

# 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  $\text{\TeX}$  for its typesetting.

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

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

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

I am grateful to Michael D. Adams, Leif Andersen, Dirk Beyer, Joachim Breitner, Benjamin Byholm, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Jamie Davis, Luis Leiva, Ben Liblit, LianTze Lim, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Tobias Pape, 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 customizatón 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  $\text{\TeX}$  Users Group. The world-wide  $\text{\TeX}$  Users Group is at <https://tug.org/>; please consider joining us if you use  $\text{\TeX}$  regularly.

### 2.1 Installation

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

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

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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:

- *amscs*, <http://www.ctan.org/pkg/amscs>
- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *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 2.10.

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, TRET, 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 2.10)
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 2.6

`\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 2.9).

`\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.

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

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

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

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.

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

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

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.

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>  
</ccs2012>  
</CCSXML>
```

```

</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
sourcenote. This is a table sourcenote. This is a table
sourcenote.

\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 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.

## 2.7 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.

## 2.8 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.

## 2.9 Acknowledgments

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

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

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

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

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

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

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

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

Example:

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

## 2.10 Bibliography

The ACM uses the `natbib` package for formatting references and the `BibTeX` style file `ACM-Reference-Format.bst` for `BibTeX` processing. You can disable loading of `natbib` using the option `natbib=false` in `\documentclass`. However, it is not recommended,

as well as the use of Bib<sub>T</sub><sub>E</sub>X 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 `\cite` and `\citeauthor` are automatically supported. The command `\shortcite` is the same as `\cite` in numerical mode and cites the year in author-date mode.

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

There are several customized Bib<sub>T</sub><sub>E</sub>X 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 “noopsort” trick by Oren Patashnik. Add to the .bib file the line

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

```

and then encode the author as

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

```

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

## 2.11 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.

## 2.12 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

## 2.13 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.

## 2.14 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

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

Abbreviation	Publication
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
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

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

Abbreviation	Publication
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 [2018/10/20 v1.55 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@sigchiamodetrue
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 num-
ber
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@longnametrue \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   \@tempskipa #4\relax
304   \@afterindenttrue
305   \ifdim \@tempskipa <\z@
306     \@tempskipa -\@tempskipa \@afterindentfalse
307   \fi
308   \if@nobreak
309     \everypar{}%
310   \else
311     \addpenalty\@secpenalty\addvspace\@tempskipa

```

```

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{\@seccntformat{#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\@essect#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@filesn
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={English},
468     pdfdisplaydoctitle}}
  Bibliography mangling.
469 \if@ACM@natbib
470   \let\cite\citeN
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  $\text{\LaTeX}$  definition:

```
487 \def\bibliographystyle#1{%
488   \ifx\@begindocumenthook\undefined\else
489     \expandafter\AtBeginDocument
490   \fi
491   {\if@files
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\@iiiparbox\@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
```

### 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.

```
614 \RequirePackage{iftex}
615 \ifPDFTeX
616 \input{glyptounicode}
617 \pdfglyptounicode{f_f}{FB00}
618 \pdfglyptounicode{f_f_i}{FB03}
619 \pdfglyptounicode{f_f_l}{FB04}
620 \pdfglyptounicode{f_i}{FB01}
621 \pdfglyptounicode{t_t}{0074 0074}
622 \pdfglyptounicode{f_t}{0066 0074}
623 \pdfglyptounicode{T_h}{0054 0068}
624 \pdfgentounicode=1
625 \fi
626 \RequirePackage{cmap}
```

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

```
627 \newif\if@ACM@newfonts
628 \@ACM@newfontstrue
629 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
630   have the libertine package installed. Please upgrade your
631   TeX}\@ACM@newfontsfalse}
632 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
633   have the zi4 package installed. Please upgrade your
634   TeX}\@ACM@newfontsfalse}
635 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
636   have the newtxmath package installed. Please upgrade your
```

```
637 TeX}\@ACM@newfontsfalse}
```

We use Libertine throughout.

```
638 \if@ACM@newfonts
639   \RequirePackage[T1]{fontenc}
640 \ifxetex
641   \RequirePackage[tt=false]{libertine}
642 \else
643   \RequirePackage[tt=false, type1=true]{libertine}
644 \fi
645 \RequirePackage[varqu]{zi4}
646 \RequirePackage[libertine]{newtxmath}
647 \fi
```

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

```
648 \let\liningnums\@undefined
649 \AtEndPreamble{%
650   \DeclareTextFontCommand{\liningnums}{\libertineLF}}
```

The SIGCHI extended abstracts are sans serif:

```
651 \if@ACM@sigchiamode
652   \renewcommand{\familydefault}{\sfdefault}
653 \fi
```

### 3.9 Floats

We use the caption package

```
654 \RequirePackage{caption, float}
655 \captionsetup[table]{position=top}
656 \if@ACM@journal
657   \captionsetup{labelfont={sf, small},
658     textfont={sf, small}, margin=\z@}
659   \captionsetup[figure]{name={Fig.}}
660 \else
661   \captionsetup{labelfont={bf},
662     textfont={bf}, labelsep=colon, margin=\z@}
663   \ifcase\ACM@format@nr
664     \relax % manuscript
665     \or % acmsmall
666     \or % acmlarge
667     \or % acmtog
668     \or % sigconf
669     \or % siggraph
670     \captionsetup{textfont={it}}
671     \or % sigplan
672     \captionsetup{labelfont={bf},
673       textfont={normalfont}, labelsep=period, margin=\z@}
674     \or % sigchi
```

```

675 \captionsetup[figure]{labelfont={bf, small},
676   textfont={bf, small}}
677 \captionsetup[table]{labelfont={bf, small},
678   textfont={bf, small}}
679 \or % sigchi-a
680 \captionsetup[figure]{labelfont={bf, small},
681   textfont={bf, small}}
682 \captionsetup[table]{labelfont={bf, small},
683   textfont={bf, small}}
684 \fi
685 \fi

sidebar The sidebar environment:
686 \newfloat{sidebar}{}{sbar}
687 \floatname{sidebar}{Sidebar}
688 \renewenvironment{sidebar}{}{\Collect@Body\@sidebar}{}

\@sidebar The processing of the saved text
689 \long\def\@sidebar#1{\bgroup\captionsetup{type=sidebar}%
690   \marginpar{\small#1}\egroup}

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

\@marginfigure The processing of the saved text
692 \long\def\@marginfigure#1{\bgroup\captionsetup{type=figure}%
693   \marginpar{\centering\small#1}\egroup}

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

\@margintable The processing of the saved text
695 \long\def\@margintable#1{\bgroup\captionsetup{type=table}%
696   \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
697 \newdimen\fulltextwidth
698 \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)
699 \if@ACM@sigchiamode
700 \def\@dblfloat{\bgroup\columnwidth=\fulltextwidth
701   \let\@endfloatbox\@endwidefloatbox
702   \def\@fpsadddefault{\def\@fps{tp}}%
703   \@float}
704 \fi

```

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

```
705 \if@ACM@sigchiamode
706 \def\end@dblfloat{%
707     \end@float\egroup}
708 \fi
```

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

```
709 \def\@endwidefloatbox{%
710     \par\vskip\z@skip
711     \@minipagefalse
712     \outer@nobreak
713     \egroup
714     \color@endbox
715     \global\setbox\@currbox=\vbox{\moveleft
716         \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
717     \wd\@currbox=\textwidth
718 }
```

### 3.10 Lists

```
719 \ifcase\ACM@format@nr
720 \relax % manuscript
721 \or % acmsmall
722 \or % acmlarge
723 \or % acmtog
724 \or % sigconf
725 \or % siggraph
726 \or % sigplan
727 \def\labelenumi{\theenumi.}
728 \def\labelenumii{\theenumii.}
729 \def\labelenumiii{\theenumiii.}
730 \def\labelenumiv{\theenumiv.}
731 \or % sigchi
732 \or % sigchi-a
733 \fi
```

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

```
734 \newdimen\@ACM@labelwidth
735 \AtBeginDocument{%
736     \setlength\labelsep{4pt}
737     \setlength{\@ACM@labelwidth}{6.5pt}
738
739     %% First-level list: when beginning after the first line of an
740     %% indented paragraph or ending before an indented paragraph, labels
```



```

741 %% should not hang to the left of the preceding/following text.
742 \setlength\leftmargini{\z@}
743 \addtolength\leftmargini{\parindent}
744 \addtolength\leftmargini{2\labelsep}
745 \addtolength\leftmargini{\@ACM@labelwidth}
746
747 %% Second-level and higher lists.
748 \setlength\leftmarginii{\z@}
749 \addtolength\leftmarginii{0.5\labelsep}
750 \addtolength\leftmarginii{\@ACM@labelwidth}
751 \setlength\leftmarginiii{\leftmarginii}
752 \setlength\leftmarginiv{\leftmarginiii}
753 \setlength\leftmarginv{\leftmarginiv}
754 \setlength\leftmarginvi{\leftmarginv}
755 \@listi}
756 \newskip\listisep
757 \listisep\smallskipamount
758 \def\@listI{\leftmargin\leftmargini
759 \labelwidth\leftmargini \advance\labelwidth-\labelsep
760 \listparindent\z@
761 \topsep\listisep}
762 \let\@listi\@listI
763 \def\@listii{\leftmargin\leftmarginii
764 \labelwidth\leftmarginii \advance\labelwidth-\labelsep
765 \topsep\z@skip}
766 \def\@listiii{\leftmargin\leftmarginiii
767 \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
768 \def\@listiv{\leftmargin\leftmarginiv
769 \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
770 \def\@listv{\leftmargin\leftmarginv
771 \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
772 \def\@listvi{\leftmargin\leftmarginvi
773 \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}
\descriptionlabel We do not use a colon by default like amsart does:
774 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
775 \renewenvironment{description}{\list{}{\%
776 \labelwidth\@ACM@labelwidth
777 \let\makelabel\descriptionlabel}%
778 }{
779 \endlist
780 }
781 \let\enddescription=\endlist % for efficiency

```

### 3.11 Top-matter data

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

```

782 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
783   CIE,%
784   CSUR,%
785   DTRAP,%
786   IMWUT,%
787   JACM,%
788   JDIQ,%
789   JEA,%
790   JERIC,%
791   JETC,%
792   JOCCH,%
793   PACMCGIT,%
794   PACMHCI,%
795   PACMPL,%
796   POMACS,%
797   TAAS,%
798   TACCESS,%
799   TACO,%
800   TALG,%
801   TALLIP,%
802   TAP,%
803   TCPS,%
804   TDSCI,%
805   TEAC,%
806   TECS,%
807   THRI,%
808   TIIS,%
809   TIOT,%
810   TISSEC,%
811   TIST,%
812   TKDD,%
813   TMIS,%
814   TOCE,%
815   TOCHI,%
816   TOCL,%
817   TOCS,%
818   TOCT,%
819   TODAES,%
820   TODS,%
821   TOG,%
822   TOIS,%
823   TOIT,%
824   TOMACS,%
825   TOMM,%
826   TOMPECS,%
827   TOMS,%
828   TOPC,%
829   TOPS,%
830   TOPLAS,%
831   TOS,%

