

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, John Collins, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, Ulrike Fischer, Jason Hemann, Peter Kemp, Luis Leiva, Ben Liblit, Rholaïs 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 customization options, so it might appear intimidating for a casual user. Do not panic! Many of these commands and options can be safely left with their default values or the values recommended by your conference or journal editors. If you have problems or questions, do not hesitate to ask me directly or the community at <https://github.com/borisveytsman/acmart>, <https://tex.stackexchange.com> or the closest \TeX Users Group. The world-wide \TeX Users Group is at <https://tug.org/>; please consider joining us if you use \TeX regularly.

2.1 Installation

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

The latest released version of this package can be found on CTAN: <https://www.ctan.org/pkg/acmart>. The development version can be found on GitHub: <https://>

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 \TeX can find them (see [1] or the documentation for your \TeX system).
3. Update the database of file names. Again, see [1] or the documentation for your \TeX system for the system-specific details.
4. The file `acmart.pdf` provides the documentation for the package. (This is probably the file you are reading now.)

As an alternative to items 2 and 3 you can just put the files in the working directory where your `.tex` file is.

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

- *amscs*, <http://www.ctan.org/pkg/amscs>
- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *balance*, <http://www.ctan.org/pkg/balance>
- *booktabs*, <http://www.ctan.org/pkg/booktabs>
- *caption*, <http://www.ctan.org/pkg/caption>
- *comment*, <http://www.ctan.org/pkg/comment>
- *cm-super*, <http://www.ctan.org/pkg/cm-super>
- *cmap*, <http://www.ctan.org/pkg/cmap>
- *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, TRETS, 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. An alternative is the (experimental) option `pbalance`, which uses the new package `pbalance` for this end.

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

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
pbalance	false	Whether to balance the last page in two column mode using pbalance package
urlbreakonhyphens	true	Whether to break urls on hyphens

data. Some of these commands, like `\title` and `\author`, should be put by the authors. Others, like `\acmVolume` and `\acmDOI`—by the editors. Below we describe these commands and mention who should issue them. These macros should be used *before* the `\maketitle` command. Note that in previous versions of ACM classes some of these commands should be used before `\maketitle`, and some after it. Now they all must be used before `\maketitle`.

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

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

```
\acmJournal{TOMS}
```

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

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

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

name: the name of the conference.

date: the date(s) of the conference.

venue: the place of the conference.

Examples:

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

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

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

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

`\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:

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

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

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

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.

<code>\position</code>	The <code>\affiliation</code> and <code>\additionalaffiliation</code> commands are further structured
<code>\institution</code>	to interact with the metadata extraction tools. Inside these commands you should use the
<code>\department</code>	<code>\position</code> , <code>\institution</code> , <code>\department</code> , <code>\city</code> , <code>\streetaddress</code> , <code>\state</code> , <code>\postcode</code>
<code>\streetaddress</code>	and <code>\country</code> macros to indicate the corresponding parts of the affiliation. Note that in
<code>\city</code>	some cases (for example, journals) these parts are not printed in the resulting copy, but
<code>\state</code>	they <i>are</i> necessary since they are used by the XML metadata extraction programs. Do
<code>\postcode</code>	<i>not</i> put commas or <code>\\</code> between the elements of <code>\affiliation</code> . They will be provided
<code>\country</code>	automatically.

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

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>	<p>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,</p> <pre>\acmISBN{978-1-4503-3916-2}</pre> <p>Setting it to the empty string, as <code>\acmISBN{}</code>, suppresses printing the ISBN.</p>
<code>\acmDOI</code>	<p>The macro <code>\acmDOI{<DOI>}</code> sets the DOI of the article, for example,</p> <pre>\acmDOI{10.1145/9999997.9999999}</pre> <p>It is normally set by the typesetter. Setting it to the empty string, as <code>\acmDOI{}</code>, suppresses the DOI.</p>
<code>\acmBadgeR</code> <code>\acmBadgeL</code>	<p>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: <code>[<url>]</code>, 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</p> <pre>\acmBadgeR[http://ctuning.org/ae/ppopp2016.html]{ae-logo}</pre>
<code>\startPage</code>	<p>The macro <code>\startPage{<page>}</code> sets the first page of the article in a journal or book. It is used by the typesetter.</p>
<code>\terms</code> <code>\keywords</code>	<p>The command <code>\keywords{<keyword, keyword,...>}</code> sets keywords for the article. They must be separated by commas, for example,</p> <pre>\keywords{wireless sensor networks, media access control, multi-channel, radio interference, time synchronization}</pre>
CCSXML <code>\ccsdesc</code>	<p>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> <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 \LaTeX . 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 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` All financial support *must* be listed using the commands `\grantsponsor` and
`\grantnum` `\grantnum`. These commands tell the postprocessing software about the granting organization and grant. The format of these commands is the following:

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

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

At present $\{\langle sponsorID \rangle\}$ 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 `BibTeX` style file `ACM-Reference-Format.bst` for `BibTeX` processing. You can disable loading of `natbib` using the option `natbib=false` in `\documentclass`. However, it is not recommended, as well as the use of `BibTeX` 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 <https://arxiv.org/help/hypertex/bibstyles>.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

and then encode the author as

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

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

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

2.12 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 Notes for wizards

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

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

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

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

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

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

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

you will pass `dvipsnames` to `xcolor`.

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

`\AtBeginMaketitle`

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

```
\AtBeginMaketitle{\acmPrice{125.00}}
```

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
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

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

Abbreviation	Publication
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
TOMACS	ACM Transactions on Modeling and Computer Simulation
TOMM	ACM Transactions on Multimedia Computing, Communications and Applications
TOMPECS	ACM Transactions on Modeling and Performance Evaluation of Computing Systems
TOMS	ACM Transactions on Mathematical Software
TOPC	ACM Transactions on Parallel Computing
TOPLAS	ACM Transactions on Programming Languages and Systems
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
marginfigure

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 [2021/02/21 v1.76 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@pbalance Whether to balance the last page
106 \define@boolkey+{acmart.cls}[@ACM@]{pbalance}[true]{%}{%
107   \PackageError{\@classname}{The option pbalance can be either true or
108     false}}
109 \ExecuteOptionsX{pbalance=false}

```

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

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

```

110 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
111   \if@ACM@natbib
112     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
113   \else
114     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
115   \fi}{\PackageError{\@classname}{The option natbib can be either true or
116     false}}
117 \ExecuteOptionsX{natbib=true}

```

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

```

118 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
119   \if@ACM@anonymous
120     \PackageInfo{\@classname}{Using anonymous mode}%
121   \else
122     \PackageInfo{\@classname}{Not using anonymous mode}%
123   \fi}{\PackageError{\@classname}{The option anonymous can be either true or
124     false}}
125 \ExecuteOptionsX{anonymous=false}

```

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

```

126 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
127   \if@ACM@timestamp
128     \PackageInfo{\@classname}{Using timestamp mode}%
129   \else
130     \PackageInfo{\@classname}{Not using timestamp mode}%
131   \fi}{\PackageError{\@classname}{The option timestamp can be either true or
132     false}}
133 \ExecuteOptionsX{timestamp=false}

```

`\if@ACM@authordraft` Whether we use author-draft mode

```

134 \define@boolkey+{acmart.cls}[@ACM@]{authordraft}[true]{%
135   \if@ACM@authordraft
136     \PackageInfo{\@classname}{Using authordraft mode}%
137     \@ACM@timestamptrue
138     \@ACM@reviewtrue
139   \else
140     \PackageInfo{\@classname}{Not using authordraft mode}%
141   \fi}{\PackageError{\@classname}{The option authordraft can be either true or
142     false}}
143 \ExecuteOptionsX{authordraft=false}

```

`\ACM@fontsize` The font size to pass to the base class

```

144 \def\ACM@fontsize{}
145 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
146 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
147 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
148 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

```

```

149 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
150 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
151 \ProcessOptionsX
152 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.4 Setting switches

<pre> \if@ACM@manuscript </pre>	Whether we use manuscript mode
<pre> 153 \newif\if@ACM@manuscript </pre>	
<pre> \if@ACM@journal </pre>	There are two kinds of publications: journals and books
<pre> 154 \newif\if@ACM@journal </pre>	
<pre> \if@ACM@journal@bibstrip </pre>	Sometimes ACM wants a journal-like publication to have conference information in the bibstrip and vice versa, so we have an additional switch.
<pre> 155 \newif\if@ACM@journal@bibstrip </pre>	
<pre> \if@ACM@sigchiamode </pre>	The formatting of SIGCHI extended abstracts is quite unusual. We have a special switch for them.
<pre> 156 \newif\if@ACM@sigchiamode </pre>	

Setting up switches

```

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

```

```

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

```

3.5 Loading the base class and package

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

```

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

```

```

229 \def\ACM@fontsize{10pt}%
230 \or % sigchi
231 \def\ACM@fontsize{9pt}%
232 \or % sigchi-a
233 \def\ACM@fontsize{10pt}%
234 \fi
235 \fi
236 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
237 \LoadClass[\ACM@fontsize, reqno]{amsart}
238 \RequirePackage{microtype}

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

    Booktabs is now the default
240 \RequirePackage{booktabs}

    We need totpages to calculate the number of pages and refcount to use that num-
ber
241 \RequirePackage{refcount}
242 \RequirePackage{totpages}

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

    We use setspace for double spacing
244 \if@ACM@manuscript
245 \RequirePackage{setspace}
246 \onehalfspacing
247 \fi

    We need textcase for better upcasing
248 \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.

```

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

```

```

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

```



```

311 \def\@tempb{yysep}\ifx\@tempa\@tempb
312 \xdef\NAT@yrsep{\@tempc}\fi
313 \def\@tempb{noteseq}\ifx\@tempa\@tempb
314 \xdef\NAT@cmt{\@tempc}\fi
315 \def\@tempb{citesep}\ifx\@tempa\@tempb
316 \xdef\NAT@sep{\@tempc}\fi
317 \fi
318 }%
319 \NAT@@setcites
320 }
321 \renewcommand\citestyle[1]{%
322 \ifcsname bibstyle@#1\endcsname%
323 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
324 \else%
325 \@latex@error{Undefined ‘#1’ citestyle}%
326 \fi
327 }%
328 \fi

```

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

```

329 \newcommand{\bibstyle@acmauthoryear}{%
330 \setcitestyle{%
331 authoryear,%
332 open={},close={},citesep={;},%
333 aysep={},yysep={},,%
334 noteseq={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```

335 \newcommand{\bibstyle@acmnumeric}{%
336 \setcitestyle{%
337 numbers,sort&compress,%
338 open={},close={},citesep={,},%
339 noteseq={, }}

```

The default is numeric:

```

340 \if@ACM@natbib
341 \citestyle{acmnumeric}
342 \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:

```

343 \def\@startsection#1#2#3#4#5#6{%
344 \if@noskipsec \leavevmode \fi
345 \par
346 \@tempskipa #4\relax
347 \@afterindenttrue
348 \ifdim \@tempskipa <\z@
349 \@tempskipa -\@tempskipa \@afterindentfalse

```

```

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

```

```

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

```

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

```

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

```

```

447 }

\l@section Section spacing is more generous than for amsart
448 \def\l@section{\@tocline{1}{0pt}{1pc}{2pc}{}}

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

\l@subsubsection The spacing in amsart is too large
450 \def\l@subsubsection{\@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
451 \def\@makefnmark{\noindent\@makefnmark}

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

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

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

Adding hyperxmp
477 \RequirePackage{hyperxmp}

```

And now, hyperref

```
478 \let\@footnotemark@nolink\@footnotemark
479 \let\@footnotetext@nolink\@footnotetext
480 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
481 \pdfstringdefDisableCommands{%
482   \def\addtocounter#1#2{%}%
483   \def\unskip{%}%
484   \def\textbullet{- }%
485   \def\textrightarrow{-> }%
486   \def\footnotemark{%}%
487 }
488 \urlstyle{rm}
489 \ifcase\ACM@format@nr
490 \relax % manuscript
491 \or % acmsmall
492 \or % acmlarge
493 \or % acmtog
494 \or % sigconf
495 \or % siggraph
496 \or % sigplan
497   \urlstyle{sf}
498 \or % sigchi
499 \or % sigchi-a
500   \urlstyle{sf}
501 \fi
502 \AtEndPreamble{%
503   \if@ACM@urlbreakonhyphens
504     \def\do@url@hyp{\do-}%
505   \fi
506   \if@ACM@screen
507     \hypersetup{colorlinks,
508       linkcolor=ACMPurple,
509       citecolor=ACMPurple,
510       urlcolor=ACMDarkBlue,
511       filecolor=ACMDarkBlue}
512   \else
513     \hypersetup{hidelinks}
514   \fi
515   \hypersetup{pdflang={en},
516     pdfdisplaydoctitle}}
```

Bibliography mangling.

```
517 \if@ACM@natbib
518   \let\citeN\cite
519   \let\cite\citep
520   \let\citeANP\citeauthor
521   \let\citeNN\citeyearpar
522   \let\citeyearNP\citeyear
523   \let\citeNP\citealt
524   \DeclareRobustCommand\citeA
```

```

525     {\begingroup\NAT@swafalse
526       \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
527     \providecommand\newblock{}%
528   \else
529     \AtBeginDocument{%
530       \let\shortcite\cite%
531       \providecommand\citename[1]{#1}}
532   \fi
533   \newcommand\shortcite[2][]{%
534     \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:

```

535 \def\bibliographystyle#1{%
536   \ifx\@begindocumenthook\@undefined\else
537     \expandafter\AtBeginDocument
538   \fi
539   {\if@filesw
540     \immediate\write\@auxout{\string\bibstyle{#1}}%
541   \fi}}

```

Graphics and color.

```

542 \RequirePackage{graphicx}
543 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [7]:

```

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

```

Author-draft mode or sigchi-a mode

```

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

```

```

566         Legacy document. \\
567         Not for publication in an ACM venue}}
568     \fi
569 \fi
570 \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>.

