \def\@tempb{open}\ifx\@tempa\@tempb
302     \xdef\NAT@open{\@tempc} \fi
303   \def\@tempb{close}\ifx\@tempa\@tempb
304     \xdef\NAT@close{\@tempc} \fi
305   \def\@tempb{aysep}\ifx\@tempa\@tempb
306     \xdef\NAT@aysep{\@tempc} \fi
307   \def\@tempb{yysep}\ifx\@tempa\@tempb
308     \xdef\NAT@yrsep{\@tempc} \fi
309   \def\@tempb{notesep}\ifx\@tempa\@tempb
310     \xdef\NAT@cmt{\@tempc} \fi
311   \def\@tempb{citesep}\ifx\@tempa\@tempb

```



```

312     \xdef\NAT@sep{\@tempc}\fi
313   \fi
314 }%
315 \NAT@@setcites
316 }
317 \renewcommand\citestyle[1]{%
318   \ifcsname bibstyle@#1\endcsname%
319   \csname bibstyle@#1\endcsname\let\bibstyle@gobble%
320   \else%
321   \@latex@error{Undefined ‘#1’ citestyle}%
322   \fi
323 }%
324 \fi

```

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

```

325 \newcommand{\bibstyle@acmauthoryear}{%
326   \setcitestyle{%
327     authoryear,%
328     open={[]},close={]},citesep={;},%
329     aysep={},yysep={,},%
330     notesep={, }}}

```

`\bibstyle@acmnumeric` The default numeric format:

```

331 \newcommand{\bibstyle@acmnumeric}{%
332   \setcitestyle{%
333     numbers,sort&compress,%
334     open={[]},close={]},citesep={,},%
335     notesep={, }}}

```

The default is numeric:

```

336 \if@ACM@natbib
337 \citestyle{acmnumeric}
338 \fi

```

`\@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:

```

339 \def\@startsection#1#2#3#4#5#6{%
340   \if@noskipsec \leavevmode \fi
341   \par
342   \@tempkipa #4\relax
343   \@afterindenttrue
344   \ifdim \@tempkipa <\z@
345     \@tempkipa -\@tempkipa \@afterindentfalse
346   \fi
347   \if@nobreak
348     \everypar{}%
349   \else
350     \addpenalty\@secpenalty\addvspace\@tempkipa

```

```

351 \fi
352 \@ifstar
353   {\@ssect{#3}{#4}{#5}{#6}}%
354   {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}%
355 \def\@sect#1#2#3#4#5#6[#7]#8{%
356   \edef\@toclevel{\ifnum#2=\@m 0\else\number#2\fi}%
357   \ifnum #2>\c@secnumdepth
358     \let\@svsec\@empty
359   \else
360     \refstepcounter{#1}%
361     \protected@edef\@svsec{\@secntformat{#1}\relax}%
362   \fi
363   \@tempskipa #5\relax
364   \ifdim \@tempskipa>\z@
365     \begingroup
366       #6{%
367         \@hangfrom{\hskip #3\relax\@svsec}%
368         \interlinepenalty \@M #8\@par}%
369     \endgroup
370     \csname #1mark\endcsname{#7}%
371     \ifnum #2>\c@secnumdepth \else
372       \@tochangmeasure{\csname the#1\endcsname}%
373     \fi
374     \addcontentsline{toc}{#1}{%
375       \ifnum #2>\c@secnumdepth \else
376         \protect\numberline{\csname the#1\endcsname}%
377       \fi
378       #7}%
379   \else
380     \def\@svsechd{%
381       #6{\hskip #3\relax
382         \@svsec #8}%
383       \csname #1mark\endcsname{#7}%
384       \ifnum #2>\c@secnumdepth \else
385         \@tochangmeasure{\csname the#1\endcsname\space}%
386       \fi
387       \addcontentsline{toc}{#1}{%
388         \ifnum #2>\c@secnumdepth \else
389           \protect\numberline{\csname the#1\endcsname}%
390         \fi
391         #7}}%
392   \fi
393   \@xsect{#5}}
394 \def\@xsect#1{%
395   \@tempskipa #1\relax
396   \ifdim \@tempskipa>\z@
397     \par \nobreak
398     \vskip \@tempskipa
399     \@afterheading
400   \else

```

```

401 \@nobreakfalse
402 \global\@noskipsectrue
403 \everypar{%
404   \if@noskipsec
405     \global\@noskipsecfalse
406     {\setbox\z@\lastbox}%
407     \clubpenalty\@M
408     \begingroup \@svsechd \endgroup
409     \unskip
410     \@tempskipa #1\relax
411     \hskip -\@tempskipa
412   \else
413     \clubpenalty \@clubpenalty
414     \everypar{}}%
415 \fi}%
416 \fi
417 \ignorespaces}
418 \def\@secCNTformat#1{\csname the#1\endcsname\quad}
419 \def\@ssect#1#2#3#4#5{%
420   \@tempskipa #3\relax
421   \ifdim \@tempskipa>\z@
422     \begingroup
423       #4{%
424         \@hangfrom{\hskip #1}%
425         \interlinepenalty \@M #5\@par}%
426     \endgroup
427   \else
428     \def\@svsechd{#4{\hskip #1\relax #5}}%
429   \fi
430   \@xsect{#3}}

```

`\@startsection` The `amsart` package redefines `\startsection`. Here we redefine it again to make the table of contents work.

```

431 \def\@starttoc#1#2{\begingroup\makeatletter
432   \setTrue{#1}%
433   \par\removelastskip\vskip\z@skip
434   \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
435     {.5\linespacing}{\centering\contentsnamefont}{#2}%
436   \@input{\jobname.#1}%
437   \if@filesW
438     \xp\newwrite\csname tf@#1\endcsname
439     \immediate\xp\openout\csname tf@#1\endcsname \jobname.#1\relax
440   \fi
441   \global\@nobreakfalse \endgroup
442   \addvspace{32\p@\@plus14\p@}%
443 }

```

`\l@section` Section spacing is more generous than for `amsart`

```

444 \def\l@section{\@toCline{1}{0pt}{1pc}{2pc}{}}

```

```

\l@section The spacing in amsart is too large
445 \def\l@section{\@tocline{2}{0pt}{1pc}{3pc}{}}

\l@subsection The spacing in amsart is too large
446 \def\l@subsection{\@tocline{3}{0pt}{1pc}{5pc}{}}

    We need to define footnote-related stuff before the call to hyperref (Ross Moore)

\makefnmark We do not use indentation for footnotes
447 \def\makefnmark{\noindent\makefnmark}

\@footnotetext In sigchi-a mode our footnotes are in the margin!
448 \if@ACM@sigchiamode
449 \long\def\@footnotetext#1{\marginpar{%
450   \reset@font\small
451   \interlinepenalty\interfootnotelinepenalty
452   \protected@edef\@currentlabel{%
453     \csname p@footnote\endcsname\@thefnmark
454   }}%
455   \color@begingroup
456     \makefnmark{%
457       \rule{z}{\footnotesep\ignorespaces#1}\@finalstrut\strutbox}%
458   \color@endgroup}}%
459 \fi

\@mpfootnotetext We want the footnotes in minipages centered:
460 \long\def\@mpfootnotetext#1{%
461   \global\setbox\@mpfootins\vbox{%
462     \unvbox\@mpfootins
463     \reset@font\footnotesize
464     \hsize\columnwidth
465     \@parboxrestore
466     \protected@edef\@currentlabel
467       {\csname p@mpfootnote\endcsname\@thefnmark}%
468     \color@begingroup\centering
469     \makefnmark{%
470       \rule{z}{\footnotesep\ignorespaces#1}\@finalstrut\strutbox}%
471     \color@endgroup}}

\makefnmark AMS classes use a buggy definition of \makefnmark. We revert to the standard one.
472 \def\makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}

    And now, hyperref
473 \let\@footnotemark@nolink\@footnotemark
474 \let\@footnotetext@nolink\@footnotetext
475 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
476 \pdfstringdefDisableCommands{%
477   \def\addtocounter#1#2{}%
478   \def\unskip{}%

```

```

479 \def\textbullet{- }%
480 \def\extrightarrow{ -> }%
481 \def\footnotemark{}%
482 }
483 \urlstyle{rm}
484 \ifcase\ACM@format@nr
485 \relax % manuscript
486 \or % acmsmall
487 \or % acmlarge
488 \or % acmtog
489 \or % sigconf
490 \or % siggraph
491 \or % sigplan
492 \urlstyle{sf}
493 \or % sigchi
494 \or % sigchi-a
495 \urlstyle{sf}
496 \fi
497 \AtEndPreamble{%
498 \if@ACM@urlbreakonhyphens
499 \def\do@url@hyp{\do\~}%
500 \fi
501 \if@ACM@screen
502 \hypersetup{colorlinks,
503 linkcolor=ACMPurple,
504 citecolor=ACMPurple,
505 urlcolor=ACMDarkBlue,
506 filecolor=ACMDarkBlue}
507 \else
508 \hypersetup{hidelinks}
509 \fi
510 \hypersetup{pdflang={en},
511 pdfdisplaydoctitle}}
    And hyperxmp
512 \RequirePackage{hyperxmp}
    Bibliography mangling.
513 \if@ACM@natbib
514 \let\citeN\cite
515 \let\cite\citep
516 \let\citeANP\citeauthor
517 \let\citeNN\citeyearpar
518 \let\citeyearNP\citeyear
519 \let\citeNP\citealt
520 \DeclareRobustCommand\citeA
521 {\begingroup\NAT@swafalse
522 \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
523 \providecommand\newblock{}%
524 \else
525 \AtBeginDocument{%

```

```

526 \let\shortcite\cite%
527 \providecommand\citename[1]{#1}
528 \fi
529 \newcommand\shortcite[2][{}]{%
530 \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:

```

531 \def\bibliographystyle#1{%
532 \ifx\@begindocumenthook\undefined\else
533 \expandafter\AtBeginDocument
534 \fi
535 {\if@filesw
536 \immediate\write\@auxout{\string\bibstyle{#1}}%
537 \fi}}

```

Graphics and color.

```

538 \RequirePackage{graphicx}
539 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [7]:

```

540 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
541 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
542 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
543 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
544 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
545 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
546 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
547 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode or sigchi-a mode

```

548 \if@ACM@authordraft
549 \RequirePackage{draftwatermark}
550 \SetWatermarkFontSize{0.5in}
551 \SetWatermarkColor[gray]{.9}
552 \SetWatermarkText{\parbox{12em}{\centering
553 Unpublished working draft.\
554 Not for distribution.}}
555 \else
556 \if@ACM@sigchiamode
557 \if@ACM@nonacm\else
558 \RequirePackage{draftwatermark}
559 \SetWatermarkFontSize{0.5in}
560 \SetWatermarkColor[gray]{.9}
561 \SetWatermarkText{\parbox{12em}{\centering
562 Legacy document. \
563 Not for publication in an ACM venue}}
564 \fi
565 \fi
566 \fi

```

3.7 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>.

```
567 \RequirePackage{geometry}
568 \ifcase\ACM@format@nr
569 \relax % manuscript
570   \geometry{letterpaper,head=13pt,
571   marginparwidth=6pc,heightrounded}%
572 \or % acmsmall
573   \geometry{twoside=true,
574   includeheadfoot, head=13pt, foot=2pc,
575   paperwidth=6.75in, paperheight=10in,
576   top=58pt, bottom=44pt, inner=46pt, outer=46pt,
577   marginparwidth=2pc,heightrounded
578   }%
579 \or % acmlarge
580   \geometry{twoside=true, head=13pt, foot=2pc,
581   paperwidth=8.5in, paperheight=11in,
582   includeheadfoot,
583   top=78pt, bottom=114pt, inner=81pt, outer=81pt,
584   marginparwidth=4pc,heightrounded
585   }%
586 \or % acmtog
587   \geometry{twoside=true, head=13pt, foot=2pc,
588   paperwidth=8.5in, paperheight=11in,
589   includeheadfoot, columnsep=24pt,
590   top=52pt, bottom=75pt, inner=52pt, outer=52pt,
591   marginparwidth=2pc,heightrounded
592   }%
593 \or % sigconf
594   \geometry{twoside=true, head=13pt,
595   paperwidth=8.5in, paperheight=11in,
596   includeheadfoot, columnsep=2pc,
597   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
598   marginparwidth=2pc,heightrounded
599   }%
600 \or % siggraph
601   \geometry{twoside=true, head=13pt,
602   paperwidth=8.5in, paperheight=11in,
603   includeheadfoot, columnsep=2pc,
604   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
605   marginparwidth=2pc,heightrounded
606   }%
607 \or % sigplan
608   \geometry{twoside=true, head=13pt,
609   paperwidth=8.5in, paperheight=11in,
610   includeheadfoot=false, columnsep=2pc,
611   top=1in, bottom=1in, inner=0.75in, outer=0.75in,
```

```

612     marginparwidth=2pc,heightrounded
613   }%
614 \or % sigchi
615   \geometry{twoside=true, head=13pt,
616     paperwidth=8.5in, paperheight=11in,
617     includeheadfoot, columnsep=2pc,
618     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
619     marginparwidth=2pc,heightrounded
620   }%
621 \or % sigchi-a
622   \geometry{twoside=false, head=13pt,
623     paperwidth=11in, paperheight=8.5in,
624     includeheadfoot, marginparsep=72pt,
625     marginparwidth=170pt, columnsep=20pt,
626     top=72pt, bottom=72pt, left=314pt, right=72pt
627   }%
628   \@mparswitchfalse
629   \reversemarginpar
630 \fi

```

`\parindent` Paragraphing

```

\parskip 631 \setlength\parindent{10\p@}
632 \setlength\parskip{\z@}
633 \ifcase\ACM@format@nr
634 \relax % manuscript
635 \or % acmsmall
636 \or % acmlarge
637 \or % acmtog
638   \setlength\parindent{9\p@}%
639 \or % sigconf
640 \or % siggraph
641 \or % sigplan
642 \or % sigchi
643 \or % sigchi-a
644 \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.

```
645 \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.

```
646 \def\copyrightpermissionfootnoterule{\kern-3\p@
647 \hrule \@width \columnwidth \kern 2.6\p@}
```

```
648 \RequirePackage{manyfoot}
649 \SelectFootnoteRule[2]{copyrightpermission}
650 \DeclareNewFootnote{authorsaddresses}
651 \SelectFootnoteRule[2]{copyrightpermission}
652 \DeclareNewFootnote{copyrightpermission}
```

`\footnoterule` Tschichold's rules:

```
653 \def\footnoterule{\kern-3\p@
654 \hrule \@width 4pc \kern 2.6\p@}
```

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

```
655 \def\endminipage{%
656 \par
657 \unskip
658 \ifvoid\@mpfootins\else
659 \vskip\skip\@mpfootins
660 \normalcolor
661 \unvbox\@mpfootins
662 \fi
663 \@minipagefalse
664 \color@endgroup
665 \egroup
666 \expandafter\@iiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
667 \def\@textbottom{\vskip \z@ \@plus 1pt}
668 \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.

```
669 \ifcase\ACM@format@nr
670 \relax % manuscript
671 \or % acmsmall
672 \or % acmlarge
673 \or % acmtog
674 \flushbottom
675 \or % sigconf
676 \flushbottom
677 \or % siggraph
678 \flushbottom
679 \or % sigplan
680 \flushbottom
681 \or % sigchi
```

```

682 \flushbottom
683 \or % sigchi-a
684 \fi

```

3.8 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.