```

```

832 TOSEM,%
833 TOSN,%
834 TRET$,%
835 TSAS,%
836 TSC,%
837 TSLP,%
838 TWEB%
839 }{%
840 \ifcase\@journalCode@nr
841 \relax % CIE
842 \def\@journalName{ACM Computers in Entertainment}%
843 \def\@journalNameShort{ACM Comput. Entertain.}%
844 \def\@permissionCodeOne{1544-3574}%
845 \or % CSUR
846 \def\@journalName{ACM Computing Surveys}%
847 \def\@journalNameShort{ACM Comput. Surv.}%
848 \def\@permissionCodeOne{0360-0300}%
849 \or % DTRAP
850 \def\@journalName{Digital Threats: Research and Practice}%
851 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
852 \def\@permissionCodeOne{2576-5337}%
853 \or % IMWUT
854 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
855     Wearable and Ubiquitous Technologies}%
856 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
857 \def\@permissionCodeOne{2474-9567}%
858 \@ACM@screen>true
859 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
860 \or % JACM
861 \def\@journalName{Journal of the ACM}%
862 \def\@journalNameShort{J. ACM}%
863 \def\@permissionCodeOne{0004-5411}%
864 \or % JDIQ
865 \def\@journalName{ACM Journal of Data and Information Quality}%
866 \def\@journalNameShort{ACM J. Data Inform. Quality}%
867 \def\@permissionCodeOne{1936-1955}%
868 \or % JEA
869 \def\@journalName{ACM Journal of Experimental Algorithmics}%
870 \def\@journalNameShort{ACM J. Exp. Algor.}%
871 \def\@permissionCodeOne{1084-6654}%
872 \or % JERIC
873 \def\@journalName{ACM Journal of Educational Resources in Computing}%
874 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
875 \def\@permissionCodeOne{1073-0516}%
876 \or % JETC
877 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
878 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
879 \def\@permissionCodeOne{1550-4832}%
880 \or % JOCCH
881 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%

```

```

882 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
883 \or % PACMCGIT
884 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
885 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
886 \def\@permissionCodeOne{2577-6193}%
887 \@ACM@screentru
888 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
889 \or % PACMHCI
890 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
891 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
892 \def\@permissionCodeOne{2573-0142}%
893 \@ACM@screentru
894 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
895 \or % PACMPL
896 \def\@journalName{Proceedings of the ACM on Programming Languages}%
897 \def\@journalNameShort{Proc. ACM Program. Lang.}%
898 \def\@permissionCodeOne{2475-1421}%
899 \@ACM@screentru
900 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
901 \or % POMACS
902 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
903 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
904 \def\@permissionCodeOne{2476-1249}%
905 \@ACM@screentru
906 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
907 \or % TAAS
908 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
909 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
910 \def\@permissionCodeOne{1556-4665}%
911 \or % TACCESS
912 \def\@journalName{ACM Transactions on Accessible Computing}%
913 \def\@journalNameShort{ACM Trans. Access. Comput.}%
914 \def\@permissionCodeOne{1936-7228}%
915 \or % TACO
916 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
917 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
918 \or % TALG
919 \def\@journalName{ACM Transactions on Algorithms}%
920 \def\@journalNameShort{ACM Trans. Algor.}%
921 \def\@permissionCodeOne{1549-6325}%
922 \or % TALLIP
923 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
924 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
925 \def\@permissionCodeOne{2375-4699}%
926 \or % TAP
927 \def\@journalName{ACM Transactions on Applied Perception}%
928 \or % TCPS
929 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
930 \or % TDSCI
931 \def\@journalName{ACM Transactions on Data Science}%

```

```

932 \def\@journalNameShort{ACM Trans. Data Sci.}%
933 \def\@permissionCodeOne{2577-3224}%
934 \or % TEAC
935 \def\@journalName{ACM Transactions on Economics and Computation}%
936 \or % TECS
937 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
938 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
939 \def\@permissionCodeOne{1539-9087}%
940 \or % THRI
941 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
942 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
943 \def\@permissionCodeOne{2573-9522}%
944 \or % TIIS
945 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
946 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
947 \def\@permissionCodeOne{2160-6455}%
948 \or % TIOT
949 \def\@journalName{ACM Transactions on Internet of Things}%
950 \def\@journalNameShort{ACM Trans. Internet Things}%
951 \def\@permissionCodeOne{2577-6207}%
952 \or % TISSEC
953 \def\@journalName{ACM Transactions on Information and System Security}%
954 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
955 \def\@permissionCodeOne{1094-9224}%
956 \or % TIST
957 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
958 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
959 \def\@permissionCodeOne{2157-6904}%
960 \or % TKDD
961 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
962 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
963 \def\@permissionCodeOne{1556-4681}%
964 \or % TMIS
965 \def\@journalName{ACM Transactions on Management Information Systems}%
966 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
967 \def\@permissionCodeOne{2158-656X}%
968 \or % TOCE
969 \def\@journalName{ACM Transactions on Computing Education}%
970 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
971 \def\@permissionCodeOne{1946-6226}%
972 \or % TOCHI
973 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
974 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
975 \def\@permissionCodeOne{1073-0516}%
976 \or % TOCL
977 \def\@journalName{ACM Transactions on Computational Logic}%
978 \def\@journalNameShort{ACM Trans. Comput. Logic}%
979 \def\@permissionCodeOne{1529-3785}%
980 \or % TOCS
981 \def\@journalName{ACM Transactions on Computer Systems}%

```

```

982 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
983 \def\@permissionCodeOne{0734-2071}%
984 \or % TOCT
985 \def\@journalName{ACM Transactions on Computation Theory}%
986 \def\@journalNameShort{ACM Trans. Comput. Theory}%
987 \def\@permissionCodeOne{1942-3454}%
988 \or % TODAES
989 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
990 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
991 \def\@permissionCodeOne{1084-4309}%
992 \or % TODS
993 \def\@journalName{ACM Transactions on Database Systems}%
994 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
995 \def\@permissionCodeOne{0362-5915}%
996 \or % TOG
997 \def\@journalName{ACM Transactions on Graphics}%
998 \def\@journalNameShort{ACM Trans. Graph.}%
999 \def\@permissionCodeOne{0730-0301}%
1000 \or % TOIS
1001 \def\@journalName{ACM Transactions on Information Systems}%
1002 \def\@permissionCodeOne{1046-8188}%
1003 \or % TOIT
1004 \def\@journalName{ACM Transactions on Internet Technology}%
1005 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1006 \def\@permissionCodeOne{1533-5399}%
1007 \or % TOMACS
1008 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1009 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1010 \or % TOMM
1011 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1012 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1013 \def\@permissionCodeOne{1551-6857}%
1014 \def\@permissionCodeTwo{0100}%
1015 \or % TOMPECS
1016 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1017 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1018 \def\@permissionCodeOne{2376-3639}%
1019 \or % TOMS
1020 \def\@journalName{ACM Transactions on Mathematical Software}%
1021 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1022 \def\@permissionCodeOne{0098-3500}%
1023 \or % TOPC
1024 \def\@journalName{ACM Transactions on Parallel Computing}%
1025 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1026 \def\@permissionCodeOne{1539-9087}%
1027 \or % TOPS
1028 \def\@journalName{ACM Transactions on Privacy and Security}%
1029 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1030 \def\@permissionCodeOne{2471-2566}%
1031 \or % TOPLAS

```

```

1032 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1033 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1034 \def\@permissionCodeOne{0164-0925}%
1035 \or % TOS
1036 \def\@journalName{ACM Transactions on Storage}%
1037 \def\@journalNameShort{ACM Trans. Storage}%
1038 \def\@permissionCodeOne{1553-3077}%
1039 \or % TOSEM
1040 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1041 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1042 \def\@permissionCodeOne{1049-331X}%
1043 \or % TOSN
1044 \def\@journalName{ACM Transactions on Sensor Networks}%
1045 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1046 \def\@permissionCodeOne{1550-4859}%
1047 \or % TRET
1048 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1049 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1050 \def\@permissionCodeOne{1936-7406}%
1051 \or % TSAS
1052 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1053 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1054 \def\@permissionCodeOne{2374-0353}%
1055 \or % TSC
1056 \def\@journalName{ACM Transactions on Social Computing}%
1057 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1058 \def\@permissionCodeOne{2469-7818}%
1059 \or % TSLP
1060 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1061 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1062 \def\@permissionCodeOne{1550-4875}%
1063 \or % TWEB
1064 \def\@journalName{ACM Transactions on the Web}%
1065 \def\@journalNameShort{ACM Trans. Web}%
1066 \def\@permissionCodeOne{1559-1131}%
1067 \fi
1068 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1069 }{%
1070 \ClassError{\@classname}{Incorrect journal #1}%
1071 }%

```

\acmJournal And the syntactic sugar around it

```

1072 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}

```

The defaults:

```

1073 \def\@journalCode@nr{0}
1074 \def\@journalName{}%
1075 \def\@journalNameShort{\@journalName}%
1076 \def\@permissionCodeOne{XXXX-XXXX}%
1077 \def\@permissionCodeTwo{}%

```

`\acmConference` This is the conference command

```

1078 \newcommand\acmConference[4][\%
1079   \gdef\acmConference@shortname{#1}%
1080   \gdef\acmConference@name{#2}%
1081   \gdef\acmConference@date{#3}%
1082   \gdef\acmConference@venue{#4}%
1083   \ifx\acmConference@shortname\@empty
1084     \gdef\acmConference@shortname{#2}%
1085   \fi}
1086 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1087   DC, USA}

```

`\acmBooktitle` The book title of the conference:

`\@acmBooktitle`

```

1088 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1089 \acmBooktitle{Proceedings of \acmConference@name
1090   \ifx\acmConference@name\acmConference@shortname\else
1091     \ (\acmConference@shortname)\fi}

```

`\@editorsAbbrev` How to abbreviate editors

```

1092 \def\@editorsAbbrev{(Ed.)}

```

`\@acmEditors` The list of editors

```

1093 \def\@acmEditors{}

```

`\editor` Add a new editor to the list

```

1094 \def\editor#1{\ifx\@acmEditors\@empty
1095   \gdef\@acmEditors{#1}%
1096   \else
1097     \gdef\@editorsAbbrev{(Eds.)}%
1098     \g@addto@macro\@acmEditors{\and#1}%
1099   \fi}

```

`\subtitle` The subtitle macro

```

1100 \def\subtitle#1{\def\@subtitle{#1}}
1101 \subtitle{}

```

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

```

1102 \newcount\num@authorgroups
1103 \num@authorgroups=0\relax

```

`\num@author`s The total number of authors

```

1104 \newcount\num@author
1105 \num@author=0\relax

```

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

```

1106 \newif\if@insideauthorgroup
1107 \@insideauthorgroupfalse