```

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

```

```

609     marginparwidth=2pc,heightrounded
610   }%
611 \or % sigplan
612   \geometry{twoside=true, head=13pt,
613     paperwidth=8.5in, paperheight=11in,
614     includeheadfoot=false, columnsep=2pc,
615     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
616     marginparwidth=2pc,heightrounded
617   }%
618 \or % sigchi
619   \geometry{twoside=true, head=13pt,
620     paperwidth=8.5in, paperheight=11in,
621     includeheadfoot, columnsep=2pc,
622     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
623     marginparwidth=2pc,heightrounded
624   }%
625 \or % sigchi-a
626   \geometry{twoside=false, head=13pt,
627     paperwidth=11in, paperheight=8.5in,
628     includeheadfoot, marginparsep=72pt,
629     marginparwidth=170pt, columnsep=20pt,
630     top=72pt, bottom=72pt, left=314pt, right=72pt
631   }%
632   \@mparswitchfalse
633   \reversemarginpar
634 \fi

```

`\parindent` Paragraphing

```

\parskip 635 \setlength\parindent{10\p@}
636 \setlength\parskip{\z@}
637 \ifcase\ACM@format@nr
638 \relax % manuscript
639 \or % acmsmall
640 \or % acmlarge
641 \or % acmtog
642   \setlength\parindent{9\p@}%
643 \or % sigconf
644 \or % siggraph
645 \or % sigplan
646 \or % sigchi
647 \or % sigchi-a
648 \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.

```

649 \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.

```
650 \def\copyrightpermissionfootnoterule{\kern-3\p@
651   \hrule \@width \columnwidth \kern 2.6\p@}

652 \RequirePackage{manyfoot}
653 \SelectFootnoteRule[2]{copyrightpermission}
654 \DeclareNewFootnote{authorsaddresses}
655 \SelectFootnoteRule[2]{copyrightpermission}
656 \DeclareNewFootnote{copyrightpermission}
```

`\footnoterule` Tschichold’s rules:

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

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

```
659 \def\endminipage{%
660   \par
661   \unskip
662   \ifvoid\@mpfootins\else
663     \vskip\skip\@mpfootins
664     \normalcolor
665     \unvbox\@mpfootins
666   \fi
667   \@minipagefalse
668   \color@endgroup
669   \egroup
670   \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
671 \def\@textbottom{\vskip \z@ \@plus 1pt}
672 \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.

```
673 \ifcase\ACM@format@nr
674 \relax % manuscript
675 \or % acmsmall
676 \or % acmlarge
677 \or % acmtog
678   \flushbottom
679 \or % sigconf
```

```

680 \flushbottom
681 \or % siggraph
682 \flushbottom
683 \or % sigplan
684 \flushbottom
685 \or % sigchi
686 \flushbottom
687 \or % sigchi-a
688 \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.

```

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

```

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

```

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

```

We use Libertine throughout.

```

712 \if@ACM@newfonts
713 \RequirePackage[T1]{fontenc}
714 % Note that the order in which packages are loaded matters,
715 % and the correct order depends on the LaTeX engine used.
716 % See https://github.com/borisveytsman/acmart/issues/402
717 % and https://github.com/borisveytsman/acmart/issues/410
718 \ifxetex

```

```

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

```

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

```

734 \let\liningnums\@undefined
735 \AtEndPreamble{%
736 \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

737 \if@ACM@sigchiamode
738 \renewcommand{\familydefault}{\sfdefault}
739 \fi

```

3.9 Image descriptions

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

```

740 \newif\if@Description@present
741 \@Description@presenttrue

```

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

```

742 \newif\if@undescrbed@images
743 \@undescrbed@imagesfalse

```

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

```

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

```

The global warning

```

745 \AtEndDocument{\if@undescrbed@images
746 \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}

```

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

```

747 \AtBeginEnvironment{figure}{\@Description@presentfalse
748 \let\@vspace\@vspace@orig
749 \let\@vspacer\@vspacer@orig}

```

```

750 \AtBeginEnvironment{figure*}{\@Description@presentfalse
751   \let\@vspace\@vspace@orig
752   \let\@vspacer\@vspacer@orig}
753 \AtEndEnvironment{figure}{\if@Description@present\else
754   \global\@undescrbed@imagestrue
755   \ClassWarning{\@classname}{A possible image without description}\fi}
756 \AtEndEnvironment{figure*}{\if@Description@present\else
757   \global\@undescrbed@imagestrue
758   \ClassWarning{\@classname}{A possible image without description}\fi}
759 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
760   \let\@vspacer\@vspacer@orig}
761 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
762   \let\@vspacer\@vspacer@orig}
763 \AtBeginEnvironment{algorithm}{\let\@vspace\@vspace@orig
764   \let\@vspacer\@vspacer@orig}
765 \AtBeginEnvironment{algorithm*}{\let\@vspace\@vspace@orig
766   \let\@vspacer\@vspacer@orig}
767 \AtBeginEnvironment{lstlisting}{\let\@vspace\@vspace@orig
768   \let\@vspacer\@vspacer@orig}
769 \AtBeginEnvironment{lstlisting*}{\let\@vspace\@vspace@orig
770   \let\@vspacer\@vspacer@orig}
771 \AtBeginEnvironment{minted}{\let\@vspace\@vspace@orig
772   \let\@vspacer\@vspacer@orig}
773 \AtBeginEnvironment{minted*}{\let\@vspace\@vspace@orig
774   \let\@vspacer\@vspacer@orig}
775 \AtBeginEnvironment{listing}{\let\@vspace\@vspace@orig
776   \let\@vspacer\@vspacer@orig}
777 \AtBeginEnvironment{listing*}{\let\@vspace\@vspace@orig
778   \let\@vspacer\@vspacer@orig}
779

```

3.10 Floats

We use the caption package

```

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

```

```

795 \or % siggraph
796   \captionsetup{textfont={it}}
797 \or % sigplan
798   \captionsetup{labelfont={bf},
799     textfont={normalfont}, labelsep=period, margin=\z@}
800 \or % sigchi
801   \captionsetup[figure]{labelfont={bf, small},
802     textfont={bf, small}}
803   \captionsetup[table]{labelfont={bf, small},
804     textfont={bf, small}}
805 \or % sigchi-a
806   \captionsetup[figure]{labelfont={bf, small},
807     textfont={bf, small}}
808   \captionsetup[table]{labelfont={bf, small},
809     textfont={bf, small}}
810 \fi
811 \fi

sidebar The sidebar environment:
812 \newfloat{sidebar}{}{sbar}
813 \floatname{sidebar}{Sidebar}
814 \renewenvironment{sidebar}{}{\Collect@Body\@sidebar}{}

\@sidebar The processing of the saved text
815 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
816   \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
817   \marginpar{\small#1}\egroup}

marginfigure The marginfigure environment:
818 \newenvironment{marginfigure}{}{\Collect@Body\@marginfigure}{}

\@marginfigure The processing of the saved text
819 \long\def\@marginfigure#1{\bgroup
820   \let\@vspace\@vspace@orig
821   \let\@vspacer\@vspacer@orig
822   \captionsetup{type=figure}%
823   \marginpar{\@Description@presentfalse\centering
824     \small#1\if@Description@present\else
825       \global\@undescrbed@imagestrue
826       \ClassWarning{\@classname}{A possible image without description}
827       \fi}%
828   \egroup}

margintable The margintable environment:
829 \newenvironment{margintable}{}{\Collect@Body\@margintable}{}

\@margintable The processing of the saved text
830 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
831   \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
832   \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
833 \newdimen\fulltextwidth
834 \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)
835 \if@ACM@sigchiamode
836 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
837 \let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
838 \let\@endfloatbox\@endwidefloatbox
839 \def\@fpsaddddefault{\def\@fps{tp}}}%
840 \@float}
841 \fi

\enddblfloat And the end. Just adding a \bgroup.
842 \if@ACM@sigchiamode
843 \def\enddblfloat{%
844 \end@float\egroup}
845 \fi

\@endwidefloatbox This is the end of a wide box—we basically move everything to the left
846 \def\@endwidefloatbox{%
847 \par\vskip\z@skip
848 \@minipagefalse
849 \outer@nobreak
850 \egroup
851 \color@endbox
852 \global\setbox\@currbox=\vbox{\moveleft
853 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
854 \wd\@currbox=\textwidth
855 }
```

3.11 Lists

```
856 \ifcase\ACM@format@nr
857 \relax % manuscript
858 \or % acmsmall
859 \or % acmlarge
860 \or % acmtog
861 \or % sigconf
862 \or % siggraph
863 \or % sigplan
864 \def\labelenumi{\theenumi.}
865 \def\labelenumii{\theenumii.}
866 \def\labelenumiii{\theenumiii.}
867 \def\labelenumiv{\theenumiv.}
```

```

868 \or % sigchi
869 \or % sigchi-a
870 \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`.

```

871 \newdimen\@ACM@labelwidth
872 \AtBeginDocument{%
873   \setlength\labelsep{4pt}
874   \setlength{\@ACM@labelwidth}{6.5pt}
875
876   %% First-level list: when beginning after the first line of an
877   %% indented paragraph or ending before an indented paragraph, labels
878   %% should not hang to the left of the preceding/following text.
879   \setlength\leftmargini{\z@}
880   \addtolength\leftmargini{\parindent}
881   \addtolength\leftmargini{2\labelsep}
882   \addtolength\leftmargini{\@ACM@labelwidth}
883
884   %% Second-level and higher lists.
885   \setlength\leftmarginii{\z@}
886   \addtolength\leftmarginii{0.5\labelsep}
887   \addtolength\leftmarginii{\@ACM@labelwidth}
888   \setlength\leftmarginiii{\leftmarginii}
889   \setlength\leftmarginiv{\leftmarginiii}
890   \setlength\leftmarginv{\leftmarginiv}
891   \setlength\leftmarginvi{\leftmarginv}
892   \@listi}
893 \newskip\listisep
894 \listisep\smallskipamount
895 \def\@listI{\leftmargin\leftmargini
896   \labelwidth\leftmargini \advance\labelwidth-\labelsep
897   \listparindent\z@
898   \topsep\listisep}
899 \let\@listi\@listI
900 \def\@listii{\leftmargin\leftmarginii
901   \labelwidth\leftmarginii \advance\labelwidth-\labelsep
902   \topsep\z@skip}
903 \def\@listiii{\leftmargin\leftmarginiii
904   \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
905 \def\@listiv{\leftmargin\leftmarginiv
906   \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
907 \def\@listv{\leftmargin\leftmarginv
908   \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
909 \def\@listvi{\leftmargin\leftmarginvi
910   \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}

```

```

\descriptionlabel We do not use a colon by default like amsart does:
911 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
912 \renewenvironment{description}{\list{}{%
913   \labelwidth\@ACM@labelwidth
914   \let\makelabel\descriptionlabel}%
915 }{
916   \endlist
917 }
918 \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.
919 \newif\if@ACM@maketitle@typeset
920 \@ACM@maketitle@typesetfalse

```

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

```

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

```


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

```

999 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
1000 \def\@permissionCodeOne{2576-5337}%
1001 \or % HEALTH
1002 \def\@journalName{ACM Transactions on Computing for Healthcare}%
1003 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
1004 \def\@permissionCodeOne{2637-8051}%
1005 \or % IMWUT
1006 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
1007     Wearable and Ubiquitous Technologies}%
1008 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
1009 \def\@permissionCodeOne{2474-9567}%
1010 \@ACM@screentru
1011 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1012 \or % JACM
1013 \def\@journalName{Journal of the ACM}%
1014 \def\@journalNameShort{J. ACM}%
1015 \def\@permissionCodeOne{0004-5411}%
1016 \or % JDIQ
1017 \def\@journalName{ACM Journal of Data and Information Quality}%
1018 \def\@journalNameShort{ACM J. Data Inform. Quality}%
1019 \def\@permissionCodeOne{1936-1955}%
1020 \or % JEA
1021 \def\@journalName{ACM Journal of Experimental Algorithmics}%
1022 \def\@journalNameShort{ACM J. Exp. Algor.}%
1023 \def\@permissionCodeOne{1084-6654}%
1024 \or % JERIC
1025 \def\@journalName{ACM Journal of Educational Resources in Computing}%
1026 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
1027 \def\@permissionCodeOne{1073-0516}%
1028 \or % JETC
1029 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
1030 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
1031 \def\@permissionCodeOne{1550-4832}%
1032 \or % JOCCH
1033 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
1034 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
1035 \or % PACMCGIT
1036 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
1037 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
1038 \def\@permissionCodeOne{2577-6193}%
1039 \@ACM@screentru
1040 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1041 \or % PACMHCI
1042 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
1043 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
1044 \def\@permissionCodeOne{2573-0142}%
1045 \@ACM@screentru
1046 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1047 \or % PACMPL
1048 \def\@journalName{Proceedings of the ACM on Programming Languages}%

```

```

1049 \def\@journalNameShort{Proc. ACM Program. Lang.}%
1050 \def\@permissionCodeOne{2475-1421}%
1051 \@ACM@screentruer
1052 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1053 \or % POMACS
1054 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
1055 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
1056 \def\@permissionCodeOne{2476-1249}%
1057 \@ACM@screentruer
1058 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1059 \or % TAAS
1060 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
1061 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
1062 \def\@permissionCodeOne{1556-4665}%
1063 \or % TACCESS
1064 \def\@journalName{ACM Transactions on Accessible Computing}%
1065 \def\@journalNameShort{ACM Trans. Access. Comput.}%
1066 \def\@permissionCodeOne{1936-7228}%
1067 \or % TACO
1068 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
1069 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
1070 \or % TALG
1071 \def\@journalName{ACM Transactions on Algorithms}%
1072 \def\@journalNameShort{ACM Trans. Algor.}%
1073 \def\@permissionCodeOne{1549-6325}%
1074 \or % TALLIP
1075 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
1076 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
1077 \def\@permissionCodeOne{2375-4699}%
1078 \or % TAP
1079 \def\@journalName{ACM Transactions on Applied Perception}%
1080 \or % TCPS
1081 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1082 \or % TDS
1083 \def\@journalName{ACM/IMS Transactions on Data Science}%
1084 \def\@journalNameShort{ACM/IMS Trans. Data Sci.}%
1085 \def\@permissionCodeOne{2577-3224}%
1086 \or % TEAC
1087 \def\@journalName{ACM Transactions on Economics and Computation}%
1088 \or % TECS
1089 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1090 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1091 \def\@permissionCodeOne{1539-9087}%
1092 \or % TELO
1093 \def\@journalName{ACM Transactions on Evolutionary Learning}%
1094 \def\@journalNameShort{ACM Trans. Evol. Learn.}%
1095 \def\@permissionCodeOne{2688-3007}%
1096 \or % THRI
1097 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1098 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%

