

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

Boris Veytsman[†]

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Abstract

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

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[†]borisv@lk.net, boris@varphi.com

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1 Introduction

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

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

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

This package uses only free T_EX packages and fonts included in T_EXLive, MikT_EX and other popular T_EX distributions. It is intended to be published in these distributions itself, which minimizes users' efforts in the installation and support of this package.

I am grateful to Michael D. Adams, Leif Andersen, Dirk Beyer, Joachim Breitner, Benjamin Byholm, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, Luis Leiva, Ben Liblit, Rholais Lii, LianTze Lim, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Tobias Pape, Philip Quinn, Mathias Rav, Andreas Reichinger, Matteo Riondato, Craig Rodkin, Bernard Rous, David Shamma, Gabriel Scherer, Stephen Spencer, Daniel Thomas, Zack Weinberg, John Wickerson and many others for their invaluable help.

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

2 User's guide

This class uses many commands and 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 T_EX Users Group. The world-wide T_EX Users Group is at <https://tug.org/>; please consider joining us if you use T_EX regularly.

2.1 Installation

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

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

¹<http://www.acm.org/>

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

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

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

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

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

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

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

2.2 Invocation and options

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 1: The possible values for the format option

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

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

The option `balance` determines whether the last page in the two column mode has balanced columns. By default it is true; however, it may lead to problems for some documents. Set it to false if you encounter compilation errors.

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].

Table 2: Boolean options

Option	Default	Meaning
review	false	A review version: lines are numbered and hyperlinks are colored
screen	see text	A screen version: hyperlinks are colored
natbib	true	Whether to use the natbib package (see Section 2.11)
anonymous	false	Whether to make author(s) anonymous
authorversion	false	Whether to generate a special version for the authors' personal use or posting (see Section 2.3)
nonacm	false	Use the class typesetting options for a non-ACM document, which will not include the conference/journal header and footers or permission statements
timestamp	false	Whether to put a time stamp in the footer of each page
authordraft	false	Whether author's-draft mode is enabled
acmthm	true	Whether to define theorem-like environments, see Section 2.7
balance	true	Whether to balance the last page in two column mode

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

```
\acmJournal{TOMS}
```

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

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

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

name: the name of the conference.

date: the date(s) of the conference.

venue: the place of the conference.

Examples:

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

`\acmBooktitle` By default we assume that conference proceedings are published in the book named

Proceedings of CONFERENCE, where CONFERENCE is the name of the conference inferred from the command `\acmConference` above. However, sometimes the book title is different. The command `\acmBooktitle` can be used to set this title, for example,

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Similarly you can repeat the `\email` command.

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

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

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

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

However, this format is not generally recommended.

`\additionalaffiliation`

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

```

\author{G. Tobin}
\author{Ben Trovato}
\additionalaffiliation{%
  \institution{The Th{\o}rv{\a}ld Group}
  \streetaddress{1 Th{\o}rv{\a}ld Circle}
  \city{Hekla}
  \country{Iceland}}
\affiliation{%
  \institution{Institute for Clarity in Documentation}
  \streetaddress{P.O. Box 1212}
  \city{Dublin}
  \state{Ohio}
  \postcode{43017-6221}}

```

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

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

An example of the author block:

```

\author{A. U. Thor}
\orcid{1234-4564-1234-4565}
\affiliation{%
  \institution{University of New South Wales}
  \department{School of Biomedical Engineering}
  \streetaddress{Samuels Building (F25), Kensington Campus}
  \city{Sidney}
  \state{NSW}
  \postcode{2052}
  \country{Australia}}
\email{author@nsw.au.edu}
\author{A. N. Other}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
\author{C. O. Respondent}
\orcid{1234-4565-4564-1234}
\affiliation{%
  \institution{University of Pennsylvania}
  \city{Philadelphia}
  \state{PA}
}

```

```

\country{USA}}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}

```

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

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

```

\affiliation{%
  \department[0]{Department of Lunar Studies} % 0 is the default
  \department[1]{John Doe Institute} % higher than 0
  \institution{University of San Serriffe}
  \country{San Serriffe}}

```

and

```

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

```

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

```

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

```

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

```

Fluginstitut
Sonnenallee 17
123456, Helm, Germany

```

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

```
\affiliation[obeypunctuation=true]{%
  \institution{Fluginstitut}\\
  \streetaddress{Sonnenallee 17}\\
  \postcode{123456}
  \city{Helm},
  \country{Germany}}
```

will be typeset as

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

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

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

`\thanks` Like `amsart` (and unlike standard \LaTeX), we allow `\thanks` only *outside* of the commands `\title` and `\author`. This command is obsolete and should *not* be used in most cases. Do not list your acknowledgments or grant sponsors here. Put this information in the `acks` environment (see Section 2.10).

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

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

You can *suppress* printing authors’ addresses by setting them to an empty string: `\authorsaddresses{}`.

`\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}
```

	<pre> \titlenote{This is a titlenote} \author{A. U. Thor} \authornote{This is an authornote} </pre>
\authornotemark	<p>Please never use a <code>\footnote</code> inside an <code>\author</code> or <code>\title</code> command since this confuses the metadata extraction software. (Actually these commands now produce errors.)</p> <p>Sometimes one may need to have the same footnote connected to several authors. The command <code>\authornotemark[<i>number</i>]</code> adds just the footnote mark, for example,</p> <pre> \author{A. U. Thor} \authornote{Both authors contributed equally to the paper} ... \author{A. N. Other} \authornotemark[1] </pre>
\acmVolume \acmNumber \acmArticle \acmYear \acmMonth	<p>The correct numbering of these marks is the responsibility of the user.</p> <p>The macros <code>\acmVolume</code>, <code>\acmNumber</code>, <code>\acmArticle</code>, <code>\acmYear</code> and <code>\acmMonth</code> are inserted by the editor and set the journal volume, issue, article number, year and month correspondingly. The arguments of all these commands, including <code>\acmMonth</code>, is numerical. For example,</p> <pre> \acmVolume{9} \acmNumber{4} \acmArticle{39} \acmYear{2010} \acmMonth{3} </pre>
\acmArticleSeq	<p>Note that <code>\acmArticle</code> is used not only for journals but also for some conference proceedings.</p> <p>The articles in the same issue of a journal have a <i>sequence number</i>. 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 <code>\acmArticleSeq{<i>n</i>}</code> can be used to change it:</p> <pre> \acmArticle{39} % The sequence number will be 39 by default \acmArticleSeq{5} % We redefine it to 5 </pre>
\acmSubmissionID	<p>Setting this number to zero suppresses the blob.</p> <p>If your paper got a Submission ID from the Conference Management System, put it here:</p> <pre> \acmSubmissionID{123-A56-BU3} </pre>
\acmPrice	<p>The macro <code>\acmPrice{<i>price</i>}</code> sets the price for the article, for example,</p> <pre> \acmPrice{25.00} </pre>

Note that you do not need to put the dollar sign here, just the amount. By default the price is \$15.00, unless the copyright is set to `usgov`, `rightsretained`, `iw3c2w3`, or `iw3c2w3g`, when it is suppressed. Note that to override the defaults you need to set the price *after* the `\setcopyright` command. Also, the command `\acmPrice{}` suppresses the printing of the price.

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

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

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

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

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

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

`\acmBadgeR` Some conference articles get special distinctions, for example, the artifact evaluation
`\acmBadgeL` for PPOPP 2016 (see <http://ctuning.org/ae/ppopp2016.html>). These articles display special badges supplied by the conference organizers. This class provides commands to add these badges: `\acmBadgeR[<url>]{<graphics>}` and `\acmBadgeL[<url>]{<graphics>}`. The first command puts the badge to the right of the title, and the second one—to the left. The exception is the `sigchi-a` mode for SIGCHI extended abstracts, which puts the badges on the left margin. The arguments have the following meaning: `[<url>]`, if provided, sets the link to the badge authority in the screen version, while `{<graphics>}` sets the graphics file with the badge image. The file must be a cropped square, which is scaled to a standard size in the output. For example, if the badge image is `ae-logo.pdf`, the command is

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

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

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

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

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

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

```

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

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

```

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

\setcopyright There are several possibilities for the copyright of the papers published by the ACM: the authors may transfer the rights to the ACM, license them to the ACM, some or all authors might be employees of the US or Canadian governments, etc. Accordingly the command \setcopyright{...} is introduced. Its argument is the copyright status of the paper, for example, \setcopyright{acmcopyright}. The possible values for this command are listed in Table 3.

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

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

```

\acmYear{2016}
\copyrightyear{2015}

```

There is a special case for a personal copy that the authors may be allowed to generate for their use or a posting on a personal site (check the instructions for the specific journal

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

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.

`abstract` The environment `abstract` must *precede* the `\maketitle` command. Again, this is different from the standard \LaTeX .

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

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

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

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

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

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

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

<code>\received</code>	<p>The command <code>\received[<i><stage></i>]{<i><date></i>}</code> sets the history of the publication. The [<i><stage></i>] 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>
<code>\maketitle</code>	<p>The macro <code>\maketitle</code> must be the last command in the top-matter group. That is it must follow the commands defined in this section.</p>
<code>\shortauthors</code>	<p><i>After</i> the command <code>\maketitle</code>, the macro <code>\shortauthors</code> 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.,</p> <pre> \maketitle \renewcommand{\shortauthors}{Zhou et al.} </pre>

2.4 Algorithms

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

2.5 Figures and tables

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

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

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

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

teaserfigure: a special figure before `\maketitle`.

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

marginable: a table in the margin

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

2.6 Descriptions of images

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

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

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

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

2.7 Theorems

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

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

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

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

2.8 Online-only and offline-only material

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

version. The text inside the environment `screenonly` will be typeset only when the option `screen` (see Section 2.2) is set to `true`. Conversely, the text inside the environment `printonly` is typeset only when this option is set to `false`. For example,

```
\section{Supplementary materials}

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

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

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

2.9 Note about anonymous mode

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

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

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

2.10 Acknowledgments

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

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

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

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

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

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

Example:

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

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

2.11 Bibliography

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

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

```
\citestyle{acmauthoryear}
```

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

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

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

One of the more common versions is

```
\setcitestyle{nosort}
```

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

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

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

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

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

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

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

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

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

There are the special entry types `online` and `game` for Web pages and games, for example,

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

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

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

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



```

lastaccessed = "March 21, 2008",
}

```

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

```

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

```

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

```

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

```

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

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

```

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

```

A note about sorting. The current ACM bibliography styles always sort the entries according to authors names and publication year. There is a controversy about sorting

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

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

and then encode the author as

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

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

2.12 Colors

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

The ACM provides the following recommendation on color use.