```



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

```

1108 \renewcommand\author[2][{}%
1109   \global\advance\num@authors by 1\relax
1110   \if@insideauthorgroup\else
1111     \global\advance\num@authorgroups by 1\relax
1112     \global\@insideauthorgrouptrue
1113   \fi
1114   \ifx\addresses\@empty
1115     \if@ACM@anonymous
1116       \gdef\addresses{\@author{Anonymous Author(s)}%
1117         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1118           \@acmSubmissionID\fi}}%
1119       \gdef\authors{Anonymous Author(s)}%
1120     \else
1121       \gdef\addresses{\@author{#2}}%
1122       \gdef\authors{#2}%
1123     \fi
1124   \else
1125     \if@ACM@anonymous\else
1126       \g@addto@macro\addresses{\and\@author{#2}}%
1127       \g@addto@macro\authors{\and#2}%
1128     \fi
1129   \fi
1130   \if@ACM@anonymous
1131     \ifx\shortauthors\@empty
1132       \gdef\shortauthors{Anon.
1133         \ifx\@acmSubmissionID\@empty\else Submission Id:
1134           \@acmSubmissionID\fi}%
1135     \fi
1136   \else
1137     \def\@tempa{#1}%
1138     \ifx\@tempa\@empty
1139       \ifx\shortauthors\@empty
1140         \gdef\shortauthors{#2}%
1141       \else
1142         \g@addto@macro\shortauthors{\and#2}%
1143       \fi
1144     \else
1145       \ifx\shortauthors\@empty
1146         \gdef\shortauthors{#1}%
1147       \else
1148         \g@addto@macro\shortauthors{\and#1}%
1149       \fi
1150     \fi
1151   \fi}

```

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

```

1152 \newcommand{\affiliation}[2][{}%

```

```

1153 \global\@insideauthorgroupfalse
1154 \if@ACM@anonymous\else
1155     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1156 \fi}

@ACM@affiliation@obeypunctuation Whether to use the author's punctuation (false by default, which adds American-style
address punctuation)
1157 \define@boolkey+{@ACM@affiliation@}[@ACM@affiliation@]{obeypunctuation}%
1158 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

\additionalaffiliation Additional affiliations go to footnotes
1159 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

\@additionalaffiliation Process \additionalaffiliation inside \authornote
1160 \def\@additionalaffiliation#1{\bgroup
1161     \def\position##1{\ignorespaces}%
1162     \def\institution##1{##1\ignorespaces}%
1163     \def\department{\ifnextchar[{\@department}]{\@department[]}}%
1164     \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1165     \let\streetaddress\position
1166     \let\city\position
1167     \let\state\position
1168     \let\postcode\position
1169     \let\country\position
1170     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.
1171 \renewcommand{\email}[2][]{%
1172     \if@ACM@anonymous\else
1173         \g@addto@macro\addresses{\email{#1}{#2}}%
1174     \fi}

\orcid Right now we do not typeset ORCIDs
1175 \def\orcid#1{\unskip\ignorespaces}

\authorsaddresses Setting up authors' addresses
1176 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1177 \authorsaddresses{\mkauthorsaddresses}

\@titlenotes The title notes
1178 \def\@titlenotes{}

\titlenote Adding a note to the title
1179 \def\titlenote#1{%
1180     \g@addto@macro\@title{\footnotemark}%
1181     \if@ACM@anonymous
1182         \g@addto@macro\@titlenotes{%

```

```

1183     \stepcounter{footnote}\footnotetext{Title note}}%
1184 \else
1185     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1186 \fi}

\@subtitlenotes The subtitle notes
1187 \def\@subtitlenotes{}

\subtitlenote Adding a note to the subtitle
1188 \def\subtitlenote#1{%
1189     \g@addto@macro\@subtitle{\footnotemark}%
1190     \if@ACM@anonymous
1191         \g@addto@macro\@subtitlenotes{%
1192             \stepcounter{footnote}\footnotetext{Subtitle note}}%
1193     \else
1194         \g@addto@macro\@subtitlenotes{%
1195             \stepcounter{footnote}\footnotetext{#1}}%
1196     \fi}

\@authornotes The author notes
1197 \def\@authornotes{}

\authornote Adding a note to the author
1198 \def\authornote#1{%
1199     \if@ACM@anonymous\else
1200         \g@addto@macro\addresses{\@authornotemark}%
1201         \g@addto@macro\@authornotes{%
1202             \stepcounter{footnote}\footnotetext{#1}}%
1203     \fi}

\authornotemark Adding a footnote mark to the authors
1204 \newcommand\authornotemark[1][\relax]{%
1205     \ifx#1\relax\relax\relax
1206     \g@addto@macro\addresses{\@authornotemark}%
1207     \else
1208     \g@addto@macro\addresses{\@authornotemark{#1}}%
1209     \fi}

\acmVolume The current volume
1210 \def\acmVolume#1{\def\@acmVolume{#1}}
1211 \acmVolume{1}

\acmNumber The current number
1212 \def\acmNumber#1{\def\@acmNumber{#1}}
1213 \acmNumber{1}

\acmArticle The current article
1214 \def\acmArticle#1{\def\@acmArticle{#1}}
1215 \acmArticle{}

```

<code>\acmArticleSeq</code>	<p>The sequence number</p> <pre>1216 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}} 1217 \acmArticleSeq{\@acmArticle}</pre>
<code>\acmYear</code>	<p>The current year</p> <pre>1218 \def\acmYear#1{\def\@acmYear{#1}} 1219 \acmYear{\the\year}</pre>
<code>\acmMonth</code>	<p>The current month</p> <pre>1220 \def\acmMonth#1{\def\@acmMonth{#1}} 1221 \acmMonth{\the\month}</pre>
<code>\@acmPubDate</code>	<p>The publication date</p> <pre>1222 \def\@acmPubDate{\ifcase\@acmMonth\or 1223   January\or February\or March\or April\or May\or June\or 1224   July\or August\or September\or October\or November\or 1225   December\fi~\@acmYear}</pre>
<code>\acmPrice</code>	<p>The price</p> <pre>1226 \def\acmPrice#1{\def\@acmPrice{#1}} 1227 \acmPrice{15.00}</pre>
<code>\acmSubmissionID</code>	<p>The submission ID</p> <pre>1228 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}} 1229 \acmSubmissionID{}</pre>
<code>\acmISBN</code>	<p>The book ISBN</p> <pre>1230 \def\acmISBN#1{\def\@acmISBN{#1}} 1231 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}</pre>
<code>\acmDOI</code>	<p>The paper DOI</p> <pre>1232 \def\acmDOI#1{\def\@acmDOI{#1}} 1233 \acmDOI{10.1145/nnnnnnn.nnnnnnn}</pre>
<code>\if@ACM@badge</code>	<p>Whether to print a badge. Note that either a left or right badge triggers it:</p> <pre>1234 \newif\if@ACM@badge 1235 \@ACM@badgefalse</pre>
<code>\@ACM@badge@width</code>	<p>The width of the badge</p> <pre>1236 \newlength\@ACM@badge@width 1237 \setlength\@ACM@badge@width{5pc}</pre>
<code>\@ACM@title@width</code>	<p>The width of the badge</p> <pre>1238 \newlength\@ACM@title@width</pre>
<code>\@ACM@badge@skip</code>	<p>The space between the badge and the title</p> <pre>1239 \newlength\@ACM@badge@skip 1240 \setlength\@ACM@badge@skip{1pc}</pre>

`\acmBadgeR` Setting the right badge

```

1241 \newcommand\acmBadgeR[2][\@ACM@badgetrue
1242   \def\@acmBadgeR@url{#1}%
1243   \def\@acmBadgeR@image{#2}}
1244 \def\@acmBadgeR@url{}
1245 \def\@acmBadgeR@image{}

```

`\acmBadgeL` Setting the left badge

```

1246 \newcommand\acmBadgeL[2][\@ACM@badgetrue
1247   \def\@acmBadgeL@url{#1}%
1248   \def\@acmBadgeL@image{#2}}
1249 \def\@acmBadgeL@url{}
1250 \def\@acmBadgeL@image{}

```

`\startPage` The start page of the paper

```

1251 \def\startPage#1{\def\@startPage{#1}}
1252 \startPage{}

```

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

```

1253 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1254   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.

```

1255 \def\keywords#1{\def\@keywords{#1}}
1256 \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

```

1257 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}

```

`\@saveabstract` And saving the abstract

```

1258 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
1259 \@saveabstract{}

```

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

```

1260 \long\def\@empty{}

```

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

```

1261 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printccs}[true]{%
1262   \if@ACM@printccs
1263     \ClassInfo{\@classname}{Printing CCS}%
1264   \else
1265     \ClassInfo{\@classname}{Suppressing CCS}%
1266   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

```

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

```

1267 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1268   \if@ACM@printacmref
1269     \ClassInfo{\@classname}{Printing bibformat}%
1270   \else
1271     \ClassInfo{\@classname}{Suppressing bibformat}%
1272 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

```

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

```

1273 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1274   \if@ACM@printfolios
1275     \ClassInfo{\@classname}{Printing folios}%
1276   \else
1277     \ClassInfo{\@classname}{Suppressing folios}%
1278 \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}

```

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

```

1279 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorssperrow}[0]{%
1280   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorssperrow to
1281     #1}}{\ClassWarning{\@classname}{The parameter authorssperrow must be
1282     numerical. Ignoring the input #1}}\gdef\@ACM@authorssperrow{0}}

```

`\settopmatter` The usual syntactic sugar

```

1283 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

```

Now the settings

```

1284 \settopmatter{printccs=true, printacmref=true}
1285 \if@ACM@manuscript
1286   \settopmatter{printfolios=true}
1287 \else
1288   \if@ACM@journal
1289     \settopmatter{printfolios=true}
1290   \else
1291     \settopmatter{printfolios=false}
1292   \fi
1293 \fi
1294 \settopmatter{authorssperrow=0}

```

`\@received` The container for the paper history

```

1295 \def\@received{}

```

`\received` The `\received` command

```

1296 \newcommand\received[2][\def\@tempa{#1}%
1297   \ifx\@tempa\@empty
1298     \ifx\@received\@empty
1299       \gdef\@received{Received #2}%
1300     \else
1301       \g@addto@macro{\@received}{; revised #2}%
1302     \fi

```

```

1303 \else
1304 \ifx\@received\@empty
1305 \gdef\@received{#1 #2}%
1306 \else
1307 \g@addto@macro{\@received}{; #1 #2}%
1308 \fi
1309 \fi}
1310 \AtEndDocument{%
1311 \ifx\@received\@empty\else
1312 \par\bigskip\noindent\small\normalfont\@received\par
1313 \fi}

```

### 3.12 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1314 \RequirePackage{comment}
1315 \excludecomment{CCSXML}

```

\@concepts This is the storage macro for concepts

```
1316 \let\@concepts\@empty
```

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

```

1317 \newcommand\ccsdesc[2][100]{%
1318 \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!

```

1319 \RequirePackage{textcomp}
1320 \def\ccsdesc@parse#1~#2~#3~{%
1321 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1322 \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1323 \textbf{#2}}%
1324 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
1325 \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1326 \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1327 \csname CCS@Punctuation@#2\endcsname
1328 \csname CCS@Specific@#2\endcsname}%
1329 \fi
1330 \ifx#3\relax\relax\else
1331 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1332 \textrightarrow\ }%
1333 \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1334 \ifnum#1>499\textbf{#3}; \else
1335 \ifnum#1>299\textit{#3}; \else
1336 #3; \fi\fi}%
1337 \fi
1338 \ccsdesc@parse@finish}

```

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

```
1339 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}
```