```

685 \ifPDFTeX
686 \input{glyphtounicode}
687 \pdfglyphtounicode{f_f}{FB00}
688 \pdfglyphtounicode{f_f_i}{FB03}
689 \pdfglyphtounicode{f_f_l}{FB04}
690 \pdfglyphtounicode{f_i}{FB01}
691 \pdfglyphtounicode{t_t}{0074 0074}
692 \pdfglyphtounicode{f_t}{0066 0074}
693 \pdfglyphtounicode{T_h}{0054 0068}
694 \pdfgentounicode=1
695 \RequirePackage{cmap}
696 \fi

```

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

```

697 \newif\if@ACM@newfonts
698 \@ACM@newfontstrue
699 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
700   have the libertine package installed. Please upgrade your
701   TeX}\@ACM@newfontsfalse}
702 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
703   have the inconsolata (zi4.sty) package installed. Please upgrade your
704   TeX}\@ACM@newfontsfalse}
705 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
706   have the newtxmath package installed. Please upgrade your
707   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

708 \if@ACM@newfonts
709   \RequirePackage[T1]{fontenc}
710   % Note that the order in which packages are loaded matters,
711   % and the correct order depends on the LaTeX engine used.
712   % See https://github.com/borisveytsman/acmart/issues/402
713   % and https://github.com/borisveytsman/acmart/issues/410
714   \ifxetex
715     \RequirePackage[libertine]{newtxmath}
716     \RequirePackage[tt=false]{libertine}
717     \setmonofont[StylisticSet=3]{inconsolata}
718   \else
719     \ifluatex
720       \RequirePackage[libertine]{newtxmath}

```

```

721     \RequirePackage[tt=false]{libertine}
722     \setmonofont[StylisticSet=3]{inconsolata}
723   \else
724     \RequirePackage[tt=false, type1=true]{libertine}
725     \RequirePackage[varqu]{zi4}
726     \RequirePackage[libertine]{newtxmath}
727   \fi
728 \fi
729 \fi

```

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

```

730 \let\liningnums\@undefined
731 \AtEndPreamble{%
732   \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

733 \if@ACM@sigchiamode
734   \renewcommand{\familydefault}{\sfdefault}
735 \fi

```

3.9 Image descriptions

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

```

736 \newif\if@Description@present
737 \@Description@presenttrue

```

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

```

738 \newif\if@undescribed@images
739 \@undescribed@imagesfalse

```

`\Description` The `Description` macro right now just sets switches

```

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

```

The global warning

```

741 \AtEndDocument{\if@undescribed@images
742   \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}

```

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

```

743 \AtBeginEnvironment{figure}{\@Description@presentfalse
744   \let\@vspace\@vspace@orig
745   \let\@vspacer\@vspacer@orig}
746 \AtBeginEnvironment{figure*}{\@Description@presentfalse
747   \let\@vspace\@vspace@orig
748   \let\@vspacer\@vspacer@orig}
749 \AtEndEnvironment{figure}{\if@Description@present\else
750   \global\@undescribed@imagestrue
751   \ClassWarning{\@classname}{A possible image without description}\fi}

```

```

752 \AtEndEnvironment{figure*}{\if@Description@present\else
753   \global\@undescribed@imagestrue
754   \ClassWarning{\@classname}{A possible image without description}\fi}
755 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
756   \let\@vspacer\@vspacer@orig}
757 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
758   \let\@vspacer\@vspacer@orig}
759 \AtBeginEnvironment{algorithm}{\let\@vspace\@vspace@orig
760   \let\@vspacer\@vspacer@orig}
761 \AtBeginEnvironment{algorithm*}{\let\@vspace\@vspace@orig
762   \let\@vspacer\@vspacer@orig}
763 \AtBeginEnvironment{lstlisting}{\let\@vspace\@vspace@orig
764   \let\@vspacer\@vspacer@orig}
765 \AtBeginEnvironment{lstlisting*}{\let\@vspace\@vspace@orig
766   \let\@vspacer\@vspacer@orig}
767 \AtBeginEnvironment{minted}{\let\@vspace\@vspace@orig
768   \let\@vspacer\@vspacer@orig}
769 \AtBeginEnvironment{minted*}{\let\@vspace\@vspace@orig
770   \let\@vspacer\@vspacer@orig}
771 \AtBeginEnvironment{listing}{\let\@vspace\@vspace@orig
772   \let\@vspacer\@vspacer@orig}
773 \AtBeginEnvironment{listing*}{\let\@vspace\@vspace@orig
774   \let\@vspacer\@vspacer@orig}
775

```

3.10 Floats

We use the caption package

```

776 \RequirePackage{caption, float}
777 \captionsetup[table]{position=top}
778 \if@ACM@journal
779   \captionsetup[labelfont={sf, small},
780     textfont={sf, small}, margin=\z@}
781   \captionsetup[figure]{name={Fig.}}
782 \else
783   \captionsetup[labelfont={bf},
784     textfont={bf}, labelsep=colon, margin=\z@}
785   \ifcase\ACM@format@nr
786     \relax % manuscript
787     \or % acmsmall
788     \or % acmlarge
789     \or % acmtog
790     \or % sigconf
791     \or % siggraph
792     \captionsetup{textfont={it}}
793     \or % sigplan
794     \captionsetup[labelfont={bf},
795       textfont={normalfont}, labelsep=period, margin=\z@}
796     \or % sigchi

```

```

797 \captionsetup[figure]{labelfont={bf, small},
798   textfont={bf, small}}
799 \captionsetup[table]{labelfont={bf, small},
800   textfont={bf, small}}
801 \or % sigchi-a
802 \captionsetup[figure]{labelfont={bf, small},
803   textfont={bf, small}}
804 \captionsetup[table]{labelfont={bf, small},
805   textfont={bf, small}}
806 \fi
807 \fi

```

sidebar The sidebar environment:

```

808 \newfloat{sidebar}{}{sbar}
809 \floatname{sidebar}{Sidebar}
810 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

811 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
812 \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
813 \marginpar{\small#1}\egroup}

```

marginfigure The marginfigure environment:

```

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

```

\@marginfigure The processing of the saved text

```

815 \long\def\@marginfigure#1{\bgroup
816 \let\@vspace\@vspace@orig
817 \let\@vspacer\@vspacer@orig
818 \captionsetup{type=figure}%
819 \marginpar{\@Description@presentfalse\centering
820 \small#1\if@Description@present\else
821 \global\@undescribed@imagestrue
822 \ClassWarning{\@classname}{A possible image without description}
823 \fi}%
824 \egroup}

```

marginable The marginable environment:

```

825 \newenvironment{marginable}{\Collect@Body\@marginable}{}

```

\@marginable The processing of the saved text

```

826 \long\def\@marginable#1{\bgroup\let\@vspace\@vspace@orig
827 \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
828 \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
829 \newdimen\fulltextwidth
830 \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)
831 \if@ACM@sigchiamode
832 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
833 \let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
834 \let\@endfloatbox\@endwidefloatbox
835 \def\@fpsaddefault{\def\@fps{tp}}%
836 \@float}
837 \fi

\end@dblfloat And the end. Just adding a \bgroup.
838 \if@ACM@sigchiamode
839 \def\end@dblfloat{%
840 \end@float\egroup}
841 \fi

\@endwidefloatbox This is the end of a wide box—we basically move everything to the left
842 \def\@endwidefloatbox{%
843 \par\vskip\z@skip
844 \@minipagefalse
845 \outer@nobreak
846 \egroup
847 \color@endbox
848 \global\setbox\@currbox=\vbox{\moveleft
849 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
850 \wd\@currbox=\textwidth
851 }

```

3.11 Lists

```

852 \ifcase\ACM@format@nr
853 \relax % manuscript
854 \or % acsmall
855 \or % acmlarge
856 \or % acmtog
857 \or % sigconf
858 \or % siggraph
859 \or % sigplan
860 \def\labelenumi{\theenumi.}
861 \def\labelenumii{\theenumii.}
862 \def\labelenumiii{\theenumiii.}
863 \def\labelenumiv{\theenumiv.}
864 \or % sigchi
865 \or % sigchi-a
866 \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`.

```

867 \newdimen\@ACM@labelwidth
868 \AtBeginDocument{%
869   \setlength\labelsep{4pt}
870   \setlength{\@ACM@labelwidth}{6.5pt}
871
872   %% First-level list: when beginning after the first line of an
873   %% indented paragraph or ending before an indented paragraph, labels
874   %% should not hang to the left of the preceding/following text.
875   \setlength\leftmarginI{\z@}
876   \addtolength\leftmarginI{\parindent}
877   \addtolength\leftmarginI{2\labelsep}
878   \addtolength\leftmarginI{\@ACM@labelwidth}
879
880   %% Second-level and higher lists.
881   \setlength\leftmarginII{\z@}
882   \addtolength\leftmarginII{0.5\labelsep}
883   \addtolength\leftmarginII{\@ACM@labelwidth}
884   \setlength\leftmarginIII{\leftmarginII}
885   \setlength\leftmarginIV{\leftmarginIII}
886   \setlength\leftmarginV{\leftmarginIV}
887   \setlength\leftmarginVI{\leftmarginV}
888   \@listI}
889 \newskip\listisep
890 \listisep\smallskipamount
891 \def\@listI{\leftmargin\leftmarginI
892   \labelwidth\leftmarginI \advance\labelwidth-\labelsep
893   \listparindent\z@
894   \topsep\listisep}
895 \let\@listI\@listI
896 \def\@listII{\leftmargin\leftmarginII
897   \labelwidth\leftmarginII \advance\labelwidth-\labelsep
898   \topsep\z@skip}
899 \def\@listIII{\leftmargin\leftmarginIII
900   \labelwidth\leftmarginIII \advance\labelwidth-\labelsep}
901 \def\@listIV{\leftmargin\leftmarginIV
902   \labelwidth\leftmarginIV \advance\labelwidth-\labelsep}
903 \def\@listV{\leftmargin\leftmarginV
904   \labelwidth\leftmarginV \advance\labelwidth-\labelsep}
905 \def\@listVI{\leftmargin\leftmarginVI
906   \labelwidth\leftmarginVI \advance\labelwidth-\labelsep}

```

`\descriptionlabel` We do not use a colon by default like `amsart` does:

```

907 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

```

`\description` Make the description environment indentation consistent with that of the `itemize` and `enumerate` environments.

```
908 \renewenvironment{description}{\list{}{%
909   \labelwidth\@ACM@labelwidth
910   \let\makelabel\descriptionlabel}%
911 }{
912   \endlist
913 }
914 \let\enddescription=\endlist % for efficiency
```

3.12 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.

```
915 \newif\if@ACM@maketitle@typeset
916 \@ACM@maketitle@typesetfalse
```

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

```
917 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
918   CIE,%
919   CSUR,%
920   DGOV,%
921   DTRAP,%
922   HEALTH,%
923   IMWUT,%
924   JACM,%
925   JDIQ,%
926   JEA,%
927   JERIC,%
928   JETC,%
929   JOCCH,%
930   PACMCGIT,%
931   PACMHCI,%
932   PACMPL,%
933   POMACS,%
934   TAAS,%
935   TACCESS,%
936   TACO,%
937   TALG,%
938   TALLIP,%
939   TAP,%
940   TCPS,%
941   TDS,%
942   TEAC,%
943   TECS,%
944   TELO,%
945   THRI,%
946   TIIS,%
947   TIOT,%
```


948 TISSEC,%
 949 TIST,%
 950 TKDD,%
 951 TMIS,%
 952 TOCE,%
 953 TOCHI,%
 954 TOCL,%
 955 TOCS,%
 956 TOCT,%
 957 TODAES,%
 958 TODS,%
 959 TOG,%
 960 TOIS,%
 961 TOIT,%
 962 TOMACS,%
 963 TOMM,%
 964 TOMPECS,%
 965 TOMS,%
 966 TOPC,%
 967 TOPS,%
 968 TOPLAS,%
 969 TOS,%
 970 TOSEM,%
 971 TOSN,%
 972 TQC,%
 973 TRETs,%
 974 TSAS,%
 975 TSC,%
 976 TSLP,%
 977 TWEB,%
 978 FACMP%
 979 }{%
 980 \ifcase\@journalCode@nr
 981 \relax % CIE
 982 \def\@journalName{ACM Computers in Entertainment}%
 983 \def\@journalNameShort{ACM Comput. Entertain.}%
 984 \def\@permissionCodeOne{1544-3574}%
 985 \or % CSUR
 986 \def\@journalName{ACM Computing Surveys}%
 987 \def\@journalNameShort{ACM Comput. Surv.}%
 988 \def\@permissionCodeOne{0360-0300}%
 989 \or % DGOV
 990 \def\@journalName{Digital Government: Research and Practice}%
 991 \def\@journalNameShort{Digit. Gov. Res. Pract.}%
 992 \def\@permissionCodeOne{2639-0175}%
 993 \or % DTRAP
 994 \def\@journalName{Digital Threats: Research and Practice}%
 995 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
 996 \def\@permissionCodeOne{2576-5337}%
 997 \or % HEALTH

```

998 \def\@journalName{ACM Transactions on Computing for Healthcare}%
999 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
1000 \def\@permissionCodeOne{2637-8051}%
1001 \or % IMMUT
1002 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
1003     Wearable and Ubiquitous Technologies}%
1004 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
1005 \def\@permissionCodeOne{2474-9567}%
1006 \@ACM@screentruer
1007 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1008 \or % JACM
1009 \def\@journalName{Journal of the ACM}%
1010 \def\@journalNameShort{J. ACM}%
1011 \def\@permissionCodeOne{0004-5411}%
1012 \or % JDIQ
1013 \def\@journalName{ACM Journal of Data and Information Quality}%
1014 \def\@journalNameShort{ACM J. Data Inform. Quality}%
1015 \def\@permissionCodeOne{1936-1955}%
1016 \or % JEA
1017 \def\@journalName{ACM Journal of Experimental Algorithmics}%
1018 \def\@journalNameShort{ACM J. Exp. Algor.}%
1019 \def\@permissionCodeOne{1084-6654}%
1020 \or % JERIC
1021 \def\@journalName{ACM Journal of Educational Resources in Computing}%
1022 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
1023 \def\@permissionCodeOne{1073-0516}%
1024 \or % JETC
1025 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
1026 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
1027 \def\@permissionCodeOne{1550-4832}%
1028 \or % JOCCH
1029 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
1030 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
1031 \or % PACMCGIT
1032 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
1033 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
1034 \def\@permissionCodeOne{2577-6193}%
1035 \@ACM@screentruer
1036 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1037 \or % PACMHCI
1038 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
1039 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
1040 \def\@permissionCodeOne{2573-0142}%
1041 \@ACM@screentruer
1042 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1043 \or % PACMPL
1044 \def\@journalName{Proceedings of the ACM on Programming Languages}%
1045 \def\@journalNameShort{Proc. ACM Program. Lang.}%
1046 \def\@permissionCodeOne{2475-1421}%
1047 \@ACM@screentruer

