

# L<sup>A</sup>T<sub>E</sub>X 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 Machinery<sup>1</sup> 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 T<sub>E</sub>X 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 L<sup>A</sup>T<sub>E</sub>X package.

This package uses only free T<sub>E</sub>X packages and fonts included in T<sub>E</sub>XLive, MikT<sub>E</sub>X and other popular T<sub>E</sub>X 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, Dirk Beyer, Joachim Breitner, Benjamin Byholm, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giraruso, Ben Greenman, Jamie Davis, Luis Leiva, Ben Liblit, LianTze Lim, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Tobias Pape, Philip Quinn, Mathias Rav, Andreas Reichinger, Matteo Riondato, Craig Rodkin, Bernard Rous, David Shamma, Gabriel Scherer, Stephen Spencer, Daniel Thomas, Zack Weinberg, John Wickerson and many others for their invaluable help.

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

## 2 User’s guide

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

### 2.1 Installation

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

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

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<sup>1</sup><http://www.acm.org/>

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

Most users should not attempt to install this package themselves but should rather rely on their  $\text{\TeX}$  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  $\text{\TeX}$  can find them (see [1] or the documentation for your  $\text{\TeX}$  system).
3. Update the database of file names. Again, see [1] or the documentation for your  $\text{\TeX}$  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  $\text{\TeX}$  distributions ( $\text{\TeX}$ Live, Mac $\text{\TeX}$ , Mik $\text{\TeX}$ ) of 2015 and later, so you probably have them installed. Just in case here is the list of these packages:

- *amscls*, <http://www.ctan.org/pkg/amscls>
- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *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>
- *ifluatex*, <http://www.ctan.org/pkg/ifluatex>
- *ifxetex*, <http://www.ctan.org/pkg/ifxetex>
- *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.

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.

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

The option `natbib` is used when the corresponding BibTeX style is based on `natbib`. In most cases you do not need to set it. See Section 2.11.

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.

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, DTRAP, JACM, JDIQ, JEA, JERIC, JETC, PACMCGIT, PACMHCI, PACMPL, TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TDSCI, TEAC, TECS, 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, TRETTS, TSAS, TSC, TSLP and TWEB, including special issues.
<code>acmlarge</code>	Large single-column format. Used for 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.
<code>sigchi</code>	Proceedings format for SIGCHI conferences.
<code>sigchi-a</code>	Format for SIGCHI extended abstracts.

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`.

### 2.3 Top matter

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

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

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

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

`\acmJournal{TOMS}`

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

It is expected that this command is inserted by the author of the manuscript when she decides to which journal to submit the manuscript.

`\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)}
```

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

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

`\title` The command `\title`, as in the `amsart` class, has two arguments: one optional, and one mandatory:

```
\title[<ShortTitle>]{<FullTitle>}
```

The mandatory argument is the full title of the article. The optional argument, if present, defines the shorter version of the title for running heads. If the optional argument is absent, the full title is used instead.

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

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

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

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

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

Do *not* use the  $\LaTeX$  `\and` macro! Each author deserves his or her own `\author` command.

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

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

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

Similarly you can repeat the `\email` command.

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

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

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

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

However, this format is not generally recommended.

`\additionalaffiliation`

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

```
\author{G. Tobin}
\author{Ben Trovato}
\additionalaffiliation{%
  \institution{The Th{\o}rv{"a}ld Group}
  \streetaddress{1 Th{\o}rv{"a}ld Circle}
  \city{Hekla}
  \country{Iceland}}
\affiliation{%
  \institution{Institute for Clarity in Documentation}
  \streetaddress{P.O. Box 1212}
  \city{Dublin}}
```

```

\state{Ohio}
\postcode{43017-6221}}

```

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

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

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
Sonentallee 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{}`.

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

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

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

`\authornotemark` Sometimes one may need to have the same footnote connected to several authors.

The command `\authornotemark[number]` adds just the footnote mark, for example,

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

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

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

```
\acmVolume{9}
\acmNumber{4}
\acmArticle{39}
\acmYear{2010}
\acmMonth{3}
```

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

`\acmArticleSeq`    The articles in the same issue of a journal have a *sequence number*. 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 *after* the `\setcopyright` command. Also, the command `\acmPrice{}` suppresses the printing of the price.

`\acmISBN`        Book-like volumes have ISBN numbers attached to them. The macro `\acmISBN{ISBN}`

sets it. Normally it is set by the typesetter, for example,

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

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

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

```
\acmDOI{10.1145/9999997.9999999}
```

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

`\acmBadgeR` Some conference articles get special distinctions, for example, the artifact evaluation  
`\acmBadgeL` 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: `\acmBadgeR[<url>]{<graphics>}` and `\acmBadgeL[<url>]{<graphics>}`. The first command puts the badge to the right of the title, and the second one—to the left. The exception is the `sigchi-a` mode for SIGCHI extended abstracts, which puts the badges on the left margin. The arguments have the following meaning: `[<url>]`, if provided, sets the link to the badge authority in the screen version, while `{<graphics>}` sets the graphics file with the badge image. The file must be a cropped square, which is scaled to a standard size in the output. For example, if the badge image is `ae-logo.pdf`, the command is

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

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

`\terms` The command `\keywords{<keyword, keyword,...>}` sets keywords for the article.  
`\keywords` They must be separated by commas, for example,

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

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

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

```
\begin{CCSXML}  
<ccs2012>  
<concept>  
  <concept_id>10010520.10010553.10010562</concept_id>  
  <concept_desc>Computer systems organization~Embedded systems</concept_desc>  
  <concept_significance>500</concept_significance>
```

```

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

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

```

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

`\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.

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

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

```

\acmYear{2016}
\copyrightyear{2015}

```

There is a special case for a personal copy that the authors may be allowed to generate for their use or a posting on a personal site (check the instructions for the specific journal or conference for the details). The document option `authorversion=true` produces a special form of the copyright statement for this case. Note that you still need the `\setcopyright` command and (optionally) `\copyrightyear` command to tell  $\TeX$  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.



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.

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

<code>abstract</code>	The environment <code>abstract</code> must <i>precede</i> the <code>\maketitle</code> command. Again, this is different from the standard $\LaTeX$ .
<code>teaserfigure</code>	<p>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 <code>teaserfigure</code> is used for these figures. This environment must be used <i>before</i> <code>\maketitle</code>, for example,</p> <pre> \begin{teaserfigure}   \includegraphics[width=\textwidth]{sampleteaser}   \caption{This is a teaser}   \label{fig:teaser} \end{teaserfigure} </pre>
<code>\settopmatter</code>	<p>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 <code>\settopmatter{&lt;settings&gt;}</code>. The settings and their meanings are listed in Table 4. For example,</p> <pre> \settopmatter{printacmref=false, printccs=true, printfolios=true} </pre> <p>The parameter <code>authorsperrow</code> requires some explanation. In conference proceedings authors' information is typeset in boxes, several boxes per row (see <code>sample-sigconf.pdf</code>, <code>sample-sigplan.pdf</code>, 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,</p> <pre> \settopmatter{authorsperrow=4} </pre> <p>However, in most cases you should <i>not</i> do this and should use the default settings. Setting <code>authorsperrow</code> to 0 will revert it to the default settings.</p>
<code>\received</code>	<p>The command <code>\received[&lt;stage&gt;]{&lt;date&gt;}</code> sets the history of the publication. The <code>[&lt;stage&gt;]</code> argument is optional; the default is Received for the first date and revised for the subsequent ones. For example,</p> <pre> \received{February 2007} \received[revised]{March 2009} \received[accepted]{June 2009} </pre>

`\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  $\text{\LaTeX}$  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`.

**sidebar, marginfigure, margintable:** in the sigchi-a format, special sidebars, tables and figures in the margin.

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`.
  - (c) For `marginfigure`, use `\marginparwidth`.
  - (d) For `figure*` in SIGCHI extended abstracts, use `\fulltextwidth`.

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
sourcernote. This is a table sourcernote. This is a table
sourcernote.

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

sidebar  
marginfigure  
margintable

SIGCHI extended abstracts use margin space extensively. 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

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

## 2.6 Descriptions of images

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

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

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

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

## 2.7 Theorems

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

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

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

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

## 2.8 Online-only and offline-only material

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

```
\section{Supplementary materials}

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

\begin{screenonly}
```

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

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

## 2.9 Note about anonymous mode

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

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

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

## 2.10 Acknowledgments

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

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

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

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

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

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

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

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

Example:

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

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

## 2.11 Bibliography

The ACM uses the `natbib` package for formatting references and the Bib $\TeX$  style file `ACM-Reference-Format.bst` for Bib $\TeX$  processing. You can disable loading of `natbib` using the option `natbib=false` in `\documentclass`. However, it is not recommended, as well as the use of Bib $\TeX$  styles other than `ACM-Reference-Format.bst`, and may delay the processing of the manuscript.

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

```
\citestyle{acmauthoryear}
```

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

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

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

One of the more common versions is

```
\setcitestyle{nosort}
```

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

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

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

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

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

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

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

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

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

There are the special entry types `online` and `game` 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",
}
```

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](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 “noosort” trick by Oren Patashnik. Add to the .bib file the line

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

and then encode the author as

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

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

## 2.12 Colors

While printed ACM publications are usually black and white, screen mode allows the use of colors. The ACM classes pre-define several colors according to [7]: ACMBLue, ACMYellow, ACMOrange, ACMRed, ACMLightBlue, ACMGreen, ACMPurple and ACMDarkBlue. You can use them in color assignments.

The ACM provides the following recommendation on color use.

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

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

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

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

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

## 2.13 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

The package `subcaption` [8] is recommended for complex figures with several subplots or subfigures that require separate subcaptioning. The packages `nomencl` [9] and `glossaries` [10] can be used for the automatic creation of the lists of symbols and concepts used.

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

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

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

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

Note that the upercasing in section titles is done using the `textcase` package [11], so the command `\NoCaseChange` inside the title may help to prevent extraneous upercasing.

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

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

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

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

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

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

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

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

you will pass dvipsnames to xcolor.

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

## 2.15 Currently supported publications

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DTRAP	Digital Threats: Research and Practice
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
TDSCI	ACM Transactions on Data Science
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
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

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

Abbreviation	Publication
TOCE	ACM Transactions on Computing Education
TOCHI	ACM Transactions on Computer-Human Interaction
TOCL	ACM Transactions on Computational Logic
TOCS	ACM Transactions on Computer Systems
TOCT	ACM Transactions on Computation Theory
TODAES	ACM Transactions on Design Automation of Electronic Systems
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
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
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

## 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 [2018/11/11 v1.56 Typesetting articles for the Association for
7 Computing Machinery]
```

And the driver code:

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

### 3.2 Preload hook

We preload acmart-preload-hook:

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

### 3.3 Options

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

```
30 \RequirePackage{xkeyval}
```

We use xstring to check whether user input is integer

```
31 \RequirePackage{xstring}
```

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@acmthm Whether we define theorem-like environments.

```
57 \define@boolkey+{acmart.cls}[@ACM@]{acmthm}[true]{%
58 \if@ACM@acmthm
59 \PackageInfo{\@classname}{Requiring acmthm}%
60 \else
61 \PackageInfo{\@classname}{Suppressing acmthm}%
62 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
63 false}}
64 \ExecuteOptionsX{acmthm=true}
```

\if@ACM@review Whether we use review mode

```
65 \define@boolkey+{acmart.cls}[@ACM@]{review}[true]{%
66 \if@ACM@review
67 \PackageInfo{\@classname}{Using review mode}%
68 \AtBeginDocument{\@ACM@printfoliostrue}%
69 \else
70 \PackageInfo{\@classname}{Not using review mode}%
71 \fi}{\PackageError{\@classname}{The option review can be either true or
72 false}}
73 \ExecuteOptionsX{review=false}
```

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

```

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

```

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

```

82 \define@boolkey+{acmart.cls}[@ACM@]{nonacm}[true]{%
83   \if@ACM@nonacm
84     \PackageInfo{\@classname}{Using nonacm mode}%
85     \AtBeginDocument{\@ACM@printacmreffalse}%
86     % in 'nonacm' mode we disable the "ACM Reference Format"
87     % printing by default, but this can be re-enabled by the
88     % user using \settopmatter{printacmref=true}
89   \else
90     \PackageInfo{\@classname}{Not using nonacm mode}%
91   \fi}{\PackageError{\@classname}{The option nonacm can be either true or
92     false}}
93 \ExecuteOptionsX{nonacm=false}

```

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

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

```

94 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
95   \if@ACM@natbib
96     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
97   \else
98     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
99   \fi}{\PackageError{\@classname}{The option natbib can be either true or
100     false}}
101 \ExecuteOptionsX{natbib=true}

```

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

```

102 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
103   \if@ACM@anonymous
104     \PackageInfo{\@classname}{Using anonymous mode}%
105   \else
106     \PackageInfo{\@classname}{Not using anonymous mode}%
107   \fi}{\PackageError{\@classname}{The option anonymous can be either true or
108     false}}
109 \ExecuteOptionsX{anonymous=false}

```

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

```

110 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
111   \if@ACM@timestamp

```



```

112 \PackageInfo{\@classname}{Using timestamp mode}%
113 \else
114 \PackageInfo{\@classname}{Not using timestamp mode}%
115 \fi}{\PackageError{\@classname}{The option timestamp can be either true or
116 false}}
117 \ExecuteOptionsX{timestamp=false}

```

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

```

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

```

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

```

128 \def\ACM@fontsize{}
129 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
130 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
131 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
132 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

133 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
134 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
135 \ProcessOptionsX
136 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

### 3.4 Setting switches

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

```

137 \newif\if@ACM@manuscript

```

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

```

138 \newif\if@ACM@journal

```

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

```

139 \newif\if@ACM@sigchiamode

```

#### Setting up switches

```

140 \ifnum\ACM@format@nr=5\relax % siggraph
141 \ClassWarning{\@classname}{The format siggraph is now obsolete.
142 I am switching to sigconf.}
143 \setkeys{acmart.cls}{format=sigconf}

```

```

144 \fi
145 \ifnum\ACM@format@nr=0\relax
146   \@ACM@manuscripttrue
147 \else
148   \@ACM@manuscriptfalse
149 \fi
150 \@ACM@sigchiamodef=false
151 \ifcase\ACM@format@nr
152 \relax % manuscript
153   \@ACM@journaltrue
154 \or % acmsmall
155   \@ACM@journaltrue
156 \or % acmlarge
157   \@ACM@journaltrue
158 \or % acmtog
159   \@ACM@journaltrue
160 \or % sigconf
161   \@ACM@journalfalse
162 \or % siggraph
163   \@ACM@journalfalse
164 \or % sigplan
165   \@ACM@journalfalse
166 \or % sigchi
167   \@ACM@journalfalse
168 \or % sigchi-a
169   \@ACM@journalfalse
170   \@ACM@sigchiamode=true
171 \fi

```

### 3.5 Loading the base class and package

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

```

172 \ifx\ACM@fontsize\empty
173   \ifcase\ACM@format@nr
174   \relax % manuscript
175     \def\ACM@fontsize{9pt}%
176   \or % acmsmall
177     \def\ACM@fontsize{10pt}%
178   \or % acmlarge
179     \def\ACM@fontsize{10pt}%
180   \or % acmtog
181     \def\ACM@fontsize{9pt}%
182   \or % sigconf
183     \def\ACM@fontsize{9pt}%
184   \or % siggraph
185     \def\ACM@fontsize{9pt}%
186   \or % sigplan
187     \def\ACM@fontsize{10pt}%
188   \or % sigchi

```

```

189 \def\ACM@fontsize{10pt}%
190 \or % sigchi-a
191 \def\ACM@fontsize{10pt}%
192 \fi
193 \fi
194 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
195 \LoadClass[\ACM@fontsize, reqno]{amsart}
196 \RequirePackage{microtype}
    We need etoolbox for delayed code
197 \RequirePackage{etoolbox}
    We need totpages to calculate the number of pages and refcount to use that number
198 \RequirePackage{refcount}
199 \RequirePackage{totpages}
    The \collect@body macro in amsmath is defined using \def. We load environ to
    access the \long version of this command
200 \RequirePackage{environ}
    We use setspace for double spacing
201 \if@ACM@manuscript
202 \RequirePackage{setspace}
203 \onehalfspacing
204 \fi
    We need textcase for better upcasing
205 \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.