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

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

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

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

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

2.13 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

2.14 Disabled or forbidden commands

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

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

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

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

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

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

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

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

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

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

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

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

you will pass `dvipsnames` to `xcolor`.

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

2.16 Currently supported publications

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DTRAP	Digital Threats: Research and Practice
HEALTH	ACM Transactions on Computing for Healthcare
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JDIQ	ACM Journal of Data and Information Quality
JEA	ACM Journal of Experimental Algorithmics
JERIC	ACM Journal of Educational Resources in Computing
JETC	ACM Journal on Emerging Technologies in Computing Systems
JOCCH	ACM Journal on Computing and Cultural Heritage
PACMCGIT	Proceedings of the ACM on Computer Graphics and Interactive Techniques
PACMHCI	PACM on Human-Computer Interaction
PACMPL	PACM on Programming Languages
POMACS	PACM on Measurement and Analysis of Computing Systems
TAAS	ACM Transactions on Autonomous and Adaptive Systems
TACCESS	ACM Transactions on Accessible Computing
TACO	ACM Transactions on Architecture and Code Optimization
TALG	ACM Transactions on Algorithms
TALLIP	ACM Transactions on Asian and Low-Resource Language Information Processing

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

Abbreviation	Publication
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TDS	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
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 [2019/03/29 v1.59 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 valid

```
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@balance` Whether to balance the last page

```

94 \define@boolkey+{acmart.cls}[@ACM@]{balance}[true]{}%
95   \PackageError{\@classname}{The option balance can be either true or
96     false}}
97 \ExecuteOptionsX{balance}

```

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

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

```

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

```

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

```

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

```



```

112     false}}
113 \ExecuteOptionsX{anonymous=false}

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

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

\ACM@fontsize The font size to pass to the base class
132 \def\ACM@fontsize{}
133 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
134 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
135 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
136 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

137 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
138 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
139 \ProcessOptionsX
140 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.4 Setting switches

```

\if@ACM@manuscript Whether we use manuscript mode
141 \newif\if@ACM@manuscript

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

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

```

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

```
144 \newif\if@ACM@sigchiamode
```

Setting up switches

```
145 \ifnum\ACM@format@nr=5\relax % siggraph
146   \ClassWarning{\@classname}{The format siggraph is now obsolete.
147     I am switching to sigconf.}
148   \setkeys{acmart.cls}{format=sigconf}
149 \fi
150 \ifnum\ACM@format@nr=0\relax
151   \@ACM@manuscripttrue
152 \else
153   \@ACM@manuscriptfalse
154 \fi
155 \@ACM@sigchiamodefalse
156 \ifcase\ACM@format@nr
157 \relax % manuscript
158   \@ACM@journaltrue
159 \or % acmsmall
160   \@ACM@journaltrue
161 \or % acmlarge
162   \@ACM@journaltrue
163 \or % acmtog
164   \@ACM@journaltrue
165 \or % sigconf
166   \@ACM@journalfalse
167 \or % siggraph
168   \@ACM@journalfalse
169 \or % sigplan
170   \@ACM@journalfalse
171 \or % sigchi
172   \@ACM@journalfalse
173 \or % sigchi-a
174   \@ACM@journalfalse
175   \@ACM@sigchiamodetrue
176 \fi
177 \if@ACM@journal
178   \@ACM@journal@bibstriptrue
179 \else
180   \@ACM@journal@bibstripfalse
181 \fi
```

3.5 Loading the base class and package

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

```
182 \ifx\ACM@fontsize\@empty
183   \ifcase\ACM@format@nr
184     \relax % manuscript
```

```

185 \def\ACM@fontsize{9pt}%
186 \or % acmsmall
187 \def\ACM@fontsize{10pt}%
188 \or % acmlarge
189 \def\ACM@fontsize{10pt}%
190 \or % acmtog
191 \def\ACM@fontsize{9pt}%
192 \or % sigconf
193 \def\ACM@fontsize{9pt}%
194 \or % siggraph
195 \def\ACM@fontsize{9pt}%
196 \or % sigplan
197 \def\ACM@fontsize{10pt}%
198 \or % sigchi
199 \def\ACM@fontsize{10pt}%
200 \or % sigchi-a
201 \def\ACM@fontsize{10pt}%
202 \fi
203 \fi
204 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
205 \LoadClass[\ACM@fontsize, reqno]{amsart}
206 \RequirePackage{microtype}

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

    Booktabs is now the default
208 \RequirePackage{booktabs}

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

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

    We use setspace for double spacing
212 \if@ACM@manuscript
213 \RequirePackage{setspace}
214 \onehalfspacing
215 \fi

    We need textcase for better upcasing
216 \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.

```

217 \if@ACM@natbib
218   \RequirePackage{natbib}
219   \renewcommand{\bibsection}{%
220     \section*{\refname}%
221     \phantomsection\addcontentsline{toc}{section}{\refname}%
222   }
223   \renewcommand{\bibfont}{\bibliofont}
224   \renewcommand\setcitestyle[1]{
225     \@for\@tempa:=#1\do
226     {\def\@tempb{round}\ifx\@tempa\@tempb
227       \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
228     \def\@tempb{square}\ifx\@tempa\@tempb
229       \renewcommand\NAT@open{[]\renewcommand\NAT@close{[]}\fi
230     \def\@tempb{angle}\ifx\@tempa\@tempb
231       \renewcommand\NAT@open{$<$}\renewcommand\NAT@close{$>$}\fi
232     \def\@tempb{curly}\ifx\@tempa\@tempb
233       \renewcommand\NAT@open{\{}\renewcommand\NAT@close{\}}\fi
234     \def\@tempb{semicolon}\ifx\@tempa\@tempb
235       \renewcommand\NAT@sep{;}\fi
236     \def\@tempb{colon}\ifx\@tempa\@tempb
237       \renewcommand\NAT@sep{:}\fi
238     \def\@tempb{comma}\ifx\@tempa\@tempb
239       \renewcommand\NAT@sep{,}\fi
240     \def\@tempb{authoryear}\ifx\@tempa\@tempb
241       \NAT@numbersfalse\fi
242     \def\@tempb{numbers}\ifx\@tempa\@tempb
243       \NAT@numberstrue\NAT@superfalse\fi
244     \def\@tempb{super}\ifx\@tempa\@tempb
245       \NAT@numberstrue\NAT@supertrue\fi
246     \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
247       \let\bibstyle=\@gobble\fi
248     \def\@tempb{bibstyle}\ifx\@tempa\@tempb
249       \let\bibstyle=\@citestyle\fi
250     \def\@tempb{sort}\ifx\@tempa\@tempb
251       \def\NAT@sort{\@ne}\fi
252     \def\@tempb{nosort}\ifx\@tempa\@tempb
253       \def\NAT@sort{\z@}\fi
254     \def\@tempb{compress}\ifx\@tempa\@tempb
255       \def\NAT@cmprs{\@ne}\fi
256     \def\@tempb{nocompress}\ifx\@tempa\@tempb
257       \def\NAT@cmprs{\z@}\fi
258     \def\@tempb{sort&compress}\ifx\@tempa\@tempb
259       \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
260     \def\@tempb{mcite}\ifx\@tempa\@tempb
261       \let\NAT@merge\@ne\fi
262     \def\@tempb{merge}\ifx\@tempa\@tempb
263       \ifnum\NAT@merge<\tw@\{\let\NAT@merge\tw@\}\fi
264     \def\@tempb{elide}\ifx\@tempa\@tempb
265       \ifnum\NAT@merge<\thr@\{\let\NAT@merge\thr@\}\fi
266     \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb

```

```

267 \NAT@longnamestrue\fi
268 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
269 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
270 \expandafter\NAT@find@eq\@tempa=\relax\@nil
271 \if\@tempc\relax\else
272 \expandafter\NAT@rem@eq\@tempc
273 \def\@tempb{open}\ifx\@tempa\@tempb
274 \xdef\NAT@open{\@tempc}\fi
275 \def\@tempb{close}\ifx\@tempa\@tempb
276 \xdef\NAT@close{\@tempc}\fi
277 \def\@tempb{aysep}\ifx\@tempa\@tempb
278 \xdef\NAT@aysep{\@tempc}\fi
279 \def\@tempb{yysep}\ifx\@tempa\@tempb
280 \xdef\NAT@yrsep{\@tempc}\fi
281 \def\@tempb{notesep}\ifx\@tempa\@tempb
282 \xdef\NAT@cmt{\@tempc}\fi
283 \def\@tempb{citesep}\ifx\@tempa\@tempb
284 \xdef\NAT@sep{\@tempc}\fi
285 \fi
286 }%
287 \NAT@@setcites
288 }
289 \renewcommand\citestyle[1]{%
290 \ifcsname bibstyle@#1\endcsname%
291 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
292 \else%
293 \@latex@error{Undefined ‘#1’ citestyle}%
294 \fi
295 }%
296 \fi

```

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