```

```

1048 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1049 \or % POMACS
1050 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
1051 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
1052 \def\@permissionCodeOne{2476-1249}%
1053 \@ACM@screentruer
1054 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1055 \or % TAAS
1056 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
1057 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
1058 \def\@permissionCodeOne{1556-4665}%
1059 \or % TACCESS
1060 \def\@journalName{ACM Transactions on Accessible Computing}%
1061 \def\@journalNameShort{ACM Trans. Access. Comput.}%
1062 \def\@permissionCodeOne{1936-7228}%
1063 \or % TACO
1064 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
1065 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
1066 \or % TALG
1067 \def\@journalName{ACM Transactions on Algorithms}%
1068 \def\@journalNameShort{ACM Trans. Algor.}%
1069 \def\@permissionCodeOne{1549-6325}%
1070 \or % TALLIP
1071 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
1072 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
1073 \def\@permissionCodeOne{2375-4699}%
1074 \or % TAP
1075 \def\@journalName{ACM Transactions on Applied Perception}%
1076 \or % TCPS
1077 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1078 \or % TDS
1079 \def\@journalName{ACM/IMS Transactions on Data Science}%
1080 \def\@journalNameShort{ACM/IMS Trans. Data Sci.}%
1081 \def\@permissionCodeOne{2577-3224}%
1082 \or % TEAC
1083 \def\@journalName{ACM Transactions on Economics and Computation}%
1084 \or % TECS
1085 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1086 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1087 \def\@permissionCodeOne{1539-9087}%
1088 \or % TELO
1089 \def\@journalName{ACM Transactions on Evolutionary Learning}%
1090 \def\@journalNameShort{ACM Trans. Evol. Learn.}%
1091 \def\@permissionCodeOne{2688-3007}%
1092 \or % THRI
1093 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1094 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
1095 \def\@permissionCodeOne{2573-9522}%
1096 \or % TIIS
1097 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%

```

```

1098 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1099 \def\@permissionCodeOne{2160-6455}%
1100 \or % TIOT
1101 \def\@journalName{ACM Transactions on Internet of Things}%
1102 \def\@journalNameShort{ACM Trans. Internet Things}%
1103 \def\@permissionCodeOne{2577-6207}%
1104 \or % TISSEC
1105 \def\@journalName{ACM Transactions on Information and System Security}%
1106 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1107 \def\@permissionCodeOne{1094-9224}%
1108 \or % TIST
1109 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1110 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1111 \def\@permissionCodeOne{2157-6904}%
1112 \or % TKDD
1113 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1114 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1115 \def\@permissionCodeOne{1556-4681}%
1116 \or % TMIS
1117 \def\@journalName{ACM Transactions on Management Information Systems}%
1118 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1119 \def\@permissionCodeOne{2158-656X}%
1120 \or % TOCE
1121 \def\@journalName{ACM Transactions on Computing Education}%
1122 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1123 \def\@permissionCodeOne{1946-6226}%
1124 \or % TOCHI
1125 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1126 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1127 \def\@permissionCodeOne{1073-0516}%
1128 \or % TOCL
1129 \def\@journalName{ACM Transactions on Computational Logic}%
1130 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1131 \def\@permissionCodeOne{1529-3785}%
1132 \or % TOCS
1133 \def\@journalName{ACM Transactions on Computer Systems}%
1134 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1135 \def\@permissionCodeOne{0734-2071}%
1136 \or % TOCT
1137 \def\@journalName{ACM Transactions on Computation Theory}%
1138 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1139 \def\@permissionCodeOne{1942-3454}%
1140 \or % TODAES
1141 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1142 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1143 \def\@permissionCodeOne{1084-4309}%
1144 \or % TODS
1145 \def\@journalName{ACM Transactions on Database Systems}%
1146 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1147 \def\@permissionCodeOne{0362-5915}%

```

```

1148 \or % TOG
1149 \def\@journalName{ACM Transactions on Graphics}%
1150 \def\@journalNameShort{ACM Trans. Graph.}%
1151 \def\@permissionCodeOne{0730-0301}
1152 \or % TOIS
1153 \def\@journalName{ACM Transactions on Information Systems}%
1154 \def\@permissionCodeOne{1046-8188}%
1155 \or % TOIT
1156 \def\@journalName{ACM Transactions on Internet Technology}%
1157 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1158 \def\@permissionCodeOne{1533-5399}%
1159 \or % TOMACS
1160 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1161 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1162 \or % TOMM
1163 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1164 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1165 \def\@permissionCodeOne{1551-6857}%
1166 \def\@permissionCodeTwo{0100}%
1167 \or % TOMPECS
1168 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1169 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1170 \def\@permissionCodeOne{2376-3639}%
1171 \or % TOMS
1172 \def\@journalName{ACM Transactions on Mathematical Software}%
1173 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1174 \def\@permissionCodeOne{0098-3500}%
1175 \or % TOPC
1176 \def\@journalName{ACM Transactions on Parallel Computing}%
1177 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1178 \def\@permissionCodeOne{1539-9087}%
1179 \or % TOPS
1180 \def\@journalName{ACM Transactions on Privacy and Security}%
1181 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1182 \def\@permissionCodeOne{2471-2566}%
1183 \or % TOPLAS
1184 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1185 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1186 \def\@permissionCodeOne{0164-0925}%
1187 \or % TOS
1188 \def\@journalName{ACM Transactions on Storage}%
1189 \def\@journalNameShort{ACM Trans. Storage}%
1190 \def\@permissionCodeOne{1553-3077}%
1191 \or % TOSEM
1192 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1193 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1194 \def\@permissionCodeOne{1049-331X}%
1195 \or % TOSN
1196 \def\@journalName{ACM Transactions on Sensor Networks}%
1197 \def\@journalNameShort{ACM Trans. Sensor Netw.}%

```

```

1198 \def\@permissionCodeOne{1550-4859}%
1199 \or % TQC
1200 \def\@journalName{ACM Transactions on Quantum Computing}%
1201 \def\@journalNameShort{ACM Trans. Quantum Comput.}%
1202 \def\@permissionCodeOne{2643-6817}%
1203 \or % TRET
1204 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1205 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1206 \def\@permissionCodeOne{1936-7406}%
1207 \or % TSAS
1208 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1209 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1210 \def\@permissionCodeOne{2374-0353}%
1211 \or % TSC
1212 \def\@journalName{ACM Transactions on Social Computing}%
1213 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1214 \def\@permissionCodeOne{2469-7818}%
1215 \or % TSLP
1216 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1217 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1218 \def\@permissionCodeOne{1550-4875}%
1219 \or % TWEB
1220 \def\@journalName{ACM Transactions on the Web}%
1221 \def\@journalNameShort{ACM Trans. Web}%
1222 \def\@permissionCodeOne{1559-1131}%
1223 \else % FACMP, a dummy journal
1224 \def\@journalName{Forthcoming ACM Publication}%
1225 \def\@journalNameShort{ACM Forthcoming}%
1226 \def\@permissionCodeOne{XXXX-XXXX}%
1227 \fi
1228 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1229 }{%
1230 \ClassError{\@classname}{Incorrect journal #1}%
1231 }%

```

`\acmJournal` And the syntactic sugar around it

```

1232 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1233 \global\@ACM@journal@bibstriptrue}

```

The defaults:

```

1234 \def\@journalCode@nr{0}
1235 \def\@journalName{}%
1236 \def\@journalNameShort{\@journalName}%
1237 \def\@permissionCodeOne{XXXX-XXXX}%
1238 \def\@permissionCodeTwo{}%

```

`\acmConference` This is the conference command

```

1239 \newcommand\acmConference[4][{}]{%
1240 \gdef\acmConference@shortname{#1}%

```

```

1241 \gdef\acmConference@name{#2}%
1242 \gdef\acmConference@date{#3}%
1243 \gdef\acmConference@venue{#4}%
1244 \ifx\acmConference@shortname\@empty
1245   \gdef\acmConference@shortname{#2}%
1246   \fi
1247 \global\@ACM@journal@bibstripfalse
1248 }
1249 \if@ACM@journal\else
1250 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1251 DC, USA}%
1252 \fi

\acmBooktitle The book title of the conference:
\@acmBooktitle 1253 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1254 \acmBooktitle{Proceedings of \acmConference@name
1255   \ifx\acmConference@name\acmConference@shortname\else
1256   \ (\acmConference@shortname)\fi}

\@editorsAbbrev How to abbreviate editors
1257 \def\@editorsAbbrev{(Ed.)}

\@acmEditors The list of editors
1258 \def\@acmEditors{}

\editor Add a new editor to the list
1259 \def\editor#1{\ifx\@acmEditors\@empty
1260   \gdef\@acmEditors{#1}%
1261   \else
1262   \gdef\@editorsAbbrev{(Eds.)}%
1263   \g@addto@macro\@acmEditors{\and#1}%
1264 \fi}

\subtitle The subtitle macro
1265 \def\subtitle#1{\def\@subtitle{#1}}
1266 \subtitle{}

\num@authorgroups The total number of “groups”. Each group is several authors with the same affiliations(s)
1267 \newcount\num@authorgroups
1268 \num@authorgroups=0\relax

\num@authors The total number of authors
1269 \newcount\num@authors
1270 \num@authors=0\relax

\if@insideauthorgroup Whether we are continuing an author group
1271 \newif\if@insideauthorgroup
1272 \@insideauthorgroupfalse

```

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

```
1273 \renewcommand\author[2][{%
1274   \IfSubStr{\detokenize{#2}}{,}{\ClassWarning{\@classname}{Do not put several
1275     authors in the same \string\author\space macro!}}{%
1276     \global\advance\num@authors by 1\relax
1277   \if@insideauthorgroup\else
1278     \global\advance\num@authorgroups by 1\relax
1279     \global\@insideauthorgrouptrue
1280   \fi
1281   \ifx\addresses\@empty
1282     \if@ACM@anonymous
1283       \gdef\addresses{\@author{Anonymous Author(s)}%
1284         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1285           \@acmSubmissionID\fi}}%
1286       \gdef\authors{Anonymous Author(s)}%
1287     \else
1288       \gdef\addresses{\@author{#2}}%
1289       \gdef\authors{#2}%
1290     \fi
1291   \else
1292     \if@ACM@anonymous\else
1293       \g@addto@macro\addresses{\and\@author{#2}}%
1294       \g@addto@macro\authors{\and#2}%
1295     \fi
1296   \fi
1297   \if@ACM@anonymous
1298     \ifx\shortauthors\@empty
1299       \gdef\shortauthors{Anon.
1300         \ifx\@acmSubmissionID\@empty\else Submission Id:
1301           \@acmSubmissionID\fi}%
1302     \fi
1303   \else
1304     \def\@tempa{#1}%
1305     \ifx\@tempa\@empty
1306       \ifx\shortauthors\@empty
1307         \gdef\shortauthors{#2}%
1308       \else
1309         \g@addto@macro\shortauthors{\and#2}%
1310       \fi
1311     \else
1312       \ifx\shortauthors\@empty
1313         \gdef\shortauthors{#1}%
1314       \else
1315         \g@addto@macro\shortauthors{\and#1}%
1316       \fi
1317     \fi
1318   \fi}
```

`\affiliation` The macro `\affiliation` mimics `\address` from `amsart`. Note that it has an optional

argument, which we use differently from `amsart`.

```
1319 \newcommand{\affiliation}[2][]{%
1320   \global\@insideauthorgroupfalse
1321   \if@ACM@anonymous\else
1322     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1323   \fi}
```

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

```
1324 \define@boolkey+{@ACM@affiliation@}{@ACM@affiliation@}{obeypunctuation}%
1325 [true]{ }\ClassError{\@classname}{The option obeypunctuation can be either true or false}}
```

`\additionalaffiliation` Additional affiliations go to footnotes

```
1326 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}
```

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

```
1327 \def\@additionalaffiliation#1{\bgroup
1328   \def\position##1{\ignorespaces}%
1329   \def\institution##1{##1\ignorespaces}%
1330   \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1331   \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1332   \let\streetaddress\position
1333   \let\city\position
1334   \let\state\position
1335   \let\postcode\position
1336   \let\country\position
1337   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.

```
1338 \renewcommand{\email}[2][]{%
1339   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1340     addresses in the same \string\email\space macro!}}{ }%
1341   \if@ACM@anonymous\else
1342     \g@addto@macro\addresses{\email{#1}{#2}}%
1343   \fi}
```

`\orcid` Right now we do not typeset ORCIDs

```
1344 \def\orcid#1{\unskip\ignorespaces}
```

`\authorsaddresses` Setting up authors' addresses

```
1345 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1346 \authorsaddresses{\mkauthorsaddresses}
```

`@titlenotes` The title notes

```
1347 \def\@titlenotes{ }
```

```

\titlenote Adding a note to the title
1348 \def\titlenote#1{%
1349   \g@addto@macro\@title{\footnotemark}%
1350   \if@ACM@anonymous
1351     \g@addto@macro\@titlenotes{%
1352       \stepcounter{footnote}\footnotetext{Title note}}%
1353   \else
1354     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1355   \fi}

\@subtitlenotes The subtitle notes
1356 \def\@subtitlenotes{}

\subtitlenote Adding a note to the subtitle
1357 \def\subtitlenote#1{%
1358   \g@addto@macro\@subtitle{\footnotemark}%
1359   \if@ACM@anonymous
1360     \g@addto@macro\@subtitlenotes{%
1361       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1362   \else
1363     \g@addto@macro\@subtitlenotes{%
1364       \stepcounter{footnote}\footnotetext{#1}}%
1365   \fi}

\@authornotes The author notes
1366 \def\@authornotes{}

\authornote Adding a note to the author
1367 \def\authornote#1{%
1368   \if@ACM@anonymous\else
1369     \g@addto@macro\addresses{\@authornotemark}%
1370     \g@addto@macro\@authornotes{%
1371       \stepcounter{footnote}\footnotetext{#1}}%
1372   \fi}

\authornotemark Adding a footnote mark to the authors
1373 \newcommand\authornotemark[1][\relax]{%
1374   \ifx#1\relax\relax\relax
1375     \g@addto@macro\addresses{\@authornotemark}%
1376   \else
1377     \g@addto@macro\addresses{\@authornotemark{#1}}%
1378   \fi}

\acmVolume The current volume
1379 \def\acmVolume#1{\def\@acmVolume{#1}}
1380 \acmVolume{1}