```

206 \if@ACM@natbib
207 \RequirePackage{natbib}
208 \renewcommand{\bibsection}{%
209 \section*{\refname}%
210 \phantomsection\addcontentsline{toc}{section}{\refname}%
211 }
212 \renewcommand{\bibfont}{\bibliofont}
213 \renewcommand\setcitestyle[1]{
214 \@for\@tempa:=#1\do
215 {\def\@tempb{round}\ifx\@tempa\@tempb
216 \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
217 \def\@tempb{square}\ifx\@tempa\@tempb
218 \renewcommand\NAT@open{[]\renewcommand\NAT@close{]}\fi
219 \def\@tempb{angle}\ifx\@tempa\@tempb
220 \renewcommand\NAT@open{<}\renewcommand\NAT@close{>}\fi
221 \def\@tempb{curly}\ifx\@tempa\@tempb
222 \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi

```

```

223 \def\@tempb{semicolon}\ifx\@tempa\@tempb
224 \renewcommand\NAT@sep{;}\fi
225 \def\@tempb{colon}\ifx\@tempa\@tempb
226 \renewcommand\NAT@sep{;}\fi
227 \def\@tempb{comma}\ifx\@tempa\@tempb
228 \renewcommand\NAT@sep{,}\fi
229 \def\@tempb{authoryear}\ifx\@tempa\@tempb
230 \NAT@numbersfalse\fi
231 \def\@tempb{numbers}\ifx\@tempa\@tempb
232 \NAT@numberstrue\NAT@superfalse\fi
233 \def\@tempb{super}\ifx\@tempa\@tempb
234 \NAT@numberstrue\NAT@supertrue\fi
235 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
236 \let\bibstyle=\@gobble\fi
237 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
238 \let\bibstyle=\@citestyle\fi
239 \def\@tempb{sort}\ifx\@tempa\@tempb
240 \def\NAT@sort{\@ne}\fi
241 \def\@tempb{nosort}\ifx\@tempa\@tempb
242 \def\NAT@sort{\z@}\fi
243 \def\@tempb{compress}\ifx\@tempa\@tempb
244 \def\NAT@cmprs{\@ne}\fi
245 \def\@tempb{nocompress}\ifx\@tempa\@tempb
246 \def\NAT@cmprs{\z@}\fi
247 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
248 \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
249 \def\@tempb{mcite}\ifx\@tempa\@tempb
250 \let\NAT@merge\@ne\fi
251 \def\@tempb{merge}\ifx\@tempa\@tempb
252 \@ifnum{\NAT@merge<\tw@}{\let\NAT@merge\tw@}\fi
253 \def\@tempb{elide}\ifx\@tempa\@tempb
254 \@ifnum{\NAT@merge<\thr@}{\let\NAT@merge\thr@}\fi
255 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
256 \NAT@longnamestrue\fi
257 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
258 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
259 \expandafter\NAT@find@eq\@tempa=\relax\@nil
260 \if\@tempc\relax\else
261 \expandafter\NAT@rem@eq\@tempc
262 \def\@tempb{open}\ifx\@tempa\@tempb
263 \xdef\NAT@open{\@tempc}\fi
264 \def\@tempb{close}\ifx\@tempa\@tempb
265 \xdef\NAT@close{\@tempc}\fi
266 \def\@tempb{aysep}\ifx\@tempa\@tempb
267 \xdef\NAT@aysep{\@tempc}\fi
268 \def\@tempb{yysep}\ifx\@tempa\@tempb
269 \xdef\NAT@yrsep{\@tempc}\fi
270 \def\@tempb{notesep}\ifx\@tempa\@tempb
271 \xdef\NAT@cmt{\@tempc}\fi
272 \def\@tempb{citesep}\ifx\@tempa\@tempb

```

```

273     \xdef\NAT@sep{\@tempc}\fi
274   \fi
275 }%
276 \NAT@@setcites
277 }
278 \renewcommand\citestyle[1]{%
279   \ifcsname bibstyle@#1\endcsname%
280   \csname bibstyle@#1\endcsname\let\bibstyle@gobble%
281   \else%
282   \@latex@error{Undefined ‘#1’ citestyle}%
283   \fi
284 }%
285 \fi

```

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

```

286 \newcommand{\bibstyle@acmauthoryear}{%
287   \setcitestyle{%
288     authoryear,%
289     open={[]},close={]},citesep={;},%
290     aysep={},yysep={,},%
291     notesep={, }}}

```

`\bibstyle@acmnumeric` The default numeric format:

```

292 \newcommand{\bibstyle@acmnumeric}{%
293   \setcitestyle{%
294     numbers,sort&compress,%
295     open={[]},close={]},citesep={,},%
296     notesep={, }}}

```

The default is numeric:

```

297 \if@ACM@natbib
298 \citestyle{acmnumeric}
299 \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:

```

300 \def\@startsection#1#2#3#4#5#6{%
301   \if@noskipsec \leavevmode \fi
302   \par
303   \@tempkipa #4\relax
304   \@afterindenttrue
305   \ifdim \@tempkipa <\z@
306     \@tempkipa -\@tempkipa \@afterindentfalse
307   \fi
308   \if@nobreak
309     \everypar{}%
310   \else
311     \addpenalty\@secpenalty\addvspace\@tempkipa

```

```

312 \fi
313 \@ifstar
314   {\@ssect{#3}{#4}{#5}{#6}}%
315   {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}%
316 \def\@sect#1#2#3#4#5#6[#7]#8{%
317   \edef\@toclevel{\ifnum#2=\@m 0\else\number#2\fi}%
318   \ifnum #2>\c@secnumdepth
319     \let\@svsec\@empty
320   \else
321     \refstepcounter{#1}%
322     \protected@edef\@svsec{\@secntformat{#1}\relax}%
323   \fi
324   \@tempskipa #5\relax
325   \ifdim \@tempskipa>\z@
326     \begingroup
327       #6{%
328         \@hangfrom{\hskip #3\relax\@svsec}%
329         \interlinepenalty \@M #8\@par}%
330   \endgroup
331   \csname #1mark\endcsname{#7}%
332   \ifnum #2>\c@secnumdepth \else
333     \@tochangmeasure{\csname the#1\endcsname}%
334   \fi
335   \addcontentsline{toc}{#1}{%
336     \ifnum #2>\c@secnumdepth \else
337       \protect\numberline{\csname the#1\endcsname}%
338     \fi
339     #7}%
340   \else
341     \def\@svsechd{%
342       #6{\hskip #3\relax
343         \@svsec #8}%
344       \csname #1mark\endcsname{#7}%
345       \ifnum #2>\c@secnumdepth \else
346         \@tochangmeasure{\csname the#1\endcsname\space}%
347       \fi
348       \addcontentsline{toc}{#1}{%
349         \ifnum #2>\c@secnumdepth \else
350           \protect\numberline{\csname the#1\endcsname}%
351         \fi
352         #7}}%
353   \fi
354   \@xsect{#5}}
355 \def\@xsect#1{%
356   \@tempskipa #1\relax
357   \ifdim \@tempskipa>\z@
358     \par \nobreak
359     \vskip \@tempskipa
360     \@afterheading
361   \else

```

```

362 \@nobreakfalse
363 \global\@noskipsectrue
364 \everypar{%
365   \if@noskipsec
366     \global\@noskipsecfalse
367     {\setbox\z@\lastbox}%
368     \clubpenalty\@M
369     \begingroup \@svsechd \endgroup
370     \unskip
371     \@tempskipa #1\relax
372     \hskip -\@tempskipa
373   \else
374     \clubpenalty \@clubpenalty
375     \everypar{}}%
376 \fi}%
377 \fi
378 \ignorespaces}
379 \def\@secCNTformat#1{\csname the#1\endcsname\quad}
380 \def\@ssect#1#2#3#4#5{%
381   \@tempskipa #3\relax
382   \ifdim \@tempskipa>\z@
383     \begingroup
384       #4{%
385         \@hangfrom{\hskip #1}%
386         \interlinepenalty \@M #5\@par}%
387     \endgroup
388   \else
389     \def\@svsechd{#4{\hskip #1\relax #5}}%
390   \fi
391   \@xsect{#3}}

```

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

```

392 \def\@starttoc#1#2{\begingroup\makeatletter
393   \setTrue{#1}%
394   \par\removelastskip\vskip\z@skip
395   \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
396     {.5\linespacing}{\centering\contentsnamefont}{#2}%
397   \@input{\jobname.#1}%
398   \if@filesW
399     \xp\newwrite\csname tf@#1\endcsname
400     \immediate\xp\openout\csname tf@#1\endcsname \jobname.#1\relax
401   \fi
402   \global\@nobreakfalse \endgroup
403   \addvspace{32\p@\@plus14\p@}%
404 }

```

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

```

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

```

```

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

\l@subsubsection The spacing in amsart is too large
407 \def\l@subsubsection{\@tocline{2}{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
408 \def\makefnmark{\noindent\makefnmark}

\@footnotetext In sigchi-a mode our footnotes are in the margin!
409 \if@ACM@sigchiamode
410 \long\def\@footnotetext#1{\marginpar{%
411   \reset@font\small
412   \interlinepenalty\interfootnotelinepenalty
413   \protected@edef\@currentlabel{%
414     \csname p@footnote\endcsname\@thefnmark
415   }}%
416   \color@begingroup
417     \makefnmark{%
418       \rule{z}{\footnotesep\ignorespaces#1}\@finalstrut\strutbox}%
419   \color@endgroup}}%
420 \fi

\@mpfootnotetext We want the footnotes in minipages centered:
421 \long\def\@mpfootnotetext#1{%
422   \global\setbox\@mpfootins\vbox{%
423     \unvbox\@mpfootins
424     \reset@font\footnotesize
425     \hsize\columnwidth
426     \@parboxrestore
427     \protected@edef\@currentlabel
428       {\csname p@mpfootnote\endcsname\@thefnmark}%
429     \color@begingroup\centering
430     \makefnmark{%
431       \rule{z}{\footnotesep\ignorespaces#1}\@finalstrut\strutbox}%
432     \color@endgroup}}

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

And now, hyperref
434 \let\@footnotemark@nolink\@footnotemark
435 \let\@footnotetext@nolink\@footnotetext
436 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
437 \pdfstringdefDisableCommands{%
438   \def\unskip{}}
439 \def\textbullet{- }%

```



```

440 \def\textrightarrow{ -> }%
441 \def\footnotemark{ }%
442 }
443 \urlstyle{rm}
444 \ifcase\ACM@format@nr
445 \relax % manuscript
446 \or % acmsmall
447 \or % acmlarge
448 \or % acmtog
449 \or % sigconf
450 \or % siggraph
451 \or % sigplan
452 \urlstyle{sf}
453 \or % sigchi
454 \or % sigchi-a
455 \urlstyle{sf}
456 \fi
457 \AtEndPreamble{%
458   \if@ACM@screen
459     \hypersetup{colorlinks,
460       linkcolor=ACMPurple,
461       citecolor=ACMPurple,
462       urlcolor=ACMDarkBlue,
463       filecolor=ACMDarkBlue}
464   \else
465     \hypersetup{hidelinks}
466   \fi
467   \hypersetup{pdflang={en},
468     pdfdisplaydoctitle}}
  Bibliography mangling.
469 \if@ACM@natbib
470   \let\cite\cite
471   \let\cite\citep
472   \let\citeANP\citeauthor
473   \let\citeNN\citeyearpar
474   \let\citeyearNP\citeyear
475   \let\citeNP\citealt
476   \DeclareRobustCommand\citeA
477     {\begingroup\NAT@swafalse
478       \let\NAT@ctype@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
479   \providecommand\newblock{ }%
480 \else
481   \AtBeginDocument{%
482     \let\shortcite\cite%
483     \providecommand\citename[1]{#1}}
484 \fi
485 \newcommand\shortcite[2][ ]{%
486   \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:

```
487 \def\bibliographystyle#1{%
488   \ifx\@begindocumenthook\@undefined\else
489     \expandafter\AtBeginDocument
490     \fi
491     {\if@filesw
492       \immediate\write\@auxout{\string\bibstyle{#1}}%
493       \fi}}
```

Graphics and color.

```
494 \RequirePackage{graphicx}
495 \RequirePackage[prologue]{xcolor}
```

We define ACM colors according to [7]:

```
496 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
497 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
498 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
499 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
500 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
501 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
502 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
503 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}
```

Author-draft mode

```
504 \if@ACM@authordraft
505   \RequirePackage{draftwatermark}
506   \SetWatermarkFontSize{0.5in}
507   \SetWatermarkColor[gray]{.9}
508   \SetWatermarkText{\parbox{12em}{\centering
509     Unpublished working draft.\
510     Not for distribution.}}
511 \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>.

```
512 \RequirePackage{geometry}
513 \ifcase\ACM@format@nr
514 \relax % manuscript
515   \geometry{letterpaper,head=13pt,
516     marginparwidth=6pc,heightrounded}%
517 \or % acmsmall
518   \geometry{twoside=true,
519     includeheadfoot, head=13pt, foot=2pc,
520     paperwidth=6.75in, paperheight=10in,
521     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
```

```

522     marginparwidth=2pc,heightrounded
523   }%
524 \or % acmlarge
525   \geometry{twoside=true, head=13pt, foot=2pc,
526     paperwidth=8.5in, paperheight=11in,
527     includeheadfoot,
528     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
529     marginparwidth=4pc,heightrounded
530   }%
531 \or % acmtog
532   \geometry{twoside=true, head=13pt, foot=2pc,
533     paperwidth=8.5in, paperheight=11in,
534     includeheadfoot, columnsep=24pt,
535     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
536     marginparwidth=2pc,heightrounded
537   }%
538 \or % sigconf
539   \geometry{twoside=true, head=13pt,
540     paperwidth=8.5in, paperheight=11in,
541     includeheadfoot, columnsep=2pc,
542     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
543     marginparwidth=2pc,heightrounded
544   }%
545 \or % siggraph
546   \geometry{twoside=true, head=13pt,
547     paperwidth=8.5in, paperheight=11in,
548     includeheadfoot, columnsep=2pc,
549     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
550     marginparwidth=2pc,heightrounded
551   }%
552 \or % sigplan
553   \geometry{twoside=true, head=13pt,
554     paperwidth=8.5in, paperheight=11in,
555     includeheadfoot=false, columnsep=2pc,
556     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
557     marginparwidth=2pc,heightrounded
558   }%
559 \or % sigchi
560   \geometry{twoside=true, head=13pt,
561     paperwidth=8.5in, paperheight=11in,
562     includeheadfoot, columnsep=2pc,
563     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
564     marginparwidth=2pc,heightrounded
565   }%
566 \or % sigchi-a
567   \geometry{twoside=false, head=13pt,
568     paperwidth=11in, paperheight=8.5in,
569     includeheadfoot, marginparsep=72pt,
570     marginparwidth=170pt, columnsep=20pt,
571     top=72pt, bottom=72pt, left=314pt, right=72pt

```

```

572   }%
573   \@mparswitchfalse
574   \reversemarginpar
575 \fi

```

`\parindent` Paragraphing

```

\parskip 576 \setlength\parindent{10\p@}
577 \setlength\parskip{\z@}
578 \ifcase\ACM@format@nr
579 \relax % manuscript
580 \or % acmsmall
581 \or % acmlarge
582 \or % acmtog
583   \setlength\parindent{9\p@}%
584 \or % sigconf
585 \or % siggraph
586 \or % sigplan
587 \or % sigchi
588 \or % sigchi-a
589 \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.