```

```

1099 \def\@permissionCodeOne{2573-9522}%
1100 \or % TIIS
1101 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
1102 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1103 \def\@permissionCodeOne{2160-6455}%
1104 \or % TIOT
1105 \def\@journalName{ACM Transactions on Internet of Things}%
1106 \def\@journalNameShort{ACM Trans. Internet Things}%
1107 \def\@permissionCodeOne{2577-6207}%
1108 \or % TISSEC
1109 \def\@journalName{ACM Transactions on Information and System Security}%
1110 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1111 \def\@permissionCodeOne{1094-9224}%
1112 \or % TIST
1113 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1114 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1115 \def\@permissionCodeOne{2157-6904}%
1116 \or % TKDD
1117 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1118 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1119 \def\@permissionCodeOne{1556-4681}%
1120 \or % TMIS
1121 \def\@journalName{ACM Transactions on Management Information Systems}%
1122 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1123 \def\@permissionCodeOne{2158-656X}%
1124 \or % TOCE
1125 \def\@journalName{ACM Transactions on Computing Education}%
1126 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1127 \def\@permissionCodeOne{1946-6226}%
1128 \or % TOCHI
1129 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1130 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1131 \def\@permissionCodeOne{1073-0516}%
1132 \or % TOCL
1133 \def\@journalName{ACM Transactions on Computational Logic}%
1134 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1135 \def\@permissionCodeOne{1529-3785}%
1136 \or % TOCS
1137 \def\@journalName{ACM Transactions on Computer Systems}%
1138 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1139 \def\@permissionCodeOne{0734-2071}%
1140 \or % TOCT
1141 \def\@journalName{ACM Transactions on Computation Theory}%
1142 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1143 \def\@permissionCodeOne{1942-3454}%
1144 \or % TODAES
1145 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1146 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1147 \def\@permissionCodeOne{1084-4309}%
1148 \or % TODS

```

```

1149 \def\@journalName{ACM Transactions on Database Systems}%
1150 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1151 \def\@permissionCodeOne{0362-5915}%
1152 \or % TOG
1153 \def\@journalName{ACM Transactions on Graphics}%
1154 \def\@journalNameShort{ACM Trans. Graph.}%
1155 \def\@permissionCodeOne{0730-0301}%
1156 \or % TOIS
1157 \def\@journalName{ACM Transactions on Information Systems}%
1158 \def\@permissionCodeOne{1046-8188}%
1159 \or % TOIT
1160 \def\@journalName{ACM Transactions on Internet Technology}%
1161 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1162 \def\@permissionCodeOne{1533-5399}%
1163 \or % TOMACS
1164 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1165 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1166 \or % TOMM
1167 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1168 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1169 \def\@permissionCodeOne{1551-6857}%
1170 \def\@permissionCodeTwo{0100}%
1171 \or % TOMPECS
1172 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1173 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1174 \def\@permissionCodeOne{2376-3639}%
1175 \or % TOMS
1176 \def\@journalName{ACM Transactions on Mathematical Software}%
1177 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1178 \def\@permissionCodeOne{0098-3500}%
1179 \or % TOPC
1180 \def\@journalName{ACM Transactions on Parallel Computing}%
1181 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1182 \def\@permissionCodeOne{1539-9087}%
1183 \or % TOPS
1184 \def\@journalName{ACM Transactions on Privacy and Security}%
1185 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1186 \def\@permissionCodeOne{2471-2566}%
1187 \or % TOPLAS
1188 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1189 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1190 \def\@permissionCodeOne{0164-0925}%
1191 \or % TOS
1192 \def\@journalName{ACM Transactions on Storage}%
1193 \def\@journalNameShort{ACM Trans. Storage}%
1194 \def\@permissionCodeOne{1553-3077}%
1195 \or % TOSEM
1196 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1197 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1198 \def\@permissionCodeOne{1049-331X}%

```

```

1199 \or % TOSN
1200 \def\@journalName{ACM Transactions on Sensor Networks}%
1201 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1202 \def\@permissionCodeOne{1550-4859}%
1203 \or % TQC
1204 \def\@journalName{ACM Transactions on Quantum Computing}%
1205 \def\@journalNameShort{ACM Trans. Quantum Comput.}%
1206 \def\@permissionCodeOne{2643-6817}%
1207 \or % TRET
1208 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1209 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1210 \def\@permissionCodeOne{1936-7406}%
1211 \or % TSAS
1212 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1213 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1214 \def\@permissionCodeOne{2374-0353}%
1215 \or % TSC
1216 \def\@journalName{ACM Transactions on Social Computing}%
1217 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1218 \def\@permissionCodeOne{2469-7818}%
1219 \or % TSLP
1220 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1221 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1222 \def\@permissionCodeOne{1550-4875}%
1223 \or % TWEB
1224 \def\@journalName{ACM Transactions on the Web}%
1225 \def\@journalNameShort{ACM Trans. Web}%
1226 \def\@permissionCodeOne{1559-1131}%
1227 \else % FACMP, a dummy journal
1228 \def\@journalName{Forthcoming ACM Publication}%
1229 \def\@journalNameShort{ACM Forthcoming}%
1230 \def\@permissionCodeOne{XXXX-XXXX}%
1231 \fi
1232 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1233 }{%
1234 \ClassError{\@classname}{Incorrect journal #1}%
1235 }%

```

\acmJournal And the syntactic sugar around it

```

1236 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1237 \global\@ACM@journal@bibstriptrue}

```

The defaults:

```

1238 \def\@journalCode@nr{0}
1239 \def\@journalName{}%
1240 \def\@journalNameShort{\@journalName}%
1241 \def\@permissionCodeOne{XXXX-XXXX}%
1242 \def\@permissionCodeTwo{}%

```

`\acmConference` This is the conference command

```

1243 \newcommand\acmConference[4][\%
1244   \gdef\acmConference@shortname{#1}%
1245   \gdef\acmConference@name{#2}%
1246   \gdef\acmConference@date{#3}%
1247   \gdef\acmConference@venue{#4}%
1248   \ifx\acmConference@shortname\empty
1249     \gdef\acmConference@shortname{#2}%
1250   \fi
1251   \global\@ACM@journal@bibstripfalse
1252 }
1253 \if@ACM@journal\else
1254 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1255   DC, USA}%
1256 \fi

```

`\acmBooktitle` The book title of the conference:

`\@acmBooktitle`

```

1257 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1258 \acmBooktitle{}
1259 \ifx\acmConference@name\undefined\else
1260 \acmBooktitle{Proceedings of \acmConference@name
1261   \ifx\acmConference@name\acmConference@shortname\else
1262     \ (\acmConference@shortname)\fi}
1263 \fi

```

`\@editorsAbbrev` How to abbreviate editors

```

1264 \def\@editorsAbbrev{(Ed.)}

```

`\@acmEditors` The list of editors

```

1265 \def\@acmEditors{}

```

`\editor` Add a new editor to the list

```

1266 \def\editor#1{\ifx\@acmEditors\empty
1267   \gdef\@acmEditors{#1}%
1268   \else
1269     \gdef\@editorsAbbrev{(Eds.)}%
1270     \g@addto@macro\@acmEditors{\and#1}%
1271   \fi}

```

`\subtitle` The subtitle macro

```

1272 \def\subtitle#1{\def\@subtitle{#1}}
1273 \subtitle{}

```

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

```

1274 \newcount\num@authorgroups
1275 \num@authorgroups=0\relax

```

`\num@author` The total number of authors

```

1276 \newcount\num@author
1277 \num@author=0\relax

```

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

```
1278 \newif\if@insideauthorgroup
1279 \@insideauthorgroupfalse
```

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

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

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



```

1319     \else
1320       \g@addto@macro\shortauthors{\and#2}%
1321     \fi
1322   \else
1323     \ifx\shortauthors\@empty
1324       \gdef\shortauthors{#1}%
1325     \else
1326       \g@addto@macro\shortauthors{\and#1}%
1327     \fi
1328   \fi
1329 \fi}

```

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

```

1330 \newcommand{\affiliation}[2][{}%
1331   \global\@insideauthorgroupfalse
1332   \if@ACM@anonymous\else
1333     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1334   \fi}

```

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

```

1335 \define@boolkey+{@ACM@affiliation@}[@ACM@affiliation@]{obeypunctuation}%
1336 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1337 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

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

```

1338 \def\@additionalaffiliation#1{\bgroup
1339   \def\position##1{\ignorespaces}%
1340   \def\institution##1{##1\ignorespaces}%
1341   \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1342   \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1343   \let\streetaddress\position
1344   \let\city\position
1345   \let\state\position
1346   \let\postcode\position
1347   \let\country\position
1348   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.

```

1349 \renewcommand{\email}[2][{}%
1350   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1351     addresses in the same \string\email\space macro!}}{}%
1352   \if@ACM@anonymous\else
1353     \g@addto@macro\addresses{\email{#1}{#2}}%
1354   \fi}

```

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

```

1355 \def\orcid#1{\unskip\ignorespaces%
1356   \IfBeginWith{#1}{http}{%
1357     \expandafter\gdef\csname
1358       typeset@author\the\num@authors\endcsname##1{%
1359         \href{#1}{##1}}}%
1360     \expandafter\gdef\csname
1361       typeset@author\the\num@authors\endcsname##1{%
1362         \href{https://orcid.org/#1}{##1}}}
```

`\authorsaddresses` Setting up authors' addresses

```

1363 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1364 \authorsaddresses{\mkauthorsaddresses}
```

`\@titlenotes` The title notes

```

1365 \def\@titlenotes{}
```

`\titlenote` Adding a note to the title

```

1366 \def\titlenote#1{%
1367   \g@addto@macro\@title{\footnotemark}%
1368   \if@ACM@anonymous
1369     \g@addto@macro\@titlenotes{%
1370       \stepcounter{footnote}\footnotetext{Title note}}%
1371   \else
1372     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1373   \fi}
```

`\@subtitlenotes` The subtitle notes

```

1374 \def\@subtitlenotes{}
```

`\subtitlenote` Adding a note to the subtitle

```

1375 \def\subtitlenote#1{%
1376   \g@addto@macro\@subtitle{\footnotemark}%
1377   \if@ACM@anonymous
1378     \g@addto@macro\@subtitlenotes{%
1379       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1380   \else
1381     \g@addto@macro\@subtitlenotes{%
1382       \stepcounter{footnote}\footnotetext{#1}}%
1383   \fi}
```

`\@authornotes` The author notes

```

1384 \def\@authornotes{}
```

`\authornote` Adding a note to the author

```

1385 \def\authornote#1{%
1386   \if@ACM@anonymous\else
1387     \g@addto@macro\addresses{\@authornotemark}%

```

```

1388     \g@addto@macro\@authornotes{%
1389         \stepcounter{footnote}\footnotetext{#1}}%
1390     \fi}

\authornotemark Adding a footnote mark to the authors
1391 \newcommand\authornotemark[1][\relax]{%
1392     \ifx#1\relax\relax\relax
1393     \g@addto@macro\addresses{\@authornotemark}%
1394     \else
1395     \g@addto@macro\addresses{\@authornotemark{#1}}%
1396     \fi}

\acmVolume The current volume
1397 \def\acmVolume#1{\def\@acmVolume{#1}}
1398 \acmVolume{1}

\acmNumber The current number
1399 \def\acmNumber#1{\def\@acmNumber{#1}}
1400 \acmNumber{1}

\acmArticle The current article
1401 \def\acmArticle#1{\def\@acmArticle{#1}}
1402 \acmArticle{}

\acmArticleSeq The sequence number
1403 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
1404 \acmArticleSeq{\@acmArticle}

\acmYear The current year
1405 \def\acmYear#1{\def\@acmYear{#1}}
1406 \acmYear{\the\year}

\acmMonth The current month
1407 \def\acmMonth#1{\def\@acmMonth{#1}}
1408 \acmMonth{\the\month}

\@acmPubDate The publication date
1409 \def\@acmPubDate{\ifcase\@acmMonth\or
1410     January\or February\or March\or April\or May\or June\or
1411     July\or August\or September\or October\or November\or
1412     December\fi~\@acmYear}

\acmPrice The price
1413 \def\acmPrice#1{\def\@acmPrice{#1}}
1414 \acmPrice{15.00}

\acmSubmissionID The submission ID
1415 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}
1416 \acmSubmissionID{}

```

`\acmISBN` The book ISBN

```

1417 \def\acmISBN#1{\def\@acmISBN{#1}}
1418 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}

```

`\acmDOI` The paper DOI

```

1419 \def\acmDOI#1{\def\@acmDOI{#1}}
1420 \acmDOI{10.1145/nnnnnnn.nnnnnnn}

```

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

```

1421 \newif\if@ACM@badge
1422 \@ACM@badgefalse

```

`\@ACM@badge@width` The width of the badge

```

1423 \newlength\@ACM@badge@width
1424 \setlength\@ACM@badge@width{5pc}

```

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

```

1425 \newlength\@ACM@title@width

```

`\@ACM@badge@skip` The space between the badge and the title

```

1426 \newlength\@ACM@badge@skip
1427 \setlength\@ACM@badge@skip{1pc}

```

`\acmBadgeR` Setting the right badge

```

1428 \newcommand\acmBadgeR[2][\@ACM@badgetrue
1429   \def\@acmBadgeR@url{#1}%
1430   \def\@acmBadgeR@image{#2}}
1431 \def\@acmBadgeR@url{}
1432 \def\@acmBadgeR@image{}

```

`\acmBadgeL` Setting the left badge

```

1433 \newcommand\acmBadgeL[2][\@ACM@badgetrue
1434   \def\@acmBadgeL@url{#1}%
1435   \def\@acmBadgeL@image{#2}}
1436 \def\@acmBadgeL@url{}
1437 \def\@acmBadgeL@image{}

```

`\startPage` The start page of the paper

```

1438 \def\startPage#1{\def\@startPage{#1}}
1439 \startPage{}

```

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

```

1440 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1441   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.