```

297 \newcommand{\bibstyle@acmauthoryear}{%
298 \setcitestyle{%
299 authoryear,%
300 open={},close={},citesep={;},%
301 aysep={},yysep={},,%
302 notesep={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```

303 \newcommand{\bibstyle@acmnumeric}{%
304 \setcitestyle{%
305 numbers,sort&compress,%
306 open={},close={},citesep={,},%
307 notesep={, }}

```

The default is numeric:

```

308 \if@ACM@natbib
309 \citestyle{acmnumeric}
310 \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:

```

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

```

```

357         \@tochangmeasure{\csname the#1\endcsname\space}%
358     \fi
359     \addcontentsline{toc}{#1}{%
360         \ifnum #2>\c@secnumdepth \else
361             \protect\numberline{\csname the#1\endcsname}%
362         \fi
363     #7}}%
364 \fi
365 \@xsect{#5}}
366 \def\@xsect#1{%
367     \@tempskipa #1\relax
368     \ifdim \@tempskipa>\z@
369         \par \nobreak
370         \vskip \@tempskipa
371         \@afterheading
372     \else
373         \@nobreakfalse
374         \global\@noskipsectrue
375         \everypar{%
376             \if@noskipsec
377                 \global\@noskipsecfalse
378                 {\setbox\z@\lastbox}%
379                 \clubpenalty\@M
380                 \begingroup \@svsechd \endgroup
381                 \unskip
382                 \@tempskipa #1\relax
383                 \hskip -\@tempskipa
384             \else
385                 \clubpenalty \@clubpenalty
386             \everypar{}%
387         \fi}%
388     \fi
389     \ignorespaces}
390 \def\@secntformat#1{\csname the#1\endcsname\quad}
391 \def\@essect#1#2#3#4#5{%
392     \@tempskipa #3\relax
393     \ifdim \@tempskipa>\z@
394         \begingroup
395             #4{%
396                 \@hangfrom{\hskip #1}%
397                 \interlinepenalty \@M #5\@par}%
398         \endgroup
399     \else
400         \def\@svsechd{#4{\hskip #1\relax #5}}%
401     \fi
402     \@xsect{#3}}

```

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

```

403 \def\@starttoc#1#2{\begingroup\makeatletter

```

```

404 \setTrue{#1}%
405 \par\removelastskip\vskip\z@skip
406 \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
407   {.5\linespacing}{\centering\contentsnamefont}{#2}%
408 \@input{\jobname.#1}%
409 \if@files
410   \exp\newwrite\csname tf@#1\endcsname
411   \immediate\exp\openout\csname tf@#1\endcsname \jobname.#1\relax
412 \fi
413 \global\@nobreakfalse \endgroup
414 \addvspace{32\p@\@plus14\p@}%
415 }

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

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

\l@subsection The spacing in amsart is too large
418 \def\l@subsection{\@toctline{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
419 \def\@makefnmark{\noindent\@makefnmark}

\@footnotetext In sigchi-a mode our footnotes are in the margin!
420 \if@ACM@sigchiamode
421 \long\def\@footnotetext#1{\marginpar{%
422   \reset@font\small
423   \interlinepenalty\interfootnotelinepenalty
424   \protected@edef\@currentlabel{%
425     \csname p@footnote\endcsname\@thefnmark
426   }}%
427   \color@begingroup
428     \@makefnmark{%
429       \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
430   \color@endgroup}}%
431 \fi

\@mpfootnotetext We want the footnotes in minipages centered:
432 \long\def\@mpfootnotetext#1{%
433   \global\setbox\@mpfootins\vbox{%
434     \unvbox\@mpfootins
435     \reset@font\footnotesize
436     \hsize\columnwidth
437     \@parboxrestore
438     \protected@edef\@currentlabel

```



```

439         {\csname p@mpfootnote\endcsname \@thefnmark}%
440         \color@begingroup\centering
441         \makefnmark{\rule{z}{\footnotesep\ignorespaces#1\@finalstrut\strutbox}}%
442         \color@endgroup}}
443

```

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

```

444 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont \@thefnmark}}}

```

And now, hyperref

```

445 \let\@footnotemark@nolink\@footnotemark
446 \let\@footnotetext@nolink\@footnotetext
447 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
448 \pdfstringdefDisableCommands{%
449   \def\addtocounter#1#2{%
450     \def\unskip{%
451       \def\textbullet{- }%
452       \def\textrightarrow{-> }%
453       \def\footnotemark{%
454         }
455       \urlstyle{rm}
456       \ifcase\ACM@format@nr
457       \relax % manuscript
458       \or % acmsmall
459       \or % acmlarge
460       \or % acmtog
461       \or % sigconf
462       \or % siggraph
463       \or % sigplan
464       \urlstyle{sf}
465       \or % sigchi
466       \or % sigchi-a
467       \urlstyle{sf}
468       \fi
469       \AtEndPreamble{%
470         \if@ACM@screen
471           \hypersetup{colorlinks,
472             linkcolor=ACMPurple,
473             citecolor=ACMPurple,
474             urlcolor=ACMDarkBlue,
475             filecolor=ACMDarkBlue}
476         \else
477           \hypersetup{hidelinks}
478         \fi
479         \hypersetup{pdflang={en},
480           pdfdisplaydoctitle}}
480
481 Bibliography mangling.
482 \if@ACM@natbib
483   \let\citeN\cite

```

```

483 \let\cite\citep
484 \let\citeANP\citeauthor
485 \let\citeNN\citeyearpar
486 \let\citeyearNP\citeyear
487 \let\citeNP\citealt
488 \DeclareRobustCommand\citeA
489   {\begingroup\NAT@swafalse
490     \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
491   \providecommand\newblock{}%
492 \else
493   \AtBeginDocument{%
494     \let\shortcite\cite%
495     \providecommand\citename[1]{#1}}
496 \fi
497 \newcommand\shortcite[2][]{%
498   \ifNAT@numbers\cite[#1]{#2}\else\citeyearpar[#1]{#2}\fi}

```

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

```

499 \def\bibliographystyle#1{%
500   \ifx\@begindocumenthook\@undefined\else
501     \expandafter\AtBeginDocument
502   \fi
503   {\if@filesw
504     \immediate\write\@auxout{\string\bibstyle{#1}}%
505   \fi}}

```

Graphics and color.

```

506 \RequirePackage{graphicx}
507 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [7]:

```

508 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
509 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
510 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
511 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
512 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
513 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
514 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
515 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode

```

516 \if@ACM@authordraft
517   \RequirePackage{draftwatermark}
518   \SetWatermarkFontSize{0.5in}
519   \SetWatermarkColor[gray]{.9}
520   \SetWatermarkText{\parbox{12em}{\centering
521     Unpublished working draft.\
522     Not for distribution.}}
523 \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>.

```
524 \RequirePackage{geometry}
525 \ifcase\ACM@format@nr
526 \relax % manuscript
527   \geometry{letterpaper,head=13pt,
528     marginparwidth=6pc,heightrounded}%
529 \or % acmsmall
530   \geometry{twoside=true,
531     includeheadfoot, head=13pt, foot=2pc,
532     paperwidth=6.75in, paperheight=10in,
533     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
534     marginparwidth=2pc,heightrounded
535   }%
536 \or % acmlarge
537   \geometry{twoside=true, head=13pt, foot=2pc,
538     paperwidth=8.5in, paperheight=11in,
539     includeheadfoot,
540     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
541     marginparwidth=4pc,heightrounded
542   }%
543 \or % acmtog
544   \geometry{twoside=true, head=13pt, foot=2pc,
545     paperwidth=8.5in, paperheight=11in,
546     includeheadfoot, columnsep=24pt,
547     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
548     marginparwidth=2pc,heightrounded
549   }%
550 \or % sigconf
551   \geometry{twoside=true, head=13pt,
552     paperwidth=8.5in, paperheight=11in,
553     includeheadfoot, columnsep=2pc,
554     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
555     marginparwidth=2pc,heightrounded
556   }%
557 \or % siggraph
558   \geometry{twoside=true, head=13pt,
559     paperwidth=8.5in, paperheight=11in,
560     includeheadfoot, columnsep=2pc,
561     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
562     marginparwidth=2pc,heightrounded
563   }%
564 \or % sigplan
565   \geometry{twoside=true, head=13pt,
566     paperwidth=8.5in, paperheight=11in,
567     includeheadfoot=false, columnsep=2pc,
568     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
```

```

569     marginparwidth=2pc,heightrounded
570   }%
571 \or % sigchi
572   \geometry{twoside=true, head=13pt,
573     paperwidth=8.5in, paperheight=11in,
574     includeheadfoot, columnsep=2pc,
575     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
576     marginparwidth=2pc,heightrounded
577   }%
578 \or % sigchi-a
579   \geometry{twoside=false, head=13pt,
580     paperwidth=11in, paperheight=8.5in,
581     includeheadfoot, marginparsep=72pt,
582     marginparwidth=170pt, columnsep=20pt,
583     top=72pt, bottom=72pt, left=314pt, right=72pt
584   }%
585   \@mparswitchfalse
586   \reversemarginpar
587 \fi