\acmNumber The current number
1381 \def\acmNumber#1{\def\@acmNumber{#1}}
1382 \acmNumber{1}

```

`\acmArticle` The current article
1383 `\def\acmArticle#1{\def\@acmArticle{#1}}`
1384 `\acmArticle{}`

`\acmArticleSeq` The sequence number
1385 `\def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}`
1386 `\acmArticleSeq{\@acmArticle}`

`\acmYear` The current year
1387 `\def\acmYear#1{\def\@acmYear{#1}}`
1388 `\acmYear{\the\year}`

`\acmMonth` The current month
1389 `\def\acmMonth#1{\def\@acmMonth{#1}}`
1390 `\acmMonth{\the\month}`

`\@acmPubDate` The publication date
1391 `\def\@acmPubDate{\ifcase\@acmMonth\or`
1392 `January\or February\or March\or April\or May\or June\or`
1393 `July\or August\or September\or October\or November\or`
1394 `December\fi~\@acmYear}`

`\acmPrice` The price
1395 `\def\acmPrice#1{\def\@acmPrice{#1}}`
1396 `\acmPrice{15.00}`

`\acmSubmissionID` The submission ID
1397 `\def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}`
1398 `\acmSubmissionID{}`

`\acmISBN` The book ISBN
1399 `\def\acmISBN#1{\def\@acmISBN{#1}}`
1400 `\acmISBN{978-x-xxxx-xxxx-x/YY/MM}`

`\acmDOI` The paper DOI
1401 `\def\acmDOI#1{\def\@acmDOI{#1}}`
1402 `\acmDOI{10.1145/nnnnnnn.nnnnnnn}`

`\if@ACM@badge` Whether to print a badge. Note that either a left or right badge triggers it:
1403 `\newif\if@ACM@badge`
1404 `\@ACM@badgefalse`

`\@ACM@badge@width` The width of the badge
1405 `\newlength\@ACM@badge@width`
1406 `\setlength\@ACM@badge@width{5pc}`

`\@ACM@title@width` The width of the badge
1407 `\newlength\@ACM@title@width`

`\@ACM@badge@skip` The space between the badge and the title
1408 `\newlength\@ACM@badge@skip`
1409 `\setlength\@ACM@badge@skip{1pc}`

`\acmBadgeR` Setting the right badge
1410 `\newcommand\acmBadgeR[2][\@ACM@badgetrue`
1411 `\def\@acmBadgeR@url{#1}%`
1412 `\def\@acmBadgeR@image{#2}}`
1413 `\def\@acmBadgeR@url{}`
1414 `\def\@acmBadgeR@image{}`

`\acmBadgeL` Setting the left badge
1415 `\newcommand\acmBadgeL[2][\@ACM@badgetrue`
1416 `\def\@acmBadgeL@url{#1}%`
1417 `\def\@acmBadgeL@image{#2}}`
1418 `\def\@acmBadgeL@url{}`
1419 `\def\@acmBadgeL@image{}`

`\startPage` The start page of the paper
1420 `\def\startPage#1{\def\@startPage{#1}}`
1421 `\startPage{}`

`\terms` Terms are obsolete. We use CCS now.
1422 `\def\terms#1{\ClassWarning{\@classname}{The command \string\terms{}` is
1423 `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.
1424 `\def\keywords#1{\def\@keywords{#1}}`
1425 `\let\@keywords\@empty`

1426 `\AtEndDocument{\if@ACM@nonacm\else\ifx\@keywords\@empty`
1427 `\ifnum\getrefnumber{TotPages}>2\relax`
1428 `\ClassWarningNoLine{\@classname}{ACM keywords are mandatory`
1429 `for papers over two pages}%`
1430 `\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
1431 `\renewenvironment{abstract}{\Collect@Body\@saveabstract}{}`

`\@saveabstract` And saving the abstract
1432 `\long\def\@saveabstract#1{\if@ACM@maketitle@typeset`
1433 `\ClassError{\@classname}{Abstract must be defined before maketitle`
1434 `command. Please move it!}\fi`
1435 `\long\gdef\@abstract{#1}}`
1436 `\@saveabstract{}`

```

\@empty The long version of \@empty (to compare with \@abstract)
1437 \long\def\@empty{}

\if@ACM@printccs Whether to print CCS
1438 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1439   \if@ACM@printccs
1440     \ClassInfo{\@classname}{Printing CCS}%
1441   \else
1442     \ClassInfo{\@classname}{Suppressing CCS}%
1443 \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

\if@ACM@printacmref Whether to print the ACM bibstrip
1444 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1445   \if@ACM@printacmref
1446     \ClassInfo{\@classname}{Printing bibformat}%
1447   \else
1448     \ClassInfo{\@classname}{Suppressing bibformat}%
1449 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

1450 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@printacmref\else
1451   \ifnum\getrefnumber{TotPages}>1\relax
1452   \ClassWarningNoLine{\@classname}{ACM reference format is mandatory
1453     for papers over one page}%
1454   \fi\fi\fi}

\if@ACM@printfolios Whether to print folios
1455 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1456   \if@ACM@printfolios
1457     \ClassInfo{\@classname}{Printing folios}%
1458   \else
1459     \ClassInfo{\@classname}{Suppressing folios}%
1460 \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.
1461 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorssperrow}[0]{%
1462   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorssperrow to
1463     #1}}{\ClassWarning{\@classname}{The parameter authorssperrow must be
1464     numerical. Ignoring the input #1}\gdef\@ACM@authorssperrow{0}}}}

\settopmatter The usual syntactic sugar
1465 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

      Now the settings
1466 \settopmatter{printccs=true, printacmref=true}
1467 \if@ACM@manuscript
1468   \settopmatter{printfolios=true}
1469 \else
1470   \if@ACM@journal
1471     \settopmatter{printfolios=true}

```

```

1472 \else
1473 \settopmatter{printfolios=false}
1474 \fi
1475 \fi
1476 \settopmatter{authorsperrow=0}

\@received The container for the paper history
1477 \def\@received{}

\received The \received command
1478 \newcommand\received[2][\def\@tempa{#1}%
1479 \ifx\@tempa\@empty
1480 \ifx\@received\@empty
1481 \gdef\@received{Received #2}%
1482 \else
1483 \g@addto@macro{\@received}{; revised #2}%
1484 \fi
1485 \else
1486 \ifx\@received\@empty
1487 \gdef\@received{#1 #2}%
1488 \else
1489 \g@addto@macro{\@received}{; #1 #2}%
1490 \fi
1491 \fi}
1492 \AtEndDocument{%
1493 \ifx\@received\@empty\else
1494 \par\bigskip\noindent\small\normalfont\@received\par
1495 \fi}

```

3.13 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1496 \RequirePackage{comment}
1497 \excludecomment{CCSXML}

\@concepts This is the storage macro and counter for concepts
1498 \let\@concepts\@empty
1499 \newcounter{@concepts}

\ccsdesc The first argument is the significance, the second is the concept(s)
1500 \newcommand\ccsdesc[2][100]{%
1501 \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!
1502 \def\textrightarrow{\rightarrow}
1503 \def\ccsdesc@parse#1~#2~#3~{%
1504 \stepcounter{@concepts}%

```

```

1505 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1506 \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1507 \textbf{#2}}%
1508 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{;}%
1509 \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1510 \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1511 \csname CCS@Punctuation@#2\endcsname
1512 \csname CCS@Specific@#2\endcsname}%
1513 \fi
1514 \ifx#3\relax\relax\else
1515 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1516 \textrightarrow\ }%
1517 \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1518 \addtocounter{@concepts}{-1}}%
1519 \ifnum#1>499\textbf{#3}\else
1520 \ifnum#1>299\textit{#3}\else
1521 #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1522 \fi
1523 \ccsdesc@parse@finish}

1524 \AtEndDocument{\if@ACM@nonacm\else\ifx\@concepts\empty\relax
1525 \ifnum\getrefnumber{TotPages}>2\relax
1526 \ClassWarningNoLine{\@classname}{CCS concepts are mandatory
1527 for papers over two pages}%
1528 \fi\fi\fi}

```

```

\ccdesc@parse@finish Gobble everything to \ccsdesc@parse@end
1529 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}

```

3.14 Copyright system

This is from acmcopyright.sty

```

\if@printcopyright Whether to print a copyright symbol
1530 \newif\if@printcopyright
1531 \@printcopyrighttrue

```

```

\if@printpermission Whether to print the permission block
1532 \newif\if@printpermission
1533 \@printpermissiontrue

```

```

\if@acmowned Whether the ACM owns the rights to the paper
1534 \newif\if@acmowned
1535 \@acmownedtrue

```

Keys:

```

1536 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1537 \acm@copyrightinput\acm@copyrightmode]{none,%
1538 acmcopyright,acmlicensed,rightsretained,%

```

```

1539   usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1540   licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1541   iw3c2w3,iw3c2w3g}{%
1542   \@printpermissiontrue
1543   \@printcopyrighttrue
1544   \@acmownedtrue
1545   \ifnum\acm@copyrightmode=0\relax % none
1546   \@printpermissionfalse
1547   \@printcopyrightfalse
1548   \@acmownedfalse
1549   \fi
1550   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1551   \@acmownedfalse
1552   \fi
1553   \ifnum\acm@copyrightmode=3\relax % rightsretained
1554   \@acmownedfalse
1555   \AtBeginDocument{\acmPrice{}}%
1556   \fi
1557   \ifnum\acm@copyrightmode=4\relax % usgov
1558   \@printpermissiontrue
1559   \@printcopyrightfalse
1560   \@acmownedfalse
1561   \AtBeginDocument{\acmPrice{}}%
1562   \fi
1563   \ifnum\acm@copyrightmode=6\relax % cagov
1564   \@acmownedfalse
1565   \fi
1566   \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1567   \@acmownedfalse
1568   \fi
1569   \ifnum\acm@copyrightmode=9\relax % licensedcagov
1570   \@acmownedfalse
1571   \fi
1572   \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1573   \@acmownedfalse
1574   \fi
1575   \ifnum\acm@copyrightmode=11\relax % othergov
1576   \@acmownedtrue
1577   \fi
1578   \ifnum\acm@copyrightmode=12\relax % licensedothergov
1579   \@acmownedfalse
1580   \fi
1581   \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1582   \@acmownedfalse
1583   \AtBeginDocument{\acmPrice{}}%
1584   \fi
1585   \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1586   \@acmownedfalse
1587   \AtBeginDocument{\acmPrice{}}%
1588   \fi}

```


`\setcopyright` This is the syntactic sugar around setting keys.
 1589 `\def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}`
 1590 `\setcopyright{acmcopyright}`

`\@copyrightowner` Here is the owner of the copyright
 1591 `\def\@copyrightowner{%`
 1592 `\ifcase\acm@copyrightmode\relax % none`
 1593 `\or % acmcopyright`
 1594 Association for Computing Machinery.
 1595 `\or % acmlicensed`
 1596 Copyright held by the owner/author(s). Publication rights licensed to
 1597 ACM\@.
 1598 `\or % rightsretained`
 1599 Copyright held by the owner/author(s).
 1600 `\or % usgov`
 1601 `\or % usgovmixed`
 1602 Association for Computing Machinery.
 1603 `\or % cagov`
 1604 Crown in Right of Canada.
 1605 `\or %cagovmixed`
 1606 Association for Computing Machinery.
 1607 `\or %licensedusgovmixed`
 1608 Copyright held by the owner/author(s). Publication rights licensed to
 1609 ACM\@.
 1610 `\or % licensedcagov`
 1611 Crown in Right of Canada. Publication rights licensed to
 1612 ACM\@.
 1613 `\or %licensedcagovmixed`
 1614 Copyright held by the owner/author(s). Publication rights licensed to
 1615 ACM\@.
 1616 `\or % othergov`
 1617 Association for Computing Machinery.
 1618 `\or % licensedothergov`
 1619 Copyright held by the owner/author(s). Publication rights licensed to
 1620 ACM\@.
 1621 `\or % ic2w3www`
 1622 IW3C2 (International World Wide Web Conference Committee), published
 1623 under Creative Commons CC-BY~4.0 License.
 1624 `\or % ic2w3wwwgoogle`
 1625 IW3C2 (International World Wide Web Conference Committee), published
 1626 under Creative Commons CC-BY-NC-ND~4.0 License.
 1627 `\fi}`

`\@formatdoi` Print a clickable DOI
 1628 `\def\@formatdoi#1{\url{https://doi.org/#1}}`

`\@copyrightpermission` The canned permission block.
 1629 `\def\@copyrightpermission{%`
 1630 `\ifcase\acm@copyrightmode\relax % none`

1631 \or % acmcopyright
1632 Permission to make digital or hard copies of all or part of this
1633 work for personal or classroom use is granted without fee provided
1634 that copies are not made or distributed for profit or commercial
1635 advantage and that copies bear this notice and the full citation on
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1647 the first page. Copyrights for components of this work owned by
1648 others than the author(s) must be honored. Abstracting with credit
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1650 or to redistribute to lists, requires prior specific permission
1651 and\hspace*{.5pt}/or a fee. Request permissions from
1652 permissions@acm.org.

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1656 copies are not made or distributed for profit or commercial advantage
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1658 page. Copyrights for third-party components of this work must be
1659 honored. For all other uses, contact the
1660 owner\hspace*{.5pt}/author(s).

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1665 given and the authors and agency are clearly identified as its
1666 source.

1667 \or % usgovmixed
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1738 this article, or to allow others to do so, for Government purposes
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1742 International (CC-BY~4.0) license. Authors reserve their rights to
1743 disseminate the work on their personal and corporate Web sites with
1744 the appropriate attribution.
1745 \or % iw3c2w3g
1746 This paper is published under the Creative Commons
1747 Attribution-NonCommercial-NoDerivs~4.0 International
1748 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
1749 disseminate the work on their personal and corporate Web sites with
1750 the appropriate attribution.
1751 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
1752 \def\copyrightyear#1{\def\copyrightyear{#1}}
1753 \copyrightyear{\acmYear}

\@teaserfigures The teaser figures container
1754 \def\@teaserfigures{}

teaserfigure The teaser figure
1755 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
1756 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amsart \thanks so the anonymous key works
1757 \renewcommand{\thanks}[1]{%
1758 \ifnotempty{#1}{%
1759 \if@ACM@anonymous
1760 \g@addto@macro\thankses{\thanks{A note}}%
1761 \else
1762 \g@addto@macro\thankses{\thanks{#1}}%
1763 \fi}}

3.15 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*].
1764 \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.

```

1765 \def\maketitle{%
1766   \@ACM@maketitle@typesettrue
1767   \if@ACM@anonymous
1768     % Anonymize omission of \author-s
1769     \ifnum\num@authorgroups=0\author{}\fi
1770   \fi
1771   \begingroup
1772   \let\@vspace\@vspace@orig
1773   \let\@vspacer\@vspacer@orig
1774   \let\@footnotemark\@footnotemark@nolink
1775   \let\@footnotetext\@footnotetext@nolink
1776   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1777   \hsize=\textwidth
1778   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1779   \@mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1780   \@printtopmatter
1781   \if@ACM@sigchiamode\mkauthors\fi
1782   \setcounter{footnote}{0}%
1783   \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1784   \@titlenotes
1785   \@subtitlenotes
1786   \@authornotes
1787   \let\@makefnmark\relax
1788   \let\@thefnmark\relax
1789   \let\@makefntext\noindent
1790   \ifx\@empty\thankses\else
1791     \footnotetextauthorsaddresses{%
1792       \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1793   \fi
1794   \ifx\@empty\@authorsaddresses\else
1795     \if@ACM@anonymous\else
1796       \if@ACM@journal@bibstrip
1797         \footnotetextauthorsaddresses{%
1798           \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1799       \fi
1800     \fi
1801   \fi
1802   \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1803     \if@ACM@authordraft
1804       \raisebox{-2ex}{\z@\z@}{\makebox[0pt][l]{\large\bfseries
1805         Unpublished working draft. Not for distribution.}}%
1806       \color[gray]{0.9}%
1807     \fi
1808     \parindent\z@\parskip0.1\baselineskip