```

1442 \def\keywords#1{\def\@keywords{#1}}
1443 \let\@keywords\@empty

```

```

1444 \AtEndDocument{\if@ACM@nonacm\else\ifx\@keywords\@empty
1445   \ifnum\getrefnumber{TotPages}>2\relax
1446   \ClassWarningNoLine{\@classname}{ACM keywords are mandatory
1447     for papers over two pages}%
1448   \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
1449 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}}

\@saveabstract And saving the abstract
1450 \long\def\@saveabstract#1{\if@ACM@maketitle@typeset
1451   \ClassError{\@classname}{Abstract must be defined before maketitle
1452     command. Please move it!}\fi
1453   \long\gdef\@abstract{#1}}
1454 \@saveabstract{}}

\@empty The long version of \@empty (to compare with \@abstract)
1455 \long\def\@empty{}}

\if@ACM@printccs Whether to print CCS
1456 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1457   \if@ACM@printccs
1458     \ClassInfo{\@classname}{Printing CCS}%
1459   \else
1460     \ClassInfo{\@classname}{Suppressing CCS}%
1461   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

\if@ACM@printacmref Whether to print the ACM bibstrip
1462 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1463   \if@ACM@printacmref
1464     \ClassInfo{\@classname}{Printing bibformat}%
1465   \else
1466     \ClassInfo{\@classname}{Suppressing bibformat}%
1467   \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

1468 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@printacmref\else
1469   \ifnum\getrefnumber{TotPages}>1\relax
1470   \ClassWarningNoLine{\@classname}{ACM reference format is mandatory
1471     for papers over one page}%
1472   \fi\fi\fi}

\if@ACM@printfolios Whether to print folios
1473 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1474   \if@ACM@printfolios
1475     \ClassInfo{\@classname}{Printing folios}%
1476   \else
1477     \ClassInfo{\@classname}{Suppressing folios}%
1478   \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}

```

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

```

1479 \define@cmdkey{@ACM@topmatter@}{@ACM@}{authorsperrow}[0]{%
1480   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorsperrow to
1481     #1}}{\ClassWarning{\@classname}{The parameter authorsperrow must be
1482       numerical. Ignoring the input #1}\gdef\@ACM@authorsperrow{0}}}
```

`\settopmatter` The usual syntactic sugar

```

1483 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}
```

Now the settings

```

1484 \settopmatter{printccs=true, printacmref=true}
1485 \if@ACM@manuscript
1486   \settopmatter{printfolios=true}
1487 \else
1488   \if@ACM@journal
1489     \settopmatter{printfolios=true}
1490   \else
1491     \settopmatter{printfolios=false}
1492   \fi
1493 \fi
1494 \settopmatter{authorsperrow=0}
```

`\@received` The container for the paper history

```

1495 \def\@received{}
```

`\received` The `\received` command

```

1496 \newcommand\received[2][\def\@tempa{#1}%
1497   \ifx\@tempa\@empty
1498     \ifx\@received\@empty
1499       \gdef\@received{Received #2}%
1500     \else
1501       \g@addto@macro{\@received}{; revised #2}%
1502     \fi
1503   \else
1504     \ifx\@received\@empty
1505       \gdef\@received{#1 #2}%
1506     \else
1507       \g@addto@macro{\@received}{; #1 #2}%
1508     \fi
1509   \fi}
1510 \AtEndDocument{%
1511   \ifx\@received\@empty\else
1512     \par\bigskip\noindent\small\normalfont\@received\par
1513   \fi}
```

3.13 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1514 \RequirePackage{comment}
1515 \excludecomment{CCSXML}

\@concepts This is the storage macro and counter for concepts
1516 \let\@concepts\@empty
1517 \newcounter{@concepts}

\ccsdesc The first argument is the significance, the second is the concept(s)
1518 \newcommand\ccsdesc[2][100]{%
1519   \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!
1520 \def\textrightarrow{$\rightarrow$}
1521 \def\ccsdesc@parse#1~#2~#3~{%
1522   \stepcounter{@concepts}%
1523   \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1524     \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1525       \textbf{#2}}%
1526     \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{;}%
1527     \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1528     \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1529       \csname CCS@Punctuation@#2\endcsname
1530       \csname CCS@Specific@#2\endcsname}%
1531     \fi
1532     \ifx#3\relax\relax\else
1533       \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1534         \textrightarrow\ }%
1535       \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1536         \addtocounter{@concepts}{-1}%
1537         \ifnum#1>499\textbf{#3}\else
1538         \ifnum#1>299\textit{#3}\else
1539         #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1540       \fi
1541   \ccsdesc@parse@finish}

1542 \AtEndDocument{\if@ACM@nonacm\else\ifx\@concepts\@empty\relax
1543   \ifnum\getrefnumber{TotPages}>2\relax
1544     \ClassWarningNoLine{\@classname}{CCS concepts are mandatory
1545       for papers over two pages}%
1546     \fi\fi\fi}

\ccdesc@parse@finish Gobble everything to \ccsdesc@parse@end
1547 \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
1548 \newif\if@printcopyright
1549 \@printcopyrighttrue

\if@printpermission Whether to print the permission block
1550 \newif\if@printpermission
1551 \@printpermissiontrue

\if@acmowned Whether the ACM owns the rights to the paper
1552 \newif\if@acmowned
1553 \@acmownedtrue

Keys:

```

1554 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1555   \acm@copyrightinput\acm@copyrightmode]{none,%
1556     acmcopyright,acmlicensed,rightsretained,%
1557     usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1558     licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1559     iw3c2w3,iw3c2w3g}{%
1560   \@printpermissiontrue
1561   \@printcopyrighttrue
1562   \@acmownedtrue
1563   \ifnum\acm@copyrightmode=0\relax % none
1564     \@printpermissionfalse
1565     \@printcopyrightfalse
1566     \@acmownedfalse
1567   \fi
1568   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1569     \@acmownedfalse
1570   \fi
1571   \ifnum\acm@copyrightmode=3\relax % rightsretained
1572     \@acmownedfalse
1573   \AtBeginDocument{\acmPrice{}}%
1574   \fi
1575   \ifnum\acm@copyrightmode=4\relax % usgov
1576     \@printpermissiontrue
1577     \@printcopyrightfalse
1578     \@acmownedfalse
1579   \AtBeginDocument{\acmPrice{}}%
1580   \fi
1581   \ifnum\acm@copyrightmode=6\relax % cagov
1582     \@acmownedfalse
1583   \fi
1584   \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1585     \@acmownedfalse
1586   \fi
1587   \ifnum\acm@copyrightmode=9\relax % licensedcagov
1588     \@acmownedfalse
1589   \fi

```



```

1590 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1591 \@acmownedfalse
1592 \fi
1593 \ifnum\acm@copyrightmode=11\relax % othergov
1594 \@acmownedtrue
1595 \fi
1596 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1597 \@acmownedfalse
1598 \fi
1599 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1600 \@acmownedfalse
1601 \AtBeginDocument{\acmPrice{}}%
1602 \fi
1603 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1604 \@acmownedfalse
1605 \AtBeginDocument{\acmPrice{}}%
1606 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1607 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1608 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1609 \def\@copyrightowner{%
1610 \ifcase\acm@copyrightmode\relax % none
1611 \or % acmcopyright
1612 Association for Computing Machinery.
1613 \or % acmlicensed
1614 Copyright held by the owner/author(s). Publication rights licensed to
1615 ACM\@.
1616 \or % rightsretained
1617 Copyright held by the owner/author(s).
1618 \or % usgov
1619 \or % usgovmixed
1620 Association for Computing Machinery.
1621 \or % cagov
1622 Crown in Right of Canada.
1623 \or %cagovmixed
1624 Association for Computing Machinery.
1625 \or %licensedusgovmixed
1626 Copyright held by the owner/author(s). Publication rights licensed to
1627 ACM\@.
1628 \or % licensedcagov
1629 Crown in Right of Canada. Publication rights licensed to
1630 ACM\@.
1631 \or %licensedcagovmixed
1632 Copyright held by the owner/author(s). Publication rights licensed to
1633 ACM\@.
1634 \or % othergov
1635 Association for Computing Machinery.

```

```

1636 \or % licensedothergov
1637 Copyright held by the owner/author(s). Publication rights licensed to
1638 ACM\@.
1639 \or % ic2w3www
1640 IW3C2 (International World Wide Web Conference Committee), published
1641 under Creative Commons CC-BY~4.0 License.
1642 \or % ic2w3wwwgoogle
1643 IW3C2 (International World Wide Web Conference Committee), published
1644 under Creative Commons CC-BY-NC-ND~4.0 License.
1645 \fi}

```

\@formatdoi Print a clickable DOI

```

1646 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1647 \def\@copyrightpermission{%
1648   \ifcase\acm@copyrightmode\relax % none
1649   \or % acmcopyright
1650     Permission to make digital or hard copies of all or part of this
1651     work for personal or classroom use is granted without fee provided
1652     that copies are not made or distributed for profit or commercial
1653     advantage and that copies bear this notice and the full citation on
1654     the first page. Copyrights for components of this work owned by
1655     others than ACM must be honored. Abstracting with credit is
1656     permitted. To copy otherwise, or republish, to post on servers or to
1657     redistribute to lists, requires prior specific permission
1658     and\hspace*{.5pt}/or a fee. Request permissions from
1659     permissions@acm.org.
1660   \or % acmlicensed
1661     Permission to make digital or hard copies of all or part of this
1662     work for personal or classroom use is granted without fee provided
1663     that copies are not made or distributed for profit or commercial
1664     advantage and that copies bear this notice and the full citation on
1665     the first page. Copyrights for components of this work owned by
1666     others than the author(s) must be honored. Abstracting with credit
1667     is permitted. To copy otherwise, or republish, to post on servers
1668     or to redistribute to lists, requires prior specific permission
1669     and\hspace*{.5pt}/or a fee. Request permissions from
1670     permissions@acm.org.
1671   \or % rightsretained
1672     Permission to make digital or hard copies of part or all of this work
1673     for personal or classroom use is granted without fee provided that
1674     copies are not made or distributed for profit or commercial advantage
1675     and that copies bear this notice and the full citation on the first
1676     page. Copyrights for third-party components of this work must be
1677     honored. For all other uses, contact the
1678     owner\hspace*{.5pt}/author(s).
1679   \or % usgov
1680     This paper is authored by an employee(s) of the United States
1681     Government and is in the public domain. Non-exclusive copying or

```

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\or % usgovmixed

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 1760 International (CC-BY~4.0) license. Authors reserve their rights to
 1761 disseminate the work on their personal and corporate Web sites with
 1762 the appropriate attribution.
 1763 \or % iw3c2w3g
 1764 This paper is published under the Creative Commons
 1765 Attribution-NonCommercial-NoDerivs~4.0 International
 1766 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
 1767 disseminate the work on their personal and corporate Web sites with
 1768 the appropriate attribution.
 1769 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
 1770 \def\copyrightyear#1{\def\@copyrightyear{#1}}
 1771 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container
 1772 \def\@teaserfigures{}

teaserfigure The teaser figure
 1773 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

`\@saveteaser` Saving the teaser
1774 `\long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}`

`\thanks` We redefine `amsart \thanks` so the anonymous key works
1775 `\renewcommand{\thanks}[1]{%`
1776 `\@ifnotempty{#1}{%`
1777 `\if@ACM@anonymous`
1778 `\g@addto@macro\thankses{\thanks{A note}}%`
1779 `\else`
1780 `\g@addto@macro\thankses{\thanks{#1}}%`
1781 `\fi}}`

3.15 Maketitle hook

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

`\@beginmaketitlehook` The hook
1782 `\ifx\@beginmaketitlehook\@undefined`
1783 `\let\@beginmaketitlehook\@empty`
1784 `\fi`

`\AtBeginMaketitle` Adding to the hook
1785 `\def\AtBeginMaketitle{\g@addto@macro\@beginmaketitlehook}`

3.16 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⟩]`.
1786 `\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.

1787 `\def\maketitle{\@beginmaketitlehook`
1788 `\@ACM@maketitle@typesettrue`
1789 `\if@ACM@anonymous`
1790 `% Anonymize omission of \author-s`
1791 `\ifnum\@authorgroups=0\author{}\fi`
1792 `\fi`
1793 `\begingroup`
1794 `\let\@vspace\@vspace@orig`
1795 `\let\@vspacer\@vspacer@orig`
1796 `\let\@footnotemark\@footnotemark@nolink`
1797 `\let\@footnotetext\@footnotetext@nolink`