\parindent Paragraphing
\parskip
588 \setlength\parindent{10\p@}
589 \setlength\parskip{\z@}
590 \ifcase\ACM@format@nr
591 \relax % manuscript
592 \or % acmsmall
593 \or % acmlarge
594 \or % acmtog
595   \setlength\parindent{9\p@}%
596 \or % sigconf
597 \or % siggraph
598 \or % sigplan
599 \or % sigchi
600 \or % sigchi-a
601 \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 com-
mand. We set \normalparindent to the value of \parindent as selected by acmart for
consistent paragraph indents.
602 \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.

```
603 \def\copyrightpermissionfootnoterule{\kern-3\p@
604   \hrule \@width \columnwidth \kern 2.6\p@}

605 \RequirePackage{manyfoot}
606 \SelectFootnoteRule[2]{copyrightpermission}
607 \DeclareNewFootnote{authorsaddresses}
608 \SelectFootnoteRule[2]{copyrightpermission}
609 \DeclareNewFootnote{copyrightpermission}
```

`\footnoterule` Tschichold's rules:

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

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

```
612 \def\endminipage{%
613   \par
614   \unskip
615   \ifvoid\@mpfootins\else
616     \vskip\skip\@mpfootins
617     \normalcolor
618     \unvbox\@mpfootins
619   \fi
620   \@minipagefalse
621   \color@endgroup
622   \egroup
623   \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
624 \def\@textbottom{\vskip \z@ \@plus 1pt}
625 \let\@texttop\relax
```

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

```
626 \ifcase\ACM@format@nr
627 \relax % manuscript
628 \or % acmsmall
629 \or % acmlarge
630 \or % acmtog
631   \flushbottom
632 \or % sigconf
633   \flushbottom
634 \or % siggraph
635   \flushbottom
636 \or % sigplan
637   \flushbottom
638 \or % sigchi
```

```

639 \flushbottom
640 \or % sigchi-a
641 \fi

```

3.8 Fonts

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

The code below is by Ross Moore.

```

642 \RequirePackage{iftex}
643 \ifPDFTeX
644 \input{glyphtounicode}
645 \pdfglyphtounicode{f_f}{FB00}
646 \pdfglyphtounicode{f_f_i}{FB03}
647 \pdfglyphtounicode{f_f_l}{FB04}
648 \pdfglyphtounicode{f_i}{FB01}
649 \pdfglyphtounicode{t_t}{0074 0074}
650 \pdfglyphtounicode{f_t}{0066 0074}
651 \pdfglyphtounicode{T_h}{0054 0068}
652 \pdfgentounicode=1
653 \fi
654 \RequirePackage{cmap}

```

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

```

655 \newif\if@ACM@newfonts
656 \@ACM@newfontstrue
657 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
658   have the libertine package installed. Please upgrade your
659   TeX}\@ACM@newfontsfalse}
660 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
661   have the zi4 package installed. Please upgrade your
662   TeX}\@ACM@newfontsfalse}
663 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
664   have the newtxmath package installed. Please upgrade your
665   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

666 \if@ACM@newfonts
667 \RequirePackage[T1]{fontenc}
668 \ifxetex
669 \RequirePackage[tt=false]{libertine}
670 \setmonofont{inconsolata}
671 \else
672 \RequirePackage[tt=false, type1=true]{libertine}
673 \fi
674 \RequirePackage[varqu]{zi4}
675 \RequirePackage[libertine]{newtxmath}
676 \fi

```

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

```
677 \let\liningnums\@undefined
678 \AtEndPreamble{%
679   \DeclareTextFontCommand{\liningnums}{\libertineLF}}
```

The SIGCHI extended abstracts are sans serif:

```
680 \if@ACM@sigchiamode
681   \renewcommand{\familydefault}{\sfdefault}
682 \fi
```

3.9 Image descriptions

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

```
683 \newif\if@Description@present
684 \@Description@presenttrue
```

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

```
685 \newif\if@undescribed@images
686 \@undescribed@imagesfalse
```

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

```
687 \newcommand\Description[2][\global\@Description@presenttrue\ignorespaces]
```

The global warning

```
688 \AtEndDocument{\if@undescribed@images
689   \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}
```

Hooks for figures and tables

```
690 \AtBeginEnvironment{figure}{\@Description@presentfalse
691   \let\@vspace\@vspace@orig
692   \let\@vspacer\@vspacer@orig}
693 \AtBeginEnvironment{figure*}{\@Description@presentfalse
694   \let\@vspace\@vspace@orig
695   \let\@vspacer\@vspacer@orig}
696 \AtEndEnvironment{figure}{\if@Description@presentfalse
697   \global\@undescribed@imagestrue
698   \ClassWarning{\@classname}{A possible image without description}\fi}
699 \AtEndEnvironment{figure*}{\if@Description@presentfalse
700   \global\@undescribed@imagestrue
701   \ClassWarning{\@classname}{A possible image without description}\fi}
702 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
703   \let\@vspacer\@vspacer@orig}
704 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
705   \let\@vspacer\@vspacer@orig}
```

3.10 Floats

We use the caption package

```

706 \RequirePackage{caption, float}
707 \captionsetup[table]{position=top}
708 \if@ACM@journal
709   \captionsetup{labelfont={sf, small},
710     textfont={sf, small}, margin=\z@}
711   \captionsetup[figure]{name={Fig.}}
712 \else
713   \captionsetup{labelfont={bf},
714     textfont={bf}, labelsep=colon, margin=\z@}
715   \ifcase\ACM@format@nr
716     \relax % manuscript
717     \or % acmsmall
718     \or % acmlarge
719     \or % acmtog
720     \or % sigconf
721     \or % siggraph
722     \captionsetup{textfont={it}}
723     \or % sigplan
724     \captionsetup{labelfont={bf},
725       textfont={normalfont}, labelsep=period, margin=\z@}
726     \or % sigchi
727     \captionsetup[figure]{labelfont={bf, small},
728       textfont={bf, small}}
729     \captionsetup[table]{labelfont={bf, small},
730       textfont={bf, small}}
731     \or % sigchi-a
732     \captionsetup[figure]{labelfont={bf, small},
733       textfont={bf, small}}
734     \captionsetup[table]{labelfont={bf, small},
735       textfont={bf, small}}
736   \fi
737 \fi

```

sidebar The sidebar environment:

```

738 \newfloat{sidebar}{}{sbar}
739 \floatname{sidebar}{Sidebar}
740 \renewenvironment{sidebar}{}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

741 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
742   \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
743   \marginpar{\small#1}\egroup}

```

marginfigure The marginfigure environment:

```

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

```



```

\@marginfigure The processing of the saved text
745 \long\def\@marginfigure#1{\bgroup
746   \let\@vspace\@vspace@orig
747   \let\@vspacer\@vspacer@orig
748   \captionsetup{type=figure}%
749   \marginpar{\@Description@presentfalse\centering
750     \small#1\if@Description@present\else
751       \global\@undescrbed@imagestrue
752       \ClassWarning{\@classname}{A possible image without description}
753       \fi}%
754   \egroup}

marginable The margintable environment:
755 \newenvironment{margintable}{\Collect@Body\@margintable}{}

\@margintable The processing of the saved text
756 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
757   \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
758   \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
759 \newdimen\fulltextwidth
760 \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)
761 \if@ACM@sigchiamode
762 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
763   \let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
764   \let\@endfloatbox\@endwidefloatbox
765   \def\@fpsadddefault{\def\@fps{tp}}%
766   \@float}
767 \fi

\end@dblfloat And the end. Just adding a \bgroup.
768 \if@ACM@sigchiamode
769 \def\end@dblfloat{%
770   \end@float\egroup}
771 \fi

\@endwidefloatbox This is the end of a wide box—we basically move everything to the left
772 \def\@endwidefloatbox{%
773   \par\vskip\z@skip
774   \minipagefalse
775   \outer@nobreak
776   \egroup

```

```

777 \color@endbox
778 \global\setbox\@currbox=\vbox{\moveleft
779   \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
780 \wd\@currbox=\textwidth
781 }

```

3.11 Lists

```

782 \ifcase\ACM@format@nr
783 \relax % manuscript
784 \or % acmsmall
785 \or % acmlarge
786 \or % acmtog
787 \or % sigconf
788 \or % siggraph
789 \or % sigplan
790 \def\labelenumi{\theenumi.}
791 \def\labelenumii{\theenumii.}
792 \def\labelenumiii{\theenumiii.}
793 \def\labelenumiv{\theenumiv.}
794 \or % sigchi
795 \or % sigchi-a
796 \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`.