```
590 \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.

```

591 \def\copyrightpermissionfootnoterule{\kern-3\p@
592   \hrule \@width \columnwidth \kern 2.6\p@}

593 \RequirePackage{manyfoot}
594 \SelectFootnoteRule[2]{copyrightpermission}
595 \DeclareNewFootnote{authorsaddresses}
596 \SelectFootnoteRule[2]{copyrightpermission}
597 \DeclareNewFootnote{copyrightpermission}

```

`\footnoterule` Tschichold’s rules:

```

598 \def\footnoterule{\kern-3\p@
599   \hrule \@width 4pc \kern 2.6\p@}

```

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

```
600 \def\endminipage{%
601   \par
602   \unskip
603   \ifvoid\@mpfootins\else
604     \vskip\skip\@mpfootins
605     \normalcolor
606     \unvbox\@mpfootins
607   \fi
608   \@minipagefalse
609   \color@endgroup
610   \egroup
611   \expandafter\@iiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
612 \def\@textbottom{\vskip \z@ \@plus 1pt}
613 \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.

```
614 \ifcase\ACM@format@nr
615 \relax % manuscript
616 \or % acmsmall
617 \or % acmlarge
618 \or % acmtog
619   \flushbottom
620 \or % sigconf
621   \flushbottom
622 \or % siggraph
623   \flushbottom
624 \or % sigplan
625   \flushbottom
626 \or % sigchi
627   \flushbottom
628 \or % sigchi-a
629 \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.

```
630 \RequirePackage{iftex}
631 \ifPDFTeX
632 \input{glyphtounicode}
633 \pdfglyphtounicode{f_f}{FB00}
634 \pdfglyphtounicode{f_f_i}{FB03}
```

```

635 \pdfglyphtounicode{f_f_1}{FB04}
636 \pdfglyphtounicode{f_i}{FB01}
637 \pdfglyphtounicode{t_t}{0074 0074}
638 \pdfglyphtounicode{f_t}{0066 0074}
639 \pdfglyphtounicode{T_h}{0054 0068}
640 \pdfgentounicode=1
641 \fi
642 \RequirePackage{cmap}

```

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

```

643 \newif\if@ACM@newfonts
644 \@ACM@newfontstrue
645 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
646   have the libertine package installed. Please upgrade your
647   TeX}\@ACM@newfontsfalse}
648 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
649   have the zi4 package installed. Please upgrade your
650   TeX}\@ACM@newfontsfalse}
651 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
652   have the newtxmath package installed. Please upgrade your
653   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

654 \if@ACM@newfonts
655   \RequirePackage[T1]{fontenc}
656   \ifxetex
657     \RequirePackage[tt=false]{libertine}
658     \setmonofont{inconsolata}
659   \else
660     \RequirePackage[tt=false, type1=true]{libertine}
661   \fi
662   \RequirePackage[varqu]{zi4}
663   \RequirePackage[libertine]{newtxmath}
664 \fi

```

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

```

665 \let\liningnums\undefined
666 \AtEndPreamble{%
667   \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

668 \if@ACM@sigchiamode
669   \renewcommand{\familydefault}{\sfdefault}
670 \fi

```

### 3.9 Image descriptions

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

```

671 \newif\if@Description@present
672 \@Description@presenttrue

\if@undescribed@images A global switch whether some images were not described
673 \newif\if@undescribed@images
674 \@undescribed@imagesfalse

\Description The Description macro right now just sets switches
675 \newcommand\Description[2][\global\@Description@presenttrue]

    The global warning
676 \AtEndDocument{\if@undescribed@images
677 \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}

    Hooks for figures
678 \AtBeginEnvironment{figure}{\@Description@presentfalse}
679 \AtBeginEnvironment{figure*}{\@Description@presentfalse}
680 \AtEndEnvironment{figure}{\if@Description@present\else
681 \global\@undescribed@imagestrue
682 \ClassWarning{\@classname}{A possible image without description}\fi}
683 \AtEndEnvironment{figure*}{\if@Description@present\else
684 \global\@undescribed@imagestrue
685 \ClassWarning{\@classname}{A possible image without description}\fi}

```

### 3.10 Floats

We use the caption package

```

686 \RequirePackage{caption, float}
687 \captionsetup[table]{position=top}
688 \if@ACM@journal
689 \captionsetup{labelfont={sf, small},
690 textfont={sf, small}, margin=\z@}
691 \captionsetup[figure]{name={Fig.}}
692 \else
693 \captionsetup{labelfont={bf},
694 textfont={bf}, labelsep=colon, margin=\z@}
695 \ifcase\ACM@format@nr
696 \relax % manuscript
697 \or % acmsmall
698 \or % acmlarge
699 \or % acmtog
700 \or % sigconf
701 \or % siggraph
702 \captionsetup{textfont={it}}
703 \or % sigplan
704 \captionsetup{labelfont={bf},
705 textfont={normalfont}, labelsep=period, margin=\z@}
706 \or % sigchi
707 \captionsetup[figure]{labelfont={bf, small},

```

```

708     textfont={bf, small}}
709   \captionsetup[table]{labelfont={bf, small},
710     textfont={bf, small}}
711   \or % sigchi-a
712   \captionsetup[figure]{labelfont={bf, small},
713     textfont={bf, small}}
714   \captionsetup[table]{labelfont={bf, small},
715     textfont={bf, small}}
716   \fi
717 \fi

```

sidebar The sidebar environment:

```

718 \newfloat{sidebar}{}{sbar}
719 \floatname{sidebar}{Sidebar}
720 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

721 \long\def\@sidebar#1{\bgroup\captionsetup{type=sidebar}%
722   \marginpar{\small#1}\egroup}

```

marginfigure The marginfigure environment:

```

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

```

\@marginfigure The processing of the saved text

```

724 \long\def\@marginfigure#1{\bgroup
725   \captionsetup{type=figure}%
726   \marginpar{\@Description@presentfalse\centering
727     \small#1\if@Description@present\else
728       \global\@undescribed@imagestrue
729       \ClassWarning{\@classname}{A possible image without description}
730       \fi}%
731   \egroup}

```

margintable The margintable environment:

```

732 \newenvironment{margintable}{\Collect@Body\@margintable}{}

```

\@margintable The processing of the saved text

```

733 \long\def\@margintable#1{\bgroup\captionsetup{type=table}%
734   \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

```

735 \newdimen\fulltextwidth
736 \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)

```
737 \if@ACM@sigchiamode
738 \def\@dblfloat{\bgroup\columnwidth=\fulltextwidth
739 \let\@endfloatbox\@endwidefloatbox
740 \def\@fpsaddefault{\def\@fps{tp}}%
741 \@float}
742 \fi
```

`\end@dblfloat` And the end. Just adding a `\bgroup`.

```
743 \if@ACM@sigchiamode
744 \def\end@dblfloat{%
745 \end@float\egroup}
746 \fi
```

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

```
747 \def\@endwidefloatbox{%
748 \par\vskip\z@skip
749 \@minipagefalse
750 \outer@nobreak
751 \egroup
752 \color@endbox
753 \global\setbox\@currbox=\vbox{\moveleft
754 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
755 \wd\@currbox=\textwidth
756 }
```

### 3.11 Lists

```
757 \ifcase\ACM@format@nr
758 \relax % manuscript
759 \or % acmsmall
760 \or % acmlarge
761 \or % acmtog
762 \or % sigconf
763 \or % siggraph
764 \or % sigplan
765 \def\labelenumi{\theenumi.}
766 \def\labelenumii{\theenumii.}
767 \def\labelenumiii{\theenumiii.}
768 \def\labelenumiv{\theenumiv.}
769 \or % sigchi
770 \or % sigchi-a
771 \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 (effec-

tively) irrelevant; nonetheless, we follow amsart and set `\labelwidth` to `\leftmargin` minus `\labelsep`.

```

772 \newdimen\@ACM@labelwidth
773 \AtBeginDocument{%
774   \setlength\labelsep{4pt}
775   \setlength{\@ACM@labelwidth}{6.5pt}
776
777   %% First-level list: when beginning after the first line of an
778   %% indented paragraph or ending before an indented paragraph, labels
779   %% should not hang to the left of the preceding/following text.
780   \setlength\leftmargini{\z@}
781   \addtolength\leftmargini{\parindent}
782   \addtolength\leftmargini{2\labelsep}
783   \addtolength\leftmargini{\@ACM@labelwidth}
784
785   %% Second-level and higher lists.
786   \setlength\leftmarginii{\z@}
787   \addtolength\leftmarginii{0.5\labelsep}
788   \addtolength\leftmarginii{\@ACM@labelwidth}
789   \setlength\leftmarginiii{\leftmarginii}
790   \setlength\leftmarginiv{\leftmarginiii}
791   \setlength\leftmarginv{\leftmarginiv}
792   \setlength\leftmarginvi{\leftmarginv}
793   \@listi}
794 \newskip\listisep
795 \listisep\smallskipamount
796 \def\@listI{\leftmargin\leftmargini
797   \labelwidth\leftmargini \advance\labelwidth-\labelsep
798   \listparindent\z@
799   \topsep\listisep}
800 \let\@listi\@listI
801 \def\@listii{\leftmargin\leftmarginii
802   \labelwidth\leftmarginii \advance\labelwidth-\labelsep
803   \topsep\z@skip}
804 \def\@listiii{\leftmargin\leftmarginiii
805   \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
806 \def\@listiv{\leftmargin\leftmarginiv
807   \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
808 \def\@listv{\leftmargin\leftmarginv
809   \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
810 \def\@listvi{\leftmargin\leftmarginvi
811   \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}

```

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

```

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

```

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

```

813 \renewenvironment{description}{\list{}}{%
814   \labelwidth\@ACM@labelwidth

```

```

815 \let\makelabel\descriptionlabel}%
816 }{
817 \endlist
818 }
819 \let\enddescription=\endlist % for efficiency

```

### 3.12 Top-matter data

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

```

820 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
821 CIE,%
822 CSUR,%
823 DTRAP,%
824 IMWUT,%
825 JACM,%
826 JDIQ,%
827 JEA,%
828 JERIC,%
829 JETC,%
830 JOCCH,%
831 PACMCGIT,%
832 PACMHCI,%
833 PACMPL,%
834 POMACS,%
835 TAAS,%
836 TACCESS,%
837 TACO,%
838 TALG,%
839 TALLIP,%
840 TAP,%
841 TCPS,%
842 TDSCI,%
843 TEAC,%
844 TECS,%
845 THRI,%
846 TIIS,%
847 TIOT,%
848 TISSEC,%
849 TIST,%
850 TKDD,%
851 TMIS,%
852 TOCE,%
853 TOCHI,%
854 TOCL,%
855 TOCS,%
856 TOCT,%
857 TODAES,%
858 TODS,%
859 TOG,%

```

```

860 TOIS,%
861 TOIT,%
862 TOMACS,%
863 TOMM,%
864 TOMPECS,%
865 TOMS,%
866 TOPC,%
867 TOPS,%
868 TOPLAS,%
869 TOS,%
870 TOSEM,%
871 TOSN,%
872 TRETs,%
873 TSAS,%
874 TSC,%
875 TSLP,%
876 TWEB%
877 }{%
878 \ifcase\@journalCode@nr
879 \relax % CIE
880 \def\@journalName{ACM Computers in Entertainment}%
881 \def\@journalNameShort{ACM Comput. Entertain.}%
882 \def\@permissionCodeOne{1544-3574}%
883 \or % CSUR
884 \def\@journalName{ACM Computing Surveys}%
885 \def\@journalNameShort{ACM Comput. Surv.}%
886 \def\@permissionCodeOne{0360-0300}%
887 \or % DTRAP
888 \def\@journalName{Digital Threats: Research and Practice}%
889 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
890 \def\@permissionCodeOne{2576-5337}%
891 \or % IMWUT
892 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
893     Wearable and Ubiquitous Technologies}%
894 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
895 \def\@permissionCodeOne{2474-9567}%
896 \@ACM@screentrue
897 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
898 \or % JACM
899 \def\@journalName{Journal of the ACM}%
900 \def\@journalNameShort{J. ACM}%
901 \def\@permissionCodeOne{0004-5411}%
902 \or % JDIQ
903 \def\@journalName{ACM Journal of Data and Information Quality}%
904 \def\@journalNameShort{ACM J. Data Inform. Quality}%
905 \def\@permissionCodeOne{1936-1955}%
906 \or % JEA
907 \def\@journalName{ACM Journal of Experimental Algorithmics}%
908 \def\@journalNameShort{ACM J. Exp. Algor.}%
909 \def\@permissionCodeOne{1084-6654}%

```

```

910 \or % JERIC
911 \def\@journalName{ACM Journal of Educational Resources in Computing}%
912 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
913 \def\@permissionCodeOne{1073-0516}%
914 \or % JETC
915 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
916 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
917 \def\@permissionCodeOne{1550-4832}%
918 \or % JOCC
919 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
920 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
921 \or % PACMCGIT
922 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
923 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
924 \def\@permissionCodeOne{2577-6193}%
925 \@ACM@screentru
926 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
927 \or % PACMHCI
928 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
929 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
930 \def\@permissionCodeOne{2573-0142}%
931 \@ACM@screentru
932 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
933 \or % PACMPL
934 \def\@journalName{Proceedings of the ACM on Programming Languages}%
935 \def\@journalNameShort{Proc. ACM Program. Lang.}%
936 \def\@permissionCodeOne{2475-1421}%
937 \@ACM@screentru
938 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
939 \or % POMACS
940 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
941 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
942 \def\@permissionCodeOne{2476-1249}%
943 \@ACM@screentru
944 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
945 \or % TAAS
946 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
947 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
948 \def\@permissionCodeOne{1556-4665}%
949 \or % TACCESS
950 \def\@journalName{ACM Transactions on Accessible Computing}%
951 \def\@journalNameShort{ACM Trans. Access. Comput.}%
952 \def\@permissionCodeOne{1936-7228}%
953 \or % TACO
954 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
955 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
956 \or % TALG
957 \def\@journalName{ACM Transactions on Algorithms}%
958 \def\@journalNameShort{ACM Trans. Algor.}%
959 \def\@permissionCodeOne{1549-6325}%

```