```

1798 \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1799 \hspace=\textwidth
1800 \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1801 \mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1802 \@printtopmatter
1803 \if@ACM@sigchiamode\mkauthors\fi
1804 \setcounter{footnote}{0}%
1805 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1806 \@titlenotes
1807 \@subtitlenotes
1808 \@authornotes
1809 \let\@makefnmark\relax
1810 \let\@thefnmark\relax
1811 \let\@makefntext\noindent
1812 \ifx\@empty\thankses\else
1813   \footnotetextauthorsaddresses{%
1814     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1815   \fi
1816 \ifx\@empty\@authorsaddresses\else
1817   \if@ACM@anonymous\else
1818     \if@ACM@journal@bibstrip
1819       \footnotetextauthorsaddresses{%
1820         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1821       \fi
1822     \fi
1823   \fi
1824 \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1825   \if@ACM@authordraft
1826     \raisebox{-2ex}{\z@}{\z@}{\makebox[0pt][l]{\large\bfseries
1827       Unpublished working draft. Not for distribution.}}%
1828     \color[gray]{0.9}%
1829   \fi
1830   \parindent\z@\parskip0.1\baselineskip
1831   \if@ACM@authorversion\else
1832     \if@printpermission\@copyrightpermission\par\fi
1833   \fi
1834   \if@ACM@manuscript\else
1835     \if@ACM@journal@bibstrip\else % Print the conference information
1836       {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1837     \fi
1838   \fi
1839   \if@printcopyright
1840     \copyright\ \@copyrightyear\ \@copyrightowner\
1841   \else
1842     \@copyrightyear.\
1843   \fi
1844   \if@ACM@manuscript
1845     Manuscript submitted to ACM\
1846   \else
1847     \if@ACM@authorversion

```

```

1848         This is the author's version of the work. It is posted here for
1849         your personal use. Not for redistribution. The definitive Version
1850         of Record was published in
1851         \if@ACM@journal@bibstrip
1852             \emph{\@journalName}%
1853         \else
1854             \emph{\@acmBooktitle}%
1855         \fi
1856         \ifx\@acmDOI\@empty
1857             .
1858         \else
1859             , \@formatdoi{\@acmDOI}.
1860         \fi\\
1861     \else
1862         \if@ACM@nonacm\else
1863             \if@ACM@journal@bibstrip
1864                 \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1865                 \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\\
1866                 \@formatdoi{\@acmDOI}%
1867             \else % Conference
1868                 \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1869                 \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\fi
1870                 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1871             \fi
1872         \fi
1873     \fi
1874 \fi}
1875 \fi
1876 \endgroup
1877 \setcounter{footnote}{0}%
1878 \@mkabstract
1879 \if@ACM@printccs
1880 \ifx\@concepts\@empty\else\bgroup
1881     {\@specialsection{CCS Concepts}%
1882     \noindent\@concepts\par}\egroup
1883 \fi
1884 \fi
1885 \ifx\@keywords\@empty\else\bgroup
1886     {\if@ACM@journal
1887         \@specialsection{Additional Key Words and Phrases}%
1888     \else
1889         \@specialsection{Keywords}%
1890     \fi
1891     \noindent\@keywords\par}\egroup
1892 \fi
1893 \let\metadata@authors=\authors
1894 \nxandlist{, }{, }{, }{, }\metadata@authors
1895 \def\@ACM@checkaffil{}%
1896 \hypersetup{%
1897     pdfauthor={\metadata@authors},

```

```

1898 pdftitle={\@title},
1899 pdfsubject={\@concepts},
1900 pdfkeywords={\@keywords},
1901 pdfcreator={LaTeX with acmart
1902 \csname ver@acmart.cls\endcsname\space
1903 and hyperref
1904 \csname ver@hyperref.sty\endcsname}}%
1905 \andify\authors
1906 \andify\shortauthors
1907 \global\let\authors=\authors
1908 \global\let\shortauthors=\shortauthors
1909 \if@ACM@printacmref
1910 \mkbibcitation
1911 \fi
1912 \global\@topnum\z@ % this prevents floats from falling
1913 % at the top of page 1
1914 \global\@botnum\z@ % we do not want them to be on the bottom either
1915 \@printendtopmatter
1916 \@afterindentfalse
1917 \@afterheading
1918 }

```

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

```

1919 \def\@specialsection#1{%
1920 \ifcase\ACM@format@nr
1921 \relax % manuscript
1922 \par\medskip\small\noindent#1: %
1923 \or % acmsmall
1924 \par\medskip\small\noindent#1: %
1925 \or % acmlarge
1926 \par\medskip\small\noindent#1: %
1927 \or % acmtog
1928 \par\medskip\small\noindent#1: %
1929 \or % sigconf
1930 \section*{#1}%
1931 \or % siggraph
1932 \section*{#1}%
1933 \or % sigplan
1934 \noindentparagraph*{#1:~}%
1935 \or % sigchi
1936 \section*{#1}%
1937 \or % sigchi-a
1938 \section*{#1}%
1939 \fi
1940 }

```

`\@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.


```

1941 \def\@printtopmatter{%
1942   \ifx\@startPage\@empty
1943     \gdef\@startPage{1}%
1944   \else
1945     \setcounter{page}{\@startPage}%
1946   \fi
1947   \thispagestyle{firstpagestyle}%
1948   \noindent
1949   \ifcase\ACM@format@nr
1950   \relax % manuscript
1951     \box\mktitle@bx\par
1952   \or % acmsmall
1953     \box\mktitle@bx\par
1954   \or % acmlarge
1955     \box\mktitle@bx\par
1956   \or % acmtog
1957     \twocolumn[\box\mktitle@bx]%
1958   \or % sigconf
1959     \twocolumn[\box\mktitle@bx]%
1960   \or % siggraph
1961     \twocolumn[\box\mktitle@bx]%
1962   \or % sigplan
1963     \twocolumn[\box\mktitle@bx]%
1964   \or % sigchi
1965     \twocolumn[\box\mktitle@bx]%
1966   \or % sigchi-a
1967     \par\box\mktitle@bx\par\bigskip
1968     \if@ACM@badge
1969       \marginpar{\noindent
1970         \ifx\@acmBadgeL@image\@empty\else
1971           \href{\@acmBadgeL@url}{%
1972             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1973           \hskip\@ACM@badge@skip
1974         \fi
1975         \ifx\@acmBadgeR@image\@empty\else
1976           \href{\@acmBadgeR@url}{%
1977             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1978         \fi}%
1979     \fi
1980   \fi
1981 }

```

\@mktitle The title of the article

```

1982 \def\@mktitle{%
1983   \ifcase\ACM@format@nr
1984   \relax % manuscript
1985     \@mktitle@i
1986   \or % acmsmall
1987     \@mktitle@i
1988   \or % acmlarge

```

```

1989 \mktitle@i
1990 \or % acmtog
1991 \mktitle@i
1992 \or % sigconf
1993 \mktitle@iii
1994 \or % siggraph
1995 \mktitle@iii
1996 \or % sigplan
1997 \mktitle@iii
1998 \or % sigchi
1999 \mktitle@iii
2000 \or % sigchi-a
2001 \mktitle@iv
2002 \fi
2003 }

```

\@titlefont The font to typeset the title

```

2004 \def\@titlefont{%
2005 \ifcase\ACM@format@nr
2006 \relax % manuscript
2007 \LARGE\sffamily\bfseries
2008 \or % acmsmall
2009 \LARGE\sffamily\bfseries
2010 \or % acmlarge
2011 \LARGE\sffamily\bfseries
2012 \or % acmtog
2013 \Huge\sffamily
2014 \or % sigconf
2015 \Huge\sffamily\bfseries
2016 \or % siggraph
2017 \Huge\sffamily\bfseries
2018 \or % sigplan
2019 \Huge\bfseries
2020 \or % sigchi
2021 \Huge\sffamily\bfseries
2022 \or % sigchi-a
2023 \Huge\bfseries
2024 \fi}

```

\@subtitlefont The font to typeset the subtitle

```

2025 \def\@subtitlefont{\normalsize
2026 \ifcase\ACM@format@nr
2027 \relax % manuscript
2028 \mdseries
2029 \or % acmsmall
2030 \mdseries
2031 \or % acmlarge
2032 \mdseries
2033 \or % acmtog
2034 \LARGE

```

```

2035 \or % sigconf
2036     \LARGE\mdseries
2037 \or % siggraph
2038     \LARGE\mdseries
2039 \or % sigplan
2040     \LARGE\mdseries
2041 \or % sigchi
2042     \LARGE\mdseries
2043 \or % sigchi-a
2044     \mdseries
2045 \fi}

\mktitle@i The version of \mktitle for most journals
2046 \def\mktitle@i{\hsize=\textwidth
2047     \@ACM@title@width=\hsize
2048     \ifx\@acmBadgeL@image\@empty\else
2049         \advance\@ACM@title@width by -\@ACM@badge@width
2050         \advance\@ACM@title@width by -\@ACM@badge@skip
2051     \fi
2052     \ifx\@acmBadgeR@image\@empty\else
2053         \advance\@ACM@title@width by -\@ACM@badge@width
2054         \advance\@ACM@title@width by -\@ACM@badge@skip
2055     \fi
2056     \setbox\mktitle@bx=\vbox{\noindent\@titlefont
2057         \ifx\@acmBadgeL@image\@empty\else
2058             \raisebox{- .5\baselineskip}{\z@\z@}{\href{\@acmBadgeL@url}{%
2059                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2060             \hskip\@ACM@badge@skip
2061         \fi
2062         \parbox[t]{\@ACM@title@width}{\raggedright
2063             \@titlefont\noindent
2064             \@title
2065             \ifx\@subtitle\@empty\else
2066                 \par\noindent{\@subtitlefont\@subtitle}
2067             \fi}%
2068         \ifx\@acmBadgeR@image\@empty\else
2069             \hskip\@ACM@badge@skip
2070             \raisebox{- .5\baselineskip}{\z@\z@}{\href{\@acmBadgeR@url}{%
2071                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2072         \fi
2073     \par\bigskip}}%

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

\mktitle@iii The version of \mktitle for SIG proceedings. Note that since the title is centered, we
leave space for the left badge even if only the right badge is defined.
2074 \def\mktitle@iii{\hsize=\textwidth
2075     \setbox\mktitle@bx=\vbox{\@titlefont\centering
2076         \@ACM@title@width=\hsize

```

```

2077 \if@ACM@badge
2078 \advance\@ACM@title@width by -2\@ACM@badge@width
2079 \advance\@ACM@title@width by -2\@ACM@badge@skip
2080 \parbox[b]{\@ACM@badge@width}{\strut
2081 \ifx\@acmBadgeL@image\@empty\else
2082 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
2083 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2084 \fi}%
2085 \hskip\@ACM@badge@skip
2086 \fi
2087 \parbox[t]{\@ACM@title@width}{\centering\@titlefont
2088 \@title
2089 \ifx\@subtitle\@empty\else
2090 \par\noindent{\@subtitlefont\@subtitle}
2091 \fi
2092 }%
2093 \if@ACM@badge
2094 \hskip\@ACM@badge@skip
2095 \parbox[b]{\@ACM@badge@width}{\strut
2096 \ifx\@acmBadgeR@image\@empty\else
2097 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
2098 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2099 \fi}%
2100 \fi
2101 \par\bigskip}}%

```

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

```

2102 \def\@mktitle@iv{\hsize=\textwidth
2103 \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
2104 \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
2105 \noindent\@title
2106 \ifx\@subtitle\@empty\else
2107 \par\noindent\@subtitlefont\@subtitle
2108 \fi
2109 \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.

```

2110 \newbox\@ACM@commabox
2111 \def\@ACM@addtoaddress#1{%
2112 \ifvmode\else
2113 \if@ACM@affiliation@obeypunctuation\else
2114 \setbox\@ACM@commabox=\hbox{, }%
2115 \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox

```

```

2116 \fi\fi
2117 #1}

\institution Theoretically we can define the macros for \affiliation inside the \@mkauthors-style
\position commands. However, this would lead to a strange error if an author uses them outside
\department \affiliation. Of course we can make them produce an error message, but...
\streetaddress 2118 \def\streetaddress#1{\unskip\ignorespaces}
\city 2119 \def\postcode#1{\unskip\ignorespaces}
\state 2120 \if@ACM@journal
\postcode 2121 \def\position#1{\unskip\ignorespaces}
\country 2122 \def\institution#1{\global\@ACM@instpresenttrue
2123 \unskip~#1\ignorespaces}
2124 \def\city#1{\global\@ACM@citypresenttrue\unskip\ignorespaces}
2125 \def\state#1{\unskip\ignorespaces}
2126 \newcommand\department[2][0]{\unskip\ignorespaces}
2127 \def\country#1{\global\@ACM@countrypresenttrue
2128 \if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
2129 \else
2130 \def\position#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2131 \def\institution#1{\global\@ACM@instpresenttrue
2132 \if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2133 \newcommand\department[2][0]{\if@ACM@affiliation@obeypunctuation
2134 #2\else#2\par\fi}%
2135 % \def\streetaddress#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2136 \def\city#1{\global\@ACM@citypresenttrue\@ACM@addtoaddress{#1}}%
2137 \let\state\@ACM@addtoaddress
2138 % \def\postcode#1{\if@ACM@affiliation@obeypunctuation#1\else\unskip\space#1\fi}%
2139 \def\country#1{\global\@ACM@countrypresenttrue\@ACM@addtoaddress{#1}}%
2140 \fi

\@mkauthors Typesetting the authors
2141 \def\@mkauthors{\begingroup
2142 \hsize=\textwidth
2143 \ifcase\ACM@format@nr
2144 \relax % manuscript
2145 \@mkauthors@i
2146 \or % acmsmall
2147 \@mkauthors@i
2148 \or % acmlarge
2149 \@mkauthors@i
2150 \or % acmtog
2151 \@mkauthors@i
2152 \or % sigconf
2153 \@mkauthors@iii
2154 \or % siggraph
2155 \@mkauthors@iii
2156 \or % sigplan
2157 \@mkauthors@iii
2158 \or % sigchi