```

797 \newdimen\@ACM@labelwidth
798 \AtBeginDocument{%
799   \setlength\labelsep{4pt}
800   \setlength{\@ACM@labelwidth}{6.5pt}
801
802   %% First-level list: when beginning after the first line of an
803   %% indented paragraph or ending before an indented paragraph, labels
804   %% should not hang to the left of the preceding/following text.
805   \setlength\leftmargini{\z@}
806   \addtolength\leftmargini{\parindent}
807   \addtolength\leftmargini{2\labelsep}
808   \addtolength\leftmargini{\@ACM@labelwidth}
809
810   %% Second-level and higher lists.
811   \setlength\leftmarginii{\z@}
812   \addtolength\leftmarginii{0.5\labelsep}
813   \addtolength\leftmarginii{\@ACM@labelwidth}
814   \setlength\leftmarginiii{\leftmarginii}
815   \setlength\leftmarginiv{\leftmarginiii}
816   \setlength\leftmarginv{\leftmarginiv}

```

```

817 \setlength\leftmarginvi{\leftmarginv}
818 \@listi}
819 \newskip\listisep
820 \listisep\smallskipamount
821 \def\@listI{\leftmargin\leftmargini
822 \labelwidth\leftmargini \advance\labelwidth-\labelsep
823 \listparindent\z@
824 \topsep\listisep}
825 \let\@listi\@listI
826 \def\@listii{\leftmargin\leftmarginii
827 \labelwidth\leftmarginii \advance\labelwidth-\labelsep
828 \topsep\z@skip}
829 \def\@listiii{\leftmargin\leftmarginiii
830 \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
831 \def\@listiv{\leftmargin\leftmarginiv
832 \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
833 \def\@listv{\leftmargin\leftmarginv
834 \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
835 \def\@listvi{\leftmargin\leftmarginvi
836 \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}
\descriptionlabel We do not use a colon by default like amsart does:
837 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
838 \renewenvironment{description}{\list{}{%
839 \labelwidth\@ACM\labelwidth
840 \let\makelabel\descriptionlabel}%
841 }{
842 \endlist
843 }
844 \let\enddescription=\endlist % for efficiency

```

3.12 Top-matter data

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

```

845 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
846 CIE,%
847 CSUR,%
848 DTRAP,%
849 HEALTH,%
850 IMWUT,%
851 JACM,%
852 JDIQ,%
853 JEA,%
854 JERIC,%
855 JETC,%
856 JOCCH,%

```

```

857 PACMCGIT,%
858 PACMHCI,%
859 PACMPL,%
860 POMACS,%
861 TAAS,%
862 TACCESS,%
863 TACO,%
864 TALG,%
865 TALLIP,%
866 TAP,%
867 TCPS,%
868 TDS,%
869 TEAC,%
870 TECS,%
871 THRI,%
872 TIIS,%
873 TIOT,%
874 TISSEC,%
875 TIST,%
876 TKDD,%
877 TMIS,%
878 TOCE,%
879 TOCHI,%
880 TOCL,%
881 TOCS,%
882 TOCT,%
883 TODAES,%
884 TODS,%
885 TOG,%
886 TOIS,%
887 TOIT,%
888 TOMACS,%
889 TOMM,%
890 TOMPECS,%
891 TOMS,%
892 TOPC,%
893 TOPS,%
894 TOPLAS,%
895 TOS,%
896 TOSEM,%
897 TOSN,%
898 TRETs,%
899 TSAS,%
900 TSC,%
901 TSLP,%
902 TWEB%
903 }{%
904 \ifcase\@journalCode@nr
905 \relax % CIE
906 \def\@journalName{ACM Computers in Entertainment}%

```

```

907 \def\@journalNameShort{ACM Comput. Entertain.}%
908 \def\@permissionCodeOne{1544-3574}%
909 \or % CSUR
910 \def\@journalName{ACM Computing Surveys}%
911 \def\@journalNameShort{ACM Comput. Surv.}%
912 \def\@permissionCodeOne{0360-0300}%
913 \or % DTRAP
914 \def\@journalName{Digital Threats: Research and Practice}%
915 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
916 \def\@permissionCodeOne{2576-5337}%
917 \or % HEALTH
918 \def\@journalName{ACM Transactions on Computing for Healthcare}%
919 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
920 \def\@permissionCodeOne{2637-8051}%
921 \or % IMWUT
922 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
923     Wearable and Ubiquitous Technologies}%
924 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
925 \def\@permissionCodeOne{2474-9567}%
926 \@ACM@screentruer
927 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
928 \or % JACM
929 \def\@journalName{Journal of the ACM}%
930 \def\@journalNameShort{J. ACM}%
931 \def\@permissionCodeOne{0004-5411}%
932 \or % JDIQ
933 \def\@journalName{ACM Journal of Data and Information Quality}%
934 \def\@journalNameShort{ACM J. Data Inform. Quality}%
935 \def\@permissionCodeOne{1936-1955}%
936 \or % JEA
937 \def\@journalName{ACM Journal of Experimental Algorithmics}%
938 \def\@journalNameShort{ACM J. Exp. Algor.}%
939 \def\@permissionCodeOne{1084-6654}%
940 \or % JERIC
941 \def\@journalName{ACM Journal of Educational Resources in Computing}%
942 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
943 \def\@permissionCodeOne{1073-0516}%
944 \or % JETC
945 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
946 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
947 \def\@permissionCodeOne{1550-4832}%
948 \or % JOCCH
949 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
950 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
951 \or % PACMCGIT
952 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
953 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
954 \def\@permissionCodeOne{2577-6193}%
955 \@ACM@screentruer
956 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%

```

```

957 \or % PACMHCI
958 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
959 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
960 \def\@permissionCodeOne{2573-0142}%
961 \@ACM@screentruer
962 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
963 \or % PACMPL
964 \def\@journalName{Proceedings of the ACM on Programming Languages}%
965 \def\@journalNameShort{Proc. ACM Program. Lang.}%
966 \def\@permissionCodeOne{2475-1421}%
967 \@ACM@screentruer
968 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
969 \or % POMACS
970 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
971 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
972 \def\@permissionCodeOne{2476-1249}%
973 \@ACM@screentruer
974 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
975 \or % TAAS
976 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
977 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
978 \def\@permissionCodeOne{1556-4665}%
979 \or % TACCESS
980 \def\@journalName{ACM Transactions on Accessible Computing}%
981 \def\@journalNameShort{ACM Trans. Access. Comput.}%
982 \def\@permissionCodeOne{1936-7228}%
983 \or % TACO
984 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
985 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
986 \or % TALG
987 \def\@journalName{ACM Transactions on Algorithms}%
988 \def\@journalNameShort{ACM Trans. Algor.}%
989 \def\@permissionCodeOne{1549-6325}%
990 \or % TALLIP
991 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
992 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
993 \def\@permissionCodeOne{2375-4699}%
994 \or % TAP
995 \def\@journalName{ACM Transactions on Applied Perception}%
996 \or % TCPS
997 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
998 \or % TDS
999 \def\@journalName{ACM Transactions on Data Science}%
1000 \def\@journalNameShort{ACM Trans. Data Sci.}%
1001 \def\@permissionCodeOne{2577-3224}%
1002 \or % TEAC
1003 \def\@journalName{ACM Transactions on Economics and Computation}%
1004 \or % TECS
1005 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1006 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%

```

```

1007 \def\@permissionCodeOne{1539-9087}%
1008 \or % THRI
1009 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1010 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
1011 \def\@permissionCodeOne{2573-9522}%
1012 \or % TIIS
1013 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
1014 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1015 \def\@permissionCodeOne{2160-6455}%
1016 \or % TIOT
1017 \def\@journalName{ACM Transactions on Internet of Things}%
1018 \def\@journalNameShort{ACM Trans. Internet Things}%
1019 \def\@permissionCodeOne{2577-6207}%
1020 \or % TISSEC
1021 \def\@journalName{ACM Transactions on Information and System Security}%
1022 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1023 \def\@permissionCodeOne{1094-9224}%
1024 \or % TIST
1025 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1026 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1027 \def\@permissionCodeOne{2157-6904}%
1028 \or % TKDD
1029 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1030 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1031 \def\@permissionCodeOne{1556-4681}%
1032 \or % TMIS
1033 \def\@journalName{ACM Transactions on Management Information Systems}%
1034 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1035 \def\@permissionCodeOne{2158-656X}%
1036 \or % TOCE
1037 \def\@journalName{ACM Transactions on Computing Education}%
1038 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1039 \def\@permissionCodeOne{1946-6226}%
1040 \or % TOCHI
1041 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1042 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1043 \def\@permissionCodeOne{1073-0516}%
1044 \or % TOCL
1045 \def\@journalName{ACM Transactions on Computational Logic}%
1046 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1047 \def\@permissionCodeOne{1529-3785}%
1048 \or % TOCS
1049 \def\@journalName{ACM Transactions on Computer Systems}%
1050 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1051 \def\@permissionCodeOne{0734-2071}%
1052 \or % TOCT
1053 \def\@journalName{ACM Transactions on Computation Theory}%
1054 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1055 \def\@permissionCodeOne{1942-3454}%
1056 \or % TODAES

```

```

1057 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1058 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1059 \def\@permissionCodeOne{1084-4309}%
1060 \or % TODS
1061 \def\@journalName{ACM Transactions on Database Systems}%
1062 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1063 \def\@permissionCodeOne{0362-5915}%
1064 \or % TOG
1065 \def\@journalName{ACM Transactions on Graphics}%
1066 \def\@journalNameShort{ACM Trans. Graph.}%
1067 \def\@permissionCodeOne{0730-0301}%
1068 \or % TOIS
1069 \def\@journalName{ACM Transactions on Information Systems}%
1070 \def\@permissionCodeOne{1046-8188}%
1071 \or % TOIT
1072 \def\@journalName{ACM Transactions on Internet Technology}%
1073 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1074 \def\@permissionCodeOne{1533-5399}%
1075 \or % TOMACS
1076 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1077 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1078 \or % TOMM
1079 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1080 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1081 \def\@permissionCodeOne{1551-6857}%
1082 \def\@permissionCodeTwo{0100}%
1083 \or % TOMPECS
1084 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1085 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1086 \def\@permissionCodeOne{2376-3639}%
1087 \or % TOMS
1088 \def\@journalName{ACM Transactions on Mathematical Software}%
1089 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1090 \def\@permissionCodeOne{0098-3500}%
1091 \or % TOPC
1092 \def\@journalName{ACM Transactions on Parallel Computing}%
1093 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1094 \def\@permissionCodeOne{1539-9087}%
1095 \or % TOPS
1096 \def\@journalName{ACM Transactions on Privacy and Security}%
1097 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1098 \def\@permissionCodeOne{2471-2566}%
1099 \or % TOPLAS
1100 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1101 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1102 \def\@permissionCodeOne{0164-0925}%
1103 \or % TOS
1104 \def\@journalName{ACM Transactions on Storage}%
1105 \def\@journalNameShort{ACM Trans. Storage}%
1106 \def\@permissionCodeOne{1553-3077}%

```