```

960 \or % TALLIP
961 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
962 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
963 \def\@permissionCodeOne{2375-4699}%
964 \or % TAP
965 \def\@journalName{ACM Transactions on Applied Perception}%
966 \or % TCPS
967 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
968 \or % TDSCI
969 \def\@journalName{ACM Transactions on Data Science}%
970 \def\@journalNameShort{ACM Trans. Data Sci.}%
971 \def\@permissionCodeOne{2577-3224}%
972 \or % TEAC
973 \def\@journalName{ACM Transactions on Economics and Computation}%
974 \or % TECS
975 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
976 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
977 \def\@permissionCodeOne{1539-9087}%
978 \or % THRI
979 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
980 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
981 \def\@permissionCodeOne{2573-9522}%
982 \or % TIIS
983 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
984 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
985 \def\@permissionCodeOne{2160-6455}%
986 \or % TIOT
987 \def\@journalName{ACM Transactions on Internet of Things}%
988 \def\@journalNameShort{ACM Trans. Internet Things}%
989 \def\@permissionCodeOne{2577-6207}%
990 \or % TISSEC
991 \def\@journalName{ACM Transactions on Information and System Security}%
992 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
993 \def\@permissionCodeOne{1094-9224}%
994 \or % TIST
995 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
996 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
997 \def\@permissionCodeOne{2157-6904}%
998 \or % TKDD
999 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1000 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1001 \def\@permissionCodeOne{1556-4681}%
1002 \or % TMIS
1003 \def\@journalName{ACM Transactions on Management Information Systems}%
1004 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1005 \def\@permissionCodeOne{2158-656X}%
1006 \or % TOCE
1007 \def\@journalName{ACM Transactions on Computing Education}%
1008 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1009 \def\@permissionCodeOne{1946-6226}%

```

```

1010 \or % TOCHI
1011 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1012 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1013 \def\@permissionCodeOne{1073-0516}%
1014 \or % TOCL
1015 \def\@journalName{ACM Transactions on Computational Logic}%
1016 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1017 \def\@permissionCodeOne{1529-3785}%
1018 \or % TOCS
1019 \def\@journalName{ACM Transactions on Computer Systems}%
1020 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1021 \def\@permissionCodeOne{0734-2071}%
1022 \or % TOCT
1023 \def\@journalName{ACM Transactions on Computation Theory}%
1024 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1025 \def\@permissionCodeOne{1942-3454}%
1026 \or % TODAES
1027 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1028 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1029 \def\@permissionCodeOne{1084-4309}%
1030 \or % TODS
1031 \def\@journalName{ACM Transactions on Database Systems}%
1032 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1033 \def\@permissionCodeOne{0362-5915}%
1034 \or % TOG
1035 \def\@journalName{ACM Transactions on Graphics}%
1036 \def\@journalNameShort{ACM Trans. Graph.}%
1037 \def\@permissionCodeOne{0730-0301}%
1038 \or % TOIS
1039 \def\@journalName{ACM Transactions on Information Systems}%
1040 \def\@permissionCodeOne{1046-8188}%
1041 \or % TOIT
1042 \def\@journalName{ACM Transactions on Internet Technology}%
1043 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1044 \def\@permissionCodeOne{1533-5399}%
1045 \or % TOMACS
1046 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1047 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1048 \or % TOMM
1049 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1050 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1051 \def\@permissionCodeOne{1551-6857}%
1052 \def\@permissionCodeTwo{0100}%
1053 \or % TOMPECS
1054 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1055 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1056 \def\@permissionCodeOne{2376-3639}%
1057 \or % TOMS
1058 \def\@journalName{ACM Transactions on Mathematical Software}%
1059 \def\@journalNameShort{ACM Trans. Math. Softw.}%

```

```

1060 \def\@permissionCodeOne{0098-3500}%
1061 \or % TOPC
1062 \def\@journalName{ACM Transactions on Parallel Computing}%
1063 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1064 \def\@permissionCodeOne{1539-9087}%
1065 \or % TOPS
1066 \def\@journalName{ACM Transactions on Privacy and Security}%
1067 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1068 \def\@permissionCodeOne{2471-2566}%
1069 \or % TOPLAS
1070 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1071 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1072 \def\@permissionCodeOne{0164-0925}%
1073 \or % TOS
1074 \def\@journalName{ACM Transactions on Storage}%
1075 \def\@journalNameShort{ACM Trans. Storage}%
1076 \def\@permissionCodeOne{1553-3077}%
1077 \or % TOSEM
1078 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1079 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1080 \def\@permissionCodeOne{1049-331X}%
1081 \or % TOSN
1082 \def\@journalName{ACM Transactions on Sensor Networks}%
1083 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1084 \def\@permissionCodeOne{1550-4859}%
1085 \or % TRET
1086 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1087 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1088 \def\@permissionCodeOne{1936-7406}%
1089 \or % TSAS
1090 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1091 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1092 \def\@permissionCodeOne{2374-0353}%
1093 \or % TSC
1094 \def\@journalName{ACM Transactions on Social Computing}%
1095 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1096 \def\@permissionCodeOne{2469-7818}%
1097 \or % TSLP
1098 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1099 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1100 \def\@permissionCodeOne{1550-4875}%
1101 \or % TWEB
1102 \def\@journalName{ACM Transactions on the Web}%
1103 \def\@journalNameShort{ACM Trans. Web}%
1104 \def\@permissionCodeOne{1559-1131}%
1105 \fi
1106 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1107 }{%
1108 \ClassError{\@classname}{Incorrect journal #1}%
1109 }%

```



```

\acmJournal And the syntactic sugar around it
1110 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}

    The defaults:
1111 \def\@journalCode@nr{0}
1112 \def\@journalName{}%
1113 \def\@journalNameShort{\@journalName}%
1114 \def\@permissionCodeOne{XXXX-XXXX}%
1115 \def\@permissionCodeTwo{}%

\acmConference This is the conference command
1116 \newcommand\acmConference[4][{}]{%
1117   \gdef\acmConference@shortname{#1}%
1118   \gdef\acmConference@name{#2}%
1119   \gdef\acmConference@date{#3}%
1120   \gdef\acmConference@venue{#4}%
1121   \ifx\acmConference@shortname\@empty
1122     \gdef\acmConference@shortname{#2}%
1123   \fi}
1124 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1125   DC, USA}

\acmBooktitle The book title of the conference:
\@acmBooktitle 1126 \def\acmBooktitle#1{\gdef\acmBooktitle{#1}}
1127 \acmBooktitle{Proceedings of \acmConference@name
1128   \ifx\acmConference@name\acmConference@shortname\else
1129     \ (\acmConference@shortname)\fi}

\@editorsAbbrev How to abbreviate editors
1130 \def\@editorsAbbrev{(Ed.)}

\@acmEditors The list of editors
1131 \def\@acmEditors{}

  \editor Add a new editor to the list
1132 \def\editor#1{\ifx\@acmEditors\@empty
1133   \gdef\@acmEditors{#1}%
1134   \else
1135     \gdef\@editorsAbbrev{(Eds.)}%
1136     \g@addto@macro\@acmEditors{\and#1}%
1137   \fi}

  \subtitle The subtitle macro
1138 \def\subtitle#1{\def\@subtitle{#1}}
1139 \subtitle{}

\num@authorgroups The total number of “groups”. Each group is several authors with the same affiliations(s)
1140 \newcount\num@authorgroups
1141 \num@authorgroups=0\relax

```

```

\num@authors The total number of authors
1142 \newcount\num@authors
1143 \num@authors=0\relax

\if@insideauthorgroup Whether we are continuing an author group
1144 \newif\if@insideauthorgroup
1145 \@insideauthorgroupfalse

\author Adding an author to the list of authors and addresses
1146 \renewcommand\author[2][{}%
1147   \global\advance\num@authors by 1\relax
1148   \if@insideauthorgroup\else
1149     \global\advance\num@authorgroups by 1\relax
1150     \global\@insideauthorgrouptrue
1151   \fi
1152   \ifx\addresses\@empty
1153     \if@ACM@anonymous
1154       \gdef\addresses{\@author{Anonymous Author(s)%
1155         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1156           \@acmSubmissionID\fi}}%
1157       \gdef\authors{Anonymous Author(s)}%
1158     \else
1159       \gdef\addresses{\@author{#2}}%
1160       \gdef\authors{#2}%
1161     \fi
1162   \else
1163     \if@ACM@anonymous\else
1164       \g@addto@macro\addresses{\and\@author{#2}}%
1165       \g@addto@macro\authors{\and#2}%
1166     \fi
1167   \fi
1168   \if@ACM@anonymous
1169     \ifx\shortauthors\@empty
1170       \gdef\shortauthors{Anon.
1171         \ifx\@acmSubmissionID\@empty\else Submission Id:
1172           \@acmSubmissionID\fi}%
1173     \fi
1174   \else
1175     \def\@tempa{#1}%
1176     \ifx\@tempa\@empty
1177       \ifx\shortauthors\@empty
1178         \gdef\shortauthors{#2}%
1179       \else
1180         \g@addto@macro\shortauthors{\and#2}%
1181       \fi
1182     \else
1183       \ifx\shortauthors\@empty
1184         \gdef\shortauthors{#1}%
1185       \else

```

```

1186     \g@addto@macro\shortauthors{\and#1}%
1187     \fi
1188     \fi
1189     \fi}

```

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

```

1190 \newcommand{\affiliation}[2][{}%
1191     \global\@insideauthorgroupfalse
1192     \if@ACM@anonymous\else
1193     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1194     \fi}

```

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

```

1195 \define@boolkey+{@ACM@affiliation@}{@ACM@affiliation@}{obeypunctuation}%
1196 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1197 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

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

```

1198 \def\@additionalaffiliation#1{\bgroup
1199     \def\position##1{\ignorespaces}%
1200     \def\institution##1{##1\ignorespaces}%
1201     \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1202     \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1203     \let\streetaddress\position
1204     \let\city\position
1205     \let\state\position
1206     \let\postcode\position
1207     \let\country\position
1208     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.

```

1209 \renewcommand{\email}[2][{}%
1210     \if@ACM@anonymous\else
1211     \g@addto@macro\addresses{\email{#1}{#2}}%
1212     \fi}

```

`\orcid` Right now we do not typeset ORCIDs

```

1213 \def\orcid#1{\unskip\ignorespaces}

```

`\authorsaddresses` Setting up authors' addresses

```

1214 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1215 \authorsaddresses{\mkauthorsaddresses}

```

```

\@titlenotes The title notes
1216 \def\@titlenotes{}

\@titlenote Adding a note to the title
1217 \def\@titlenote#1{%
1218   \g@addto@macro\@title{\footnotemark}%
1219   \if@ACM@anonymous
1220     \g@addto@macro\@titlenotes{%
1221       \stepcounter{footnote}\footnotetext{Title note}}%
1222   \else
1223     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1224   \fi}

\@subtitlenotes The subtitle notes
1225 \def\@subtitlenotes{}

\@subtitlenote Adding a note to the subtitle
1226 \def\@subtitlenote#1{%
1227   \g@addto@macro\@subtitle{\footnotemark}%
1228   \if@ACM@anonymous
1229     \g@addto@macro\@subtitlenotes{%
1230       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1231   \else
1232     \g@addto@macro\@subtitlenotes{%
1233       \stepcounter{footnote}\footnotetext{#1}}%
1234   \fi}

\@authornotes The author notes
1235 \def\@authornotes{}

\@authornote Adding a note to the author
1236 \def\@authornote#1{%
1237   \if@ACM@anonymous\else
1238     \g@addto@macro\addresses{\@authornotemark}%
1239     \g@addto@macro\@authornotes{%
1240       \stepcounter{footnote}\footnotetext{#1}}%
1241   \fi}

\authornotemark Adding a footnote mark to the authors
1242 \newcommand\authornotemark[1][\relax]{%
1243   \ifx#1\relax\relax\relax
1244   \g@addto@macro\addresses{\@authornotemark}%
1245   \else
1246   \g@addto@macro\addresses{\@authornotemark{#1}}%
1247   \fi}

\acmVolume The current volume
1248 \def\acmVolume#1{\def\@acmVolume{#1}}
1249 \acmVolume{1}

```

`\acmNumber` The current number  
1250 `\def\acmNumber#1{\def\@acmNumber{#1}}`  
1251 `\acmNumber{1}`

`\acmArticle` The current article  
1252 `\def\acmArticle#1{\def\@acmArticle{#1}}`  
1253 `\acmArticle{}`

`\acmArticleSeq` The sequence number  
1254 `\def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}`  
1255 `\acmArticleSeq{\@acmArticle}`

`\acmYear` The current year  
1256 `\def\acmYear#1{\def\@acmYear{#1}}`  
1257 `\acmYear{\the\year}`

`\acmMonth` The current month  
1258 `\def\acmMonth#1{\def\@acmMonth{#1}}`  
1259 `\acmMonth{\the\month}`

`\@acmPubDate` The publication date  
1260 `\def\@acmPubDate{\ifcase\@acmMonth\or`  
1261 `January\or February\or March\or April\or May\or June\or`  
1262 `July\or August\or September\or October\or November\or`  
1263 `December\fi~\@acmYear}`

`\acmPrice` The price  
1264 `\def\acmPrice#1{\def\@acmPrice{#1}}`  
1265 `\acmPrice{15.00}`

`\acmSubmissionID` The submission ID  
1266 `\def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}`  
1267 `\acmSubmissionID{}`

`\acmISBN` The book ISBN  
1268 `\def\acmISBN#1{\def\@acmISBN{#1}}`  
1269 `\acmISBN{978-x-xxxx-xxxx-x/YY/MM}`

`\acmDOI` The paper DOI  
1270 `\def\acmDOI#1{\def\@acmDOI{#1}}`  
1271 `\acmDOI{10.1145/nnnnnnn.nnnnnnn}`

`\if@ACM@badge` Whether to print a badge. Note that either a left or right badge triggers it:  
1272 `\newif\if@ACM@badge`  
1273 `\@ACM@badgefalse`

`\@ACM@badge@width` The width of the badge  
1274 `\newlength\@ACM@badge@width`  
1275 `\setlength\@ACM@badge@width{5pc}`

`\@ACM@title@width` The width of the badge  
1276 `\newlength\@ACM@title@width`

`\@ACM@badge@skip` The space between the badge and the title  
1277 `\newlength\@ACM@badge@skip`  
1278 `\setlength\@ACM@badge@skip{1pc}`

`\acmBadgeR` Setting the right badge  
1279 `\newcommand\acmBadgeR[2][\@ACM@badgetrue`  
1280 `\def\@acmBadgeR@url{#1}%`  
1281 `\def\@acmBadgeR@image{#2}}`  
1282 `\def\@acmBadgeR@url{}`  
1283 `\def\@acmBadgeR@image{}`

`\acmBadgeL` Setting the left badge  
1284 `\newcommand\acmBadgeL[2][\@ACM@badgetrue`  
1285 `\def\@acmBadgeL@url{#1}%`  
1286 `\def\@acmBadgeL@image{#2}}`  
1287 `\def\@acmBadgeL@url{}`  
1288 `\def\@acmBadgeL@image{}`

`\startPage` The start page of the paper  
1289 `\def\startPage#1{\def\@startPage{#1}}`  
1290 `\startPage{}`

`\terms` Terms are obsolete. We use CCS now.  
1291 `\def\terms#1{\ClassWarning{\@classname}{The command \string\terms{}` is  
1292 `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.  
1293 `\def\keywords#1{\def\@keywords{#1}}`  
1294 `\keywords{}`

`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  
1295 `\renewenvironment{abstract}{\Collect@Body\@saveabstract}{}`

`\@saveabstract` And saving the abstract  
1296 `\long\def\@saveabstract#1{\long\gdef\@abstract{#1}}`  
1297 `\@saveabstract{}`

`\@empty` The long version of `\@empty` (to compare with `\@abstract`)  
1298 `\long\def\@empty{}`