```

```

2159 \mkauthors@iii
2160 \or % sigchi-a
2161 \mkauthors@iv
2162 \fi
2163 \endgroup
2164 }

\@authorfont Somehow different conferences use different fonts for author names. Why?
2165 \def\@authorfont{\Large\sffamily}

\@affiliationfont Font for affiliations
2166 \def\@affiliationfont{\normalsize\normalfont}

Adjusting fonts for different formats
2167 \ifcase\ACM@format@nr
2168 \relax % manuscript
2169 \or % acmsmall
2170 \def\@authorfont{\large\sffamily}
2171 \def\@affiliationfont{\small\normalfont}
2172 \or % acmlarge
2173 \or % acmtog
2174 \def\@authorfont{\LARGE\sffamily}
2175 \def\@affiliationfont{\large}
2176 \or % sigconf
2177 \def\@authorfont{\LARGE}
2178 \def\@affiliationfont{\large}
2179 \or % siggraph
2180 \def\@authorfont{\normalsize\normalfont}
2181 \def\@affiliationfont{\normalsize\normalfont}
2182 \or % sigplan
2183 \def\@authorfont{\Large\normalfont}
2184 \def\@affiliationfont{\normalsize\normalfont}
2185 \or % sigchi
2186 \def\@authorfont{\bfseries}
2187 \def\@affiliationfont{\mdseries}
2188 \or % sigchi-a
2189 \def\@authorfont{\bfseries}
2190 \def\@affiliationfont{\mdseries}
2191 \fi

\@typeset@author@line At this point we have \@currentauthors and \@currentaffiliations. We typeset
them in the journal style
2192 \def\@typeset@author@line{%
2193 \andify\@currentauthors\par\noindent
2194 \@currentauthors\def\@currentauthors{}%
2195 \ifx\@currentaffiliations\@empty\else
2196 \andify\@currentaffiliations
2197 \unskip, {\@currentaffiliations}\par
2198 \fi
2199 \def\@currentaffiliations{}}

```

```

\if@ACM@instpresent Whether the given affiliation has institution
2200 \newif\if@ACM@instpresent
2201 \@ACM@instpresenttrue

\if@ACM@citypresent Whether the given affiliation has city
2202 \newif\if@ACM@citypresent
2203 \@ACM@citypresenttrue

\if@ACM@countrypresent Whether the given affiliation has country
2204 \newif\if@ACM@countrypresent
2205 \@ACM@countrypresenttrue

\@ACM@resetaffil Reset affiliation flags
2206 \def\@ACM@resetaffil{%
2207   \global\@ACM@instpresentfalse
2208   \global\@ACM@citypresentfalse
2209   \global\@ACM@countrypresentfalse
2210 }

\@ACM@checkaffil Check affiliation flags
2211 \def\@ACM@checkaffil{%
2212   \if@ACM@instpresent\else
2213     \ClassWarningNoLine{\@classname}{No institution present for an affiliation}%
2214     \fi
2215   \if@ACM@citypresent\else
2216     \ClassWarningNoLine{\@classname}{No city present for an affiliation}%
2217     \fi
2218   \if@ACM@countrypresent\else
2219     \ClassError{\@classname}{No country present for an affiliation}{ACM
2220       requires each author to indicate their country using country macro.}%
2221     \fi
2222 }

\@mkauthors@i This version is used in most journal formats. Note that \and between authors with the
same affiliation becomes _and_:
2223 \def\@mkauthors@i{%
2224   \def\@currentauthors{}%
2225   \def\@currentaffiliations{}%
2226   \global\let\and\@typeset@author@line
2227   \def\@author##1{%
2228     \ifx\@currentauthors\@empty
2229       \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2230     \else
2231       \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
2232     \fi
2233     \gdef\and{}%
2234   \def\email##1##2{%
2235     \def\@tempa{##2}\ifx\@tempa\@empty\else
2236

```

```

2237 \ifx\@currentaffiliations\@empty
2238 \gdef\@currentaffiliations{%
2239 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2240 \setkeys{@ACM@affiliation@}{##1}%
2241 \@ACM@resetaffil
2242 \@affiliationfont##2\@ACM@checkaffil}%
2243 \else
2244 \g@addto@macro{\@currentaffiliations}{\and
2245 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2246 \setkeys{@ACM@affiliation@}{##1}}\@ACM@resetaffil
2247 ##2\@ACM@checkaffil}%
2248 \fi
2249 \fi
2250 \global\let\and\@typeset@author@line}%
2251 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
2252 \noindent\addresses\@typeset@author@line
2253 \par\medskip}%
2254 }

```

`\@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

```
2255 \newbox\author@bx
```

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

```
2256 \newdimen\author@bx@wd
```

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

```
2257 \newskip\author@bx@sep
2258 \author@bx@sep=1pc\relax
```

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

```

2259 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd
2260 \def\and{\par}\normalbaselines
2261 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2262 \@authorfont\@currentauthors\par\@affiliationfont
2263 \@currentaffiliation}\egroup
2264 \box\author@bx\hspace{\author@bx@sep}%
2265 \gdef\@currentauthors{}}%
2266 \gdef\@currentaffiliation{}}

```

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

```
2267 \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.


```

2268 \author@bx@wd=\textwidth\relax
2269 \advance\author@bx@wd by -\author@bx@sep\relax
2270 \ifnum\@ACM@authorsperrow>0\relax
2271   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2272 \else
2273   \ifcase\num@authorgroups
2274   \relax % 0?
2275   \or % 1=one author per row
2276   \or % 2=two authors per row
2277   \divide\author@bx@wd by \num@authorgroups\relax
2278   \or % 3=three authors per row
2279   \divide\author@bx@wd by \num@authorgroups\relax
2280   \or % 4=two authors per row (!)
2281   \divide\author@bx@wd by 2\relax
2282   \else % three authors per row
2283   \divide\author@bx@wd by 3\relax
2284   \fi
2285 \fi
2286 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2287 \gdef\@currentauthors{}%
2288 \gdef\@currentaffiliation{}%
2289 \def\@author##1{\ifx\@currentauthors\@empty
2290   \gdef\@currentauthors{\par##1}%
2291 \else
2292   \g@addto@macro\@currentauthors{\par##1}%
2293 \fi
2294 \gdef\and{}}%
2295 \def\email##1##2{\ifx\@currentaffiliation\@empty
2296   \gdef\@currentaffiliation{\bgroup
2297     \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2298 \else
2299   \g@addto@macro\@currentaffiliation{\par\bgroup
2300     \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2301 \fi}%
2302 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2303   \gdef\@currentaffiliation{%
2304     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2305     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2306     ##2\@ACM@checkaffil}%
2307 \else
2308   \g@addto@macro\@currentaffiliation{\par
2309     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2310     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2311     ##2\@ACM@checkaffil}%
2312 \fi
2313 \global\let\and\@typeset@author@bx
2314 }%

```

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

```

2315 \hsize=\textwidth
2316 \global\setbox\mktitle@bx=\vbox{\noindent
2317   \box\mktitle@bx\par\medskip\leavevmode
2318   \lineskip=1pc\relax\centering\hspace*{-1em}%
2319   \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.

```

2320 \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.

```

2321 \author@bx@wd=\columnwidth\relax
2322 \advance\author@bx@wd by -\author@bx@sep\relax
2323 \ifnum\@ACM@authorsperrow>0\relax
2324   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2325 \else
2326   \ifcase\@num@authorgroups
2327     \relax % 0?
2328     \or % 1=one author per row
2329     \else % 2=two authors per row
2330       \divide\author@bx@wd by 2\relax
2331   \fi
2332 \fi
2333 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of `\addresses`:

```

2334 \gdef\@currentauthors{}%
2335 \gdef\@currentaffiliation{}%
2336 \def\author##1{\ifx\@currentauthors\@empty
2337   \gdef\@currentauthors{\par##1}%
2338 \else
2339   \g@addto@macro\@currentauthors{\par##1}%
2340 \fi
2341 \gdef\and{}}%
2342 \def\email##1##2{\ifx\@currentaffiliation\@empty
2343   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2344 \else
2345   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2346 \fi}%
2347 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2348   \gdef\@currentaffiliation{%
2349     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2350     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2351     ##2\@ACM@checkaffil}%
2352 \else
2353   \g@addto@macro\@currentaffiliation{\par

```

```

2354 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2355 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2356 ##2\@ACM@checkaffil}%
2357 \fi
2358 \global\let\and\@typeset@author@bx}%
2359 %

Actual typesetting is done by the \and macro

2360 \bgroup\hsize=\columnwidth
2361 \par\raggedright\leftskip=\z@
2362 \lineskip=1pc\noindent
2363 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2364 \def\@mkauthorsaddresses{%
2365 \ifnum\num@authors>1\relax
2366 Authors' \else Author's \fi
2367 \ifnum\num@authorgroups>1\relax
2368 addresses: \else address: \fi
2369 \bgroup
2370 \def\streetaddress##1{\unskip, ##1}%
2371 \def\postcode##1{\unskip, ##1}%
2372 \def\position##1{\unskip\ignorespaces}%
2373 \def\institution##1{\unskip, ##1}%
2374 \def\city##1{\unskip, ##1}%
2375 \def\state##1{\unskip, ##1}%
2376 \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2377 \def\country##1{\unskip, ##1}%
2378 \def\and{\unskip; }%
2379 \def\@author##1{##1}%
2380 \def\email##1##2{\unskip, \nolinkurl{##2}}%
2381 \addresses
2382 \egroup}

2383 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@journal
2384 \ifx\@authorsaddresses\@empty
2385 \ClassWarningNoLine{\@classname}{Authors'
2386 addresses are mandatory for ACM journals}%
2387 \fi\fi\fi}

```

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

```

2388 \def\@setaddresses{}

```

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

```

2389 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}

```

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

```

2390 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}

```

```

\mkteasers Typesetting the teasers
2391 \def\mkteasers{%
2392   \ifx\@teaserfigures\@empty\else
2393     \def\@teaser##1{\par\bigskip\bgroup
2394       \captionsetup{type=figure}##1\egroup\par}
2395     \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2396       \noindent\@Description@presentfalse
2397       \@teaserfigures\par\if@Description@present\else
2398         \global\@undescrbed@imagestrue
2399         \ClassWarning{\@classname}{A possible image without
2400           description}\fi
2401       \medskip}%
2402   \fi}

\mkabstract Typesetting the abstract
2403 \def\mkabstract{\bgroup
2404   \ifx\@abstract\@empty\else
2405     {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2406     \if@ACM@journal
2407       \everypar{\setbox\z@\lastbox\everypar{}}\small
2408     \else
2409       \section*{\abstractname}%
2410     \fi
2411     \ignorespaces\@abstract\par}%
2412   \fi\egroup}

\mkbibcitation Print the bibcitation format
2413 \def\mkbibcitation{\bgroup
2414   \let\@vspace\@vspace@orig
2415   \let\@vspacer\@vspacer@orig
2416   \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2417   \def\footnotemark{}%
2418   \def\{\unskip{} \ignorespaces}%
2419   \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2420     inside a \string\title{} or \string\author{} command! Use
2421     \string\titlenote{} or \string\authornote{} instead!}}%
2422   \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2423     Article~\@acmArticle\ \fi}%
2424   \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2425   \noindent\bgroup
2426     \def\{\unskip{}, \ignorespaces}\authors\egroup. \@acmYear. \@title
2427     \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2428     \if@ACM@nonacm\else
2429       % The 'nonacm' option disables 'printacmref' by default,
2430       % and the present \mkbibcitation definition is never used
2431       % in this case. The conditional remains useful if the user
2432       % explicitly sets \settopmatter{printacmref=true}.
2433       \if@ACM@journal@bibstrip
2434         \textit{\@journalNameShort}

```

```

2435 \acmVolume, \acmNumber \article@string (\acmPubDate),
2436 \ref{TotPages}~\@pages@word.
2437 \else
2438 In \textit{\@acmBooktitle}%
2439 \ifx\@acmEditors\@empty\textit{.}\else
2440 \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2441 \fi\
2442 ACM, New York, NY, USA%
2443 \article@string\unskip, \ref{TotPages}~\@pages@word.
2444 \fi
2445 \fi
2446 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2447 \par\egroup}

```

\@printendtopmatter End the top matter

```

2448 \def\@printendtopmatter{%
2449 \let\@vspace\@vspace@orig
2450 \let\@vspacer\@vspacer@orig
2451 \par\bigskip
2452 \let\@vspace\@vspace@acm
2453 \let\@vspacer\@vspacer@acm
2454 }

```

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

```

2455 \def\@setthanks{\@long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

\@setauthorsaddresses

```

2456 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

3.17 Headers and Footers

We use fancyhdr for our headers and footers:

```

2457 \RequirePackage{fancyhdr}

```

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

```

2458 \let\ACM@ps@plain\ps@plain
2459 \let\ACM@ps@myheadings\ps@myheadings
2460 \let\ACM@ps@headings\ps@headings
2461 \def\ACM@restore@pagestyle{%
2462 \let\ps@plain\ACM@ps@plain
2463 \let\ps@myheadings\ACM@ps@myheadings
2464 \let\ps@headings\ACM@ps@headings}
2465 \AtBeginDocument{\ACM@restore@pagestyle}

```

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

```

2466 \if@ACM@review
2467 \newsavebox{\ACM@linecount@bx}
2468 \newlength\ACM@linecount@bxht
2469 \newcount\ACM@linecount

```

```

2470 \ACM@linecount\@ne\relax
2471 \def\ACM@mk@linecount{%
2472   \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{\normalfont
2473     \normalsize
2474     \setlength{\ACM@linecount@bxht}{0pt}%
2475     \loop{\color{red}\scriptsize\the\ACM@linecount}\
2476     \global\advance\ACM@linecount by \@ne
2477     \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2478     \ifdim\ACM@linecount@bxht<\textheight\repeat
2479     {\color{red}\scriptsize\the\ACM@linecount}\hfill
2480     \global\advance\ACM@linecount by \@ne}}
2481 \fi

```

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

```

2482 \def\ACM@linecountL{%
2483   \if@ACM@review
2484     \ACM@mk@linecount
2485     \begin{picture}(0,0)%
2486       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2487     \end{picture}%
2488   \fi}