### 3.13 Copyright system

This is from acmcopyright.sty

```
\if@printcopyright Whether to print a copyright symbol
1340 \newif\if@printcopyright
1341 \@printcopyrighttrue

\if@printpermission Whether to print the permission block
1342 \newif\if@printpermission
1343 \@printpermissiontrue

\if@acmowned Whether the ACM owns the rights to the paper
1344 \newif\if@acmowned
1345 \@acmownedtrue

Keys:
1346 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1347   \acm@copyrightinput\acm@copyrightmode]{none,%
1348     acmcopyright,acmlicensed,rightsretained,%
1349     usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1350     licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1351     iw3c2w3,iw3c2w3g}{%
1352   \@printpermissiontrue
1353   \@printcopyrighttrue
1354   \@acmownedtrue
1355   \ifnum\acm@copyrightmode=0\relax % none
1356     \@printpermissionfalse
1357     \@printcopyrightfalse
1358     \@acmownedfalse
1359   \fi
1360   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1361     \@acmownedfalse
1362   \fi
1363   \ifnum\acm@copyrightmode=3\relax % rightsretained
1364     \@acmownedfalse
1365     \AtBeginDocument{\acmPrice{}}%
1366   \fi
1367   \ifnum\acm@copyrightmode=4\relax % usgov
1368     \@printpermissiontrue
1369     \@printcopyrightfalse
1370     \@acmownedfalse
1371     \AtBeginDocument{\acmPrice{}}%
1372   \fi
1373   \ifnum\acm@copyrightmode=6\relax % cagov
1374     \@acmownedfalse
1375   \fi
1376   \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1377     \@acmownedfalse
1378   \fi
```



```

1379 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1380 \@acmownedfalse
1381 \fi
1382 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1383 \@acmownedfalse
1384 \fi
1385 \ifnum\acm@copyrightmode=11\relax % othergov
1386 \@acmownedtrue
1387 \fi
1388 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1389 \@acmownedfalse
1390 \fi
1391 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1392 \@acmownedfalse
1393 \AtBeginDocument{\acmPrice{}}%
1394 \fi
1395 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1396 \@acmownedfalse
1397 \AtBeginDocument{\acmPrice{}}%
1398 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1399 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1400 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1401 \def\@copyrightowner{%
1402   \ifcase\acm@copyrightmode\relax % none
1403   \or % acmcopyright
1404     Association for Computing Machinery.
1405   \or % acmlicensed
1406     Copyright held by the owner/author(s). Publication rights licensed to
1407     ACM\@.
1408   \or % rightsretained
1409     Copyright held by the owner/author(s).
1410   \or % usgov
1411   \or % usgovmixed
1412     Association for Computing Machinery.
1413   \or % cagov
1414     Crown in Right of Canada.
1415   \or %cagovmixed
1416     Association for Computing Machinery.
1417   \or %licensedusgovmixed
1418     Copyright held by the owner/author(s). Publication rights licensed to
1419     ACM\@.
1420   \or % licensedcagov
1421     Crown in Right of Canada. Publication rights licensed to
1422     ACM\@.
1423   \or %licensedcagovmixed
1424     Copyright held by the owner/author(s). Publication rights licensed to

```

```

1425 ACM\@.
1426 \or % othergov
1427 Association for Computing Machinery.
1428 \or % licensedothergov
1429 Copyright held by the owner/author(s). Publication rights licensed to
1430 ACM\@.
1431 \or % ic2w3www
1432 IW3C2 (International World Wide Web Conference Committee), published
1433 under Creative Commons CC-BY~4.0 License.
1434 \or % ic2w3wwwgoogle
1435 IW3C2 (International World Wide Web Conference Committee), published
1436 under Creative Commons CC-BY-NC-ND~4.0 License.
1437 \fi}

```

\@formatdoi Print a clickable DOI

```

1438 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1439 \def\@copyrightpermission{%
1440 \ifcase\acm@copyrightmode\relax % none
1441 \or % acmcopyright
1442 Permission to make digital or hard copies of all or part of this
1443 work for personal or classroom use is granted without fee provided
1444 that copies are not made or distributed for profit or commercial
1445 advantage and that copies bear this notice and the full citation on
1446 the first page. Copyrights for components of this work owned by
1447 others than ACM must be honored. Abstracting with credit is
1448 permitted. To copy otherwise, or republish, to post on servers or to
1449 redistribute to lists, requires prior specific permission
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1452 \or % acmlicensed
1453 Permission to make digital or hard copies of all or part of this
1454 work for personal or classroom use is granted without fee provided
1455 that copies are not made or distributed for profit or commercial
1456 advantage and that copies bear this notice and the full citation on
1457 the first page. Copyrights for components of this work owned by
1458 others than the author(s) must be honored. Abstracting with credit
1459 is permitted. To copy otherwise, or republish, to post on servers
1460 or to redistribute to lists, requires prior specific permission
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1467 and that copies bear this notice and the full citation on the first
1468 page. Copyrights for third-party components of this work must be
1469 honored. For all other uses, contact the
1470 owner\hspace*{.5pt}/author(s).

```

1471 \or % usgov  
1472 This paper is authored by an employee(s) of the United States  
1473 Government and is in the public domain. Non-exclusive copying or  
1474 redistribution is allowed, provided that the article citation is  
1475 given and the authors and agency are clearly identified as its  
1476 source.

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```

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1553 disseminate the work on their personal and corporate Web sites with
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1558 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
1559 disseminate the work on their personal and corporate Web sites with
1560 the appropriate attribution.
1561 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
1562 \def\copyrightyear#1{\def\@copyrightyear{#1}}
1563 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container
1564 \def\@teaserfigures{}

teaserfigure The teaser figure

```

```

1565 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}
\@saveteaser Saving the teaser
1566 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amsart \thanks so the anonymous key works
1567 \renewcommand{\thanks}[1]{%
1568   \@ifnotempty{#1}{%
1569     \if@ACM@anonymous
1570       \g@addto@macro\thankses{\thanks{A note}}%
1571     \else
1572       \g@addto@macro\thankses{\thanks{#1}}%
1573     \fi}}

```

### 3.14 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]`.

```
1574 \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.

```

1575 \def\maketitle{%
1576   \if@ACM@anonymous
1577     % Anonymize omission of \author-s
1578     \ifnum\@authorgroups=0\author{}\fi
1579   \fi
1580   \begingroup
1581   \let\@footnotemark\@footnotemark@nolink
1582   \let\@footnotetext\@footnotetext@nolink
1583   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1584   \hsize=\textwidth
1585   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1586   \mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1587   \printtopmatter
1588   \if@ACM@sigchiamode\mkauthors\fi
1589   \setcounter{footnote}{0}%
1590   \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1591   \@titlenotes
1592   \@subtitlenotes
1593   \@authornotes
1594   \let\@makefnmark\relax
1595   \let\@thefnmark\relax
1596   \let\@makefntext\noindent

```

```

1597 \ifx\@empty\thankses\else
1598   \footnotetextauthorsaddresses{%
1599     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1600 \fi
1601 \ifx\@empty\@authorsaddresses\else
1602   \if@ACM@anonymous\else
1603     \if@ACM@journal
1604       \footnotetextauthorsaddresses{%
1605         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1606       \fi
1607     \fi
1608   \fi
1609 \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1610   \if@ACM@authordraft
1611     \raisebox{-2ex}{\z@}{\z@}{\makebox[0pt][l]{\large\bfseries
1612       Unpublished working draft. Not for distribution.}}%
1613     \color[gray]{0.9}%
1614   \fi
1615   \parindent\z@\parskip0.1\baselineskip
1616   \if@ACM@authorversion\else
1617     \if@printpermission\@copyrightpermission\par\fi
1618   \fi
1619   \if@ACM@manuscript\else
1620     \if@ACM@journal\else % Print the conference information
1621       {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1622     \fi
1623   \fi
1624   \if@printcopyright
1625     \copyright\ \@copyrightyear\ \@copyrightowner\
1626   \else
1627     \@copyrightyear.\
1628   \fi
1629   \if@ACM@manuscript
1630     Manuscript submitted to ACM\
1631   \else
1632     \if@ACM@authorversion
1633       This is the author's version of the work. It is posted here for
1634       your personal use. Not for redistribution. The definitive Version
1635       of Record was published in
1636       \if@ACM@journal
1637         \emph{\@journalName}%
1638       \else
1639         \emph{\@acmBooktitle}%
1640       \fi
1641       \ifx\@acmDOI\@empty
1642         .
1643       \else
1644         , \@formatdoi{\@acmDOI}.
1645       \fi\
1646     \else

```

```

1647         \if@ACM@nonacm\else
1648         \if@ACM@journal
1649             \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1650             \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\\
1651             \@formatdoi{\@acmDOI}%
1652         \else % Conference
1653             \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1654             \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\\fi
1655             \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1656         \fi
1657     \fi
1658 \fi
1659 \fi}
1660 \fi
1661 \endgroup
1662 \setcounter{footnote}{0}%
1663 \mkabstract
1664 \if@ACM@printccs
1665     \ifx\@concepts\@empty\else\bgroup
1666         {\@specialsection{CCS Concepts}%
1667         \@concepts\par}\egroup
1668     \fi
1669 \fi
1670 \ifx\@keywords\@empty\else\bgroup
1671     {\if@ACM@journal
1672         \@specialsection{Additional Key Words and Phrases}%
1673     \else
1674         \@specialsection{Keywords}%
1675     \fi
1676     \@keywords}\par\egroup
1677 \fi
1678 \andify\authors
1679 \andify\shortauthors
1680 \global\let\authors=\authors
1681 \global\let\shortauthors=\shortauthors
1682 \if@ACM@printacmref
1683     \mkbibcitation
1684 \fi
1685 \hypersetup{%
1686     pdfauthor={\authors},
1687     pdftitle={\@title},
1688     pdfsubject={\@concepts},
1689     pdfkeywords={\@keywords},
1690     pdfcreator={LaTeX with acmart
1691         \csname ver@acmart.cls\endcsname\space
1692         and hyperref
1693         \csname ver@hyperref.sty\endcsname}}%
1694 \global\@topnum\z@ % this prevents floats from falling
1695                     % at the top of page 1
1696 \global\@botnum\z@ % we do not want them to be on the bottom either

```

```

1697 \@printendtopmatter
1698 \@afterindentfalse
1699 \@afterheading
1700 }

```

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

```

1701 \def\@specialsection#1{%
1702   \ifcase\ACM@format@nr
1703   \relax % manuscript
1704   \par\medskip\small\noindent#1: %
1705   \or % acmsmall
1706   \par\medskip\small\noindent#1: %
1707   \or % acmlarge
1708   \par\medskip\small\noindent#1: %
1709   \or % acmtog
1710   \par\medskip\small\noindent#1: %
1711   \or % sigconf
1712   \section*{#1}%
1713   \or % siggraph
1714   \section*{#1}%
1715   \or % sigplan
1716   \paragraph*{#1}%
1717   \or % sigchi
1718   \section*{#1}%
1719   \or % sigchi-a
1720   \section*{#1}%
1721   \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 `\mktitle` since we want them in the margins.