```

1107 \or % TOSEM
1108 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1109 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1110 \def\@permissionCodeOne{1049-331X}%
1111 \or % TOSN
1112 \def\@journalName{ACM Transactions on Sensor Networks}%
1113 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1114 \def\@permissionCodeOne{1550-4859}%
1115 \or % TRET
1116 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1117 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1118 \def\@permissionCodeOne{1936-7406}%
1119 \or % TSAS
1120 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1121 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1122 \def\@permissionCodeOne{2374-0353}%
1123 \or % TSC
1124 \def\@journalName{ACM Transactions on Social Computing}%
1125 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1126 \def\@permissionCodeOne{2469-7818}%
1127 \or % TSLP
1128 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1129 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1130 \def\@permissionCodeOne{1550-4875}%
1131 \or % TWEB
1132 \def\@journalName{ACM Transactions on the Web}%
1133 \def\@journalNameShort{ACM Trans. Web}%
1134 \def\@permissionCodeOne{1559-1131}%
1135 \fi
1136 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1137 }{%
1138 \ClassError{\@classname}{Incorrect journal #1}%
1139 }%

```

\acmJournal And the syntactic sugar around it

```

1140 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1141 \global\@ACM@journal@bibstriptrue}

```

The defaults:

```

1142 \def\@journalCode@nr{0}
1143 \def\@journalName{}%
1144 \def\@journalNameShort{\@journalName}%
1145 \def\@permissionCodeOne{XXXX-XXXX}%
1146 \def\@permissionCodeTwo{}%

```

\acmConference This is the conference command

```

1147 \newcommand\acmConference[4][{}]{%
1148 \gdef\acmConference@shortname{#1}%
1149 \gdef\acmConference@name{#2}%

```

```

1150 \gdef\acmConference@date{#3}%
1151 \gdef\acmConference@venue{#4}%
1152 \ifx\acmConference@shortname\empty
1153   \gdef\acmConference@shortname{#2}%
1154 \fi
1155 \global\@ACM@journal@bibstripfalse
1156 }
1157 \if@ACM@journal\else
1158 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1159   DC, USA}%
1160 \fi

\acmBooktitle The book title of the conference:
\@acmBooktitle 1161 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1162 \acmBooktitle{Proceedings of \acmConference@name
1163   \ifx\acmConference@name\acmConference@shortname\else
1164     \ (\acmConference@shortname)\fi}

\@editorsAbbrev How to abbreviate editors
1165 \def\@editorsAbbrev{(Ed.)}

\@acmEditors The list of editors
1166 \def\@acmEditors{}

\editor Add a new editor to the list
1167 \def\editor#1{\ifx\@acmEditors\empty
1168   \gdef\@acmEditors{#1}%
1169   \else
1170     \gdef\@editorsAbbrev{(Eds.)}%
1171     \g@addto@macro\@acmEditors{\and#1}%
1172 \fi}

\subtitle The subtitle macro
1173 \def\subtitle#1{\def\@subtitle{#1}}
1174 \subtitle{}

\num@authorgroups The total number of “groups”. Each group is several authors with the same affiliations(s)
1175 \newcount\num@authorgroups
1176 \num@authorgroups=0\relax

\num@authors The total number of authors
1177 \newcount\num@authors
1178 \num@authors=0\relax

\if@insideauthorgroup Whether we are continuing an author group
1179 \newif\if@insideauthorgroup
1180 \@insideauthorgroupfalse

```

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

```

1181 \renewcommand\author[2][{}%
1182   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1183     authors in the same \string\author\space macro!}}{}%
1184   \global\advance\num@authors by 1\relax
1185   \if@insideauthorgroup\else
1186     \global\advance\num@authorgroups by 1\relax
1187     \global\@insideauthorgroupttrue
1188   \fi
1189   \ifx\addresses\@empty
1190     \if@ACM@anonymous
1191       \gdef\addresses{\@author{Anonymous Author(s)}%
1192         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1193           \@acmSubmissionID\fi}}%
1194       \gdef\authors{Anonymous Author(s)}%
1195     \else
1196       \gdef\addresses{\@author{#2}}%
1197       \gdef\authors{#2}%
1198     \fi
1199   \else
1200     \if@ACM@anonymous\else
1201       \g@addto@macro\addresses{\and\@author{#2}}%
1202       \g@addto@macro\authors{\and#2}%
1203     \fi
1204   \fi
1205   \if@ACM@anonymous
1206     \ifx\shortauthors\@empty
1207       \gdef\shortauthors{Anon.
1208         \ifx\@acmSubmissionID\@empty\else Submission Id:
1209           \@acmSubmissionID\fi}%
1210     \fi
1211   \else
1212     \def\@tempa{#1}%
1213     \ifx\@tempa\@empty
1214       \ifx\shortauthors\@empty
1215         \gdef\shortauthors{#2}%
1216       \else
1217         \g@addto@macro\shortauthors{\and#2}%
1218       \fi
1219     \else
1220       \ifx\shortauthors\@empty
1221         \gdef\shortauthors{#1}%
1222       \else
1223         \g@addto@macro\shortauthors{\and#1}%
1224       \fi
1225     \fi
1226   \fi}

```

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

argument, which we use differently from `amsart`.

```

1227 \newcommand{\affiliation}[2][{}]{%
1228   \global\@insideauthorgroupfalse
1229   \if@ACM@anonymous\else
1230     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1231   \fi}

```

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

```

1232 \define@boolkey+{@ACM@affiliation@}{@ACM@affiliation@}{obeypunctuation}%
1233 [true]{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1234 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

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

```

1235 \def@additionalaffiliation#1{\bgroup
1236   \def\position##1{\ignorespaces}%
1237   \def\institution##1{##1\ignorespaces}%
1238   \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1239   \def@department[##1]##2{\unskip, ##2\ignorespaces}%
1240   \let\streetaddress\position
1241   \let\city\position
1242   \let\state\position
1243   \let\postcode\position
1244   \let\country\position
1245   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.

```

1246 \renewcommand{\email}[2][{}]{%
1247   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1248     addresses in the same \string\email\space macro!}}{}%
1249   \if@ACM@anonymous\else
1250     \g@addto@macro\addresses{\email{#1}{#2}}%
1251   \fi}

```

`\orcid` Right now we do not typeset ORCIDs

```

1252 \def\orcid#1{\unskip\ignorespaces}

```

`\authorsaddresses` Setting up authors' addresses

```

1253 \def\authorsaddresses#1{\def@authorsaddresses{#1}}
1254 \authorsaddresses{\mkauthorsaddresses}

```

`@titlenotes` The title notes

```

1255 \def@titlenotes{}

```

```

\titlenote Adding a note to the title
1256 \def\titlenote#1{%
1257   \g@addto@macro\@title{\footnotemark}%
1258   \if@ACM@anonymous
1259     \g@addto@macro\@titlenotes{%
1260       \stepcounter{footnote}\footnotetext{Title note}}%
1261   \else
1262     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1263   \fi}

\@subtitlenotes The subtitle notes
1264 \def\@subtitlenotes{}

\subtitlenote Adding a note to the subtitle
1265 \def\subtitlenote#1{%
1266   \g@addto@macro\@subtitle{\footnotemark}%
1267   \if@ACM@anonymous
1268     \g@addto@macro\@subtitlenotes{%
1269       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1270   \else
1271     \g@addto@macro\@subtitlenotes{%
1272       \stepcounter{footnote}\footnotetext{#1}}%
1273   \fi}

\@authornotes The author notes
1274 \def\@authornotes{}

\authornote Adding a note to the author
1275 \def\authornote#1{%
1276   \if@ACM@anonymous\else
1277     \g@addto@macro\addresses{\@authornotemark}%
1278     \g@addto@macro\@authornotes{%
1279       \stepcounter{footnote}\footnotetext{#1}}%
1280   \fi}

\authornotemark Adding a footnote mark to the authors
1281 \newcommand\authornotemark[1][\relax]{%
1282   \ifx#1\relax\relax\relax
1283     \g@addto@macro\addresses{\@authornotemark}%
1284   \else
1285     \g@addto@macro\addresses{\@authornotemark{#1}}%
1286   \fi}

\acmVolume The current volume
1287 \def\acmVolume#1{\def\@acmVolume{#1}}
1288 \acmVolume{1}

\acmNumber The current number
1289 \def\acmNumber#1{\def\@acmNumber{#1}}
1290 \acmNumber{1}

```

<code>\acmArticle</code>	<p>The current article</p> <pre>1291 \def\acmArticle#1{\def\@acmArticle{#1}} 1292 \acmArticle{}</pre>
<code>\acmArticleSeq</code>	<p>The sequence number</p> <pre>1293 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}} 1294 \acmArticleSeq{\@acmArticle}</pre>
<code>\acmYear</code>	<p>The current year</p> <pre>1295 \def\acmYear#1{\def\@acmYear{#1}} 1296 \acmYear{\the\year}</pre>
<code>\acmMonth</code>	<p>The current month</p> <pre>1297 \def\acmMonth#1{\def\@acmMonth{#1}} 1298 \acmMonth{\the\month}</pre>
<code>\@acmPubDate</code>	<p>The publication date</p> <pre>1299 \def\@acmPubDate{\ifcase\@acmMonth\or 1300 January\or February\or March\or April\or May\or June\or 1301 July\or August\or September\or October\or November\or 1302 December\fi~\@acmYear}</pre>
<code>\acmPrice</code>	<p>The price</p> <pre>1303 \def\acmPrice#1{\def\@acmPrice{#1}} 1304 \acmPrice{15.00}</pre>
<code>\acmSubmissionID</code>	<p>The submission ID</p> <pre>1305 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}} 1306 \acmSubmissionID{}</pre>
<code>\acmISBN</code>	<p>The book ISBN</p> <pre>1307 \def\acmISBN#1{\def\@acmISBN{#1}} 1308 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}</pre>
<code>\acmDOI</code>	<p>The paper DOI</p> <pre>1309 \def\acmDOI#1{\def\@acmDOI{#1}} 1310 \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>1311 \newif\if@ACM@badge 1312 \@ACM@badgefalse</pre>
<code>\@ACM@badge@width</code>	<p>The width of the badge</p> <pre>1313 \newlength\@ACM@badge@width 1314 \setlength\@ACM@badge@width{5pc}</pre>
<code>\@ACM@title@width</code>	<p>The width of the badge</p> <pre>1315 \newlength\@ACM@title@width</pre>

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