```

\if@ACM@printccs Whether to print CCS
1299 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1300 \if@ACM@printccs
1301 \ClassInfo{\@classname}{Printing CCS}%
1302 \else
1303 \ClassInfo{\@classname}{Suppressing CCS}%
1304 \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

\if@ACM@printacmref Whether to print the ACM bibstrip
1305 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1306 \if@ACM@printacmref
1307 \ClassInfo{\@classname}{Printing bibformat}%
1308 \else
1309 \ClassInfo{\@classname}{Suppressing bibformat}%
1310 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

\if@ACM@printfolios Whether to print folios
1311 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1312 \if@ACM@printfolios
1313 \ClassInfo{\@classname}{Printing folios}%
1314 \else
1315 \ClassInfo{\@classname}{Suppressing folios}%
1316 \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}

\@ACM@authorsperrrow The number of authors per row. 0 means use the default algorithm.
1317 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorsperrrow}[0]{%
1318 \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorsperrrow to
1319 #1}}{\ClassWarning{\@classname}{The parameter authorsperrrow must be
1320 numerical. Ignoring the input #1}\gdef\@ACM@authorsperrrow{0}}}}

\settopmatter The usual syntactic sugar
1321 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

Now the settings
1322 \settopmatter{printccs=true, printacmref=true}
1323 \if@ACM@manuscript
1324 \settopmatter{printfolios=true}
1325 \else
1326 \if@ACM@journal
1327 \settopmatter{printfolios=true}
1328 \else
1329 \settopmatter{printfolios=false}
1330 \fi
1331 \fi
1332 \settopmatter{authorsperrrow=0}

\@received The container for the paper history
1333 \def\@received{}

```

`\received` The `\received` command

```

1334 \newcommand\received[2][\def\tempa{#1}%
1335 \ifx\tempa\empty
1336 \ifx\@received\empty
1337 \gdef\@received{Received #2}%
1338 \else
1339 \g@addto@macro{\@received}{; revised #2}%
1340 \fi
1341 \else
1342 \ifx\@received\empty
1343 \gdef\@received{#1 #2}%
1344 \else
1345 \g@addto@macro{\@received}{; #1 #2}%
1346 \fi
1347 \fi}
1348 \AtEndDocument{%
1349 \ifx\@received\empty\else
1350 \par\bigskip\noindent\small\normalfont\@received\par
1351 \fi}

```

### 3.13 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1352 \RequirePackage{comment}
1353 \excludecomment{CCSXML}

```

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

```

1354 \let\@concepts\empty
1355 \newcounter{@concepts}

```

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

```

1356 \newcommand\ccsdesc[2][100]{%
1357 \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!

```

1358 \RequirePackage{textcomp}
1359 \def\ccsdesc@parse#1~#2~#3~{%
1360 \stepcounter{@concepts}%
1361 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1362 \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1363 \textbf{#2}}%
1364 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
1365 \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1366 \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1367 \csname CCS@Punctuation@#2\endcsname
1368 \csname CCS@Specific@#2\endcsname}%
1369 \fi
1370 \ifx#3\relax\relax\else

```



```

1371 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1372 \textrightarrow\ }%
1373 \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1374 \addtocounter{@concepts}{-1}%
1375 \ifnum#1>499\textbf{#3}\else
1376 \ifnum#1>299\textit{#3}\else
1377 #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1378 \fi
1379 \ccsdesc@parse@finish}

```

```

\ccdesc@parse@finish Gobble everything to \ccsdesc@parse@end
1380 \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
1381 \newif\if@printcopyright
1382 \@printcopyrighttrue

```

```

\if@printpermission Whether to print the permission block
1383 \newif\if@printpermission
1384 \@printpermissiontrue

```

```

\if@acmowned Whether the ACM owns the rights to the paper
1385 \newif\if@acmowned
1386 \@acmownedtrue

```

Keys:

```

1387 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1388 \acm@copyrightinput\acm@copyrightmode]{none,%
1389 acmcopyright,acmlicensed,rightsretained,%
1390 usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1391 licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1392 iw3c2w3,iw3c2w3g}{%
1393 \@printpermissiontrue
1394 \@printcopyrighttrue
1395 \@acmownedtrue
1396 \ifnum\acm@copyrightmode=0\relax % none
1397 \@printpermissionfalse
1398 \@printcopyrightfalse
1399 \@acmownedfalse
1400 \fi
1401 \ifnum\acm@copyrightmode=2\relax % acmlicensed
1402 \@acmownedfalse
1403 \fi
1404 \ifnum\acm@copyrightmode=3\relax % rightsretained
1405 \@acmownedfalse

```

```

1406 \AtBeginDocument{\acmPrice{}}%
1407 \fi
1408 \ifnum\acm@copyrightmode=4\relax % usgov
1409 \@printpermissiontrue
1410 \@printcopyrightfalse
1411 \@acmownedfalse
1412 \AtBeginDocument{\acmPrice{}}%
1413 \fi
1414 \ifnum\acm@copyrightmode=6\relax % cagov
1415 \@acmownedfalse
1416 \fi
1417 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1418 \@acmownedfalse
1419 \fi
1420 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1421 \@acmownedfalse
1422 \fi
1423 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1424 \@acmownedfalse
1425 \fi
1426 \ifnum\acm@copyrightmode=11\relax % othergov
1427 \@acmownedtrue
1428 \fi
1429 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1430 \@acmownedfalse
1431 \fi
1432 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1433 \@acmownedfalse
1434 \AtBeginDocument{\acmPrice{}}%
1435 \fi
1436 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1437 \@acmownedfalse
1438 \AtBeginDocument{\acmPrice{}}%
1439 \fi}

```

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

```

1440 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1441 \setcopyright{acmcopyright}

```

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

```

1442 \def\@copyrightowner{%
1443 \ifcase\acm@copyrightmode\relax % none
1444 \or % acmcopyright
1445 Association for Computing Machinery.
1446 \or % acmlicensed
1447 Copyright held by the owner/author(s). Publication rights licensed to
1448 ACM\@.
1449 \or % rightsretained
1450 Copyright held by the owner/author(s).
1451 \or % usgov

```

1452 \or % usgovmixed  
 1453 Association for Computing Machinery.  
 1454 \or % cagov  
 1455 Crown in Right of Canada.  
 1456 \or %cagovmixed  
 1457 Association for Computing Machinery.  
 1458 \or %licensedusgovmixed  
 1459 Copyright held by the owner/author(s). Publication rights licensed to  
 1460 ACM\@.  
 1461 \or % licensedcagov  
 1462 Crown in Right of Canada. Publication rights licensed to  
 1463 ACM\@.  
 1464 \or %licensedcagovmixed  
 1465 Copyright held by the owner/author(s). Publication rights licensed to  
 1466 ACM\@.  
 1467 \or % othergov  
 1468 Association for Computing Machinery.  
 1469 \or % licensedothergov  
 1470 Copyright held by the owner/author(s). Publication rights licensed to  
 1471 ACM\@.  
 1472 \or % ic2w3www  
 1473 IW3C2 (International World Wide Web Conference Committee), published  
 1474 under Creative Commons CC-BY~4.0 License.  
 1475 \or % ic2w3wwwgoogle  
 1476 IW3C2 (International World Wide Web Conference Committee), published  
 1477 under Creative Commons CC-BY-NC-ND~4.0 License.  
 1478 \fi}

\@formatdoi Print a clickable DOI

1479 \def\@formatdoi#1{\url{https://doi.org/#1}}

\@copyrightpermission The canned permission block.

1480 \def\@copyrightpermission{%  
 1481 \ifcase\acm@copyrightmode\relax % none  
 1482 \or % acmcopyright  
 1483 Permission to make digital or hard copies of all or part of this  
 1484 work for personal or classroom use is granted without fee provided  
 1485 that copies are not made or distributed for profit or commercial  
 1486 advantage and that copies bear this notice and the full citation on  
 1487 the first page. Copyrights for components of this work owned by  
 1488 others than ACM must be honored. Abstracting with credit is  
 1489 permitted. To copy otherwise, or republish, to post on servers or to  
 1490 redistribute to lists, requires prior specific permission  
 1491 and\hspace\*{.5pt}/or a fee. Request permissions from  
 1492 permissions@acm.org.  
 1493 \or % acmlicensed  
 1494 Permission to make digital or hard copies of all or part of this  
 1495 work for personal or classroom use is granted without fee provided  
 1496 that copies are not made or distributed for profit or commercial  
 1497 advantage and that copies bear this notice and the full citation on

1498 the first page. Copyrights for components of this work owned by  
1499 others than the author(s) must be honored. Abstracting with credit  
1500 is permitted. To copy otherwise, or republish, to post on servers  
1501 or to redistribute to lists, requires prior specific permission  
1502 and\hspace\*{.5pt}/or a fee. Request permissions from  
1503 permissions@acm.org.

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1505 Permission to make digital or hard copies of part or all of this work  
1506 for personal or classroom use is granted without fee provided that  
1507 copies are not made or distributed for profit or commercial advantage  
1508 and that copies bear this notice and the full citation on the first  
1509 page. Copyrights for third-party components of this work must be  
1510 honored. For all other uses, contact the  
1511 owner\hspace\*{.5pt}/author(s).

1512 \or % usgov  
1513 This paper is authored by an employee(s) of the United States  
1514 Government and is in the public domain. Non-exclusive copying or  
1515 redistribution is allowed, provided that the article citation is  
1516 given and the authors and agency are clearly identified as its  
1517 source.

1518 \or % usgovmixed  
1519 ACM acknowledges that this contribution was authored or co-authored  
1520 by an employee, contractor, or affiliate of the United States government. As such,  
1521 the United States government retains a nonexclusive, royalty-free right to  
1522 publish or reproduce this article, or to allow others to do so, for  
1523 government purposes only.

1524 \or % cagov  
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1526 As such, the Canadian government retains all interest in the  
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1534 others than the Canadian Government must be honored. To copy  
1535 otherwise, distribute, republish, or post, requires prior specific  
1536 permission and\hspace\*{.5pt}/or a fee. Request permissions from  
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1538 \or % cagovmixed  
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1563 the authors and the Canadian government agency employing them.  
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1565 use is granted. Copies must bear this notice and the full citation  
1566 on the first page. Copyrights for components of this work owned by  
1567 others than the Canadian Government must be honored. To copy  
1568 otherwise, distribute, republish, or post, requires prior specific  
1569 permission and\hspace\*{.5pt}/or a fee. Request permissions from  
1570 permissions@acm.org.

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1574 or affiliate of the national government of Canada. As such, the  
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1577 purposes only.

1578 \or % othergov

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1587 or affiliate of a national government. As such, the Government  
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1589 this article, or to allow others to do so, for Government purposes  
1590 only.

1591 \or % iw3c2w3

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1593 International (CC-BY~4.0) license. Authors reserve their rights to  
1594 disseminate the work on their personal and corporate Web sites with  
1595 the appropriate attribution.

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```

1598 Attribution-NonCommercial-NoDerivs~4.0 International
1599 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
1600 disseminate the work on their personal and corporate Web sites with
1601 the appropriate attribution.
1602 \fi}

```

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

```

1603 \def\copyrightyear#1{\def\copyrightyear{#1}}
1604 \copyrightyear{\@acmYear}

```

`\@teaserfigures` The teaser figures container

```

1605 \def\@teaserfigures{}

```

`teaserfigure` The teaser figure

```

1606 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

```

`\@saveteaser` Saving the teaser

```

1607 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

```

`\thanks` We redefine `amsart \thanks` so the anonymous key works

```

1608 \renewcommand{\thanks}[1]{%
1609   \@ifnotempty{#1}{%
1610     \if@ACM@anonymous
1611       \g@addto@macro\thankses{\thanks{A note}}%
1612     \else
1613       \g@addto@macro\thankses{\thanks{#1}}%
1614     \fi}}

```

### 3.15 Typesetting top matter

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

```

1615 \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.

```

1616 \def\maketitle{%
1617   \if@ACM@anonymous
1618     % Anonymize omission of \author-s
1619     \ifnum\@authorgroups=0\author{}\fi
1620   \fi
1621   \begingroup
1622   \let\@footnotemark\@footnotemark@nolink
1623   \let\@footnotetext\@footnotetext@nolink

```

```

1624 \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1625 \hspace=\textwidth
1626 \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1627 \@mktitle\if@ACM@sigchiamode\else\mkauthors\fi\@mkteasers
1628 \@printtopmatter
1629 \if@ACM@sigchiamode\mkauthors\fi
1630 \setcounter{footnote}{0}%
1631 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1632 \@titlenotes
1633 \@subtitlenotes
1634 \@authornotes
1635 \let\@makefnmark\relax
1636 \let\@thefnmark\relax
1637 \let\@makefntext\noindent
1638 \ifx\@empty\thankses\else
1639   \footnotetextauthorsaddresses{%
1640     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1641   \fi
1642 \ifx\@empty\@authorsaddresses\else
1643   \if@ACM@anonymous\else
1644     \if@ACM@journal
1645       \footnotetextauthorsaddresses{%
1646         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1647     \fi
1648   \fi
1649 \fi
1650 \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1651   \if@ACM@authordraft
1652     \raisebox{-2ex}[\z@][\z@]{\makebox[0pt][l]{\large\bfseries
1653       Unpublished working draft. Not for distribution.}}%
1654     \color[gray]{0.9}%
1655   \fi
1656   \parindent\z@\parskip0.1\baselineskip
1657   \if@ACM@authorversion\else
1658     \if@printpermission\@copyrightpermission\par\fi
1659   \fi
1660   \if@ACM@manuscript\else
1661     \if@ACM@journal\else % Print the conference information
1662     {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1663     \fi
1664   \fi
1665   \if@printcopyright
1666     \copyright\ \@copyrightyear\ \@copyrightowner\
1667   \else
1668     \@copyrightyear.\
1669   \fi
1670   \if@ACM@manuscript
1671     Manuscript submitted to ACM\
1672   \else
1673     \if@ACM@authorversion

```