```

1722 \def\@printtopmatter{%
1723   \ifx\@startPage\@empty
1724     \gdef\@startPage{1}%
1725   \else
1726     \setcounter{page}{\@startPage}%
1727   \fi
1728   \thispagestyle{firstpagestyle}%
1729   \noindent
1730   \ifcase\ACM@format@nr
1731   \relax % manuscript
1732   \box\mktitle@bx\par
1733   \or % acmsmall
1734   \box\mktitle@bx\par
1735   \or % acmlarge
1736   \box\mktitle@bx\par
1737   \or % acmtog
1738   \twocolumn[\box\mktitle@bx]%
1739   \or % sigconf

```



```

1740 \twocolumn[\box\mktitle@bx]%
1741 \or % siggraph
1742 \twocolumn[\box\mktitle@bx]%
1743 \or % sigplan
1744 \twocolumn[\box\mktitle@bx]%
1745 \or % sigchi
1746 \twocolumn[\box\mktitle@bx]%
1747 \or % sigchi-a
1748 \par\box\mktitle@bx\par\bigskip
1749 \if@ACM@badge
1750 \marginpar{\noindent
1751 \ifx\@acmBadgeL@image\@empty\else
1752 \href{\@acmBadgeL@url}{%
1753 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1754 \hskip\@ACM@badge@skip
1755 \fi
1756 \ifx\@acmBadgeR@image\@empty\else
1757 \href{\@acmBadgeR@url}{%
1758 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1759 \fi}%
1760 \fi
1761 \fi
1762 }

```

`\@mktitle` The title of the article

```

1763 \def\@mktitle{%
1764 \ifcase\ACM@format@nr
1765 \relax % manuscript
1766 \@mktitle@i
1767 \or % acmsmall
1768 \@mktitle@i
1769 \or % acmlarge
1770 \@mktitle@i
1771 \or % acmtog
1772 \@mktitle@i
1773 \or % sigconf
1774 \@mktitle@iii
1775 \or % siggraph
1776 \@mktitle@iii
1777 \or % sigplan
1778 \@mktitle@iii
1779 \or % sigchi
1780 \@mktitle@iii
1781 \or % sigchi-a
1782 \@mktitle@iv
1783 \fi
1784 }

```

`\@titlefont` The font to typeset the title

```

1785 \def\@titlefont{%
1786   \ifcase\ACM@format@nr
1787   \relax % manuscript
1788   \LARGE\sffamily\bfseries
1789   \or % acmsmall
1790   \LARGE\sffamily\bfseries
1791   \or % acmlarge
1792   \LARGE\sffamily\bfseries
1793   \or % acmtog
1794   \Huge\sffamily
1795   \or % sigconf
1796   \Huge\sffamily\bfseries
1797   \or % siggraph
1798   \Huge\sffamily\bfseries
1799   \or % sigplan
1800   \Huge\bfseries
1801   \or % sigchi
1802   \Huge\sffamily\bfseries
1803   \or % sigchi-a
1804   \Huge\bfseries
1805   \fi}

```

\@subtitlefont The font to typeset the subtitle

```

1806 \def\@subtitlefont{\normalsize
1807   \ifcase\ACM@format@nr
1808   \relax % manuscript
1809   \mdseries
1810   \or % acmsmall
1811   \mdseries
1812   \or % acmlarge
1813   \mdseries
1814   \or % acmtog
1815   \LARGE
1816   \or % sigconf
1817   \LARGE\mdseries
1818   \or % siggraph
1819   \LARGE\mdseries
1820   \or % sigplan
1821   \LARGE\mdseries
1822   \or % sigchi
1823   \LARGE\mdseries
1824   \or % sigchi-a
1825   \mdseries
1826   \fi}

```

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

```

1827 \def\@mktitle@i{\hsize=\textwidth
1828   \ACM@title@width=\hsize
1829   \ifx\@acmBadgeL@image\@empty\else
1830     \advance\@ACM@title@width by -\@ACM@badge@width

```

```

1831 \advance\@ACM@title@width by -\@ACM@badge@skip
1832 \fi
1833 \ifx\@acmBadgeR@image\@empty\else
1834 \advance\@ACM@title@width by -\@ACM@badge@width
1835 \advance\@ACM@title@width by -\@ACM@badge@skip
1836 \fi
1837 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
1838 \ifx\@acmBadgeL@image\@empty\else
1839 \raisebox{-0.5\baselineskip}{\z@\z@}{\href{\@acmBadgeL@url}{%
1840 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
1841 \hskip\@ACM@badge@skip
1842 \fi
1843 \parbox[t]{\@ACM@title@width}{\raggedright
1844 \@titlefont\noindent
1845 \@title
1846 \ifx\@subtitle\@empty\else
1847 \par\noindent{\@subtitlefont\@subtitle}
1848 \fi}%
1849 \ifx\@acmBadgeR@image\@empty\else
1850 \hskip\@ACM@badge@skip
1851 \raisebox{-0.5\baselineskip}{\z@\z@}{\href{\@acmBadgeR@url}{%
1852 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1853 \fi
1854 \par\bigskip}}%

```

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

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

```

1855 \def\mktitle@iii{\hsize=\textwidth
1856 \setbox\mktitle@bx=\vbox{\@titlefont\centering
1857 \@ACM@title@width=\hsize
1858 \if@ACM@badge
1859 \advance\@ACM@title@width by -2\@ACM@badge@width
1860 \advance\@ACM@title@width by -2\@ACM@badge@skip
1861 \parbox[b]{\@ACM@badge@width}{\strut
1862 \ifx\@acmBadgeL@image\@empty\else
1863 \raisebox{-0.5\baselineskip}{\z@\z@}{\href{\@acmBadgeL@url}{%
1864 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
1865 \fi}%
1866 \hskip\@ACM@badge@skip
1867 \fi
1868 \parbox[t]{\@ACM@title@width}{\centering\@titlefont
1869 \@title
1870 \ifx\@subtitle\@empty\else
1871 \par\noindent{\@subtitlefont\@subtitle}
1872 \fi
1873 }%
1874 \if@ACM@badge

```

```

1875      \hskip\@ACM@badge@skip
1876      \parbox[b]{\@ACM@badge@width}{\strut
1877        \ifx\@acmBadgeR@image\@empty\else
1878          \raisebox{-.5\baselineskip}{\z@}{\z@}{\href{\@acmBadgeR@url}{\%
1879            \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1880        \fi}%
1881      \fi
1882      \par\bigskip}}%

\@mktitle@iv The version of \@mktitle for sigchi-a
1883 \def\@mktitle@iv{\hsize=\textwidth
1884   \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1885     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1886     \noindent\@title
1887     \ifx\@subtitle\@empty\else
1888       \par\noindent\@subtitlefont\@subtitle
1889     \fi
1890     \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.

1891 \newbox\@ACM@commabox
1892 \def\@ACM@addtoaddress#1{%
1893   \ifvmode\else
1894     \if@ACM@affiliation@obeypunctuation\else
1895       \setbox\@ACM@commabox=\hbox{, }%
1896       \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1897     \fi\fi
1898   #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 1899 \def\streetaddress#1{\unskip\ignorespaces}
\city 1900 \def\postcode#1{\unskip\ignorespaces}
\state 1901 \if@ACM@journal
\postcode 1902 \def\position#1{\unskip\ignorespaces}
\country 1903 \def\institution#1{\unskip~#1\ignorespaces}
1904 \def\city#1{\unskip\ignorespaces}
1905 \def\state#1{\unskip\ignorespaces}
1906 \newcommand\department[2][0]{\unskip\ignorespaces}
1907 \def\country#1{\if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
1908 \else

```

```

1909 \def\position#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1910 \def\institution#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1911 \newcommand\department[2][0]{\if@ACM@affiliation@obexpunctuation
1912   #2\else#2\par\fi}%
1913 % \def\streetaddress#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1914 \let\city\@ACM@addtoaddress
1915 \let\state\@ACM@addtoaddress
1916 % \def\postcode#1{\if@ACM@affiliation@obexpunctuation#1\else\unskip\space#1\fi}%
1917 \let\country\@ACM@addtoaddress
1918 \fi

```

\@mkauthors    Typesetting the authors

```

1919 \def\@mkauthors{\begingroup
1920   \hsize=\textwidth
1921   \ifcase\ACM@format@nr
1922     \relax % manuscript
1923     \@mkauthors@i
1924   \or % acmsmall
1925     \@mkauthors@i
1926   \or % acmlarge
1927     \@mkauthors@i
1928   \or % acmtog
1929     \@mkauthors@i
1930   \or % sigconf
1931     \@mkauthors@iii
1932   \or % siggraph
1933     \@mkauthors@iii
1934   \or % sigplan
1935     \@mkauthors@iii
1936   \or % sigchi
1937     \@mkauthors@iii
1938   \or % sigchi-a
1939     \@mkauthors@iv
1940   \fi
1941 \endgroup
1942 }

```

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

```

1943 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont    Font for affiliations

```

1944 \def\@affiliationfont{\normalsize\normalfont}

```

Adjusting fonts for different formats

```

1945 \ifcase\ACM@format@nr
1946 \relax % manuscript
1947 \or % acmsmall
1948   \def\@authorfont{\large\sffamily}
1949   \def\@affiliationfont{\small\normalfont}

```

```

1950 \or % acmlarge
1951 \or % acmtog
1952 \def\@authorfont{\LARGE\sffamily}
1953 \def\@affiliationfont{\large}
1954 \or % sigconf
1955 \def\@authorfont{\LARGE}
1956 \def\@affiliationfont{\large}
1957 \or % siggraph
1958 \def\@authorfont{\normalsize\normalfont}
1959 \def\@affiliationfont{\normalsize\normalfont}
1960 \or % sigplan
1961 \def\@authorfont{\Large\normalfont}
1962 \def\@affiliationfont{\normalsize\normalfont}
1963 \or % sigchi
1964 \def\@authorfont{\bfseries}
1965 \def\@affiliationfont{\mdseries}
1966 \or % sigchi-a
1967 \def\@authorfont{\bfseries}
1968 \def\@affiliationfont{\mdseries}
1969 \fi

```

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

```

1970 \def\typeset@author@line{%
1971 \andify\@currentauthors\par\noindent
1972 \@currentauthors\def\@currentauthors{}%
1973 \ifx\@currentaffiliations\@empty\else
1974 \andify\@currentaffiliations
1975 \unskip, {\@currentaffiliations}\par
1976 \fi
1977 \def\@currentaffiliations{}}

```

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

```

1978 \def\mkauthors@i{%
1979 \def\@currentauthors{}%
1980 \def\@currentaffiliations{}%
1981 \global\let\and\typeset@author@line
1982 \def\@author##1{%
1983 \ifx\@currentauthors\@empty
1984 \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
1985 \else
1986 \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
1987 \fi
1988 \gdef\and{}}%
1989 \def\email##1##2{%
1990 \def\affiliation##1##2{%
1991 \def\@tempa{##2}\ifx\@tempa\@empty\else
1992 \ifx\@currentaffiliations\@empty

```

```

1993     \gdef\@currentaffiliations{%
1994         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
1995         \setkeys{@ACM@affiliation@}{##1}%
1996         \@affiliationfont##2}%
1997     \else
1998         \g@addto@macro{\@currentaffiliations}{\and
1999             \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2000             \setkeys{@ACM@affiliation@}{##1}##2}%
2001     \fi
2002 \fi
2003     \global\let\and\@typeset@author@line}%
2004 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
2005     \noindent\addresses\@typeset@author@line
2006     \par\medskip}%
2007 }

```

`\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  
2008 `\newbox\author@bx`

`\author@bx@wd` The width of the author box  
2009 `\newdimen\author@bx@wd`

`\author@bx@sep` The separation between author boxes  
2010 `\newskip\author@bx@sep`  
2011 `\author@bx@sep=1pc\relax`