```

1316 \newlength\ACM@badge@skip
1317 \setlength\ACM@badge@skip{1pc}

```

`\acmBadgeR` Setting the right badge

```

1318 \newcommand\acmBadgeR[2][\ACM@badgetrue
1319   \def\acmBadgeR@url{#1}%
1320   \def\acmBadgeR@image{#2}}
1321 \def\acmBadgeR@url{}
1322 \def\acmBadgeR@image{}

```

`\acmBadgeL` Setting the left badge

```

1323 \newcommand\acmBadgeL[2][\ACM@badgetrue
1324   \def\acmBadgeL@url{#1}%
1325   \def\acmBadgeL@image{#2}}
1326 \def\acmBadgeL@url{}
1327 \def\acmBadgeL@image{}

```

`\startPage` The start page of the paper

```

1328 \def\startPage#1{\def\startPage{#1}}
1329 \startPage{}

```

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

```

1330 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1331   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.

```

1332 \def\keywords#1{\def\keywords{#1}}
1333 \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

```

1334 \renewenvironment{abstract}{\Collect@Body\saveabstract}{}

```

`\@saveabstract` And saving the abstract

```

1335 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
1336 \@saveabstract{}

```

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

```

1337 \long\def\@empty{}

```

`\ifACM@printccs` Whether to print CCS

```

1338 \define@boolkey+{\ACM@topmatter@}{\ACM@}{printccs}[true]{%
1339   \ifACM@printccs
1340     \ClassInfo{\@classname}{Printing CCS}%
1341   \else
1342     \ClassInfo{\@classname}{Suppressing CCS}%
1343   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

```

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

```

1344 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1345   \if@ACM@printacmref
1346     \ClassInfo{\@classname}{Printing bibformat}%
1347   \else
1348     \ClassInfo{\@classname}{Suppressing bibformat}%
1349 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

```

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

```

1350 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1351   \if@ACM@printfolios
1352     \ClassInfo{\@classname}{Printing folios}%
1353   \else
1354     \ClassInfo{\@classname}{Suppressing folios}%
1355 \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.

```

1356 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorssperrow}[0]{%
1357   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorssperrow to
1358     #1}}{\ClassWarning{\@classname}{The parameter authorssperrow must be
1359     numerical. Ignoring the input #1}}\gdef\@ACM@authorssperrow{0}}

```

`\settopmatter` The usual syntactic sugar

```

1360 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

```

Now the settings

```

1361 \settopmatter{printccs=true, printacmref=true}
1362 \if@ACM@manuscript
1363   \settopmatter{printfolios=true}
1364 \else
1365   \if@ACM@journal
1366     \settopmatter{printfolios=true}
1367   \else
1368     \settopmatter{printfolios=false}
1369   \fi
1370 \fi
1371 \settopmatter{authorssperrow=0}

```

`\@received` The container for the paper history

```

1372 \def\@received{}

```

`\received` The `\received` command

```

1373 \newcommand\received[2][\def\@tempa{#1}%
1374   \ifx\@tempa\empty
1375     \ifx\@received\empty
1376       \gdef\@received{Received #2}%
1377     \else
1378       \g@addto@macro{\@received}{; revised #2}%
1379     \fi

```



```

1380 \else
1381   \ifx\@received\@empty
1382     \gdef\@received{#1 #2}%
1383   \else
1384     \g@addto@macro{\@received}{; #1 #2}%
1385   \fi
1386 \fi}
1387 \AtEndDocument{%
1388   \ifx\@received\@empty\else
1389     \par\bigskip\noindent\small\normalfont\@received\par
1390   \fi}

```

3.13 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1391 \RequirePackage{comment}
1392 \excludecomment{CCSXML}

```

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

```

1393 \let\@concepts\@empty
1394 \newcounter{@concepts}

```

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

```

1395 \newcommand\ccsdesc[2][100]{%
1396   \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!

```

1397 \RequirePackage{textcomp}
1398 \def\ccsdesc@parse#1~#2~#3~{%
1399   \stepcounter{@concepts}%
1400   \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1401     \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1402       \textbf{#2}}}%
1403   \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
1404   \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1405   \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1406     \csname CCS@Punctuation@#2\endcsname
1407     \csname CCS@Specific@#2\endcsname}%
1408   \fi
1409   \ifx#3\relax\relax\else
1410     \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1411       \textrightarrow\ }%
1412     \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1413       \addtocounter{@concepts}{-1}%
1414       \ifnum#1>499\textbf{#3}\else
1415       \ifnum#1>299\textit{#3}\else
1416       #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1417   \fi

```

```

1418 \ccsdesc@parse@finish}

\ccdesc@parse@finish  Gobble everything to \ccsdesc@parse@end
1419 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}

```

3.14 Copyright system

This is from acmcopyright.sty

```

\if@printcopyright  Whether to print a copyright symbol
1420 \newif\if@printcopyright
1421 \@printcopyrighttrue

\if@printpermission  Whether to print the permission block
1422 \newif\if@printpermission
1423 \@printpermissiontrue

\if@acmowned  Whether the ACM owns the rights to the paper
1424 \newif\if@acmowned
1425 \@acmownedtrue

  Keys:
1426 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1427   \acm@copyrightinput\acm@copyrightmode]{none,%
1428     acmcopyright,acmlicensed,rightsretained,%
1429     usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1430     licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1431     iw3c2w3,iw3c2w3g}{%
1432   \@printpermissiontrue
1433   \@printcopyrighttrue
1434   \@acmownedtrue
1435   \ifnum\acm@copyrightmode=0\relax % none
1436     \@printpermissionfalse
1437     \@printcopyrightfalse
1438     \@acmownedfalse
1439   \fi
1440   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1441     \@acmownedfalse
1442   \fi
1443   \ifnum\acm@copyrightmode=3\relax % rightsretained
1444     \@acmownedfalse
1445     \AtBeginDocument{\acmPrice{}}%
1446   \fi
1447   \ifnum\acm@copyrightmode=4\relax % usgov
1448     \@printpermissiontrue
1449     \@printcopyrightfalse
1450     \@acmownedfalse
1451     \AtBeginDocument{\acmPrice{}}%
1452   \fi

```

```

1453 \ifnum\acm@copyrightmode=6\relax % cagov
1454 \@acmownedfalse
1455 \fi
1456 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1457 \@acmownedfalse
1458 \fi
1459 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1460 \@acmownedfalse
1461 \fi
1462 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1463 \@acmownedfalse
1464 \fi
1465 \ifnum\acm@copyrightmode=11\relax % othergov
1466 \@acmownedtrue
1467 \fi
1468 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1469 \@acmownedfalse
1470 \fi
1471 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1472 \@acmownedfalse
1473 \AtBeginDocument{\acmPrice{}}%
1474 \fi
1475 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1476 \@acmownedfalse
1477 \AtBeginDocument{\acmPrice{}}%
1478 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1479 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1480 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1481 \def\@copyrightowner{%
1482 \ifcase\acm@copyrightmode\relax % none
1483 \or % acmcopyright
1484 Association for Computing Machinery.
1485 \or % acmlicensed
1486 Copyright held by the owner/author(s). Publication rights licensed to
1487 ACM\@.
1488 \or % rightsretained
1489 Copyright held by the owner/author(s).
1490 \or % usgov
1491 \or % usgovmixed
1492 Association for Computing Machinery.
1493 \or % cagov
1494 Crown in Right of Canada.
1495 \or %cagovmixed
1496 Association for Computing Machinery.
1497 \or %licensedusgovmixed
1498 Copyright held by the owner/author(s). Publication rights licensed to

```

```

1499 ACM\@.
1500 \or % licensedcagov
1501 Crown in Right of Canada. Publication rights licensed to
1502 ACM\@.
1503 \or %licensedcagovmixed
1504 Copyright held by the owner/author(s). Publication rights licensed to
1505 ACM\@.
1506 \or % othergov
1507 Association for Computing Machinery.
1508 \or % licensedothergov
1509 Copyright held by the owner/author(s). Publication rights licensed to
1510 ACM\@.
1511 \or % ic2w3www
1512 IW3C2 (International World Wide Web Conference Committee), published
1513 under Creative Commons CC-BY~4.0 License.
1514 \or % ic2w3wwwgoogle
1515 IW3C2 (International World Wide Web Conference Committee), published
1516 under Creative Commons CC-BY-NC-ND~4.0 License.
1517 \fi}