```

1674         This is the author's version of the work. It is posted here for
1675         your personal use. Not for redistribution. The definitive Version
1676         of Record was published in
1677         \if@ACM@journal
1678             \emph{\@journalName}%
1679         \else
1680             \emph{\@acmBooktitle}%
1681         \fi
1682         \ifx\@acmDOI\@empty
1683             .
1684         \else
1685             , \@formatdoi{\@acmDOI}.
1686         \fi\
1687     \else
1688         \if@ACM@nonacm\else
1689             \if@ACM@journal
1690                 \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1691                 \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\
1692                 \@formatdoi{\@acmDOI}%
1693             \else % Conference
1694                 \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1695                 \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\
1696                 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
1697             \fi
1698         \fi
1699     \fi}
1700 \fi}
1701 \fi
1702 \endgroup
1703 \setcounter{footnote}{0}%
1704 \mkabstract
1705 \if@ACM@printccs
1706     \ifx\@concepts\@empty\else\bgroup
1707         {\@specialsection{CCS Concepts}%
1708         \@concepts\par}\egroup
1709     \fi
1710 \fi
1711 \ifx\@keywords\@empty\else\bgroup
1712     {\if@ACM@journal
1713         \@specialsection{Additional Key Words and Phrases}%
1714     \else
1715         \@specialsection{Keywords}%
1716     \fi
1717     \@keywords}\par\egroup
1718 \fi
1719 \andify\authors
1720 \andify\shortauthors
1721 \global\let\authors=\authors
1722 \global\let\shortauthors=\shortauthors
1723 \if@ACM@printacmref

```



```

1724 \mkbibcitation
1725 \fi
1726 \hypersetup{%
1727 pdfauthor={\authors},
1728 pdftitle={\@title},
1729 pdfsubject={\@concepts},
1730 pdfkeywords={\@keywords},
1731 pdfcreator={LaTeX with acmart
1732 \csname ver@acmart.cls\endcsname\space
1733 and hyperref
1734 \csname ver@hyperref.sty\endcsname}}%
1735 \global\@topnum\z@ % this prevents floats from falling
1736 % at the top of page 1
1737 \global\@botnum\z@ % we do not want them to be on the bottom either
1738 \@printtopmatter
1739 \@afterindentfalse
1740 \@afterheading
1741 }

```

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

```

1742 \def\@specialsection#1{%
1743 \ifcase\ACM@format@nr
1744 \relax % manuscript
1745 \par\medskip\small\noindent#1: %
1746 \or % acmsmall
1747 \par\medskip\small\noindent#1: %
1748 \or % acmlarge
1749 \par\medskip\small\noindent#1: %
1750 \or % acmtog
1751 \par\medskip\small\noindent#1: %
1752 \or % sigconf
1753 \section*{#1}%
1754 \or % siggraph
1755 \section*{#1}%
1756 \or % sigplan
1757 \paragraph*{#1}%
1758 \or % sigchi
1759 \section*{#1}%
1760 \or % sigchi-a
1761 \section*{#1}%
1762 \fi}

```

`\@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 `\mkttitle` since we want them in the margins.

```

1763 \def\@printtopmatter{%
1764 \ifx\@startPage\@empty
1765 \gdef\@startPage{1}%
1766 \else

```

```

1767     \setcounter{page}{\@startPage}%
1768     \fi
1769     \thispagestyle{firstpagestyle}%
1770     \noindent
1771     \ifcase\ACM@format@nr
1772     \relax % manuscript
1773     \box\mktitle@bx\par
1774     \or % acmsmall
1775     \box\mktitle@bx\par
1776     \or % acmlarge
1777     \box\mktitle@bx\par
1778     \or % acmtog
1779     \twocolumn[\box\mktitle@bx]%
1780     \or % sigconf
1781     \twocolumn[\box\mktitle@bx]%
1782     \or % siggraph
1783     \twocolumn[\box\mktitle@bx]%
1784     \or % sigplan
1785     \twocolumn[\box\mktitle@bx]%
1786     \or % sigchi
1787     \twocolumn[\box\mktitle@bx]%
1788     \or % sigchi-a
1789     \par\box\mktitle@bx\par\bigskip
1790     \if@ACM@badge
1791         \marginpar{\noindent
1792             \ifx\@acmBadgeL@image\empty\else
1793                 \href{\@acmBadgeL@url}{%
1794                     \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1795                 \hskip\@ACM@badge@skip
1796             \fi
1797             \ifx\@acmBadgeR@image\empty\else
1798                 \href{\@acmBadgeR@url}{%
1799                     \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1800             \fi}%
1801     \fi
1802     \fi
1803 }

```

\@mktitle The title of the article

```

1804 \def\@mktitle{%
1805     \ifcase\ACM@format@nr
1806     \relax % manuscript
1807     \@mktitle@i
1808     \or % acmsmall
1809     \@mktitle@i
1810     \or % acmlarge
1811     \@mktitle@i
1812     \or % acmtog
1813     \@mktitle@i
1814     \or % sigconf

```

```

1815 \mktitle@iii
1816 \or % siggraph
1817 \mktitle@iii
1818 \or % sigplan
1819 \mktitle@iii
1820 \or % sigchi
1821 \mktitle@iii
1822 \or % sigchi-a
1823 \mktitle@iv
1824 \fi
1825 }

```

\@titlefont The font to typeset the title

```

1826 \def\@titlefont{%
1827 \ifcase\ACM@format@nr
1828 \relax % manuscript
1829 \LARGE\sffamily\bfseries
1830 \or % acmsmall
1831 \LARGE\sffamily\bfseries
1832 \or % acmlarge
1833 \LARGE\sffamily\bfseries
1834 \or % acmtog
1835 \Huge\sffamily
1836 \or % sigconf
1837 \Huge\sffamily\bfseries
1838 \or % siggraph
1839 \Huge\sffamily\bfseries
1840 \or % sigplan
1841 \Huge\bfseries
1842 \or % sigchi
1843 \Huge\sffamily\bfseries
1844 \or % sigchi-a
1845 \Huge\bfseries
1846 \fi}

```

\@subtitlefont The font to typeset the subtitle

```

1847 \def\@subtitlefont{\normalsize
1848 \ifcase\ACM@format@nr
1849 \relax % manuscript
1850 \mdseries
1851 \or % acmsmall
1852 \mdseries
1853 \or % acmlarge
1854 \mdseries
1855 \or % acmtog
1856 \LARGE
1857 \or % sigconf
1858 \LARGE\mdseries
1859 \or % siggraph
1860 \LARGE\mdseries

```

```

1861 \or % sigplan
1862     \LARGE\mdseries
1863 \or % sigchi
1864     \LARGE\mdseries
1865 \or % sigchi-a
1866     \mdseries
1867 \fi}

```

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

```

1868 \def\@mkttitle@i{\hsize=\textwidth
1869   \@ACM@title@width=\hsize
1870   \ifx\@acmBadgeL@image\@empty\else
1871     \advance\@ACM@title@width by -\@ACM@badge@width
1872     \advance\@ACM@title@width by -\@ACM@badge@skip
1873   \fi
1874   \ifx\@acmBadgeR@image\@empty\else
1875     \advance\@ACM@title@width by -\@ACM@badge@width
1876     \advance\@ACM@title@width by -\@ACM@badge@skip
1877   \fi
1878   \setbox\mkttitle@bx=\vbox{\noindent\@titlefont
1879     \ifx\@acmBadgeL@image\@empty\else
1880       \raisebox{- .5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
1881         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
1882       \hskip\@ACM@badge@skip
1883     \fi
1884     \parbox[t]{\@ACM@title@width}{\raggedright
1885       \@titlefont\noindent
1886       \@title
1887     \ifx\@subtitle\@empty\else
1888       \par\noindent{\@subtitlefont\@subtitle}
1889     \fi}%
1890     \ifx\@acmBadgeR@image\@empty\else
1891       \hskip\@ACM@badge@skip
1892       \raisebox{- .5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1893         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1894     \fi
1895     \par\bigskip}}%

```

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

`\@mkttitle@iii` The version of `\mkttitle` for SIG proceedings. Note that since the title is centered, we leave space for the left badge even if only the right badge is defined.

```

1896 \def\@mkttitle@iii{\hsize=\textwidth
1897   \setbox\mkttitle@bx=\vbox{\@titlefont\centering
1898     \@ACM@title@width=\hsize
1899     \if@ACM@badge
1900       \advance\@ACM@title@width by -2\@ACM@badge@width
1901       \advance\@ACM@title@width by -2\@ACM@badge@skip
1902     \parbox[b]{\@ACM@badge@width}{\strut

```

```

1903         \ifx\@acmBadgeL@image\@empty\else
1904             \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
1905                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
1906         \fi}%
1907     \hskip\@ACM@badge@skip
1908 \fi
1909 \parbox[t]{\@ACM@title@width}{\centering\@titlefont
1910     \@title
1911     \ifx\@subtitle\@empty\else
1912         \par\noindent{\@subtitlefont\@subtitle}
1913     \fi
1914 }%
1915 \if@ACM@badge
1916     \hskip\@ACM@badge@skip
1917     \parbox[b]{\@ACM@badge@width}{\strut
1918         \ifx\@acmBadgeR@image\@empty\else
1919             \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1920                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1921         \fi}%
1922 \fi
1923 \par\bigskip}}%

```

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

```

1924 \def\@mktitle@iv{\hsize=\textwidth
1925     \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1926         \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1927         \noindent\@title
1928         \ifx\@subtitle\@empty\else
1929             \par\noindent\@subtitlefont\@subtitle
1930         \fi
1931     \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.

```

1932 \newbox\@ACM@commabox
1933 \def\@ACM@addtoaddress#1{%
1934     \ifvmode\else
1935         \if@ACM@affiliation@obeypunctuation\else
1936             \setbox\@ACM@commabox=\hbox{, }%
1937             \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1938         \fi\fi
1939     #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 1940 \def\streetaddress#1{\unskip\ignorespaces}
\city 1941 \def\postcode#1{\unskip\ignorespaces}
\state 1942 \if@ACM@journal
\postcode 1943 \def\position#1{\unskip\ignorespaces}
\country 1944 \def\institution#1{\unskip~#1\ignorespaces}
1945 \def\city#1{\unskip\ignorespaces}
1946 \def\state#1{\unskip\ignorespaces}
1947 \newcommand\department[2][0]{\unskip\ignorespaces}
1948 \def\country#1{\if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
1949 \else
1950 \def\position#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
1951 \def\institution#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
1952 \newcommand\department[2][0]{\if@ACM@affiliation@obeypunctuation
1953 #2\else#2\par\fi}%
1954 % \def\streetaddress#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
1955 \let\city\@ACM@addtoaddress
1956 \let\state\@ACM@addtoaddress
1957 % \def\postcode#1{\if@ACM@affiliation@obeypunctuation#1\else\unskip\space#1\fi}%
1958 \let\country\@ACM@addtoaddress
1959 \fi

\@mkauthors Typesetting the authors
1960 \def\@mkauthors{\begingroup
1961 \hsize=\textwidth
1962 \ifcase\ACM@format@nr
1963 \relax % manuscript
1964 \@mkauthors@i
1965 \or % acmsmall
1966 \@mkauthors@i
1967 \or % acmlarge
1968 \@mkauthors@i
1969 \or % acmtog
1970 \@mkauthors@i
1971 \or % sigconf
1972 \@mkauthors@iii
1973 \or % siggraph
1974 \@mkauthors@iii
1975 \or % sigplan
1976 \@mkauthors@iii
1977 \or % sigchi
1978 \@mkauthors@iii
1979 \or % sigchi-a
1980 \@mkauthors@iv
1981 \fi
1982 \endgroup
1983 }

```

`\@authorfont` Somehow different conferences use different fonts for author names. Why?  
1984 `\def\@authorfont{\Large\sffamily}`

`\@affiliationfont` Font for affiliations  
1985 `\def\@affiliationfont{\normalsize\normalfont}`

#### Adjusting fonts for different formats

```
1986 \ifcase\ACM@format@nr
1987 \relax % manuscript
1988 \or % acsmall
1989 \def\@authorfont{\large\sffamily}
1990 \def\@affiliationfont{\small\normalfont}
1991 \or % acmlarge
1992 \or % acmtog
1993 \def\@authorfont{\LARGE\sffamily}
1994 \def\@affiliationfont{\large}
1995 \or % sigconf
1996 \def\@authorfont{\LARGE}
1997 \def\@affiliationfont{\large}
1998 \or % siggraph
1999 \def\@authorfont{\normalsize\normalfont}
2000 \def\@affiliationfont{\normalsize\normalfont}
2001 \or % sigplan
2002 \def\@authorfont{\Large\normalfont}
2003 \def\@affiliationfont{\normalsize\normalfont}
2004 \or % sigchi
2005 \def\@authorfont{\bfseries}
2006 \def\@affiliationfont{\mdseries}
2007 \or % sigchi-a
2008 \def\@authorfont{\bfseries}
2009 \def\@affiliationfont{\mdseries}
2010 \fi
```

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

```
2011 \def\@typeset@author@line{%
2012 \andify\@currentauthors\par\noindent
2013 \@currentauthors\def\@currentauthors{}%
2014 \ifx\@currentaffiliations\@empty\else
2015 \andify\@currentaffiliations
2016 \unskip, {\@currentaffiliations}\par
2017 \fi
2018 \def\@currentaffiliations{}}
```

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

```
2019 \def\@mkauthors@i{%
2020 \def\@currentauthors{}%
2021 \def\@currentaffiliations{}}
```

```

2022 \global\let\and\@typeset@author@line
2023 \def\@author##1{%
2024   \ifx\@currentauthors\@empty
2025     \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2026   \else
2027     \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
2028   \fi
2029   \gdef\and{}}%
2030 \def\email##1##2{%
2031 \def\affiliation##1##2{%
2032   \def\@tempa{##2}\ifx\@tempa\@empty\else
2033     \ifx\@currentaffiliations\@empty
2034       \gdef\@currentaffiliations{%
2035         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2036         \setkeys{@ACM@affiliation@}{##1}%
2037         \@affiliationfont##2}%
2038     \else
2039       \g@addto@macro{\@currentaffiliations}{\and
2040         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2041         \setkeys{@ACM@affiliation@}{##1}##2}%
2042     \fi
2043   \fi
2044   \global\let\and\@typeset@author@line}%
2045 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
2046 \noindent\addresses\@typeset@author@line
2047 \par\medskip}%
2048 }

```

`\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  
2049 `\newbox\author@bx`

`\author@bx@wd` The width of the author box  
2050 `\newdimen\author@bx@wd`

`\author@bx@sep` The separation between author boxes  
2051 `\newskip\author@bx@sep`  
2052 `\author@bx@sep=1pc\relax`

`\@typeset@author@bx` Typesetting the box with authors. Note that in `sigchi-a` the box is not centered.  
2053 `\def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%`  
2054 `\global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi`  
2055 `\@authorfont\@currentauthors\par\@affiliationfont`  
2056 `\@currentaffiliation}\egroup`  
2057 `\box\author@bx\hspace{\author@bx@sep}%`  
2058 `\gdef\@currentauthors{}}%`  
2059 `\gdef\@currentaffiliation{}}`



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

```
2060 \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.