```

```

1809 \if@ACM@authorversion\else
1810   \if@printpermission\@copyrightpermission\par\fi
1811 \fi
1812 \if@ACM@manuscript\else
1813   \if@ACM@journal@bibstrip\else % Print the conference information
1814   {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1815   \fi
1816 \fi
1817 \if@printcopyright
1818   \copyright\ \@copyrightyear\ \@copyrightowner\
1819 \else
1820   \@copyrightyear.\
1821 \fi
1822 \if@ACM@manuscript
1823   Manuscript submitted to ACM\
1824 \else
1825   \if@ACM@authorversion
1826     This is the author's version of the work. It is posted here for
1827     your personal use. Not for redistribution. The definitive Version
1828     of Record was published in
1829     \if@ACM@journal@bibstrip
1830       \emph{\@journalName}%
1831     \else
1832       \emph{\@acmBooktitle}%
1833     \fi
1834     \ifx\@acmDOI\@empty
1835     .
1836     \else
1837     , \@formatdoi{\@acmDOI}.
1838     \fi\
1839 \else
1840   \if@ACM@nonacm\else
1841     \if@ACM@journal@bibstrip
1842       \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1843       \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\
1844       \@formatdoi{\@acmDOI}%
1845     \else % Conference
1846       \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1847       \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\
1848       \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
1849     \fi
1850   \fi
1851 \fi
1852 \fi}
1853 \fi
1854 \endgroup
1855 \setcounter{footnote}{0}%
1856 \mkabstract
1857 \if@ACM@printccs
1858 \ifx\@concepts\@empty\else\bgroup

```

```

1859     {\@specialsection{CCS Concepts}%
1860       \noindent\@concepts\par}\egroup
1861   \fi
1862 \fi
1863 \ifx\@keywords\empty\else\bgroup
1864   {\if@ACM@journal
1865     \@specialsection{Additional Key Words and Phrases}%
1866     \else
1867       \@specialsection{Keywords}%
1868     \fi
1869     \noindent\@keywords}\par\egroup
1870 \fi
1871 \let\metadata@authors=\authors
1872 \xandlist{, }{, }{\, }\metadata@authors
1873 \def\@ACM@checkaffil{}%
1874 \hypersetup{%
1875   pdfauthor={\metadata@authors},
1876   pdftitle={\@title},
1877   pdfsubject={\@concepts},
1878   pdfkeywords={\@keywords},
1879   pdfcreator={LaTeX with acmart
1880     \csname ver@acmart.cls\endcsname\space
1881     and hyperref
1882     \csname ver@hyperref.sty\endcsname}}%
1883 \andify\authors
1884 \andify\shortauthors
1885 \global\let\authors=\authors
1886 \global\let\shortauthors=\shortauthors
1887 \if@ACM@printacmref
1888   \@mkbibcitation
1889 \fi
1890 \global\@topnum\z@ % this prevents floats from falling
1891                   % at the top of page 1
1892 \global\@botnum\z@ % we do not want them to be on the bottom either
1893 \@printendtopmatter
1894 \@afterindentfalse
1895 \@afterheading
1896 }

```

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

```

1897 \def\@specialsection#1{%
1898   \ifcase\ACM@format@nr
1899   \relax % manuscript
1900   \par\medskip\small\noindent#1: %
1901   \or % acmsmall
1902   \par\medskip\small\noindent#1: %
1903   \or % acmlarge
1904   \par\medskip\small\noindent#1: %
1905   \or % acmtog
1906   \par\medskip\small\noindent#1: %

```

```

1907 \or % sigconf
1908   \section*{#1}%
1909 \or % siggraph
1910   \section*{#1}%
1911 \or % sigplan
1912   \noindentparagraph*{#1:~}%
1913 \or % sigchi
1914   \section*{#1}%
1915 \or % sigchi-a
1916   \section*{#1}%
1917   \fi
1918 }

```

`\@printtopmatter` The printing of top matter starts a new page and uses the given title box. Note that for `sigchi-a` we print badges here rather than in `\mktitle` since we want them in the margins.

```

1919 \def\@printtopmatter{%
1920   \ifx\@startPage\@empty
1921     \gdef\@startPage{1}%
1922   \else
1923     \setcounter{page}{\@startPage}%
1924   \fi
1925   \thispagestyle{firstpagestyle}%
1926   \noindent
1927   \ifcase\ACM@format@nr
1928   \relax % manuscript
1929     \box\mktitle@bx\par
1930   \or % acsmall
1931     \box\mktitle@bx\par
1932   \or % acmlarge
1933     \box\mktitle@bx\par
1934   \or % acmtog
1935     \twocolumn[\box\mktitle@bx]%
1936   \or % sigconf
1937     \twocolumn[\box\mktitle@bx]%
1938   \or % siggraph
1939     \twocolumn[\box\mktitle@bx]%
1940   \or % sigplan
1941     \twocolumn[\box\mktitle@bx]%
1942   \or % sigchi
1943     \twocolumn[\box\mktitle@bx]%
1944   \or % sigchi-a
1945     \par\box\mktitle@bx\par\bigskip
1946   \if@ACM@badge
1947     \marginpar{\noindent
1948       \ifx\@acmBadgeL@image\@empty\else
1949         \href{\@acmBadgeL@url}{%
1950           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1951         \hskip\@ACM@badge@skip
1952       \fi

```



```

1953         \ifx\@acmBadgeR@image\empty\else
1954         \href{\@acmBadgeR@url}{%
1955         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1956         \fi}%
1957     \fi
1958 \fi
1959 }

\@mktitle The title of the article
1960 \def\@mktitle{%
1961     \ifcase\ACM@format@nr
1962     \relax % manuscript
1963     \@mktitle@i
1964     \or % acmsmall
1965     \@mktitle@i
1966     \or % acmlarge
1967     \@mktitle@i
1968     \or % acmtog
1969     \@mktitle@i
1970     \or % sigconf
1971     \@mktitle@iii
1972     \or % siggraph
1973     \@mktitle@iii
1974     \or % sigplan
1975     \@mktitle@iii
1976     \or % sigchi
1977     \@mktitle@iii
1978     \or % sigchi-a
1979     \@mktitle@iv
1980     \fi
1981 }

\@titlefont The font to typeset the title
1982 \def\@titlefont{%
1983     \ifcase\ACM@format@nr
1984     \relax % manuscript
1985     \LARGE\sffamily\bfseries
1986     \or % acmsmall
1987     \LARGE\sffamily\bfseries
1988     \or % acmlarge
1989     \LARGE\sffamily\bfseries
1990     \or % acmtog
1991     \Huge\sffamily
1992     \or % sigconf
1993     \Huge\sffamily\bfseries
1994     \or % siggraph
1995     \Huge\sffamily\bfseries
1996     \or % sigplan
1997     \Huge\bfseries
1998     \or % sigchi

```

```

1999 \Huge\sffamily\bfseries
2000 \or % sigchi-a
2001 \Huge\bfseries
2002 \fi}

```

`\@subtitlefont` The font to typeset the subtitle

```

2003 \def\@subtitlefont{\normalsize
2004 \ifcase\ACM@format@nr
2005 \relax % manuscript
2006 \mdseries
2007 \or % acmsmall
2008 \mdseries
2009 \or % acmlarge
2010 \mdseries
2011 \or % acmtog
2012 \LARGE
2013 \or % sigconf
2014 \LARGE\mdseries
2015 \or % siggraph
2016 \LARGE\mdseries
2017 \or % sigplan
2018 \LARGE\mdseries
2019 \or % sigchi
2020 \LARGE\mdseries
2021 \or % sigchi-a
2022 \mdseries
2023 \fi}

```

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

```

2024 \def\@mktitle@i{\hsize=\textwidth
2025 \@ACM@title@width=\hsize
2026 \ifx\@acmBadgeL@image\@empty\else
2027 \advance\@ACM@title@width by -\@ACM@badge@width
2028 \advance\@ACM@title@width by -\@ACM@badge@skip
2029 \fi
2030 \ifx\@acmBadgeR@image\@empty\else
2031 \advance\@ACM@title@width by -\@ACM@badge@width
2032 \advance\@ACM@title@width by -\@ACM@badge@skip
2033 \fi
2034 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
2035 \ifx\@acmBadgeL@image\@empty\else
2036 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
2037 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2038 \hskip\@ACM@badge@skip
2039 \fi
2040 \parbox[t]{\@ACM@title@width}{\raggedright
2041 \@titlefont\noindent
2042 \@title
2043 \ifx\@subtitle\@empty\else
2044 \par\noindent{\@subtitlefont\@subtitle}

```

```

2045 \fi}%
2046 \ifx\@acmBadgeR@image\@empty\else
2047   \hskip\@ACM@badge@skip
2048   \raisebox{-0.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
2049     \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2050 \fi
2051 \par\bigskip}}%

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

\@mkttitle@iii The version of \@mkttitle for SIG proceedings. Note that since the title is centered, we
leave space for the left badge even if only the right badge is defined.
2052 \def\@mkttitle@iii{\hsize=\textwidth
2053   \setbox\mkttitle@bx=\vbox{\@titlefont\centering
2054     \@ACM@title@width=\hsize
2055     \if@ACM@badge
2056       \advance\@ACM@title@width by -2\@ACM@badge@width
2057       \advance\@ACM@title@width by -2\@ACM@badge@skip
2058       \parbox[b]{\@ACM@badge@width}{\strut
2059         \ifx\@acmBadgeL@image\@empty\else
2060           \raisebox{-0.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
2061             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2062         \fi}%
2063       \hskip\@ACM@badge@skip
2064     \fi
2065     \parbox[t]{\@ACM@title@width}{\centering\@titlefont
2066       \@title
2067       \ifx\@subtitle\@empty\else
2068         \par\noindent{\@subtitlefont\@subtitle}
2069       \fi
2070     }%
2071     \if@ACM@badge
2072       \hskip\@ACM@badge@skip
2073       \parbox[b]{\@ACM@badge@width}{\strut
2074         \ifx\@acmBadgeR@image\@empty\else
2075           \raisebox{-0.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
2076             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2077         \fi}%
2078     \fi
2079     \par\bigskip}}%

\@mkttitle@iv The version of \@mkttitle for sigchi-a
2080 \def\@mkttitle@iv{\hsize=\textwidth
2081   \setbox\mkttitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
2082     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
2083     \noindent\@title
2084     \ifx\@subtitle\@empty\else
2085       \par\noindent\@subtitlefont\@subtitle
2086     \fi

```

```
2087 \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.

```
2088 \newbox\@ACM@commabox
2089 \def\@ACM@addtoaddress#1{%
2090   \ifvmode\else
2091     \if@ACM@affiliation@obexpunctuation\else
2092     \setbox\@ACM@commabox=\hbox{, }%
2093     \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
2094   \fi\fi
2095   #1}
```

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

```
2096 \def\streetaddress#1{\unskip\ignorespaces}
2097 \def\postcode#1{\unskip\ignorespaces}
2098 \if@ACM@journal
2099   \def\position#1{\unskip\ignorespaces}
2100   \def\institution#1{\global\@ACM@instpresenttrue
2101     \unskip~#1\ignorespaces}
2102   \def\city#1{\global\@ACM@citypresenttrue\unskip\ignorespaces}
2103   \def\state#1{\unskip\ignorespaces}
2104   \newcommand\department[2][0]{\unskip\ignorespaces}
2105   \def\country#1{\global\@ACM@countrypresenttrue
2106     \if@ACM@affiliation@obexpunctuation\else, \fi#1\ignorespaces}
2107 \else
2108   \def\position#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
2109   \def\institution#1{\global\@ACM@instpresenttrue
2110     \if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
2111   \newcommand\department[2][0]{\if@ACM@affiliation@obexpunctuation
2112     #2\else#2\par\fi}%
2113 % \def\streetaddress#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
2114 \def\city#1{\global\@ACM@citypresenttrue\@ACM@addtoaddress{#1}}%
2115 \let\state\@ACM@addtoaddress
2116 % \def\postcode#1{\if@ACM@affiliation@obexpunctuation#1\else\unskip\space#1\fi}%
2117 \def\country#1{\global\@ACM@countrypresenttrue\@ACM@addtoaddress{#1}}%
2118 \fi
```

`\@mkauthors` Typesetting the authors

```
2119 \def\@mkauthors{\begingroup
2120   \hspace=\textwidth
```

```

2121 \ifcase\ACM@format@nr
2122 \relax % manuscript
2123 \mkauthors@i
2124 \or % acsmall
2125 \mkauthors@i
2126 \or % acmlarge
2127 \mkauthors@i
2128 \or % acmtog
2129 \mkauthors@i
2130 \or % sigconf
2131 \mkauthors@iii
2132 \or % siggraph
2133 \mkauthors@iii
2134 \or % sigplan
2135 \mkauthors@iii
2136 \or % sigchi
2137 \mkauthors@iii
2138 \or % sigchi-a
2139 \mkauthors@iv
2140 \fi
2141 \endgroup
2142 }

```

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

```
2143 \def\@authorfont{\Large\sffamily}
```

\@affiliationfont Font for affiliations

```
2144 \def\@affiliationfont{\normalsize\normalfont}
```

Adjusting fonts for different formats

```

2145 \ifcase\ACM@format@nr
2146 \relax % manuscript
2147 \or % acsmall
2148 \def\@authorfont{\large\sffamily}
2149 \def\@affiliationfont{\small\normalfont}
2150 \or % acmlarge
2151 \or % acmtog
2152 \def\@authorfont{\LARGE\sffamily}
2153 \def\@affiliationfont{\large}
2154 \or % sigconf
2155 \def\@authorfont{\LARGE}
2156 \def\@affiliationfont{\large}
2157 \or % siggraph
2158 \def\@authorfont{\normalsize\normalfont}
2159 \def\@affiliationfont{\normalsize\normalfont}
2160 \or % sigplan
2161 \def\@authorfont{\Large\normalfont}
2162 \def\@affiliationfont{\normalsize\normalfont}
2163 \or % sigchi

```

```

2164 \def\@authorfont{\bfseries}
2165 \def\@affiliationfont{\mdseries}
2166 \or % sigchi-a
2167 \def\@authorfont{\bfseries}
2168 \def\@affiliationfont{\mdseries}
2169 \fi

```

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

```

2170 \def\@typeset@author@line{%
2171 \andify\@currentauthors\par\noindent
2172 \@currentauthors\def\@currentauthors{}}%
2173 \ifx\@currentaffiliations\@empty\else
2174 \andify\@currentaffiliations
2175 \unskip, {\@currentaffiliations}\par
2176 \fi
2177 \def\@currentaffiliations{}}

```

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

```

2178 \newif\if@ACM@instpresent
2179 \@ACM@instpresenttrue

```

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

```

2180 \newif\if@ACM@citypresent
2181 \@ACM@citypresenttrue

```

\if@ACM@countrypresent Whether the given affiliation has country

```

2182 \newif\if@ACM@countrypresent
2183 \@ACM@countrypresenttrue

```

\@ACM@resetaffil Reset affiliation flags

```

2184 \def\@ACM@resetaffil{%
2185 \global\@ACM@instpresentfalse
2186 \global\@ACM@citypresentfalse
2187 \global\@ACM@countrypresentfalse
2188 }

```

\@ACM@checkaffil Check affiliation flags

```

2189 \def\@ACM@checkaffil{%
2190 \if@ACM@instpresent\else
2191 \ClassWarningNoLine{\@classname}{No institution present for an affiliation}%
2192 \fi
2193 \if@ACM@citypresent\else
2194 \ClassWarningNoLine{\@classname}{No city present for an affiliation}%
2195 \fi
2196 \if@ACM@countrypresent\else
2197 \ClassWarningNoLine{\@classname}{No country present for an affiliation}%
2198 \fi
2199 }

```

`\mkauthors@i` This version is used in most journal formats. Note that `\and` between authors with the same affiliation becomes `_and_`:

```

2200 \def\mkauthors@i{%
2201   \def\@currentauthors{}%
2202   \def\@currentaffiliations{}%
2203   \global\let\and\@typeset@author@line
2204   \def\@author##1{%
2205     \ifx\@currentauthors\@empty
2206       \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2207     \else
2208       \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
2209     \fi
2210   \gdef\and{}}%
2211 \def\email##1##2{%
2212 \def\affiliation##1##2{%
2213   \def\@tempa{##2}\ifx\@tempa\@empty\else
2214     \ifx\@currentaffiliations\@empty
2215       \gdef\@currentaffiliations{%
2216         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2217         \setkeys{@ACM@affiliation@}{##1}%
2218         \@ACM@resetaffil
2219         \@affiliationfont##2\@ACM@checkaffil}%
2220       \else
2221         \g@addto@macro{\@currentaffiliations}{\and
2222           \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2223           \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2224           ##2\@ACM@checkaffil}%
2225       \fi
2226     \fi
2227   \global\let\and\@typeset@author@line}%
2228 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
2229   \noindent\addresses\@typeset@author@line
2230   \par\medskip}%
2231 }
```

`\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
2232 `\newbox\author@bx`

`\author@bx@wd` The width of the author box
2233 `\newdimen\author@bx@wd`

`\author@bx@sep` The separation between author boxes
2234 `\newskip\author@bx@sep`
2235 `\author@bx@sep=1pc\relax`

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

```

2236 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd
2237 \def\and{\par}\normalbaselines
2238 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2239 \@authorfont\@currentauthors\par\@affiliationfont
2240 \@currentaffiliation}\egroup
2241 \box\author@bx\hspace{\author@bx@sep}%
2242 \gdef\@currentauthors{}}
2243 \gdef\@currentaffiliation{}}

```

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

```

2244 \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.

```

2245 \author@bx@wd=\textwidth\relax
2246 \advance\author@bx@wd by -\author@bx@sep\relax
2247 \ifnum\@ACM@authorsperrow>0\relax
2248 \divide\author@bx@wd by \@ACM@authorsperrow\relax
2249 \else
2250 \ifcase\num@authorgroups
2251 \relax % 0?
2252 \or % 1=one author per row
2253 \or % 2=two authors per row
2254 \divide\author@bx@wd by \num@authorgroups\relax
2255 \or % 3=three authors per row
2256 \divide\author@bx@wd by \num@authorgroups\relax
2257 \or % 4=two authors per row (!)
2258 \divide\author@bx@wd by 2\relax
2259 \else % three authors per row
2260 \divide\author@bx@wd by 3\relax
2261 \fi
2262 \fi
2263 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2264 \gdef\@currentauthors{}}
2265 \gdef\@currentaffiliation{}}
2266 \def\@author##1{\ifx\@currentauthors\@empty
2267 \gdef\@currentauthors{\par##1}%
2268 \else
2269 \g@addto@macro\@currentauthors{\par##1}%
2270 \fi
2271 \gdef\and{}}%
2272 \def\email##1##2{\ifx\@currentaffiliation\@empty
2273 \gdef\@currentaffiliation{\bgroup
2274 \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2275 \else
2276 \g@addto@macro\@currentaffiliation{\par\bgroup

```



```

2277     \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2278 \fi}%
2279 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2280   \gdef\@currentaffiliation{%
2281     \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2282     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2283     ##2\@ACM@checkaffil}%
2284   \else
2285     \g@addto@macro\@currentaffiliation{\par
2286       \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2287       \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2288       ##2\@ACM@checkaffil}%
2289   \fi
2290   \global\let\and\@typeset@author@bx
2291 }%

```

Actual typesetting is done by the `\and` macro:

```

2292 \hsize=\textwidth
2293 \global\setbox\mktitle@bx=\vbox{\noindent
2294   \box\mktitle@bx\par\medskip\leavevmode
2295   \lineskip=1pc\relax\centering\hspace*{-1em}%
2296   \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.

```
2297 \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.

```

2298 \author@bx@wd=\columnwidth\relax
2299 \advance\author@bx@wd by -\author@bx@sep\relax
2300 \ifnum\@ACM@authorsperrow>0\relax
2301   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2302 \else
2303   \ifcase\@num@authorgroups
2304     \relax % 0?
2305     \or % 1=one author per row
2306     \else % 2=two authors per row
2307       \divide\author@bx@wd by 2\relax
2308   \fi
2309 \fi
2310 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of `\addresses`:

```

2311 \gdef\@currentauthors{}%
2312 \gdef\@currentaffiliation{}%
2313 \def\@author##1{\ifx\@currentauthors\@empty
2314   \gdef\@currentauthors{\par##1}%

```

```

2315 \else
2316   \g@addto@macro\@currentauthors{\par##1}%
2317 \fi
2318 \gdef\and{}}%
2319 \def\email##1##2{\ifx\@currentaffiliation\@empty
2320   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2321 \else
2322   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2323 \fi}%
2324 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2325   \gdef\@currentaffiliation{
2326     \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2327     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2328     ##2\@ACM@checkaffil}%
2329 \else
2330   \g@addto@macro\@currentaffiliation{\par
2331     \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2332     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2333     ##2\@ACM@checkaffil}%
2334 \fi
2335 \global\let\and\@typeset@author@bx}%
2336 %

```

Actual typesetting is done by the \and macro

```

2337   \bgroup\hsize=\columnwidth
2338   \par\raggedright\leftskip=\z@
2339   \lineskip=1pc\noindent
2340   \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2341 \def\@mkauthorsaddresses{%
2342   \ifnum\num@authors>1\relax
2343   Authors' \else Author's \fi
2344   \ifnum\num@authorgroups>1\relax
2345   addresses: \else address: \fi
2346   \bgroup
2347   \def\streetaddress##1{\unskip, ##1}%
2348   \def\postcode##1{\unskip, ##1}%
2349   \def\position##1{\unskip\ignorespaces}%
2350   \def\institution##1{\unskip, ##1}%
2351   \def\city##1{\unskip, ##1}%
2352   \def\state##1{\unskip, ##1}%
2353   \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2354   \def\country##1{\unskip, ##1}%
2355   \def\and{\unskip; }%
2356   \def\@author##1{##1}%
2357   \def\email##1##2{\unskip, \nolinkurl{##2}}%
2358   \addresses
2359   \egroup}

```

```

2360 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@journal
2361 \ifx\@authorsaddresses\@empty
2362 \ClassWarningNoLine{\@classname}{Authors'
2363 addresses are mandatory for ACM journals}%
2364 \fi\fi\fi}

\@setaddresses This is an amsart macro that we do not need.
2365 \def\@setaddresses{}

\@authornotemark Adding a footnote mark to authors. This version adds a “normal” footnote mark.
2366 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}

@@authornotemark Adding a footnote mark to authors with a given number
2367 \def@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}

\@mkteasers Typesetting the teasers
2368 \def\@mkteasers{%
2369 \ifx\@teaserfigures\@empty\else
2370 \def\@teaser##1{\par\bigskip\bgroup
2371 \captionsetup{type=figure}##1\egroup\par}
2372 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2373 \noindent\@Description@presentfalse
2374 \@teaserfigures\par\if@Description@present\else
2375 \global\@undescrbed@imagestrue
2376 \ClassWarning{\@classname}{A possible image without
2377 description}\fi
2378 \medskip}%
2379 \fi}

\@mkabstract Typesetting the abstract
2380 \def\@mkabstract{\bgroup
2381 \ifx\@abstract\@empty\else
2382 {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2383 \if@ACM@journal
2384 \everypar{\setbox\z@\lastbox\everypar{}}\small
2385 \else
2386 \section*{\abstractname}%
2387 \fi
2388 \ignorespaces\@abstract\par}%
2389 \fi\egroup}

\@mkbibcitation Print the bibcitation format
2390 \def\@mkbibcitation{\bgroup
2391 \let\@vspace\@vspace@orig
2392 \let\@vspacer\@vspacer@orig
2393 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2394 \def\footnotemark{}%
2395 \def\@unskip{\ignorespaces}%
2396 \def\footnote{\ClassError{\@classname}{Please do not use footnotes

```

```

2397     inside a \string\title{} or \string\author{} command! Use
2398     \string\titlenote{} or \string\authornote{} instead!}}%
2399 \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2400   Article~\@acmArticle\ }fi}%
2401 \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2402 \noindent\bgroup
2403   \def\{\unskip{, \ignorespaces}\authors\egroup. \@acmYear. \@title
2404   \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2405   \if@ACM@nonacm\else
2406     % The 'nonacm' option disables 'printacmref' by default,
2407     % and the present \mkbibcitation definition is never used
2408     % in this case. The conditional remains useful if the user
2409     % explicitly sets \settopmatter{printacmref=true}.
2410     \if@ACM@journal@bibstrip
2411       \textit{\@journalNameShort}
2412       \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2413       \ref{TotPages}~\@pages@word.
2414     \else
2415       In \textit{\@acmBooktitle}%
2416       \ifx\@acmEditors\@empty\textit{.}\else
2417         \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2418       \fi\
2419       ACM, New York, NY, USA%
2420       \@article@string\unskip, \ref{TotPages}~\@pages@word.
2421     \fi
2422   \fi
2423   \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2424 \par\egroup}

```

\@printendtopmatter End the top matter

```

2425 \def\@printendtopmatter{%
2426   \let\@vspace\@vspace@orig
2427   \let\@vspacer\@vspacer@orig
2428   \par\bigskip
2429   \let\@vspace\@vspace@acm
2430   \let\@vspacer\@vspacer@acm
2431 }

```

\@setthanks We redefine \@setthanks using \@long

```

2432 \def\@setthanks{\@long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

\@setauthorsaddresses

```

2433 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

3.16 Headers and Footers

We use fancyhdr for our headers and footers:

```

2434 \RequirePackage{fancyhdr}

```

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

```
2435 \let\ACM@ps@plain\ps@plain
2436 \let\ACM@ps@myheadings\ps@myheadings
2437 \let\ACM@ps@headings\ps@headings
2438 \def\ACM@restore@pagestyle{%
2439   \let\ps@plain\ACM@ps@plain
2440   \let\ps@myheadings\ACM@ps@myheadings
2441   \let\ps@headings\ACM@ps@headings}
2442 \AtBeginDocument{\ACM@restore@pagestyle}
```

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

```
2443 \if@ACM@review
2444   \newsavebox{\ACM@linecount@bx}
2445   \newlength\ACM@linecount@bxht
2446   \newcount\ACM@linecount
2447   \ACM@linecount\@ne\relax
2448   \def\ACM@mk@linecount{%
2449     \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{\normalfont
2450       \normalsize
2451         \setlength{\ACM@linecount@bxht}{0pt}%
2452         \loop{\color{red}\scriptsize\the\ACM@linecount}\
2453           \global\advance\ACM@linecount by \@ne
2454           \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2455           \ifdim\ACM@linecount@bxht<\textheight\repeat
2456             {\color{red}\scriptsize\the\ACM@linecount}\hfill
2457             \global\advance\ACM@linecount by \@ne}}
2458   \fi
```

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

```
2459 \def\ACM@linecountL{%
2460   \if@ACM@review
2461     \ACM@mk@linecount
2462     \begin{picture}(0,0)%
2463       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2464     \end{picture}%
2465   \fi}
```

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

```
2466 \def\ACM@linecountR{%
2467   \if@ACM@review
2468     \ifcase\ACM@format@nr
2469       \relax % manuscript
2470       \relax
2471       \or % acmsmall
2472       \relax
2473       \or % acmlarge
2474       \relax
2475       \or % acmtog
2476       \ACM@mk@linecount
```

```

2477     \or % sigconf
2478         \ACM@mk@linecount
2479     \or % siggraph
2480         \ACM@mk@linecount
2481     \or % sigplan
2482         \ACM@mk@linecount
2483     \or % sigchi
2484         \ACM@mk@linecount
2485     \or % sigchi-a
2486         \ACM@mk@linecount
2487     \fi
2488     \begin{picture}(0,0)%
2489         \put(20,-22){\usebox{\ACM@linecount@bx}}%
2490     \end{picture}%
2491 \fi}

```

\ACM@timestamp The timestamp system

```

2492 \if@ACM@timestamp
2493 % Subtracting 30 from \time gives us the effect of rounding down despite
2494 % \numexpr rounding to nearest
2495 \newcounter{ACM@time@hours}
2496 \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2497 \newcounter{ACM@time@minutes}
2498 \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2499 \newcommand\ACM@timestamp{%
2500     \footnotesize%
2501     \ifx\@acmSubmissionID\@empty\relax\else
2502     Submission ID: \@acmSubmissionID.{ }%
2503     \fi
2504     \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2505     \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2506     Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2507 }
2508 \fi

```

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

```

2509 \def\@shortauthors{%
2510     \if@ACM@anonymous
2511     Anon.
2512     \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2513     \else\shortauthors\fi}

```

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

```

2514 \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

```

2515 \AtBeginDocument{%
2516 \fancypagestyle{standardpagestyle}{%

```

```

2517 \fancyhf{}%
2518 \renewcommand{\headrulewidth}{\z@}%
2519 \renewcommand{\footrulewidth}{\z@}%
2520 \def\@acmArticlePage{%
2521   \ifx\@acmArticle\empty%
2522     \if@ACM@printfolios\thepage\fi%
2523   \else%
2524     \@acmArticle\if@ACM@printfolios:\thepage\fi%
2525   \fi%
2526 }%
2527 \if@ACM@journal@bibstrip
2528 \ifcase\ACM@format@nr
2529 \relax % manuscript
2530 \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2531 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2532 \fancyhead[RE]{\@shortauthors}%
2533 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2534 \if@ACM@nonacm\else%
2535 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
2536 \fi%
2537 \or % acsmall
2538 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2539 \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2540 \fancyhead[RE]{\@headfootfont\@shortauthors}%
2541 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2542 \if@ACM@nonacm\else%
2543 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2544   \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2545 \fi
2546 \or % acmlarge
2547 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2548   \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2549 \fancyhead[LO]{\ACM@linecountL}%
2550 \fancyhead[RO]{\@headfootfont
2551   \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2552 \if@ACM@nonacm\else%
2553 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2554   \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2555 \fi
2556 \or % acmtog
2557 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2558   \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2559 \fancyhead[LO]{\ACM@linecountL}%
2560 \fancyhead[RE]{\ACM@linecountR}%
2561 \fancyhead[RO]{\@headfootfont
2562   \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2563 \if@ACM@nonacm\else%
2564 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2565   \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2566 \fi

```

```

2567 \else % Proceedings
2568 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2569 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2570 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2571 \if@ACM@nonacm\else%
2572 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
2573 \acmConference@shortname,
2574 \acmConference@date, \acmConference@venue}%
2575 \fancyhead[RO]{\@headfootfont
2576 \acmConference@shortname,
2577 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2578 \fi
2579 \fi
2580 \else % Proceedings
2581 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2582 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2583 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2584 \if@ACM@nonacm\else%
2585 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2586 \acmConference@shortname,
2587 \acmConference@date, \acmConference@venue}%
2588 \fancyhead[RO]{\@headfootfont
2589 \acmConference@shortname,
2590 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2591 \fi
2592 \fi
2593 \if@ACM@sigchiamode
2594 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
2595 \fi
2596 \if@ACM@timestamp
2597 \fancyfoot[LO,RE]{\ACM@timestamp}
2598 \fi
2599 }%
2600 \pagestyle{standardpagestyle}
2601 }