```

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

```

2489 \def\ACM@linecountR{%
2490   \if@ACM@review
2491     \ifcase\ACM@format@nr
2492       \relax % manuscript
2493       \relax
2494       \or % acmsmall
2495       \relax
2496       \or % acmlarge
2497       \relax
2498       \or % acmtog
2499       \ACM@mk@linecount
2500       \or % sigconf
2501       \ACM@mk@linecount
2502       \or % siggraph
2503       \ACM@mk@linecount
2504       \or % sigplan
2505       \ACM@mk@linecount
2506       \or % sigchi
2507       \ACM@mk@linecount
2508       \or % sigchi-a
2509       \ACM@mk@linecount
2510     \fi
2511     \begin{picture}(0,0)%
2512       \put(20,-22){\usebox{\ACM@linecount@bx}}%
2513     \end{picture}%
2514   \fi}

```

`\ACM@timestamp` The timestamp system

```

2515 \if@ACM@timestamp
2516 % Subtracting 30 from \time gives us the effect of rounding down despite
2517 % \numexpr rounding to nearest
2518 \newcounter{ACM@time@hours}
2519 \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2520 \newcounter{ACM@time@minutes}
2521 \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2522 \newcommand\ACM@timestamp{%
2523   \footnotesize%
2524   \ifx\@acmSubmissionID\@empty\relax\else
2525     Submission ID: \@acmSubmissionID.{ }%
2526   \fi
2527   \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2528   \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2529   Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2530 }
2531 \fi

```

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

```

2532 \def\@shortauthors{%
2533   \if@ACM@anonymous
2534     Anon.
2535     \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2536   \else\shortauthors\fi}

```

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

```

2537 \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

```

2538 \AtBeginDocument{%
2539 \fancypagestyle{standardpagestyle}{%
2540   \fancyhf{}%
2541   \renewcommand{\headrulewidth}{\z@}%
2542   \renewcommand{\footrulewidth}{\z@}%
2543   \def\@acmArticlePage{%
2544     \ifx\@acmArticle\empty%
2545       \if@ACM@printfolios\thepage\fi%
2546     \else%
2547       \@acmArticle\if@ACM@printfolios:\thepage\fi%
2548     \fi%
2549   }%
2550   \if@ACM@journal@bibstrip
2551     \ifcase\ACM@format@nr
2552     \relax % manuscript
2553     \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2554     \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%

```

```

2555 \fancyhead[RE]{\@shortauthors}%
2556 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2557 \if@ACM@nonacm\else%
2558 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
2559 \fi%
2560 \or % acmsmall
2561 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2562 \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2563 \fancyhead[RE]{\@headfootfont\@shortauthors}%
2564 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2565 \if@ACM@nonacm\else%
2566 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2567 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2568 \fi
2569 \or % acmlarge
2570 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2571 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2572 \fancyhead[LO]{\ACM@linecountL}%
2573 \fancyhead[RO]{\@headfootfont
2574 \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2575 \if@ACM@nonacm\else%
2576 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2577 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2578 \fi
2579 \or % acmtog
2580 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2581 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2582 \fancyhead[LO]{\ACM@linecountL}%
2583 \fancyhead[RE]{\ACM@linecountR}%
2584 \fancyhead[RO]{\@headfootfont
2585 \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2586 \if@ACM@nonacm\else%
2587 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2588 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2589 \fi
2590 \else % Proceedings
2591 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2592 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2593 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2594 \if@ACM@nonacm
2595 \fancyhead[LE]{\ACM@linecountL}%
2596 \fancyhead[RO]{\ACM@linecountR}%
2597 \else%
2598 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
2599 \acmConference@shortname,
2600 \acmConference@date, \acmConference@venue}%
2601 \fancyhead[RO]{\@headfootfont
2602 \acmConference@shortname,
2603 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2604 \fi

```



```

2605 \fi
2606 \else % Proceedings
2607 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2608 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2609 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2610 \if@ACM@nonacm
2611 \fancyhead[LE]{\ACM@linecountL}%
2612 \fancyhead[RO]{\ACM@linecountR}%
2613 \else%
2614 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2615 \acmConference@shortname,
2616 \acmConference@date, \acmConference@venue}%
2617 \fancyhead[RO]{\@headfootfont
2618 \acmConference@shortname,
2619 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2620 \fi
2621 \fi
2622 \if@ACM@sigchiamode
2623 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
2624 \fi
2625 \if@ACM@timestamp
2626 \fancyfoot[LO,RE]{\ACM@timestamp}
2627 \fi
2628 }%
2629 \pagestyle{standardpagestyle}
2630 }

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht 2631 \newdimen\@folio@wd
\@folio@voffset 2632 \@folio@wd=\z@
\@folio@max 2633 \newdimen\@folio@ht
2634 \@folio@ht=\z@
2635 \newdimen\@folio@voffset
2636 \@folio@voffset=\z@
2637 \def\@folio@max{1}
2638 \ifcase\ACM@format@nr
2639 \relax % manuscript
2640 \or % acmsmall
2641 \@folio@wd=45.75pt\relax
2642 \@folio@ht=1.25in\relax
2643 \@folio@voffset=.2in\relax
2644 \def\@folio@max{8}
2645 \or % acmlarge
2646 \@folio@wd=43.25pt\relax
2647 \@folio@ht=79pt\relax
2648 \@folio@voffset=.55in\relax
2649 \def\@folio@max{10}
2650 \fi

\@folioblob The macro to typeset the folio blob.

```

```

2651 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2652 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2653 \loop
2654 \ifnum\@tempcnta>\@folio@max\relax
2655 \advance\@tempcnta by - \@folio@max
2656 \repeat
2657 \advance\@tempcnta by -1\relax
2658 \@tempdima=\@folio@ht\relax
2659 \multiply\@tempdima by \the\@tempcnta\relax
2660 \advance\@tempdima by -\@folio@voffset\relax
2661 \begin{picture}(0,0)
2662 \makebox[\z@]{\raisebox{-\@tempdima}{%
2663 \rlap{%
2664 \raisebox{-0.45\@folio@ht}{\z@}\z@}{%
2665 \rule{\@folio@wd}{\@folio@ht}}}%
2666 \parbox{\@folio@wd}{%
2667 \centering
2668 \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}}
2669 \end{picture}\fi}
2670

```

firstpagestyle The page style for the first page only.

```

2671 \AtBeginDocument{%
2672 \fancypagestyle{firstpagestyle}{%
2673 \fancyhf{}%
2674 \renewcommand{\headrulewidth}{\z@}%
2675 \renewcommand{\footrulewidth}{\z@}%
2676 \if@ACM@journal@bibstrip
2677 \ifcase\ACM@format@nr
2678 \relax % manuscript
2679 \fancyhead[L]{\ACM@linecountL}%
2680 \fancyfoot[R0,LE]{\if@ACM@printfolios\small\thepage\fi}%
2681 \if@ACM@nonacm\else%
2682 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2683 \fi%
2684 \or % acmsmall
2685 \if@ACM@nonacm\else%
2686 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2687 \@acmNumber, Article \@acmArticle. Publication date:
2688 \@acmPubDate.}%
2689 \fi%
2690 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2691 \fancyhead[LO]{\ACM@linecountL}%
2692 \fancyhead[R0]{\@folioblob}%
2693 \fancyheadoffset[R0,LE]{0.6\@folio@wd}%
2694 \or % acmlarge
2695 \if@ACM@nonacm\else%
2696 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.

```

```

2697         \@acmNumber, Article \@acmArticle. Publication date:
2698         \@acmPubDate.}%
2699     \fi%
2700     \fancyhead[RO]{\@folioblob}%
2701     \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2702     \fancyhead[LO]{\ACM@linecountL}%
2703     \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2704 \or % acmtog
2705     \if@ACM@nonacm\else%
2706     \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2707         \@acmNumber, Article \@acmArticle. Publication date:
2708         \@acmPubDate.}%
2709     \fi%
2710     \fancyhead[L]{\ACM@linecountL}%
2711     \fancyhead[R]{\ACM@linecountR}%
2712 \else % Conference proceedings
2713     \fancyhead[L]{\ACM@linecountL}%
2714     \fancyhead[R]{\ACM@linecountR}%
2715     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2716 \fi
2717 \else
2718     \fancyhead[L]{\ACM@linecountL}%
2719     \fancyhead[R]{\ACM@linecountR}%
2720     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2721 \fi
2722 \if@ACM@timestamp
2723     \ifnum\ACM@format@nr=0\relax % Manuscript
2724     \fancyfoot[LO,RE]{\ACM@timestamp\quad
2725         \if@ACM@nonacm\else
2726         \footnotesize Manuscript submitted to ACM
2727         \fi}
2728     \else
2729     \fancyfoot[LO,RE]{\ACM@timestamp}
2730     \fi
2731 \fi
2732 }}

```

3.18 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.

```

2733 \def\ACM@NRadjust#1{%
2734   \begingroup
2735   \expandafter\ifx\csname Sectionformat\endcsname\relax
2736     % do nothing when \Sectionformat is unknown
2737     \def\next{\endgroup #1}%
2738   \else
2739     \def\next{\endgroup
2740       \let\realSectionformat\Sectionformat
2741       \def\ACM@sect@format#{#1}%
2742       \let\Sectionformat\ACM@NR@adjustedSectionformat
2743       %% next lines added 2018-06-17 to ensure section number is styled
2744       \let\real@adddotafter\@adddotafter
2745       \let\@adddotafter\ACM@adddotafter
2746       #1}% imposes the styles, but nullifies \MakeUppercase
2747       \let\@adddotafter\real@adddotafter
2748     }%
2749   \fi \next
2750 }
```

\ACM@NR@adjustedSectionformat

```

2751 \def\ACM@NR@adjustedSectionformat#1#2{%
2752   \realSectionformat{\ACM@sect@format{#1}}{#2}%
2753   \let\Sectionformat\realSectionformat}
2754 \DeclareRobustCommand{\ACM@sect@format}{\ACM@sect@format@}
2755 \def\ACM@sect@format@null#1{#1}
2756 \let\ACM@sect@format@\ACM@sect@format@null
2757 \AtBeginDocument{%
2758   \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
2759     \let\LTX@adddotafter\@adddotafter
2760   \fi
2761 }
```

\ACM@adddotafter

```

2762 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}
```

Sectioning is different for different levels

```

2763 \renewcommand\section{\@startsection{section}{1}{\z@}%
2764   {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%

```

```

2765 {.25\baselineskip}%
2766 {\ACM@NRadjust\@secfont}}
2767 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2768 {-.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2769 {.25\baselineskip}%
2770 {\ACM@NRadjust\@subsecfont}}
2771 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2772 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2773 {-3.5\p@}%
2774 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}}
2775 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2776 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2777 {-3.5\p@}%
2778 {\ACM@NRadjust{\@parfont\@adddotafter}}}}
2779 \newcommand\noindentparagraph{\@startsection{paragraph}{4}{\z@}%
2780 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2781 {-3.5\p@}%
2782 {\ACM@NRadjust{\@parfont}}}}
2783
2784 \renewcommand\part{\@startsection{part}{9}{\z@}%
2785 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2786 {4\p@}%
2787 {\ACM@NRadjust{\@parfont}}}

```

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

```

2788 \def\section@raggedright{\@rightskip\@flushglue
2789 \rightskip\@rightskip
2790 \leftskip\z@skip
2791 \parindent\z@}

```

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

```

\@subsecfont 2792 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont 2793 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 2794 \def\@subsubsecfont{\sffamily\itshape}
2795 \def\@parfont{\itshape}
2796 \setcounter{secnumdepth}{3}
2797 \ifcase\ACM@format@nr
2798 \relax % manuscript
2799 \or % acmsmall
2800 \or % acmlarge
2801 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2802 \def\@subsecfont{\sffamily\large\section@raggedright}
2803 \or % acmtog
2804 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2805 \def\@subsecfont{\sffamily\large\section@raggedright}
2806 \or % sigconf
2807 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2808 \def\@subsecfont{\bfseries\Large\section@raggedright}
2809 \or % siggraph
2810 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}

```

```

2811 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2812 \or % sigplan
2813 \def\@secfont{\bfseries\Large\section@raggedright}
2814 \def\@subsecfont{\bfseries\section@raggedright}
2815 \def\@subsubsecfont{\bfseries\section@raggedright}
2816 \def\@parfont{\bfseries\itshape}
2817 \def\@subparfont{\itshape}
2818 \or % sigchi
2819 \setcounter{secnumdepth}{1}
2820 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2821 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2822 \or % sigchi-a
2823 \setcounter{secnumdepth}{0}
2824 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2825 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2826 \fi

```

\@adddotafter Add punctuation after a sectioning command

```
2827 \def\@adddotafter#1{#1\@addpunct{.}}
```

\@addspaceafter Add space after a sectioning command

```
2828 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

3.19 TOC lists

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

```
2829 \providecommand*\@dotsep{4.5}
```

3.20 Theorems

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

```
2830 \def\@acmplainbodyfont{\itshape}
```

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

```
2831 \def\@acmplainindent{\parindent}
```

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

```
2832 \def\@acmplainheadfont{\scshape}
```

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

```
2833 \def\@acmplainnotefont{\@empty}
```

Customization of the acmplain theorem style:

```
2834 \ifcase\ACM@format@nr
```

```
2835 \relax % manuscript
```

```

2836 \or % acmsmall
2837 \or % acmlarge
2838 \or % acmtog
2839 \or % sigconf
2840 \or % siggraph
2841 \or % sigplan
2842 \def\@acmplainbodyfont{\itshape}
2843 \def\@acmplainindent{\z@}
2844 \def\@acmplainheadfont{\bfseries}
2845 \def\@acmplainnotefont{\normalfont}
2846 \or % sigchi
2847 \or % sigchi-a
2848 \fi