```
2061 \author@bx@wd=\textwidth\relax
2062 \advance\author@bx@wd by -\author@bx@sep\relax
2063 \ifnum\@ACM@authorsperrow>0\relax
2064 \divide\author@bx@wd by \@ACM@authorsperrow\relax
2065 \else
2066 \ifcase\@num@authorgroups
2067 \relax % 0?
2068 \or % 1=one author per row
2069 \or % 2=two authors per row
2070 \divide\author@bx@wd by \@num@authorgroups\relax
2071 \or % 3=three authors per row
2072 \divide\author@bx@wd by \@num@authorgroups\relax
2073 \or % 4=two authors per row (!)
2074 \divide\author@bx@wd by 2\relax
2075 \else % three authors per row
2076 \divide\author@bx@wd by 3\relax
2077 \fi
2078 \fi
2079 \advance\author@bx@wd by -\author@bx@sep\relax
```

Now, parsing of \addresses:

```
2080 \gdef\@currentauthors{}%
2081 \gdef\@currentaffiliation{}%
2082 \def\@author##1{\ifx\@currentauthors\@empty
2083 \gdef\@currentauthors{\par##1}%
2084 \else
2085 \g@addto@macro\@currentauthors{\par##1}%
2086 \fi
2087 \gdef\@and{}%
2088 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2089 \gdef\@currentaffiliation{\nolinkurl{##2}}%
2090 \else
2091 \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2092 \fi}%
2093 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2094 \gdef\@currentaffiliation%
2095 \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2096 \setkeys{@ACM@affiliation@}{##1}##2}%
2097 \else
2098 \g@addto@macro\@currentaffiliation{\par
2099 \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2100 \setkeys{@ACM@affiliation@}{##1}##2}%
2101 \fi
```

```
2102 \global\let\and\@typeset@author@bx
2103 }%
```

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

```
2104 \hsize=\textwidth
2105 \global\setbox\mktitle@bx=\vbox{\noindent
2106   \box\mktitle@bx\par\medskip\leavevmode
2107   \lineskip=1pc\relax\centering\hspace*{-1em}%
2108   \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.

```
2109 \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.

```
2110 \author@bx@wd=\columnwidth\relax
2111 \advance\author@bx@wd by -\author@bx@sep\relax
2112 \ifnum\@ACM@authorsperrow>0\relax
2113   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2114 \else
2115   \ifcase\@num@authorgroups
2116     \relax % 0?
2117     \or % 1=one author per row
2118     \else % 2=two authors per row
2119       \divide\author@bx@wd by 2\relax
2120   \fi
2121 \fi
2122 \advance\author@bx@wd by -\author@bx@sep\relax
```

Now, parsing of `\addresses`:

```
2123 \gdef\@currentauthors{}%
2124 \gdef\@currentaffiliation{}%
2125 \def\@author##1{\ifx\@currentauthors\@empty
2126   \gdef\@currentauthors{\par##1}%
2127 \else
2128   \g@addto@macro\@currentauthors{\par##1}%
2129 \fi
2130 \gdef\and{}}%
2131 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2132   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2133 \else
2134   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2135 \fi}%
2136 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2137   \gdef\@currentaffiliation{%
2138     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2139     \setkeys{@ACM@affiliation@}{##1}##2}%
```

```

2140 \else
2141 \g@addto@macro\@currentaffiliation{\par
2142 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2143 \setkeys{@ACM@affiliation@}{##1}##2}%
2144 \fi
2145 \global\let\and\@typeset@author@bx}%
2146 %
Actual typesetting is done by the \and macro
2147 \bgroup\hsize=\columnwidth
2148 \par\raggedright\leftskip=\z@
2149 \lineskip=1pc\noindent
2150 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

`\@mkauthorsaddresses` Typesetting authors' addresses in the footnote style

```

2151 \def\@mkauthorsaddresses{%
2152 \ifnum\num@authors>1\relax
2153 Authors' \else Author's \fi
2154 \ifnum\num@authorgroups>1\relax
2155 addresses: \else address: \fi
2156 \bgroup
2157 \def\streetaddress##1{\unskip\@addpunct, ##1}%
2158 \def\postcode##1{\unskip\@addpunct, ##1}%
2159 \def\position##1{\unskip\ignorespaces}%
2160 \def\institution##1{\unskip\@addpunct, ##1}%
2161 \def\city##1{\unskip\@addpunct, ##1}%
2162 \def\state##1{\unskip\@addpunct, ##1}%
2163 \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2164 \def\country##1{\unskip\@addpunct, ##1}%
2165 \def\and{\unskip\@addpunct; }%
2166 \def\author##1{##1}%
2167 \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
2168 \addresses
2169 \egroup}

```

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

```
2170 \def\@setaddresses{}
```

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

```
2171 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}
```

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

```
2172 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}
```

`\@mkteasers` Typesetting the teasers

```

2173 \def\@mkteasers{%
2174 \ifx\@teaserfigures\@empty\else
2175 \def\@teaser##1{\par\bigskip\bgroup
2176 \captionsetup{type=figure}##1\egroup\par}

```

```

2177 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2178 \noindent\@Description@presentfalse
2179 \@teaserfigures\par\if@Description@present\else
2180 \global\@undescrbed@imagestrue
2181 \ClassWarning{\@classname}{A possible image without
2182 description}\fi
2183 \medskip}%
2184 \fi}

```

**\@mkabstract** Typesetting the abstract

```

2185 \def\@mkabstract{\bgroup
2186 \ifx\@abstract\@empty\else
2187 {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2188 \if@ACM@journal
2189 \everypar{\setbox\z@\lastbox\everypar{}}\small
2190 \else
2191 \section*{\abstractname}%
2192 \fi
2193 \ignorespaces\@abstract\par}%
2194 \fi\egroup}

```

**\@mkbibcitation** Print the bibcitation format

```

2195 \def\@mkbibcitation{\bgroup
2196 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2197 \def\footnotemark{}%
2198 \def\{\unskip}\ignorespaces}%
2199 \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2200 inside a \string\title{} or \string\author{} command! Use
2201 \string\titlenote{} or \string\authornote{} instead!}}%
2202 \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2203 Article~\@acmArticle\ \fi}%
2204 \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2205 \noindent\bgroup
2206 \def\{\unskip}, \ignorespaces\authors\egroup. \@acmYear. \@title
2207 \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2208 \if@ACM@nonacm\else
2209 % The 'nonacm' option disables 'printacmref' by default,
2210 % and the present \@mkbibcitation definition is never used
2211 % in this case. The conditional remains useful if the user
2212 % explicitly sets \settopmatter{printacmref=true}.
2213 \if@ACM@journal
2214 \textit{\@journalNameShort}
2215 \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2216 \ref{TotPages}~\@pages@word.
2217 \else
2218 In \textit{\@acmBooktitle}%
2219 \ifx\@acmEditors\@empty\textit{.}\else
2220 \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2221 \fi\
2222 ACM, New York, NY, USA%

```

```

2223         \@article@string\unskip, \ref{TotPages}~\@pages@word.
2224     \fi
2225 \fi
2226 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2227 \par\egroup}

```

```

\@printendtopmatter End the top matter
2228 \def\@printendtopmatter{\par\bigskip}

```

```

\@setthanks We redefine \@setthanks using \long
2229 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

```

\@setauthorsaddresses
2230 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

### 3.16 Headers and Footers

We use fancyhdr for our headers and footers:

```

2231 \RequirePackage{fancyhdr}

```

```

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

```

```

2232 \if@ACM@review
2233 \newsavebox{\ACM@linecount@bx}
2234 \newlength\ACM@linecount@bxht
2235 \newcount\ACM@linecount
2236 \ACM@linecount\@ne\relax
2237 \def\ACM@mk@linecount{%
2238     \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
2239         \setlength{\ACM@linecount@bxht}{0pt}%
2240         \loop{\color{red}\scriptsize\the\ACM@linecount}\
2241             \global\advance\ACM@linecount by \@ne
2242             \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2243             \ifdim\ACM@linecount@bxht<\textheight\repeat
2244             {\color{red}\scriptsize\the\ACM@linecount}\hfill
2245             \global\advance\ACM@linecount by \@ne}}
2246 \fi

```

```

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

```

```

2247 \def\ACM@linecountL{%
2248     \if@ACM@review
2249     \ACM@mk@linecount
2250     \begin{picture}(0,0)%
2251         \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2252     \end{picture}%
2253     \fi}

```

```

\ACM@linecountR How to display the box on the right

```

```

2254 \def\ACM@linecountR{%

```

```

2255 \if@ACM@review
2256 \ACM@mk@linecount
2257 \begin{picture}(0,0)%
2258 \put(20,-22){\usebox{\ACM@linecount@bx}}%
2259 \end{picture}%
2260 \fi}

\ACM@timestamp The timestamp system
2261 \if@ACM@timestamp
2262 % Subtracting 30 from \time gives us the effect of rounding down despite
2263 % \numexpr rounding to nearest
2264 \newcounter{ACM@time@hours}
2265 \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2266 \newcounter{ACM@time@minutes}
2267 \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2268 \newcommand\ACM@timestamp{%
2269 \footnotesize%
2270 \ifx\@acmSubmissionID\@empty\relax\else
2271 Submission ID: \@acmSubmissionID.{ }%
2272 \fi
2273 \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2274 \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2275 Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2276 }
2277 \fi

\@shortauthors Even if the author redefined \shortauthors, we do not print it in the headers when in
anonymous mode:
2278 \def\@shortauthors{%
2279 \if@ACM@anonymous
2280 Anon.
2281 \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2282 \else\shortauthors\fi}

\@headfootfont The font to typeset header and footer text.
2283 \def\@headfootfont{\sffamily}

standardpagestyle The page style for all pages but the first one The page style for all pages but the first one
2284 \fancypagestyle{standardpagestyle}{%
2285 \fancyhf{}%
2286 \renewcommand{\headrulewidth}{\z@}%
2287 \renewcommand{\footrulewidth}{\z@}%
2288 \def\@acmArticlePage{%
2289 \ifx\@acmArticle\@empty%
2290 \if@ACM@printfolios\thepage\fi%
2291 \else%
2292 \acmArticle\if@ACM@printfolios:\thepage\fi%
2293 \fi%
2294 }

```

```

2295 \ifcase\ACM@format@nr
2296 \relax % manuscript
2297 \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2298 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2299 \fancyhead[RE]{\@shortauthors}%
2300 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2301 \if@ACM@nonacm\else%
2302 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
2303 \fi%
2304 \or % acsmall
2305 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2306 \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2307 \fancyhead[RE]{\@headfootfont\@shortauthors}%
2308 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2309 \if@ACM@nonacm\else%
2310 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2311 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2312 \fi%
2313 \or % acmlarge
2314 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2315 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2316 \fancyhead[LO]{\ACM@linecountL}%
2317 \fancyhead[RO]{\@headfootfont
2318 \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2319 \if@ACM@nonacm\else%
2320 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2321 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2322 \fi%
2323 \or % acmtog
2324 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2325 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2326 \fancyhead[LO]{\ACM@linecountL}%
2327 \fancyhead[RE]{\ACM@linecountR}%
2328 \fancyhead[RO]{\@headfootfont
2329 \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2330 \if@ACM@nonacm\else%
2331 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2332 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2333 \fi%
2334 \else % Proceedings
2335 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2336 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2337 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2338 \if@ACM@nonacm\else%
2339 \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
2340 \acmConference@date, \acmConference@venue}%
2341 \fancyhead[RO]{\@headfootfont\acmConference@shortname,
2342 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2343 \fi%
2344 \fi

```

```

2345 \if@ACM@sigchiamode
2346     \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
2347 \fi
2348 \if@ACM@timestamp
2349     \fancyfoot[LO,RE]{\ACM@timestamp}
2350 \fi
2351 }
2352 \pagestyle{standardpagestyle}

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht
\@folio@voffset
\@folio@max
2353 \newdimen\@folio@wd
2354 \@folio@wd=\z@
2355 \newdimen\@folio@ht
2356 \@folio@ht=\z@
2357 \newdimen\@folio@voffset
2358 \@folio@voffset=\z@
2359 \def\@folio@max{1}
2360 \ifcase\ACM@format@nr
2361 \relax % manuscript
2362 \or % acmsmall
2363     \@folio@wd=45.75pt\relax
2364     \@folio@ht=1.25in\relax
2365     \@folio@voffset=.2in\relax
2366     \def\@folio@max{8}
2367 \or % acmlarge
2368     \@folio@wd=43.25pt\relax
2369     \@folio@ht=79pt\relax
2370     \@folio@voffset=.55in\relax
2371     \def\@folio@max{10}
2372 \fi

\@folioblob The macro to typeset the folio blob.
2373 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2374 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2375 \loop
2376     \ifnum\@tempcnta>\@folio@max\relax
2377     \advance\@tempcnta by - \@folio@max
2378 \repeat
2379 \advance\@tempcnta by -1\relax
2380 \@tempdima=\@folio@ht\relax
2381 \multiply\@tempdima by \the\@tempcnta\relax
2382 \advance\@tempdima by -\@folio@voffset\relax
2383 \begin{picture}(0,0)
2384 \makebox[\z@]{\raisebox{-\@tempdima}{%
2385     \rlap{%
2386         \raisebox{-0.45\@folio@ht}{\z@}[\z@]{%
2387             \rule{\@folio@wd}{\@folio@ht}}}%
2388 \parbox{\@folio@wd}{%

```



```

2389         \centering
2390         \textcolor{white}{\LARGE\sfseries\bfseries\@acmArticle}}}}
2391 \end{picture}\fi}
2392

```

firstpagestyle The page style for the first page only.

```

2393 \fancypagestyle{firstpagestyle}{%
2394   \fancyhf{}%
2395   \renewcommand{\headrulewidth}{\z@}%
2396   \renewcommand{\footrulewidth}{\z@}%
2397   \ifcase\ACM@format@nr
2398   \relax % manuscript
2399   \fancyhead[L]{\ACM@linecountL}%
2400   \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
2401   \if@ACM@nonacm\else%
2402     \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2403   \fi%
2404   \or % acmsmall
2405     \if@ACM@nonacm\else%
2406       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2407         \@acmNumber, Article \@acmArticle. Publication date:
2408         \@acmPubDate.}%
2409     \fi%
2410     \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2411     \fancyhead[LO]{\ACM@linecountL}%
2412     \fancyhead[RO]{\@folioblob}%
2413     \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
2414   \or % acmlarge
2415     \if@ACM@nonacm\else%
2416       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2417         \@acmNumber, Article \@acmArticle. Publication date:
2418         \@acmPubDate.}%
2419     \fi%
2420     \fancyhead[RO]{\@folioblob}%
2421     \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2422     \fancyhead[LO]{\ACM@linecountL}%
2423     \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2424   \or % acmtog
2425     \if@ACM@nonacm\else%
2426       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2427         \@acmNumber, Article \@acmArticle. Publication date:
2428         \@acmPubDate.}%
2429     \fi%
2430     \fancyhead[L]{\ACM@linecountL}%
2431     \fancyhead[R]{\ACM@linecountR}%
2432   \else % Conference proceedings
2433     \fancyhead[L]{\ACM@linecountL}%
2434     \fancyhead[R]{\ACM@linecountR}%
2435     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2436   \fi

```

```

2437 \if@ACM@timestamp
2438 \ifnum\ACM@format@nr=0\relax % Manuscript
2439 \fancyfoot[LO,RE]{\ACM@timestamp\quad
2440 \if@ACM@nonacm\else
2441 \footnotesize Manuscript submitted to ACM
2442 \fi}
2443 \else
2444 \fancyfoot[LO,RE]{\ACM@timestamp}
2445 \fi
2446 \fi
2447 }

```

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

```

2448 \let\ACM@ps@plain\ps@plain
2449 \let\ACM@ps@myheadings\ps@myheadings
2450 \let\ACM@ps@headings\ps@headings
2451 \def\ACM@restore@pagestyle{%
2452 \let\ps@plain\ACM@ps@plain
2453 \let\ps@myheadings\ACM@ps@myheadings
2454 \let\ps@headings\ACM@ps@headings}
2455 \AtBeginDocument{\ACM@restore@pagestyle}

```

### 3.17 Sectioning

`\ACM@NRadjust` Ross Moore's macro.