```

```

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht 2602 \newdimen\@folio@wd
\@folio@voffset 2603 \@folio@wd=\z@
\@folio@max 2604 \newdimen\@folio@ht
2605 \@folio@ht=\z@
2606 \newdimen\@folio@voffset
2607 \@folio@voffset=\z@
2608 \def\@folio@max{1}
2609 \ifcase\ACM@format@nr
2610 \relax % manuscript
2611 \or % acmsmall
2612 \@folio@wd=45.75pt\relax
2613 \@folio@ht=1.25in\relax
2614 \@folio@voffset=.2in\relax

```



```

2615 \def\@folio@max{8}
2616 \or % acmlarge
2617 \@folio@wd=43.25pt\relax
2618 \@folio@ht=79pt\relax
2619 \@folio@voffset=.55in\relax
2620 \def\@folio@max{10}
2621 \fi

```

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

```

2622 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2623 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2624 \loop
2625 \ifnum\@tempcnta>\@folio@max\relax
2626 \advance\@tempcnta by - \@folio@max
2627 \repeat
2628 \advance\@tempcnta by -1\relax
2629 \@tempdima=\@folio@ht\relax
2630 \multiply\@tempdima by \the\@tempcnta\relax
2631 \advance\@tempdima by -\@folio@voffset\relax
2632 \begin{picture}(0,0)
2633 \makebox[\z@]{\raisebox{-\@tempdima}{%
2634 \rlap{%
2635 \raisebox{-0.45\@folio@ht}[\z@][\z@]{%
2636 \rule{\@folio@wd}{\@folio@ht}}}%
2637 \parbox{\@folio@wd}{%
2638 \centering
2639 \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}}
2640 \end{picture}\fi}
2641

```

`firstpagestyle` The page style for the first page only.

```

2642 \AtBeginDocument{%
2643 \fancypagestyle{firstpagestyle}{%
2644 \fancyhf{}%
2645 \renewcommand{\headrulewidth}{\z@}%
2646 \renewcommand{\footrulewidth}{\z@}%
2647 \if@ACM@journal@bibstrip
2648 \ifcase\ACM@format@nr
2649 \relax % manuscript
2650 \fancyhead[L]{\ACM@linecountL}%
2651 \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
2652 \if@ACM@nonacm\else%
2653 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2654 \fi%
2655 \or % acmsmall
2656 \if@ACM@nonacm\else%
2657 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2658 \@acmNumber, Article \@acmArticle. Publication date:

```

```

2659     \@acmPubDate.}%
2660     \fi%
2661     \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2662     \fancyhead[LO]{\ACM@linecountL}%
2663     \fancyhead[RO]{\@folioblob}%
2664     \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
2665 \or % acmlarge
2666     \if@ACM@nonacm\else%
2667     \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2668     \@acmNumber, Article \@acmArticle. Publication date:
2669     \@acmPubDate.}%
2670     \fi%
2671     \fancyhead[RO]{\@folioblob}%
2672     \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2673     \fancyhead[LO]{\ACM@linecountL}%
2674     \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2675 \or % acmtog
2676     \if@ACM@nonacm\else%
2677     \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2678     \@acmNumber, Article \@acmArticle. Publication date:
2679     \@acmPubDate.}%
2680     \fi%
2681     \fancyhead[L]{\ACM@linecountL}%
2682     \fancyhead[R]{\ACM@linecountR}%
2683 \else % Conference proceedings
2684     \fancyhead[L]{\ACM@linecountL}%
2685     \fancyhead[R]{\ACM@linecountR}%
2686     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2687     \fi
2688 \else
2689     \fancyhead[L]{\ACM@linecountL}%
2690     \fancyhead[R]{\ACM@linecountR}%
2691     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2692     \fi
2693 \if@ACM@timestamp
2694     \ifnum\ACM@format@nr=0\relax % Manuscript
2695     \fancyfoot[LO,RE]{\ACM@timestamp\quad
2696     \if@ACM@nonacm\else
2697     \footnotesize Manuscript submitted to ACM
2698     \fi}
2699 \else
2700     \fancyfoot[LO,RE]{\ACM@timestamp}
2701     \fi
2702 \fi
2703 }}

```

3.17 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`.

```

2704 \def\ACM@NRadjust#1{%
2705   \begingroup
2706   \expandafter\ifx\csname Sectionformat\endcsname\relax
2707   % do nothing when \Sectionformat is unknown
2708   \def\next{\endgroup #1}%
2709   \else
2710   \def\next{\endgroup
2711     \let\realSectionformat\Sectionformat
2712     \def\ACM@sect@format@{#1}%
2713     \let\Sectionformat\ACM@NR@adjustedSectionformat
2714     %% next lines added 2018-06-17 to ensure section number is styled
2715     \let\real@adddotafter\@adddotafter
2716     \let\@adddotafter\ACM@adddotafter
2717     #1}% imposes the styles, but nullifies \MakeUppercase
2718     \let\@adddotafter\real@adddotafter
2719   }%
2720   \fi \next
2721 }
```

`\ACM@NR@adjustedSectionformat`

```

2722 \def\ACM@NR@adjustedSectionformat#1#2{%
2723   \realSectionformat{\ACM@sect@format{#1}}{#2}%
2724   \let\Sectionformat\realSectionformat}
2725 \DeclareRobustCommand{\ACM@sect@format@}{\ACM@sect@format@}
2726 \def\ACM@sect@format@null#1{#1}
2727 \let\ACM@sect@format@\ACM@sect@format@null
2728 \AtBeginDocument{%
2729   \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
2730   \let\LTX@adddotafter\@adddotafter
2731   \fi
```

2732 }

\ACM@adddotafter

2733 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}

Sectioning is different for different levels

2734 \renewcommand\section{\@startsection{section}{1}{\z@}%
2735 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2736 {.25\baselineskip}%
2737 {\ACM@NRadjust\@secfont}}
2738 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2739 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2740 {.25\baselineskip}%
2741 {\ACM@NRadjust\@subsecfont}}
2742 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2743 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2744 {-3.5\p@}%
2745 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}
2746 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2747 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2748 {-3.5\p@}%
2749 {\ACM@NRadjust{\@parfont\@adddotafter}}}
2750 \newcommand\noindentparagraph{\@startsection{paragraph}{4}{\z@}%
2751 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2752 {-3.5\p@}%
2753 {\ACM@NRadjust{\@parfont}}}
2754
2755 \renewcommand\part{\@startsection{part}{9}{\z@}%
2756 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2757 {4\p@}%
2758 {\ACM@NRadjust\@parfont}}

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

2759 \def\section@raggedright{\@rightskip\@flushglue
2760 \rightskip\@rightskip
2761 \leftskip\z@skip
2762 \parindent\z@}

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

\@subsecfont 2763 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont 2764 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 2765 \def\@subsubsecfont{\sffamily\itshape}
2766 \def\@parfont{\itshape}
2767 \setcounter{secnumdepth}{3}
2768 \ifcase\ACM@format@nr
2769 \relax % manuscript
2770 \or % acsmall
2771 \or % acmlarge
2772 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}

```

2773 \def\@subsecfont{\sffamily\large\section@raggedright}
2774 \or % acmtog
2775 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2776 \def\@subsecfont{\sffamily\large\section@raggedright}
2777 \or % sigconf
2778 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2779 \def\@subsecfont{\bfseries\Large\section@raggedright}
2780 \or % siggraph
2781 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2782 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2783 \or % sigplan
2784 \def\@secfont{\bfseries\Large\section@raggedright}
2785 \def\@subsecfont{\bfseries\section@raggedright}
2786 \def\@subsubsecfont{\bfseries\section@raggedright}
2787 \def\@parfont{\bfseries\itshape}
2788 \def\@subparfont{\itshape}
2789 \or % sigchi
2790 \setcounter{secnumdepth}{1}
2791 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2792 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2793 \or % sigchi-a
2794 \setcounter{secnumdepth}{0}
2795 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2796 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2797 \fi

```

`\@adddotafter` Add punctuation after a sectioning command

```
2798 \def\@adddotafter#1{#1\@addpunct{.}}
```

`\@addspaceafter` Add space after a sectioning command

```
2799 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

3.18 TOC lists

`\@dotsep` Related to the `\tableofcontents` are all the horizontal fillers. Base \TeX 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.

```
2800 \providecommand*\@dotsep{4.5}
```

3.19 Theorems

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

```
2801 \def\@acmplainbodyfont{\itshape}
```

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

```
2802 \def\@acmplainindent{\parindent}
```

```

\@acmplainheadfont The font to typeset the head of the acmplain theorem style.
2803 \def\@acmplainheadfont{\scshape}

\@acmplainnotefont The font to typeset the note of the acmplain theorem style.
2804 \def\@acmplainnotefont{\@empty}

      Customization of the acmplain theorem style:
2805 \ifcase\ACM@format@nr
2806 \relax % manuscript
2807 \or % acsmall
2808 \or % acmlarge
2809 \or % acmtog
2810 \or % sigconf
2811 \or % siggraph
2812 \or % sigplan
2813 \def\@acmplainbodyfont{\itshape}
2814 \def\@acmplainindent{\z@}
2815 \def\@acmplainheadfont{\bfseries}
2816 \def\@acmplainnotefont{\normalfont}
2817 \or % sigchi
2818 \or % sigchi-a
2819 \fi

acmplain The acmplain theorem style
2820 \newtheoremstyle{acmplain}%
2821 { .5\baselineskip\@plus.2\baselineskip
2822   \@minus.2\baselineskip}% space above
2823 { .5\baselineskip\@plus.2\baselineskip
2824   \@minus.2\baselineskip}% space below
2825 {\@acmplainbodyfont}% body font
2826 {\@acmplainindent}% indent amount
2827 {\@acmplainheadfont}% head font
2828 { .}% punctuation after head
2829 { .5em}% spacing after head
2830 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont( #3)}}}% head spec

\@acmdefinitionbodyfont The font to typeset the body of the acmdefinition theorem style.
2831 \def\@acmdefinitionbodyfont{\normalfont}

\@acmdefinitionindent The amount to indent the acmdefinition theorem style.
2832 \def\@acmdefinitionindent{\parindent}

\@acmdefinitionheadfont The font to typeset the head of the acmdefinition theorem style.
2833 \def\@acmdefinitionheadfont{\itshape}

\@acmdefinitionnotefont The font to typeset the note of the acmdefinition theorem style.
2834 \def\@acmdefinitionnotefont{\@empty}

```

Customization of the acmdefinition theorem style:

```
2835 \ifcase\ACM@format@nr
2836 \relax % manuscript
2837 \or % acmsmall
2838 \or % acmlarge
2839 \or % acmtog
2840 \or % sigconf
2841 \or % siggraph
2842 \or % sigplan
2843 \def\@acmdefinitionbodyfont{\normalfont}
2844 \def\@acmdefinitionindent{\z@}
2845 \def\@acmdefinitionheadfont{\bfseries}
2846 \def\@acmdefinitionnotefont{\normalfont}
2847 \or % sigchi
2848 \or % sigchi-a
2849 \fi
```

acmdefinition The acmdefinition theorem style

```
2850 \newtheoremstyle{acmdefinition}%
2851  {.5\baselineskip\@plus.2\baselineskip
2852   \@minus.2\baselineskip}% space above
2853  {.5\baselineskip\@plus.2\baselineskip
2854   \@minus.2\baselineskip}% space below
2855  {\@acmdefinitionbodyfont}% body font
2856  {\@acmdefinitionindent}% indent amount
2857  {\@acmdefinitionheadfont}% head font
2858  {.%} punctuation after head
2859  {.5em}% spacing after head
2860  {\thmname{#1}\thmnumber{ #2}\thmnote{ \@acmdefinitionnotefont(#3)}}% head spec
```

Make acmplain the default theorem style.

```
2861 \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.

```
2862 \AtEndPreamble{%
2863   \if@ACM@acmthm
2864     \theoremstyle{acmplain}
2865     \ifundefined{theorem}{%
2866       \newtheorem{theorem}{Theorem}[section]
2867     }{}
2868     \ifundefined{conjecture}{%
2869       \newtheorem{conjecture}{Conjecture}
```

```

2870 }{}
2871 \@ifundefined{proposition}{%
2872 \newtheorem{proposition}[theorem]{Proposition}
2873 }{}
2874 \@ifundefined{lemma}{%
2875 \newtheorem{lemma}[theorem]{Lemma}
2876 }{}
2877 \@ifundefined{corollary}{%
2878 \newtheorem{corollary}[theorem]{Corollary}
2879 }{}
2880 \theoremstyle{acmdefinition}
2881 \@ifundefined{example}{%
2882 \newtheorem{example}[theorem]{Example}
2883 }{}
2884 \@ifundefined{definition}{%
2885 \newtheorem{definition}[theorem]{Definition}
2886 }{}
2887 \fi
2888 \theoremstyle{acmplain}
2889 }

```

`\@proofnamefont` The font to typeset the proof name.
2890 `\def\@proofnamefont{\scshape}`

`\@proofindent` Whether or not to indent proofs.
2891 `\def\@proofindent{\indent}`

Customization of the proof environment.

```

2892 \ifcase\ACM@format@nr
2893 \relax % manuscript
2894 \or % acmsmall
2895 \or % acmlarge
2896 \or % acmtog
2897 \or % sigconf
2898 \or % siggraph
2899 \or % sigplan
2900 \def\@proofnamefont{\itshape}
2901 \def\@proofindent{\noindent}
2902 \or % sigchi
2903 \or % sigchi-a
2904 \fi

```

`proof` We want some customization of the proof environment.

```

2905 \renewenvironment{proof}[1][\proofname]{\par
2906 \pushQED{\qed}%
2907 \normalfont \topsep6\p@\@plus6\p@\relax
2908 \trivlist
2909 \item[\@proofindent\hskip\labelsep
2910 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces

```



```

2911 }{%
2912 \popQED\endtrivlist\endpfalse
2913 }

```

3.20 Balancing columns

We need balancing only if the user did not disable it, and we use a two column format

```

2914 \AtEndPreamble{%
2915 \if@ACM@balance
2916 \ifcase\ACM@format@nr
2917 \relax % manuscript
2918 \global\@ACM@balancefalse
2919 \or % acmsmall
2920 \global\@ACM@balancefalse
2921 \or % acmlarge
2922 \global\@ACM@balancefalse
2923 \or % acmtog
2924 \RequirePackage{balance}%
2925 \or % sigconf
2926 \RequirePackage{balance}%
2927 \or % siggraph
2928 \RequirePackage{balance}%
2929 \or % sigplan
2930 \RequirePackage{balance}%
2931 \or % sigchi
2932 \RequirePackage{balance}%
2933 \or % sigchi-a
2934 \global\@ACM@balancefalse
2935 \fi
2936 \fi
2937 }
2938 \AtEndDocument{%
2939 \if@ACM@balance
2940 \if@twocolumn
2941 \balance
2942 \fi\fi}

```

3.21 Acknowledgments

\acksname

```
2943 \newcommand\acksname{Acknowledgments}
```

\acks This is a comment-like structure

```

2944 \specialcomment{acks}{%
2945 \begingroup
2946 \section*{\acksname}
2947 \phantomsection\addcontentsline{toc}{section}{\acksname}
2948 }{%
2949 \endgroup