```

acmplain The acmplain theorem style

```

2849 \newtheoremstyle{acmplain}%
2850 { .5\baselineskip \@plus.2\baselineskip
2851   \@minus.2\baselineskip}% space above
2852 { .5\baselineskip \@plus.2\baselineskip
2853   \@minus.2\baselineskip}% space below
2854 {\@acmplainbodyfont}% body font
2855 {\@acmplainindent}% indent amount
2856 {\@acmplainheadfont}% head font
2857 { .}% punctuation after head
2858 { .5em}% spacing after head
2859 {\thmname{#1}\thmnumber{ #2}\thmnote{ \@acmplainnotefont{#3}}}% head spec

```

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

```
2860 \def\@acmdefinitionbodyfont{\normalfont}
```

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

```
2861 \def\@acmdefinitionindent{\parindent}
```

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

```
2862 \def\@acmdefinitionheadfont{\itshape}
```

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

```
2863 \def\@acmdefinitionnotefont{\empty}
```

Customization of the acmdefinition theorem style:

```

2864 \ifcase\ACM@format@nr
2865 \relax % manuscript
2866 \or % acmsmall
2867 \or % acmlarge
2868 \or % acmtog
2869 \or % sigconf
2870 \or % siggraph
2871 \or % sigplan
2872 \def\@acmdefinitionbodyfont{\normalfont}

```

```

2873 \def\acmdefinitionindent{\z@}
2874 \def\acmdefinitionheadfont{\bfseries}
2875 \def\acmdefinitionnotefont{\normalfont}
2876 \or % sigchi
2877 \or % sigchi-a
2878 \fi

```

acmdefinition The acmdefinition theorem style

```

2879 \newtheoremstyle{acmdefinition}%
2880 { .5\baselineskip \@plus.2\baselineskip
2881   \@minus.2\baselineskip}% space above
2882 { .5\baselineskip \@plus.2\baselineskip
2883   \@minus.2\baselineskip}% space below
2884 {\acmdefinitionbodyfont}% body font
2885 {\acmdefinitionindent}% indent amount
2886 {\acmdefinitionheadfont}% head font
2887 {.}% punctuation after head
2888 {.5em}% spacing after head
2889 {\thmname{#1}\thmnumber{ #2}\thmnote{ \acmdefinitionnotefont{#3}}}% head spec

```

Make acmplain the default theorem style.

```

2890 \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.

```

2891 \AtEndPreamble{%
2892   \if@ACM@acmthm
2893     \theoremstyle{acmplain}
2894     \ifundefined{theorem}{%
2895       \newtheorem{theorem}{Theorem}[section]
2896     }{}
2897     \ifundefined{conjecture}{%
2898       \newtheorem{conjecture}[theorem]{Conjecture}
2899     }{}
2900     \ifundefined{proposition}{%
2901       \newtheorem{proposition}[theorem]{Proposition}
2902     }{}
2903     \ifundefined{lemma}{%
2904       \newtheorem{lemma}[theorem]{Lemma}
2905     }{}
2906     \ifundefined{corollary}{%
2907       \newtheorem{corollary}[theorem]{Corollary}
2908     }{}

```



```

2909 \theoremstyle{acmdefinition}
2910 \ifundefined{example}{%
2911 \newtheorem{example}[theorem]{Example}
2912 }{}
2913 \ifundefined{definition}{%
2914 \newtheorem{definition}[theorem]{Definition}
2915 }{}
2916 \fi
2917 \theoremstyle{acmplain}
2918 }

\@proofnamefont The font to typeset the proof name.
2919 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
2920 \def\@proofindent{\indent}

Customization of the proof environment.
2921 \ifcase\ACM@format@nr
2922 \relax % manuscript
2923 \or % acmsmall
2924 \or % acmlarge
2925 \or % acmtog
2926 \or % sigconf
2927 \or % siggraph
2928 \or % sigplan
2929 \def\@proofnamefont{\itshape}
2930 \def\@proofindent{\noindent}
2931 \or % sigchi
2932 \or % sigchi-a
2933 \fi

proof We want some customization of the proof environment.
2934 \renewenvironment{proof}[1][\proofname]{\par
2935 \pushQED{\qed}%
2936 \normalfont \topsep6\p@\@plus6\p@\relax
2937 \trivlist
2938 \item[\@proofindent\hskip\labelsep
2939 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2940 }{%
2941 \popQED\endtrivlist\@endpfalse
2942 }

```

3.21 Balancing columns

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

```

2943 \AtEndPreamble{%
2944 \if@ACM@pbalance

```

```

2945 \global\@ACM@balancefalse
2946 \ifcase\ACM@format@nr
2947 \relax % manuscript
2948 \or % acmsmall
2949 \or % acmlarge
2950 \or % acmtog
2951 \RequirePackage{pbalance}%
2952 \or % sigconf
2953 \RequirePackage{pbalance}%
2954 \or % siggraph
2955 \RequirePackage{pbalance}%
2956 \or % sigplan
2957 \RequirePackage{pbalance}%
2958 \or % sigchi
2959 \RequirePackage{pbalance}%
2960 \or % sigchi-a
2961 \fi
2962 \fi
2963 \if@ACM@balance
2964 \ifcase\ACM@format@nr
2965 \relax % manuscript
2966 \global\@ACM@balancefalse
2967 \or % acmsmall
2968 \global\@ACM@balancefalse
2969 \or % acmlarge
2970 \global\@ACM@balancefalse
2971 \or % acmtog
2972 \RequirePackage{balance}%
2973 \or % sigconf
2974 \RequirePackage{balance}%
2975 \or % siggraph
2976 \RequirePackage{balance}%
2977 \or % sigplan
2978 \RequirePackage{balance}%
2979 \or % sigchi
2980 \RequirePackage{balance}%
2981 \or % sigchi-a
2982 \global\@ACM@balancefalse
2983 \fi
2984 \fi
2985 }
2986 \AtEndDocument{%
2987 \if@ACM@balance
2988 \if@twocolumn
2989 \balance
2990 \fi\fi}

```

3.22 Acknowledgments

`\acksname`

```
2991 \newcommand\acksname{Acknowledgments}
```

`\acks` This is a comment-like structure

```
2992 \specialcomment{acks}{%
2993   \begingroup
2994   \section*{\acksname}
2995   \phantomsection\addcontentsline{toc}{section}{\acksname}
2996 }{%
2997   \endgroup
2998 }
```

`\grantsponsor` We just typeset the name of the sponsor

```
2999 \def\grantsponsor#1#2#3{#2}
```

`\grantnum`

```
3000 \newcommand\grantnum[3][{}]{#3%
3001   \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

3.23 Conditional typesetting

We use the comment package for conditional typesetting:

```
3002 \AtEndPreamble{%
3003   \if@ACM@screen
3004     \includecomment{screenonly}
3005     \excludecomment{printonly}
3006   \else
3007     \excludecomment{screenonly}
3008     \includecomment{printonly}
3009   \fi
3010   \if@ACM@anonymous
3011     \excludecomment{anonsuppress}
3012     \excludecomment{acks}
3013   \else
3014     \includecomment{anonsuppress}
3015   \fi}
```

3.24 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’.

```
3016 \newcommand\showeprint[2][arxiv]{%
3017   \def\@tempa{#1}%
3018   \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
3019   \def\@tempb{arxiv}%
3020   \ifx\@tempa\@tempb\relax
```

```

3021     arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3022 \else
3023     \def\@tempb{arXiv}%
3024     \ifx\@tempa\@tempb\relax
3025         arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3026     \else
3027         arXiv:#2%
3028     \fi
3029 \fi}

```

3.25 End of Class

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

```

3030 \let\@vspace@orig=\@vspace
3031 \let\@vspacer@orig=\@vspacer
3032 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
3033     only be used to provide space above/below surrounding
3034     objects}}{}{}
3035 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should
3036     only be used to provide space above/below surrounding
3037     objects}}{}{}
3038 \let\@vspace@acm=\@vspace
3039 \let\@vspacer@acm=\@vspacer

```

`\ACM@origbaselinestretch` We produce an error if the user tries to change `\baselinestretch`

```

3040 \let\ACM@origbaselinestretch\baselinestretch
3041 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
3042     \ClassError{\@classname}{An attempt to redefine
3043         \string\baselinestretch\space detected. Please do not do this for
3044         ACM submissions!}\fi}

3045 \normalsize\normalfont\frenchspacing
3046 </class>

```

References

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Change History

1.48	General: Added prologue option to xcolor 46 Bib code cleanup (Zack Weinberg) 33 Documentation update (siggraph) . 33	\if@ACM@printacmref: Added warning for longer papers 69 \keywords: Added warning for missing keywords 69 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 Authors' addresses are mandatory for journal articles 33
1.49	General: New journal: DTRAP 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 . . . 108
1.56	General: Documented \Description 33	1.70 General: Name change for TDS 56
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 . . . 33 LuaTeX now uses the OTF versions of fonts 33 Retired sigchi and sigchi-a 33
1.58	General: Changes in samples (Enrico Gregorio) 33 New journal: HEALTH. TDS is renamed to TDSCI 33	1.75 General: Documentation update . . . 33
1.60	\if@ACM@urlbreakonhyphens: introduced macro 34 General: New option: urlbreakonhyphens 33	v1.00 General: First released version 33 v1.01 General: Changed hyperref colors in screen mode (closes https://github.com/borisveytsman/ acmart/issues/1) 33 Defined ACM colors 33 Explicitly put draft option (closes https://github.com/borisveytsman/ acmart/issues/4) 37 Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/ acmart/issues/5) 33
1.62	General: New journal: TELO 33	
1.63	General: New journal: FACMP 33 New journal: TQUANT 33	
1.63a	General: Move: TQUANT to TQC . . 33	
1.64	General: Putting abstract after \maketitle now causes an error . 33	
1.65	General: New journal: DGOV 33	
1.66	\@mkauthorsaddresses: Added warning for missing addresses . . 91 \ccsdesc@parse: Added warning for missing concepts 71	v1.02 General: Added TOPS and TSC (closes https://github.com/borisveytsman/ acmart/issues/12) 33

Documentation changes (closes https://github.com/borisveytsman/acmart/issues/13)	33	\acmBadgeL: Added macro	68
v1.03		\acmBadgeR: Added macro	68
\@formatdoi: Added macro	74	\if@ACM@badge: Added macro	68
\if@ACM@authorversion: Added macro	35	v1.07	
\maketitle: Added special case of authorversion	77	\maketitle: Corrected a bug with abstract footnotes	77
General: Added anonsuppress environment	33	Corrected a bug with permission and footnotes order	77
Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	33	v1.08	
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\acmArticleSeq: Name change by Matthew Fluet	67	Typos corrected (Tobias Pape) . . .	33
\acmDOI: Name change by Matthew Fluet	68	v1.09	
\acmISBN: Name change by Matthew Fluet	68	General: Revert SIGPLAN caption rules	33
General: Updated bibliography for siggraph	33	v1.10	
v1.05		\maketitle: Corrected a bug with doi in manuscript and author version, https://github.com/borisveytsman/acmart/issues/36	77
General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	33	General: Changes of 'licensedothergov' wording	72
Patched \setcitestyle command; closes https://github.com/borisveytsman/acmart/issues/19	33	standardpagestyle: Reversed folios location	95
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\@ACM@badge@width: Added macro .	68	v1.12	
\@ACM@title@width: Added macro .	68	\@marginfigure: Now centering by default	53
\@mktitle@i: Added processing badges	83	\@margintable: Now centering by default	53
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\@mktitle@iv: Made more generic .	84	\if@ACM@natbib@override: Added macro	36
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\@subtitlefont: Added macro	82	\maketitle: Moved thankses to copyrightpermission box	77
\@titlefont: Added macro	82	\section@raggedright: Introduced macro	101
		General: Added graceful behavior when libertine fonts are absent . .	50
		Documentation updates	33

v1.13		\position: Added macro	85
\@mpfootnotetext: Made minipage		\postcode: Added macro	85
footnotes centered	44	\state: Added macro	85
\bibliographystyle: Redefined		\streetaddress: Added macro	85
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\bibstyle@acmauthoryear: Added		of anonymous mode	95
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\bibstyle@acmnumeric: Added		\@headfootfont: Added macro	95
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acmsmall	86	header/footer text font	95
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Print bibliographic information by		\@makefnmark: Redefined	44
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v1.14		\acmArticle: The default is now	
\bibstyle@acmauthoryear: Moved		numerical	67
def of \bibstyle@acmauthoryear		\acmMonth: The default must be	
before use	41	numerical. Closes #50.	67
\bibstyle@acmnumeric: Moved def of		\acmNumber: The default is now	
\bibstyle@numeric before use . .	41	numerical	67
General: \citestyle updates		\acmVolume: The default is now	
(Matthew Fluet)	33	numerical	67
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\@ACM@addtoaddress: Added macro	84	\description: Decreased indent . . .	56
\@mkauthors@iii: New authors		\grantnum: Added url	107
system	88	\grantsponsor: Renamed	107
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groups	65	title to sigs	95
\author: Added code for author		v1.18	
groups	64	\@mkauthors@i: Now we andify	
\city: Added macro	85	affiliations	87
\country: Added macro	85	\@typeset@author@line: Added	
\department: Added macro	85	macro	86
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\grantsponsor: Added macro	107	all formats	33
\if@insideauthorgroup: Introduced		v1.19	
macro	64	\@mkabstract: Include 'Abstract' in	
\institution: Added macro	85	PDF bookmarks (Matthew Fluet) .	92
\num@authorgroups: Renamed	63	\acks: Include 'Acknowledgements' in	
\orcid: Introduced macro	66	PDF bookmarks (Matthew Fluet)	107

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
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\@mkabstract: Deleted spurious space	92		\@mkbibcitation: Disabled linebreak	92
General: Bug fixes for bst	33		\@startsection: Added	
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General: Add IMWUT journal option	56		\l@subsubsection: Redefined macro	44
v1.25			General: Documentation changes . . .	33
General: Updated PACMPL	56	v1.32		
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General: Corrected \shortcite bug .	33		General: Added POMACS journal option	33
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