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

```

2012 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
2013     \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2014         \@authorfont\@currentauthors\par\@affiliationfont
2015         \@currentaffiliation}\egroup
2016     \box\author@bx\hspace{\author@bx@sep}%
2017     \gdef\@currentauthors{}}%
2018     \gdef\@currentaffiliation{}}

```

`\mkauthors@iii` The `sigconf` version. Here we use a centered design with each author in a separate box.  
2019 `\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.

```

2020     \author@bx@wd=\textwidth\relax
2021     \advance\author@bx@wd by -\author@bx@sep\relax
2022     \ifnum\@ACM@authorsperrrow>0\relax
2023         \divide\author@bx@wd by \@ACM@authorsperrrow\relax

```

```

2024 \else
2025   \ifcase\num@authorgroups
2026   \relax % 0?
2027   \or % 1=one author per row
2028   \or % 2=two authors per row
2029     \divide\author@bx@wd by \num@authorgroups\relax
2030   \or % 3=three authors per row
2031     \divide\author@bx@wd by \num@authorgroups\relax
2032   \or % 4=two authors per row (!)
2033     \divide\author@bx@wd by 2\relax
2034   \else % three authors per row
2035     \divide\author@bx@wd by 3\relax
2036   \fi
2037 \fi
2038 \advance\author@bx@wd by -\author@bx@sep\relax
Now, parsing of \addresses:
2039 \gdef\@currentauthors{}%
2040 \gdef\@currentaffiliation{}%
2041 \def\@author##1{\ifx\@currentauthors\@empty
2042   \gdef\@currentauthors{\par##1}%
2043 \else
2044   \g@addto@macro\@currentauthors{\par##1}%
2045 \fi
2046 \gdef\and{}}%
2047 \def\email##1##2{\ifx\@currentaffiliation\@empty
2048   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2049 \else
2050   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2051 \fi}%
2052 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2053   \gdef\@currentaffiliation{%
2054     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2055     \setkeys{@ACM@affiliation@}{##1}##2}%
2056 \else
2057   \g@addto@macro\@currentaffiliation{\par
2058     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2059     \setkeys{@ACM@affiliation@}{##1}##2}%
2060 \fi
2061 \global\let\and\@typeset@author@bx
2062 }%

```

Actual typesetting is done by the \and macro:

```

2063 \hspace=\textwidth
2064 \global\setbox\mktitle@bx=\vbox{\noindent
2065   \box\mktitle@bx\par\medskip\leavevmode
2066   \lineskip=1pc\relax\centering\hspace*{-1em}%
2067   \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.



```
2068 \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.

```
2069 \author@bx@wd=\columnwidth\relax
2070 \advance\author@bx@wd by -\author@bx@sep\relax
2071 \ifnum\@ACM@authorssperrow>0\relax
2072 \divide\author@bx@wd by \@ACM@authorssperrow\relax
2073 \else
2074 \ifcase\num@authorgroups
2075 \relax % 0?
2076 \or % 1=one author per row
2077 \else % 2=two authors per row
2078 \divide\author@bx@wd by 2\relax
2079 \fi
2080 \fi
2081 \advance\author@bx@wd by -\author@bx@sep\relax
```

Now, parsing of `\addresses`:

```
2082 \gdef\@currentauthors{}%
2083 \gdef\@currentaffiliation{}%
2084 \def\@author##1{\ifx\@currentauthors\@empty
2085 \gdef\@currentauthors{\par##1}%
2086 \else
2087 \g@addto@macro\@currentauthors{\par##1}%
2088 \fi
2089 \gdef\and{}}%
2090 \def\email##1##2{\ifx\@currentaffiliation\@empty
2091 \gdef\@currentaffiliation{\nolinkurl{##2}}%
2092 \else
2093 \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2094 \fi}%
2095 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2096 \gdef\@currentaffiliation{%
2097 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2098 \setkeys{@ACM@affiliation@}{##1}##2}%
2099 \else
2100 \g@addto@macro\@currentaffiliation{\par
2101 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2102 \setkeys{@ACM@affiliation@}{##1}##2}%
2103 \fi
2104 \global\let\and\@typeset@author@bx}%
2105 %
```

Actual typesetting is done by the `\and` macro

```
2106 \bgroup\hsize=\columnwidth
2107 \par\raggedright\leftskip=\z@
2108 \lineskip=1pc\noindent
2109 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}
```

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

```

2110 \def\mkauthorsaddresses{%
2111   \ifnum\num@authors>1\relax
2112   Authors' \else Author's \fi
2113   \ifnum\num@authorgroups>1\relax
2114   addresses: \else address: \fi
2115   \bgroup
2116   \def\streetaddress##1{\unskip\@addpunct, ##1}%
2117   \def\postcode##1{\unskip\@addpunct, ##1}%
2118   \def\position##1{\unskip\ignorespaces}%
2119   \def\institution##1{\unskip\@addpunct, ##1}%
2120   \def\city##1{\unskip\@addpunct, ##1}%
2121   \def\state##1{\unskip\@addpunct, ##1}%
2122   \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2123   \def\country##1{\unskip\@addpunct, ##1}%
2124   \def\and{\unskip\@addpunct; }%
2125   \def\author##1{##1}%
2126   \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
2127   \addresses
2128   \egroup}

```

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

```

2129 \def\setaddresses{}

```

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

```

2130 \def\authornotemark{\g@addto@macro\currentauthors{\footnotemark\relax}}

```

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

```

2131 \def\@authornotemark#1{\g@addto@macro\currentauthors{\footnotemark[#1]}}

```

`\mkteasers` Typesetting the teasers

```

2132 \def\mkteasers{%
2133   \ifx\@teaserfigures\@empty\else
2134     \def\@teaser##1{\par\bigskip\bgroup
2135       \captionsetup{type=figure}##1\egroup\par}
2136     \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2137       \noindent\@teaserfigures\par\medskip}%
2138     \fi}

```

`\mkabstract` Typesetting the abstract

```

2139 \def\mkabstract{\bgroup
2140   \ifx\@abstract\@empty\else
2141     {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2142     \if@ACM@journal
2143       \everypar{\setbox\z@=\lastbox\everypar{}}\small
2144     \else
2145       \section*{\abstractname}%
2146     \fi
2147     \ignorespaces\@abstract\par}%
2148   \fi\egroup}

```

`\@mkbibcitation` Print the bibcitation format

```
2149 \def\@mkbibcitation{\bgroup
2150 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2151 \def\footnotemark{}%
2152 \def\{\unskip{ } \ignorespaces}%
2153 \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2154     inside a \string\title{ } or \string\author{ } command! Use
2155     \string\titlenote{ } or \string\authornote{ } instead!}}%
2156 \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2157     Article~\@acmArticle\ } \fi}%
2158 \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2159 \noindent\bgroup
2160 \def\{\unskip{ }, \ignorespaces}\authors\egroup. \@acmYear. \@title
2161 \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2162 \if@ACM@nonacm\else
2163     % The 'nonacm' option disables 'printacmref' by default,
2164     % and the present \@mkbibcitation definition is never used
2165     % in this case. The conditional remains useful if the user
2166     % explicitly sets \settopmatter{printacmref=true}.
2167     \if@ACM@journal
2168         \textit{\@journalNameShort}
2169         \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2170         \ref{TotPages}~\@pages@word.
2171     \else
2172         In \textit{\@acmBooktitle}%
2173         \ifx\@acmEditors\@empty\textit{.}\else
2174             \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2175         \fi\
2176         ACM, New York, NY, USA%
2177         \@article@string\unskip, \ref{TotPages}~\@pages@word.
2178     \fi
2179 \fi
2180 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2181 \par\egroup}
```

`\@printendtopmatter` End the top matter

```
2182 \def\@printendtopmatter{\par\bigskip}
```

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

```
2183 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}
```

`\@setauthorsaddresses`

```
2184 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}
```

### 3.15 Headers and Footers

We use `fancyhdr` for our headers and footers:

```
2185 \RequirePackage{fancyhdr}
```

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

```
2186 \if@ACM@review
2187   \newsavebox{\ACM@linecount@bx}
2188   \newlength\ACM@linecount@bxht
2189   \newcount\ACM@linecount
2190   \ACM@linecount\@ne\relax
2191   \def\ACM@mk@linecount{%
2192     \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
2193       \setlength{\ACM@linecount@bxht}{0pt}%
2194       \loop{\color{red}\scriptsize\the\ACM@linecount}\
2195       \global\advance\ACM@linecount by \@ne
2196       \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2197       \ifdim\ACM@linecount@bxht<\textheight\repeat
2198       {\color{red}\scriptsize\the\ACM@linecount}\hfill
2199       \global\advance\ACM@linecount by \@ne}}
2200 \fi
```

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

```
2201 \def\ACM@linecountL{%
2202   \if@ACM@review
2203     \ACM@mk@linecount
2204     \begin{picture}(0,0)%
2205       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2206     \end{picture}%
2207   \fi}
```

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

```
2208 \def\ACM@linecountR{%
2209   \if@ACM@review
2210     \ACM@mk@linecount
2211     \begin{picture}(0,0)%
2212       \put(20,-22){\usebox{\ACM@linecount@bx}}%
2213     \end{picture}%
2214   \fi}
```

\ACM@timestamp The timestamp system

```
2215 \if@ACM@timestamp
2216   % Subtracting 30 from \time gives us the effect of rounding down despite
2217   % \numexpr rounding to nearest
2218   \newcounter{ACM@time@hours}
2219   \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2220   \newcounter{ACM@time@minutes}
2221   \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2222   \newcommand\ACM@timestamp{%
2223     \footnotesize%
2224     \ifx\@acmSubmissionID\empty\relax\else
2225       Submission ID: \@acmSubmissionID.{ }%
2226     \fi
2227     \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
```

```

2228 \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2229 Page \thepage\ of \startPage--\pageref*{TotPages}.%
2230 }
2231 \fi

\@shortauthors Even if the author redefined \@shortauthors, we do not print it in the headers when in
anonymous mode:
2232 \def\@shortauthors{%
2233 \if@ACM@anonymous
2234 Anon.
2235 \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2236 \else\shortauthors\fi}

\@headfootfont The font to typeset header and footer text.
2237 \def\@headfootfont{\sffamily}

standardpagestyle The page style for all pages but the first one The page style for all pages but the first one
2238 \fancypagestyle{standardpagestyle}{%
2239 \fancyhf{}%
2240 \renewcommand{\headrulewidth}{\z@}%
2241 \renewcommand{\footrulewidth}{\z@}%
2242 \def\@acmArticlePage{%
2243 \ifx\@acmArticle\empty%
2244 \if@ACM@printfolios\thepage\fi%
2245 \else%
2246 \@acmArticle\if@ACM@printfolios:\thepage\fi%
2247 \fi%
2248 }
2249 \ifcase\ACM@format@nr
2250 \relax % manuscript
2251 \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2252 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2253 \fancyhead[RE]{\@shortauthors}%
2254 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2255 \if@ACM@nonacm\else%
2256 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
2257 \fi%
2258 \or % acmsmall
2259 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2260 \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2261 \fancyhead[RE]{\@headfootfont\@shortauthors}%
2262 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2263 \if@ACM@nonacm\else%
2264 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2265 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2266 \fi%
2267 \or % acmlarge
2268 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2269 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%