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

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

```

2456 \def\ACM@NRadjust#1{%
2457 \begingroup
2458 \expandafter\ifx\csname Sectionformat\endcsname\relax

```

```

2459 % do nothing when \Sectionformat is unknown
2460 \def\next{\endgroup #1}%
2461 \else
2462 \def\next{\endgroup
2463 \let\realSectionformat\Sectionformat
2464 \def\ACM@sect@format@{#1}%
2465 \let\Sectionformat\ACM@NR@adjustedSectionformat
2466 %% next lines added 2018-06-17 to ensure section number is styled
2467 \let\real@adddotafter\@adddotafter
2468 \let\@adddotafter\ACM@adddotafter
2469 #1}% imposes the styles, but nullifies \MakeUppercase
2470 \let\@adddotafter\real@adddotafter
2471 }%
2472 \fi \next
2473 }

```

\ACM@NR@adjustedSectionformat

```

2474 \def\ACM@NR@adjustedSectionformat#1#2{%
2475 \realSectionformat{\ACM@sect@format{#1}}{#2}%
2476 \let\Sectionformat\realSectionformat}
2477 \DeclareRobustCommand{\ACM@sect@format@}{\ACM@sect@format@}
2478 \def\ACM@sect@format@null#1{#1}
2479 \let\ACM@sect@format@\ACM@sect@format@null
2480 \AtBeginDocument{%
2481 \expandafter\ifx\cname LTX@adddotafter\endcsname\relax
2482 \let\LTX@adddotafter\@adddotafter
2483 \fi
2484 }

```

\ACM@adddotafter

```

2485 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}

```

Sectioning is different for different levels

```

2486 \renewcommand\section{\@startsection{section}{1}{\z@}%
2487 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2488 {.25\baselineskip}%
2489 {\ACM@NRadjust\@secfont}}
2490 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2491 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2492 {.25\baselineskip}%
2493 {\ACM@NRadjust\@subsecfont}}
2494 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2495 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2496 {-3.5\p@}%
2497 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}}
2498 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2499 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2500 {-3.5\p@}%
2501 {\ACM@NRadjust{\@parfont\@adddotafter}}}}

```

```

2502 \renewcommand\part{\@startsection{part}{9}{\z@}%
2503 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2504 {4\p@}%
2505 {\ACM@NRadjust\@parfont}}

```

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

```

2506 \def\section@raggedright{\@rightskip\@flushglue
2507 \rightskip\@rightskip
2508 \leftskip\z@skip
2509 \parindent\z@}

```

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

```

\@subsecfont 2510 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont 2511 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 2512 \def\@subsubsecfont{\sffamily\itshape}
2513 \def\@parfont{\itshape}
2514 \setcounter{secnumdepth}{3}
2515 \ifcase\ACM@format@nr
2516 \relax % manuscript
2517 \or % acmsmall
2518 \or % acmlarge
2519 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2520 \def\@subsecfont{\sffamily\large\section@raggedright}
2521 \or % acmtog
2522 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2523 \def\@subsecfont{\sffamily\large\section@raggedright}
2524 \or % sigconf
2525 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2526 \def\@subsecfont{\bfseries\Large\section@raggedright}
2527 \or % siggraph
2528 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2529 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2530 \or % sigplan
2531 \def\@secfont{\bfseries\Large\section@raggedright}
2532 \def\@subsecfont{\bfseries\section@raggedright}
2533 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2534 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2535 {.25\baselineskip}%
2536 {\@subsubsecfont}}
2537 \def\@subsubsecfont{\bfseries\section@raggedright}
2538 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2539 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2540 {-3.5\p@}%
2541 {\@parfont\@addspaceafter}}
2542 \def\@parfont{\bfseries\itshape}
2543 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2544 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2545 {-3.5\p@}%
2546 {\@subparfont\@addspaceafter}}
2547 \def\@subparfont{\itshape}

```

```

2548 \or % sigchi
2549 \setcounter{secnumdepth}{1}
2550 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2551 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2552 \or % sigchi-a
2553 \setcounter{secnumdepth}{0}
2554 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2555 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2556 \fi

```

`\@adddotafter` Add punctuation after a sectioning command

```
2557 \def\@adddotafter#1{#1\@addpunct{.}}
```

`\@addspaceafter` Add space after a sectioning command

```
2558 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

### 3.18 TOC lists

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

```
2559 \providecommand*\@dotsep{4.5}
```

### 3.19 Theorems

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

```
2560 \def\@acmplainbodyfont{\itshape}
```

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

```
2561 \def\@acmplainindent{\parindent}
```

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

```
2562 \def\@acmplainheadfont{\scshape}
```

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

```
2563 \def\@acmplainnotefont{\@empty}
```

Customization of the `acmplain` theorem style:

```

2564 \ifcase\ACM@format@nr
2565 \relax % manuscript
2566 \or % acmsmall
2567 \or % acmlarge
2568 \or % acmtog
2569 \or % sigconf
2570 \or % siggraph
2571 \or % sigplan
2572 \def\@acmplainbodyfont{\itshape}

```

```

2573 \def\acmplainindent{\z@}
2574 \def\acmplainheadfont{\bfseries}
2575 \def\acmplainnotefont{\normalfont}
2576 \or % sigchi
2577 \or % sigchi-a
2578 \fi

```

acmplain The acmplain theorem style

```

2579 \newtheoremstyle{acmplain}%
2580 { .5\baselineskip\@plus.2\baselineskip
2581 \@minus.2\baselineskip}% space above
2582 { .5\baselineskip\@plus.2\baselineskip
2583 \@minus.2\baselineskip}% space below
2584 {\@acmplainbodyfont}% body font
2585 {\@acmplainindent}% indent amount
2586 {\@acmplainheadfont}% head font
2587 { .}% punctuation after head
2588 { .5em}% spacing after head
2589 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont(#3)}}}% head spec

```

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

```
2590 \def\@acmdefinitionbodyfont{\normalfont}
```

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

```
2591 \def\@acmdefinitionindent{\parindent}
```

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

```
2592 \def\@acmdefinitionheadfont{\itshape}
```

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

```
2593 \def\@acmdefinitionnotefont{\@empty}
```

Customization of the acmdefinition theorem style:

```

2594 \ifcase\ACM@format@nr
2595 \relax % manuscript
2596 \or % acmsmall
2597 \or % acmlarge
2598 \or % acmtog
2599 \or % sigconf
2600 \or % siggraph
2601 \or % sigplan
2602 \def\@acmdefinitionbodyfont{\normalfont}
2603 \def\@acmdefinitionindent{\z@}
2604 \def\@acmdefinitionheadfont{\bfseries}
2605 \def\@acmdefinitionnotefont{\normalfont}
2606 \or % sigchi
2607 \or % sigchi-a
2608 \fi

```

acmdefinition The acmdefinition theorem style

```
2609 \newtheoremstyle{acmdefinition}%
2610   {.5\baselineskip\@plus.2\baselineskip
2611     \@minus.2\baselineskip}% space above
2612   {.5\baselineskip\@plus.2\baselineskip
2613     \@minus.2\baselineskip}% space below
2614   {\@acmdefinitionbodyfont}% body font
2615   {\@acmdefinitionindent}% indent amount
2616   {\@acmdefinitionheadfont}% head font
2617   {.}% punctuation after head
2618   {.5em}% spacing after head
2619   {\thmname{#1}\thmnumber{ #2}\thmnote{ \@acmdefinitionnotefont(#3)}}}% head spec
```

Make acmplain the default theorem style.

```
2620 \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.

```
2621 \AtEndPreamble{%
2622   \if@ACM@acmthm
2623   \theoremstyle{acmplain}
2624   \@ifundefined{theorem}{%
2625     \newtheorem{theorem}{Theorem}[section]
2626   }{}
2627   \@ifundefined{conjecture}{%
2628     \newtheorem{conjecture}[theorem]{Conjecture}
2629   }{}
2630   \@ifundefined{proposition}{%
2631     \newtheorem{proposition}[theorem]{Proposition}
2632   }{}
2633   \@ifundefined{lemma}{%
2634     \newtheorem{lemma}[theorem]{Lemma}
2635   }{}
2636   \@ifundefined{corollary}{%
2637     \newtheorem{corollary}[theorem]{Corollary}
2638   }{}
2639   \theoremstyle{acmdefinition}
2640   \@ifundefined{example}{%
2641     \newtheorem{example}[theorem]{Example}
2642   }{}
2643   \@ifundefined{definition}{%
2644     \newtheorem{definition}[theorem]{Definition}
2645   }{}
}
```

```

2646 \fi
2647 \theoremstyle{acmplain}
2648 }

\@proofnamefont The font to typeset the proof name.
2649 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
2650 \def\@proofindent{\indent}

Customization of the proof environment.
2651 \ifcase\ACM@format@nr
2652 \relax % manuscript
2653 \or % acmsmall
2654 \or % acmlarge
2655 \or % acmtog
2656 \or % sigconf
2657 \or % siggraph
2658 \or % sigplan
2659 \def\@proofnamefont{\itshape}
2660 \def\@proofindent{\noindent}
2661 \or % sigchi
2662 \or % sigchi-a
2663 \fi

proof We want some customization of the proof environment.
2664 \renewenvironment{proof}[1][\proofname]{\par
2665 \pushQED{\qed}%
2666 \normalfont \topsep6\p@\@plus6\p@\relax
2667 \trivlist
2668 \item[\@proofindent\hskip\labelsep
2669 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2670 }{%
2671 \popQED\endtrivlist\@endpfalse
2672 }

```

### 3.20 Acknowledgments

```

\acksname
2673 \newcommand\acksname{Acknowledgments}

\acks This is a comment-like structure
2674 \specialcomment{acks}{%
2675 \begingroup
2676 \section*{\acksname}
2677 \phantomsection\addcontentsline{toc}{section}{\acksname}
2678 }{%
2679 \endgroup
2680 }

```



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

```
2681 \def\grantsponsor#1#2#3{#2}
```

`\grantnum`

```
2682 \newcommand\grantnum[3][]{#3%
```

```
2683 \def\@tempa{#1}\ifx\@tempa\empty\else\space(\url{#1})\fi}
```

### 3.21 Conditional typesetting

We use the comment package for conditional typesetting:

```
2684 \AtEndPreamble{%
```

```
2685 \if@ACM@screen
```

```
2686 \includecomment{screenonly}
```

```
2687 \excludecomment{printonly}
```

```
2688 \else
```

```
2689 \excludecomment{screenonly}
```

```
2690 \includecomment{printonly}
```

```
2691 \fi
```

```
2692 \if@ACM@anonymous
```

```
2693 \excludecomment{anonsuppress}
```

```
2694 \excludecomment{acks}
```

```
2695 \else
```

```
2696 \includecomment{anonsuppress}
```

```
2697 \fi}
```

### 3.22 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’ (see <http://arxiv.org/hypertex/bibstyles/>).

```
2698 \newcommand\showeprint[2][arxiv]{%
```

```
2699 \def\@tempa{#1}%
```

```
2700 \ifx\@tempa\empty\def\@tempa{arxiv}\fi
```

```
2701 \def\@tempb{arxiv}%
```

```
2702 \ifx\@tempa\@tempb
```

```
2703 arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
```

```
2704 \fi}
```

### 3.23 End of Class

```
2705 \normalsize\normalfont\frenchspacing
```

```
2706 </class>
```

## References

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## Change History

1.48	General: Added prologue option to xcolor . . . . .	42	\maketitle: Added special case of authorversion . . . . .	70
	Bib code cleanup (Zack Weinberg)	30	General: Added anonsuppress environment . . . . .	30
	Documentation update (siggraph)	30	Added authorversion option (closes <a href="https://github.com/borisveytsman/acmart/issues/9">https://github.com/borisveytsman/acmart/issues/9</a> ) . . . . .	30
1.49	General: New journal: DTRAP . . . . .	30		
1.53	General: New journals: PACMCGIT, TIOT, TDSCI . . . . .	30	v1.04	
	Rearranged docs . . . . .	30	\acmArticleSeq: Name change by Matthew Fluet . . . . .	61
1.54	General: Moved footnote stuff before hyperref call (Ross Moore) . . . . .	30	\acmDOI: Name change by Matthew Fluet . . . . .	61
1.56	General: Documented \Description	30	\acmISBN: Name change by Matthew Fluet . . . . .	61
			General: Updated bibliography for siggraph . . . . .	30
v1.00			v1.05	
	General: First released version . . . . .	30	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib . . . . .	30
v1.01	General: Changed hyperref colors in screen mode (closes <a href="https://github.com/borisveytsman/acmart/issues/1">https://github.com/borisveytsman/acmart/issues/1</a> ) . . . . .	30	Patched \setcitestyle command; closes <a href="https://github.com/borisveytsman/acmart/issues/19">https://github.com/borisveytsman/acmart/issues/19</a> . . . . .	30
	Defined ACM colors . . . . .	30		
	Explicitly put draft option (closes <a href="https://github.com/borisveytsman/acmart/issues/4">https://github.com/borisveytsman/acmart/issues/4</a> ) . . . . .	33	v1.06	
	Set headheight to 1pc for all formats (closes <a href="https://github.com/borisveytsman/acmart/issues/5">https://github.com/borisveytsman/acmart/issues/5</a> ) . . . . .	30	\@ACM@badge@skip: Added macro . . . . .	62
v1.02	General: Added TOPS and TSC (closes <a href="https://github.com/borisveytsman/acmart/issues/12">https://github.com/borisveytsman/acmart/issues/12</a> ) . . . . .	30	\@ACM@badge@width: Added macro . . . . .	61
	Documentation changes (closes <a href="https://github.com/borisveytsman/acmart/issues/13">https://github.com/borisveytsman/acmart/issues/13</a> ) . . . . .	30	\@ACM@title@width: Added macro . . . . .	62
v1.03			\@mktitle@i: Added processing badges . . . . .	76
	\@formatdoi: Added macro . . . . .	67	Made generic . . . . .	76
	\if@ACM@authorversion: Added macro . . . . .	32	\@mktitle@ii: Now this macro is obsolete . . . . .	76
			\@mktitle@iii: Added processing badges . . . . .	76
			Made more generic . . . . .	76
			\@mktitle@iv: Made more generic . . . . .	77
			\@printtopmatter: Added processing badges . . . . .	73
			\@subtitlefont: Added macro . . . . .	75
			\@titlefont: Added macro . . . . .	75
			\acmBadgeL: Added macro . . . . .	62
			\acmBadgeR: Added macro . . . . .	62
			\if@ACM@badge: Added macro . . . . .	61

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