```

```

2950 }
\grantsponsor We just typeset the name of the sponsor
2951 \def\grantsponsor#1#2#3{#2}

\grantnum
2952 \newcommand\grantnum[3][]{#3%
2953 \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}

```

3.22 Conditional typesetting

We use the comment package for conditional typesetting:

```

2954 \AtEndPreamble{%
2955 \if@ACM@screen
2956 \includecomment{screenonly}
2957 \excludecomment{printonly}
2958 \else
2959 \excludecomment{screenonly}
2960 \includecomment{printonly}
2961 \fi
2962 \if@ACM@anonymous
2963 \excludecomment{anonsuppress}
2964 \excludecomment{acks}
2965 \else
2966 \includecomment{anonsuppress}
2967 \fi}

```

3.23 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’.

```

2968 \newcommand\showeprint[2][arxiv]{%
2969 \def\@tempa{#1}%
2970 \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
2971 \def\@tempb{arxiv}%
2972 \ifx\@tempa\@tempb
2973 arXiv:\href{https://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2974 \fi}

```

3.24 End of Class

`\vspace` We do not disable `\vspace`, but add warning to it

```

2975 \let\@vspace@orig=\vspace
2976 \let\@vspacer@orig=\vspacer
2977 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
2978 only be used to provide space above/below surrounding
2979 objects}}{}{}
2980 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should

```

```
2981     only be used to provide space above/below surrounding
2982     objects}}{}}
2983 \let\@vspace@acm=\@vspace
2984 \let\@vspacer@acm=\@vspacer
```

```
\ACM@origbaselinestretch We produce an error if the user tries to change \baselinestretch
2985 \let\ACM@origbaselinestretch\baselinestretch
2986 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
2987   \ClassError{\@classname}{An attempt to redefine
2988     \string\baselinestretch\space detected. Please do not do this for
2989     ACM submissions!}\fi}

2990 \normalsize\normalfont\frenchspacing
2991 </class>
```

References

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Change History

1.48	General: Added prologue option to xcolor	46	\if@ACM@printacmref: Added warning for longer papers	69
	Bib code cleanup (Zack Weinberg)	33	\keywords: Added warning for missing keywords	68
	Documentation update (siggraph)	33	General: ACM reference format is now mandatory for papers over one page; CCS concepts and keywords are now mandatory for papers over two pages	33
1.49	General: New journal: DTRAP	33	Authors' addresses are mandatory for journal articles	33
1.53	General: New journals: PACMCGIT, TIOT, TDSCI	33		
	Rearranged docs	33		
1.54	General: Moved footnote stuff before hyperref call (Ross Moore)	33	1.69	\vspace: Added the changed command to avoid grouping
1.56	General: Documented \Description	33	1.70	General: Name change for TDS
1.57	General: Booktabs package is now the default	33	1.71	General: Bibliography change: volume for @inproceedings is now in brackets together with series
1.58	General: Changes in samples (Enrico Gregorio)	33		LuaTeX now uses the OTF versions of fonts
	New journal: HEALTH. TDS is renamed to TDSCI	33		Retired sigchi and sigchi-a
1.60	\if@ACM@urlbreakonhyphens: introduced macro	34	v1.00	General: First released version
	General: New option: urlbreakonhyphens	33	v1.01	General: Changed hyperref colors in screen mode (closes https://github.com/borisveytsman/acmart/issues/1)
1.62	General: New journal: TELO	33		Defined ACM colors
1.63	General: New journal: FACMP	33		Explicitly put draft option (closes https://github.com/borisveytsman/acmart/issues/4)
	New journal: TQUANT	33		Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/acmart/issues/5)
1.63a	General: Move: TQUANT to TQC	33	v1.02	General: Added TOPS and TSC (closes https://github.com/borisveytsman/acmart/issues/12)
1.64	General: Putting abstract after \maketitle now causes an error	33		Documentation changes (closes https://github.com/borisveytsman/acmart/issues/12)
1.65	General: New journal: DGOV	33		
1.66	\@mkauthorsaddresses: Added warning for missing addresses	90		
	\ccsdesc@parse: Added warning for missing concepts	71		

	//github.com/borisveytsman/acmart/issues/13)	33		<code>\if@ACM@badge</code> : Added macro	67
v1.03	<code>\@formatdoi</code> : Added macro	73		<code>\maketitle</code> : Corrected a bug with abstract footnotes	77
	<code>\if@ACM@authorversion</code> : Added macro	35		Corrected a bug with permission and footnotes order	77
	<code>\maketitle</code> : Added special case of authorversion	77	v1.08	General: SIGPLAN reformatting by Matthew Fluet	33
	General: Added anonsuppress environment	33		Typos corrected (Tobias Pape) . . .	33
	Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	33	v1.09	General: Revert SIGPLAN caption rules	33
v1.04	<code>\acmArticleSeq</code> : Name change by Matthew Fluet	67	v1.10	<code>\maketitle</code> : Corrected a bug with doi in manuscript and author version, https://github.com/borisveytsman/acmart/issues/36	77
	<code>\acmDOI</code> : Name change by Matthew Fluet	67		General: Changes of ‘licensedothergov’ wording	71
	<code>\acmISBN</code> : Name change by Matthew Fluet	67		<code>standardpagestyle</code> : Reversed folios location	94
	General: Updated bibliography for siggraph	33	v1.11	General: Customization of ACM theorem styles and proof environment by Matthew Fluet . .	33
v1.05	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	33	v1.12	<code>\@marginfigure</code> : Now centering by default	53
	Patched <code>\setcitetstyle</code> command; closes https://github.com/borisveytsman/acmart/issues/19	33		<code>\@marginable</code> : Now centering by default	53
v1.06	<code>\@ACM@badge@skip</code> : Added macro . .	68		<code>\@parfont</code> : Moved to <code>\section@raggedright</code>	100
	<code>\@ACM@badge@width</code> : Added macro .	67		<code>\copyrightpermissionfootnoterule</code> : Added macro	49
	<code>\@ACM@title@width</code> : Added macro .	67		<code>\descriptionlabel</code> : Redefined	55
	<code>\@mktitle@i</code> : Added processing badges	82		<code>\footnoterule</code> : Made shorter	49
	Made generic	82		<code>\if@ACM@natbib@override</code> : Added macro	35
	<code>\@mktitle@ii</code> : Now this macro is obsolete	83		<code>\if@ACM@newfonts</code> : Added macro . .	50
	<code>\@mktitle@iii</code> : Added processing badges	83		<code>\maketitle</code> : Moved thankses to <code>copyrightpermission</code> box	77
	Made more generic	83		<code>\section@raggedright</code> : Introduced macro	100
	<code>\@mktitle@iv</code> : Made more generic .	83		General: Added graceful behavior when libertine fonts are absent . .	50
	<code>\@printtopmatter</code> : Added processing badges	80		Documentation updates	33
	<code>\@subtitlefont</code> : Added macro	82			
	<code>\@titlefont</code> : Added macro	81			
	<code>\acmBadgel</code> : Added macro	68			
	<code>\acmBadger</code> : Added macro	68			

v1.13		\position: Added macro	84
	\@mpfootnotetext: Made minipage	\postcode: Added macro	84
	footnotes centered	\state: Added macro	84
	. . . . . 44	\streetaddress: Added macro	84
	\bibliographystyle: Redefined	standardpagestyle: Better handling	
	macro	of anonymous mode	94
	. . . . . 46	v1.16	
	\bibstyle@acmauthoryear: Added	\@headfootfont: Added macro	94
	macro	General: Formatting header/footer	
	. . . . . 41	(Matthew Fluet)	33
	\bibstyle@acmnumeric: Added	standardpagestyle: Customize	
	macro	header/footer text font	94
	. . . . . 41	v1.17	
	\if@ACM@printfolios: Added macro	\@makefnmark: Redefined	44
	. . . . . 69	\@mkauthors: TOG now uses the same	
	General: Font adjustments for	authors block as other journals	84
	acmsmall	\@mkauthors@ii: Deleted	87
	. . . . . 85	\@mkbibcitation: Added \nobreak	91
	Increased font size for ACM Large	Changed format for sigs	91
	Print bibliographic information by	\acmArticle: The default is now	
	default for the proceedings	numerical	67
	. . . . . 69	\acmMonth: The default must be	
	standardpagestyle: Added headers	numerical. Closes #50.	67
	for sigs	\acmNumber: The default is now	
	. . . . . 94	numerical	66
	Expanded headers for sigchi-a	\acmVolume: The default is now	
	. . . . . 94	numerical	66
	Suppressed folios if sig	\acmYear: The default is now	
	. . . . . 94	numerical	67
v1.14		\description: Decreased indent	55
	\bibstyle@acmauthoryear: Moved	\grantnum: Added url	106
	def of \bibstyle@acmauthoryear	\grantsponsor: Renamed	106
	before use	\if@ACM@printacmref: Renamed	
	. . . . . 41	from \if@ACM@printbib	69
	\bibstyle@acmnumeric: Moved def of	General: Slightly decreased margins	
	\bibstyle@numeric before use	for sigs	47
	. . . . . 41	standardpagestyle: Added paper	
	General: \citestyle updates	title to sigs	94
	(Matthew Fluet)	v1.18	
	. . . . . 33	\@mkauthors@i: Now we andify	
	Patched \citestyle	affiliations	87
	. . . . . 39	\@typeset@author@line: Added	
v1.15		macro	86
	\@ACM@addtoaddress: Added macro	General: Natbib is now the default for	
	. . . . . 84	all formats	33
	\@mkauthors@iii: New authors	v1.19	
	system	\@mkabstract: Include 'Abstract' in	
	. . . . . 88	PDF bookmarks (Matthew Fluet)	91
	\@shortauthors: Introduced macro	\acks: Include 'Acknowledgements' in	
	. . . . . 94	PDF bookmarks (Matthew Fluet)	105
	\@typeset@author@bx: Moved to		
	separate macro		
	. . . . . 87		
	\acks: Added macro		
	. . . . . 105		
	\affiliation: Added code for author		
	groups		
	. . . . . 64		
	\author: Added code for author		
	groups		
	. . . . . 64		
	\city: Added macro		
	. . . . . 84		
	\country: Added macro		
	. . . . . 84		
	\department: Added macro		
	. . . . . 84		
	\grantnum: Added macro		
	. . . . . 106		
	\grantsponsor: Added macro		
	. . . . . 106		
	\if@insideauthorgroup: Introduced		
	macro		
	. . . . . 63		
	\institution: Added macro		
	. . . . . 84		
	\num@authorgroups: Renamed		
	. . . . . 63		
	\orcid: Introduced macro		
	. . . . . 65		

General: Include 'Abstract', 'Acknowledgements', and 'References' in PDF bookmarks (Matthew Fluet)	33	v1.31	Switched to T1: looks like libertine has problems with \l in OT1	50
Include 'References' in PDF bookmarks (Matthew Fluet)	39		Updated IMWUT and PACMPL	56
v1.20			\@additionalaffiliation: Added macro	65
\@mkabstract: Deleted spurious space	91		\@mkbibcitation: Disabled linebreak	91
General: Bug fixes for bst	33		\@startsection: Added	
v1.21			\tochangmeasure	41
\showeprint: Added macro	106		Redefined macro	43
v1.22			\@textbottom: Redefined	49
General: More bibliography changes for Aptara	33		\acmMonth: The default now is the current month (Matteo Riondato)	67
v1.23			\acmYear: The default now is the current year (Matteo Riondato)	67
General: Add PACMPL journal option	33		\additionalaffiliation: Added macro	65
v1.24			\l@section: Redefined macro	44
General: Add IMWUT journal option	56		\l@subsubsection: Redefined macro	44
v1.25			General: Documentation changes	33
General: Updated PACMPL	56	v1.32	\@formatdoi: New doi format	73
v1.26			General: Added POMACS journal option	33
General: Corrected \shortcite bug	33		Format siggraph is now obsolete	33
Documentation typos fixed (thanks to Stephen Spencer)	33	v1.33	\@ACM@addtoaddress: Added obeypunctuation code	84
v1.27			\@mkauthors@i: Added obeypunctuation code	87
\if@ACM@printccs: Typo corrected	69		\@mkauthors@iii: Added obeypunctuation code	88
v1.28			\@mkauthors@iv: Added obeypunctuation code	89
\ccsdesc@parse: Change from \to to \textrightarrow (Matteo Riondato)	70		\@subtitlefont: Added \normalsize	82
General: Corrected option natbib behavior	41		\ACM@linecountL: Renamed macro	93
Got rid of warnings in pdf keywords	44		\ACM@linecountR: Added macro	93
v1.29			\ACM@timestamp: Added current page number	94
\@mkabstract: Removed spurious indentation (John Wickerson)	91		Added macro (Michael D. Adams)	94
\ccsdesc@parse: Add spacing after bullet and around rightrightarrow; semicolon separators no longer in bold/italic (John Wickerson)	70		Added submission id	94
General: Increased head to 13pt	47		\acmSubmissionID: Added macro	67
standardpagestyle: Corrected printfolios (Matthew Fluet)	94		\city: Added obeypunctuation code	84
v1.30			\country: Added obeypunctuation code	84
\department: Added optional parameter	84		\department: Added obeypunctuation code	84
General: Added \frenchspacing	107		\if@ACM@affiliation@obeypunctuation: Added macro	65
Bibtex style now recognizes https:// in doi	33			

<code>\if@ACM@authordraft</code> : Added macro	36	Rearranged <code>\bibstrip</code>	77
<code>\if@ACM@natbib@override</code> : Deleted macro	35	The <code>\terms</code> command is now obsolete	77
<code>\if@ACM@timestamp</code> : Added macro (Michael D. Adams)	36	<code>\terms</code> : The <code>\terms</code> command now just produces a warning	68
<code>\institution</code> : Added obeypunctuation code	84	v1.35	
<code>\maketitle</code> : Fixed the bug with figures on top and bottom of the title page, thanks to David Epstein	77	<code>\bibstyle@acmauthoryear</code> : Square brackets for author-year style	41
<code>\position</code> : Added obeypunctuation code	84	General: BibTeX bug fixed: et al.	33
<code>\postcode</code> : Added obeypunctuation code	84	If the copyright is set to usgov or rightsretained, the price is suppressed	71
<code>\state</code> : Added obeypunctuation code	84	v1.36	
<code>\streetaddress</code> : Added obeypunctuation code	84	<code>\@ACM@authorsperrow</code> : Added macro	69
General: Added <code>acmart-preload-hook</code>	33	<code>\@mkauthors@iii</code> : Added authorsperrow override	88
Added <code>cmap</code> and <code>glyphtounicode</code>	50	<code>\@mkauthors@iv</code> : Added authorsperrow override	89
BibTeX comma before articleno bug corrected	33	<code>\if@ACM@authordraft</code> : Corrected typo, thanks to bargteil	36
BibTeX <code>crossref</code> bug corrected	33	General: Added PACMHCI journal options	56
BibTeX <code>numpages</code> bug corrected	33	Added the possibility to adjust number of author boxes per row in conference formats	33
Documentation updates	33	v1.37	
Moved <code>\ci</code> tename definition for non-natbib bibliography, so a package may redefine it	45	<code>\description</code> : Reduce list indentation (Matthew Fluet)	55
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