```

```

2270 \fancyhead[LO]{\ACM@linecountL}%
2271 \fancyhead[RO]{\@headfootfont
2272 \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2273 \if@ACM@nonacm\else%
2274 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2275 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2276 \fi%
2277 \or % acmtog
2278 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2279 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2280 \fancyhead[LO]{\ACM@linecountL}%
2281 \fancyhead[RE]{\ACM@linecountR}%
2282 \fancyhead[RO]{\@headfootfont
2283 \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2284 \if@ACM@nonacm\else%
2285 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2286 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2287 \fi%
2288 \else % Proceedings
2289 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2290 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2291 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2292 \if@ACM@nonacm\else%
2293 \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
2294 \acmConference@date, \acmConference@venue}%
2295 \fancyhead[RO]{\@headfootfont\acmConference@shortname,
2296 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2297 \fi%
2298 \fi
2299 \if@ACM@sigchiamode
2300 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth))}%
2301 \fi
2302 \if@ACM@timestamp
2303 \fancyfoot[LO,RE]{\ACM@timestamp}
2304 \fi
2305 }
2306 \pagestyle{standardpagestyle}

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht
\@folio@voffset 2307 \newdimen\@folio@wd
\@folio@max 2308 \@folio@wd=\z@
2309 \newdimen\@folio@ht
2310 \@folio@ht=\z@
2311 \newdimen\@folio@voffset
2312 \@folio@voffset=\z@
2313 \def\@folio@max{1}
2314 \ifcase\ACM@format@nr
2315 \relax % manuscript
2316 \or % acmsmall
2317 \@folio@wd=45.75pt\relax

```

```

2318 \@folio@ht=1.25in\relax
2319 \@folio@voffset=.2in\relax
2320 \def\@folio@max{8}
2321 \or % acmlarge
2322 \@folio@wd=43.25pt\relax
2323 \@folio@ht=79pt\relax
2324 \@folio@voffset=.55in\relax
2325 \def\@folio@max{10}
2326 \fi

```

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

```

2327 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2328 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2329 \loop
2330 \ifnum\@tempcnta>\@folio@max\relax
2331 \advance\@tempcnta by - \@folio@max
2332 \repeat
2333 \advance\@tempcnta by -1\relax
2334 \@tempdima=\@folio@ht\relax
2335 \multiply\@tempdima by \the\@tempcnta\relax
2336 \advance\@tempdima by -\@folio@voffset\relax
2337 \begin{picture}(0,0)
2338 \makebox[\z@]{\raisebox{-\@tempdima}{%
2339 \rlap{%
2340 \raisebox{-0.45\@folio@ht}{\z@}\z@}{%
2341 \rule{\@folio@wd}{\@folio@ht}}}%
2342 \parbox{\@folio@wd}{%
2343 \centering
2344 \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}}
2345 \end{picture}\fi}
2346

```

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

```

2347 \fancypagestyle{firstpagestyle}{%
2348 \fancyhf{}%
2349 \renewcommand{\headrulewidth}{\z@}%
2350 \renewcommand{\footrulewidth}{\z@}%
2351 \ifcase\ACM@format@nr
2352 \relax % manuscript
2353 \fancyhead[L]{\ACM@linecountL}%
2354 \fancyfoot[R0,LE]{\if@ACM@printfolios\small\thepage\fi}%
2355 \if@ACM@nonacm\else%
2356 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2357 \fi%
2358 \or % acmsmall
2359 \if@ACM@nonacm\else%
2360 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2361 \@acmNumber, Article \@acmArticle. Publication date:

```

```

2362     \@acmPubDate.}%
2363 \fi%
2364 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2365 \fancyhead[LO]{\ACM@linecountL}%
2366 \fancyhead[RO]{\@folioblob}%
2367 \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
2368 \or % acmlarge
2369 \if@ACM@nonacm\else%
2370 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2371     \@acmNumber, Article \@acmArticle. Publication date:
2372     \@acmPubDate.}%
2373 \fi%
2374 \fancyhead[RO]{\@folioblob}%
2375 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2376 \fancyhead[LO]{\ACM@linecountL}%
2377 \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2378 \or % acmtog
2379 \if@ACM@nonacm\else%
2380 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2381     \@acmNumber, Article \@acmArticle. Publication date:
2382     \@acmPubDate.}%
2383 \fi%
2384 \fancyhead[L]{\ACM@linecountL}%
2385 \fancyhead[R]{\ACM@linecountR}%
2386 \else % Conference proceedings
2387 \fancyhead[L]{\ACM@linecountL}%
2388 \fancyhead[R]{\ACM@linecountR}%
2389 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2390 \fi
2391 \if@ACM@timestamp
2392 \ifnum\ACM@format@nr=0\relax % Manuscript
2393 \fancyfoot[LO,RE]{\ACM@timestamp\quad
2394     \if@ACM@nonacm\else
2395         \footnotesize Manuscript submitted to ACM
2396     \fi}
2397 \else
2398 \fancyfoot[LO,RE]{\ACM@timestamp}
2399 \fi
2400 \fi
2401 }

```

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

```

2402 \let\ACM@ps@plain\ps@plain
2403 \let\ACM@ps@myheadings\ps@myheadings
2404 \let\ACM@ps@headings\ps@headings
2405 \def\ACM@restore@pagestyle{%
2406     \let\ps@plain\ACM@ps@plain
2407     \let\ps@myheadings\ACM@ps@myheadings
2408     \let\ps@headings\ACM@ps@headings}
2409 \AtBeginDocument{\ACM@restore@pagestyle}

```



### 3.16 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`.

```

2410 \def\ACM@NRadjust#1{%
2411   \begingroup
2412   \expandafter\ifx\csname Sectionformat\endcsname\relax
2413   % do nothing when \Sectionformat is unknown
2414   \def\next{\endgroup #1}%
2415   \else
2416   \def\next{\endgroup
2417     \let\realSectionformat\Sectionformat
2418     \def\ACM@sect@format@{#1}%
2419     \let\Sectionformat\ACM@NR@adjustedSectionformat
2420   %% next lines added 2018-06-17 to ensure section number is styled
2421     \let\real@adddotafter\@adddotafter
2422     \let\@adddotafter\ACM@adddotafter
2423     #1{ }% imposes the styles, but nullifies \MakeUppercase
2424     \let\@adddotafter\real@adddotafter
2425   }%
2426   \fi \next
2427 }
```

`\ACM@NR@adjustedSectionformat`

```

2428 \def\ACM@NR@adjustedSectionformat#1#2{%
2429   \realSectionformat{\ACM@sect@format{#1}}{#2}%
2430   \let\Sectionformat\realSectionformat}
2431 \DeclareRobustCommand{\ACM@sect@format}{\ACM@sect@format@}
2432 \def\ACM@sect@format@null#1{#1}
2433 \let\ACM@sect@format@\ACM@sect@format@null
```

```

2434 \AtBeginDocument{%
2435   \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
2436   \let\LTX@adddotafter\@adddotafter
2437   \fi
2438 }

```

\ACM@adddotafter

```

2439 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}

```

Sectioning is different for different levels

```

2440 \renewcommand\section{\@startsection{section}{1}{\z@}%
2441   {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2442   {.25\baselineskip}%
2443   {\ACM@NRadjust\@secfont}}
2444 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2445   {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2446   {.25\baselineskip}%
2447   {\ACM@NRadjust\@subsecfont}}
2448 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2449   {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2450   {-3.5\p@}%
2451   {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}}
2452 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2453   {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2454   {-3.5\p@}%
2455   {\ACM@NRadjust{\@parfont\@adddotafter}}}}
2456 \renewcommand\part{\@startsection{part}{9}{\z@}%
2457   {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2458   {4\p@}%
2459   {\ACM@NRadjust\@parfont}}

```

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

```

2460 \def\section@raggedright{\@rightskip\@flushglue
2461   \rightskip\@rightskip
2462   \leftskip\z@skip
2463   \parindent\z@}

```

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

```

\@subsecfont
\@subsubsecfont
\@parfont
2464 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2465 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2466 \def\@subsubsecfont{\sffamily\itshape}
2467 \def\@parfont{\itshape}
2468 \setcounter{secnumdepth}{3}
2469 \ifcase\ACM@format@nr
2470 \relax % manuscript
2471 \or % acmsmall
2472 \or % acmlarge
2473 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2474 \def\@subsecfont{\sffamily\large\section@raggedright}

```

```

2475 \or % acmtog
2476 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2477 \def\@subsecfont{\sffamily\large\section@raggedright}
2478 \or % sigconf
2479 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2480 \def\@subsecfont{\bfseries\Large\section@raggedright}
2481 \or % siggraph
2482 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2483 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2484 \or % sigplan
2485 \def\@secfont{\bfseries\Large\section@raggedright}
2486 \def\@subsecfont{\bfseries\section@raggedright}
2487 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2488   {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2489   {.25\baselineskip}%
2490   {\@subsubsecfont}}
2491 \def\@subsubsecfont{\bfseries\section@raggedright}
2492 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2493   {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2494   {-3.5\p@}%
2495   {\@parfont\@addspaceafter}}
2496 \def\@parfont{\bfseries\itshape}
2497 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2498   {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2499   {-3.5\p@}%
2500   {\@subparfont\@addspaceafter}}
2501 \def\@subparfont{\itshape}
2502 \or % sigchi
2503 \setcounter{secnumdepth}{1}
2504 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2505 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2506 \or % sigchi-a
2507 \setcounter{secnumdepth}{0}
2508 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2509 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2510 \fi

```

\@adddotafter Add punctuation after a sectioning command

```
2511 \def\@adddotafter#1{#1\@addpunct{.}}
```

\@addspaceafter Add space after a sectioning command

```
2512 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

### 3.17 TOC lists

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

2513 \providecommand\*\@dotsep{4.5}

### 3.18 Theorems

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

2514 \def\@acmplainbodyfont{\itshape}

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

2515 \def\@acmplainindent{\parindent}

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

2516 \def\@acmplainheadfont{\scshape}

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

2517 \def\@acmplainnotefont{\@empty}

Customization of the acmplain theorem style:

2518 \ifcase\ACM@format@nr

2519 \relax % manuscript

2520 \or % acmsmall

2521 \or % acmlarge

2522 \or % acmtog

2523 \or % sigconf

2524 \or % siggraph

2525 \or % sigplan

2526 \def\@acmplainbodyfont{\itshape}

2527 \def\@acmplainindent{\z@}

2528 \def\@acmplainheadfont{\bfseries}

2529 \def\@acmplainnotefont{\normalfont}

2530 \or % sigchi

2531 \or % sigchi-a

2532 \fi

acmplain The acmplain theorem style

2533 \newtheoremstyle{acmplain}%

2534 {.5\baselineskip\@plus.2\baselineskip

2535 \@minus.2\baselineskip}% space above

2536 {.5\baselineskip\@plus.2\baselineskip

2537 \@minus.2\baselineskip}% space below

2538 {\@acmplainbodyfont}% body font

2539 {\@acmplainindent}% indent amount

2540 {\@acmplainheadfont}% head font

2541 {.}% punctuation after head

2542 {.5em}% spacing after head

2543 {\thmname{#1}\thmnumber{ #2}\thmnote{ \@acmplainnotefont{#3}}}% head spec

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

2544 \def\@acmdefinitionbodyfont{\normalfont}

`\acmdefinitionindent` The amount to indent the acmdefinition theorem style.  
2545 `\def\acmdefinitionindent{\parindent}`

`\acmdefinitionheadfont` The font to typeset the head of the acmdefinition theorem style.  
2546 `\def\acmdefinitionheadfont{\itshape}`

`\acmdefinitionnotefont` The font to typeset the note of the acmdefinition theorem style.  
2547 `\def\acmdefinitionnotefont{\@empty}`

Customization of the acmdefinition theorem style:

2548 `\ifcase\ACM@format@nr`  
2549 `\relax % manuscript`  
2550 `\or % acmsmall`  
2551 `\or % acmlarge`  
2552 `\or % acmtog`  
2553 `\or % sigconf`  
2554 `\or % siggraph`  
2555 `\or % sigplan`  
2556 `\def\acmdefinitionbodyfont{\normalfont}`  
2557 `\def\acmdefinitionindent{\z@}`  
2558 `\def\acmdefinitionheadfont{\bfseries}`  
2559 `\def\acmdefinitionnotefont{\normalfont}`  
2560 `\or % sigchi`  
2561 `\or % sigchi-a`  
2562 `\fi`

`acmdefinition` The acmdefinition theorem style

2563 `\newtheoremstyle{acmdefinition}%`  
2564 `{.5\baselineskip\@plus.2\baselineskip`  
2565 `\@minus.2\baselineskip}% space above`  
2566 `{.5\baselineskip\@plus.2\baselineskip`  
2567 `\@minus.2\baselineskip}% space below`  
2568 `{\acmdefinitionbodyfont}% body font`  
2569 `{\acmdefinitionindent}% indent amount`  
2570 `{\acmdefinitionheadfont}% head font`  
2571 `{.}% punctuation after head`  
2572 `{.5em}% spacing after head`  
2573 `{\thmname{#1}\thmnumber{#2}\thmnote{\acmdefinitionnotefont{#3}}}% head spec`

Make acmplain the default theorem style.

2574 `\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.

```

2575 \AtEndPreamble{%
2576   \if@ACM@acmthm
2577   \theoremstyle{acmplain}
2578   \@ifundefined{theorem}{%
2579     \newtheorem{theorem}{Theorem}[section]
2580   }{}
2581   \@ifundefined{conjecture}{%
2582     \newtheorem{conjecture}[theorem]{Conjecture}
2583   }{}
2584   \@ifundefined{proposition}{%
2585     \newtheorem{proposition}[theorem]{Proposition}
2586   }{}
2587   \@ifundefined{lemma}{%
2588     \newtheorem{lemma}[theorem]{Lemma}
2589   }{}
2590   \@ifundefined{corollary}{%
2591     \newtheorem{corollary}[theorem]{Corollary}
2592   }{}
2593   \theoremstyle{acmdefinition}
2594   \@ifundefined{example}{%
2595     \newtheorem{example}[theorem]{Example}
2596   }{}
2597   \@ifundefined{definition}{%
2598     \newtheorem{definition}[theorem]{Definition}
2599   }{}
2600   \fi
2601   \theoremstyle{acmplain}
2602 }
```

\@proofnamefont The font to typeset the proof name.

```
2603 \def\@proofnamefont{\scshape}
```

\@proofindent Whether or not to indent proofs.

```
2604 \def\@proofindent{\indent}
```

Customization of the proof environment.

```

2605 \ifcase\ACM@format@nr
2606 \relax % manuscript
2607 \or % acmsmall
2608 \or % acmlarge
2609 \or % acmtog
2610 \or % sigconf
2611 \or % siggraph
2612 \or % sigplan
2613   \def\@proofnamefont{\itshape}
2614   \def\@proofindent{\noindent}
2615 \or % sigchi
```

```

2616 \or % sigchi-a
2617 \fi

```

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

```

2618 \renewenvironment{proof}[1][\proofname]{\par
2619   \pushQED{\qed}%
2620   \normalfont \topsep6\p@\@plus6\p@\relax
2621   \trivlist
2622   \item[\@proofindent\hskip\labelsep
2623     {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2624 }{%
2625   \popQED\endtrivlist\@endpefalse
2626 }

```

### 3.19 Acknowledgments

`\acks` This is a comment-like structure

```

2627 \specialcomment{acks}{%
2628   \begingroup
2629   \section*{Acknowledgments}
2630   \phantomsection\addcontentsline{toc}{section}{Acknowledgments}
2631 }{%
2632   \endgroup
2633 }

```

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

```

2634 \def\grantsponsor#1#2#3{#2}

```

`\grantnum`

```

2635 \newcommand\grantnum[3][\]{#3%
2636   \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}

```

### 3.20 Conditional typesetting

We use the comment package for conditional typesetting:

```

2637 \AtEndPreamble{%
2638   \if@ACM@screen
2639     \includecomment{screenonly}
2640     \excludecomment{printonly}
2641   \else
2642     \excludecomment{screenonly}
2643     \includecomment{printonly}
2644   \fi
2645   \if@ACM@anonymous
2646     \excludecomment{anonsuppress}
2647     \excludecomment{acks}
2648   \else
2649     \includecomment{anonsuppress}
2650   \fi}

```

### 3.21 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/>).

```
2651 \newcommand\showeprint[2][arxiv]{%
2652   \def\@tempa{#1}%
2653   \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
2654   \def\@tempb{arxiv}%
2655   \ifx\@tempa\@tempb
2656     arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2657   \fi}
```

### 3.22 End of Class

```
2658 \normalsize\normalfont\frenchspacing
2659 </class>
```



## References

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## Change History

1.48	General: Added prologue option to xcolor . . . . . 42 Bib code cleanup (Zack Weinberg) 30 Documentation update (siggraph) . 30	General: Added anonsuppress environment . . . . . 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	v1.04
1.53	General: New journals: PACMCGIT, TIOT, TDSCI . . . . . 30 Rearranged docs . . . . . 30	\acmArticleSeq: Name change by Matthew Fluet . . . . . 60 \acmDOI: Name change by Matthew Fluet . . . . . 60 \acmISBN: Name change by Matthew Fluet . . . . . 60 General: Updated bibliography for siggraph . . . . . 30
1.54	General: Moved footnote stuff before hyperref call (Ross Moore) . . . . . 30	General: Updated bibliography for siggraph . . . . . 30
v1.00	General: First released version . . . . . 30	v1.05
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 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 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	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib . . . . . 30 Patched \setcitestyle command; closes <a href="https://github.com/borisveytsman/acmart/issues/19">https://github.com/borisveytsman/ acmart/issues/19</a> . . . . . 30
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 Documentation changes (closes <a href="https://github.com/borisveytsman/acmart/issues/13">https://github.com/borisveytsman/ acmart/issues/13</a> ) . . . . . 30	v1.06
v1.03	\@formatdoi: Added macro . . . . . 66 \if@ACM@authorversion: Added macro . . . . . 32 \maketitle: Added special case of authorversion . . . . . 69	\@ACM@badge@skip: Added macro . . 60 \@ACM@badge@width: Added macro . 60 \@ACM@title@width: Added macro . 60 \@mkttitle@i: Added processing badges . . . . . 74 Made generic . . . . . 74 \@mkttitle@ii: Now this macro is obsolete . . . . . 75 \@mkttitle@iii: Added processing badges . . . . . 75 Made more generic . . . . . 75 \@mkttitle@iv: Made more generic . 76 \@printtopmatter: Added processing badges . . . . . 72 \@subtitlefont: Added macro . . . . 74 \@titlefont: Added macro . . . . . 73 \acmBadgeL: Added macro . . . . . 61 \acmBadgeR: Added macro . . . . . 61 \if@ACM@badge: Added macro . . . . 60
		v1.07
		\maketitle: Corrected a bug with abstract footnotes . . . . . 69

	Corrected a bug with permssion and footnotes order . . . . .	69		\bibstyle@acmauthoryear: Added macro . . . . .	37
v1.08	General: SIGPLAN reformatting by Matthew Fluet . . . . .	30		\bibstyle@acmnumeric: Added macro . . . . .	37
	Typos corrected (Tobias Pape) . . .	30		\if@ACM@printfolios: Added macro	62
v1.09	General: Revert SIGPLAN caption rules . . . . .	30		General: Font adjustments for acmsmall . . . . .	77
				Increased font size for ACM Large	34
v1.10	\maketitle: Corrected a bug with doi in manuscript and author version, <a href="https://github.com/borisveytsman/acmart/issues/36">https://github.com/borisveytsman/acmart/issues/36</a> . . . . .	69		Print bibliographic information by default for the proceedings . . . . .	62
	General: Changes of ‘licensedothergov’ wording . . . .	64		standardpagestyle: Added headers for sigs . . . . .	85
	standardpagestyle: Reversed folios location . . . . .	85		Expanded headers for sigchi-a . . .	85
v1.11	General: Customization of ACM theorem styles and proof environment by Matthew Fluet . .	30		Suppressed folios if sig . . . . .	85
			v1.14	\bibstyle@acmauthoryear: Moved def of \bibstyle@acmauthoryear before use . . . . .	37
v1.12	\@marginfigure: Now centering by default . . . . .	47		\bibstyle@acmnumeric: Moved def of \bibstyle@numeric before use . .	37
	\@margintable: Now centering by default . . . . .	47		General: \citestyle updates (Matthew Fluet) . . . . .	30
	\@parfont: Moved to \section@raggedright . . . . .	90		Patched \citestyle . . . . .	35
	\copyrightpermissionfootnoterule: Added macro . . . . .	44	v1.15	\@ACM@addtoaddress: Added macro	76
	\descriptionlabel: Redefined . . . .	49		\@mkauthors@iii: New authors system . . . . .	79
	\footnoterule: Made shorter . . . .	44		\@shortauthors: Introduced macro .	85
	\if@ACM@natbib@override: Added macro . . . . .	32		\@typeset@author@bx: Moved to separate macro . . . . .	79
	\if@ACM@newfonts: Added macro . .	45		\acks: Added macro . . . . .	95
	\maketitle: Moved thankses to copyrightpermission box . . . . .	69		\affiliation: Added code for author groups . . . . .	57
	\section@raggedright: Introduced macro . . . . .	90		\author: Added code for author groups . . . . .	57
	General: Added graceful behavior when libertine fonts are absent . .	45		\city: Added macro . . . . .	76
	Documentation updates . . . . .	30		\country: Added macro . . . . .	76
v1.13	\@mpfootnotetext: Made minipage footnotes centered . . . . .	40		\department: Added macro . . . . .	76
	\bibliographystyle: Redefined macro . . . . .	41		\grantnum: Added macro . . . . .	95
				\grantsponsor: Added macro . . . .	95
				\if@insideauthorgroup: Introduced macro . . . . .	56
				\institution: Added macro . . . . .	76
				\num@authorgroups: Renamed . . . .	56
				\orcid: Introduced macro . . . . .	58
				\position: Added macro . . . . .	76
				\postcode: Added macro . . . . .	76
				\state: Added macro . . . . .	76
				\streetaddress: Added macro . . . .	76

standardpagestyle: Better handling of anonymous mode . . . . .	85	Include 'References' in PDF bookmarks (Matthew Fluet) . . . .	35
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