```

\@formatdoi Print a clickable DOI

```

1518 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1519 \def\@copyrightpermission{%
1520 \ifcase\acm@copyrightmode\relax % none
1521 \or % acmcopyright
1522 Permission to make digital or hard copies of all or part of this
1523 work for personal or classroom use is granted without fee provided
1524 that copies are not made or distributed for profit or commercial
1525 advantage and that copies bear this notice and the full citation on
1526 the first page. Copyrights for components of this work owned by
1527 others than ACM must be honored. Abstracting with credit is
1528 permitted. To copy otherwise, or republish, to post on servers or to
1529 redistribute to lists, requires prior specific permission
1530 and\hspace*{.5pt}/or a fee. Request permissions from
1531 permissions@acm.org.
1532 \or % acmlicensed
1533 Permission to make digital or hard copies of all or part of this
1534 work for personal or classroom use is granted without fee provided
1535 that copies are not made or distributed for profit or commercial
1536 advantage and that copies bear this notice and the full citation on
1537 the first page. Copyrights for components of this work owned by
1538 others than the author(s) must be honored. Abstracting with credit
1539 is permitted. To copy otherwise, or republish, to post on servers
1540 or to redistribute to lists, requires prior specific permission
1541 and\hspace*{.5pt}/or a fee. Request permissions from
1542 permissions@acm.org.
1543 \or % rightsretained
1544 Permission to make digital or hard copies of part or all of this work

```

1545 for personal or classroom use is granted without fee provided that
 1546 copies are not made or distributed for profit or commercial advantage
 1547 and that copies bear this notice and the full citation on the first
 1548 page. Copyrights for third-party components of this work must be
 1549 honored. For all other uses, contact the
 1550 owner\hspace*{.5pt}/author(s).
 1551 \or % usgov
 1552 This paper is authored by an employee(s) of the United States
 1553 Government and is in the public domain. Non-exclusive copying or
 1554 redistribution is allowed, provided that the article citation is
 1555 given and the authors and agency are clearly identified as its
 1556 source.
 1557 \or % usgovmixed
 1558 ACM acknowledges that this contribution was authored or co-authored
 1559 by an employee, contractor, or affiliate of the United States government. As such,
 1560 the United States government retains a nonexclusive, royalty-free right to
 1561 publish or reproduce this article, or to allow others to do so, for
 1562 government purposes only.
 1563 \or % cagov
 1564 This article was authored by employees of the Government of Canada.
 1565 As such, the Canadian government retains all interest in the
 1566 copyright to this work and grants to ACM a nonexclusive,
 1567 royalty-free right to publish or reproduce this article, or to allow
 1568 others to do so, provided that clear attribution is given both to
 1569 the authors and the Canadian government agency employing them.
 1570 Permission to make digital or hard copies for personal or classroom
 1571 use is granted. Copies must bear this notice and the full citation
 1572 on the first page. Copyrights for components of this work owned by
 1573 others than the Canadian Government must be honored. To copy
 1574 otherwise, distribute, republish, or post, requires prior specific
 1575 permission and\hspace*{.5pt}/or a fee. Request permissions from
 1576 permissions@acm.org.
 1577 \or % cagovmixed
 1578 ACM acknowledges that this contribution was co-authored by an
 1579 affiliate of the national government of Canada. As such, the Crown
 1580 in Right of Canada retains an equal interest in the copyright.
 1581 Reprints must include clear attribution to ACM and the author's
 1582 government agency affiliation. Permission to make digital or hard
 1583 copies for personal or classroom use is granted. Copies must bear
 1584 this notice and the full citation on the first page. Copyrights for
 1585 components of this work owned by others than ACM must be honored.
 1586 To copy otherwise, distribute, republish, or post, requires prior
 1587 specific permission and\hspace*{.5pt}/or a fee. Request permissions
 1588 from permissions@acm.org.
 1589 \or % licensedusgovmixed
 1590 Publication rights licensed to ACM\@. ACM acknowledges that this
 1591 contribution was authored or co-authored by an employee, contractor
 1592 or affiliate of the United States government. As such, the
 1593 Government retains a nonexclusive, royalty-free right to publish or
 1594 reproduce this article, or to allow others to do so, for Government

1595 purposes only.
 1596 \or % licensedcagov
 1597 This article was authored by employees of the Government of Canada.
 1598 As such, the Canadian government retains all interest in the
 1599 copyright to this work and grants to ACM a nonexclusive,
 1600 royalty-free right to publish or reproduce this article, or to allow
 1601 others to do so, provided that clear attribution is given both to
 1602 the authors and the Canadian government agency employing them.
 1603 Permission to make digital or hard copies for personal or classroom
 1604 use is granted. Copies must bear this notice and the full citation
 1605 on the first page. Copyrights for components of this work owned by
 1606 others than the Canadian Government must be honored. To copy
 1607 otherwise, distribute, republish, or post, requires prior specific
 1608 permission and\hspace*{.5pt}/or a fee. Request permissions from
 1609 permissions@acm.org.
 1610 \or % licensedcagovmixed
 1611 Publication rights licensed to ACM\@. ACM acknowledges that this
 1612 contribution was authored or co-authored by an employee, contractor
 1613 or affiliate of the national government of Canada. As such, the
 1614 Government retains a nonexclusive, royalty-free right to publish or
 1615 reproduce this article, or to allow others to do so, for Government
 1616 purposes only.
 1617 \or % othergov
 1618 ACM acknowledges that this contribution was authored or co-authored
 1619 by an employee, contractor or affiliate of a national government. As
 1620 such, the Government retains a nonexclusive, royalty-free right to
 1621 publish or reproduce this article, or to allow others to do so, for
 1622 Government purposes only.
 1623 \or % licensedothergov
 1624 Publication rights licensed to ACM\@. ACM acknowledges that this
 1625 contribution was authored or co-authored by an employee, contractor
 1626 or affiliate of a national government. As such, the Government
 1627 retains a nonexclusive, royalty-free right to publish or reproduce
 1628 this article, or to allow others to do so, for Government purposes
 1629 only.
 1630 \or % iw3c2w3
 1631 This paper is published under the Creative Commons Attribution~4.0
 1632 International (CC-BY~4.0) license. Authors reserve their rights to
 1633 disseminate the work on their personal and corporate Web sites with
 1634 the appropriate attribution.
 1635 \or % iw3c2w3g
 1636 This paper is published under the Creative Commons
 1637 Attribution-NonCommercial-NoDerivs~4.0 International
 1638 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
 1639 disseminate the work on their personal and corporate Web sites with
 1640 the appropriate attribution.
 1641 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
 1642 \def\copyrightyear#1{\def\@copyrightyear{#1}}

```

1643 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container
1644 \def\@teaserfigures{}

teaserfigure The teaser figure
1645 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
1646 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}%

\thanks We redefine amsart \thanks so the anonymous key works
1647 \renewcommand{\thanks}[1]{%
1648   \ifnotempty{#1}{%
1649     \if@ACM@anonymous
1650       \g@addto@macro\thankses{\thanks{A note}}%
1651     \else
1652       \g@addto@macro\thankses{\thanks{#1}}%
1653     \fi}}

```

3.15 Typesetting top matter

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

```

1654 \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.

```

1655 \def\maketitle{%
1656   \if@ACM@anonymous
1657     % Anonymize omission of \author-s
1658     \ifnum\@authorgroups=0\author{}\fi
1659   \fi
1660   \begingroup
1661   \let\@vspace\@vspace@orig
1662   \let\@vspacer\@vspacer@orig
1663   \let\@footnotemark\@footnotemark@nolink
1664   \let\@footnotetext\@footnotetext@nolink
1665   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1666   \hsize=\textwidth
1667   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1668   \@mktitle\if@ACM@sigchiamode\else\@mkauthors\fi\@mkteasers
1669   \@printtopmatter
1670   \if@ACM@sigchiamode\@mkauthors\fi

```

```

1671 \setcounter{footnote}{0}%
1672 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1673 \@titlenotes
1674 \@subtitlenotes
1675 \@authornotes
1676 \let\@makefnmark\relax
1677 \let\@thefnmark\relax
1678 \let\@makefntext\noindent
1679 \ifx\@empty\thankses\else
1680   \footnotetextauthorsaddresses{%
1681     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1682   \fi
1683 \ifx\@empty\@authorsaddresses\else
1684   \if@ACM@anonymous\else
1685     \if@ACM@journal@bibstrip
1686       \footnotetextauthorsaddresses{%
1687         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1688       \fi
1689     \fi
1690   \fi
1691 \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1692   \if@ACM@authordraft
1693     \raisebox{-2ex}{\z@\z@{\makebox[0pt][l]{\large\bfseries
1694       Unpublished working draft. Not for distribution.}}}%
1695     \color[gray]{0.9}%
1696   \fi
1697   \parindent\z@\parskip0.1\baselineskip
1698   \if@ACM@authorversion\else
1699     \if@printpermission\@copyrightpermission\par\fi
1700   \fi
1701   \if@ACM@manuscript\else
1702     \if@ACM@journal@bibstrip\else % Print the conference information
1703     {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1704     \fi
1705   \fi
1706   \if@printcopyright
1707     \copyright\ \@copyrightyear\ \@copyrightowner\
1708   \else
1709     \@copyrightyear.\
1710   \fi
1711   \if@ACM@manuscript
1712     Manuscript submitted to ACM\
1713   \else
1714     \if@ACM@authorversion
1715       This is the author's version of the work. It is posted here for
1716       your personal use. Not for redistribution. The definitive Version
1717       of Record was published in
1718       \if@ACM@journal@bibstrip
1719         \emph{\@journalName}%
1720       \else

```



```

1721         \emph{\@acmBooktitle}%
1722     \fi
1723     \ifx\@acmDOI\@empty
1724     .
1725     \else
1726     , \@formatdoi{\@acmDOI}.
1727     \fi\\
1728 \else
1729     \if@ACM@nonacm\else
1730     \if@ACM@journal@bibstrip
1731     \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1732     \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\\
1733     \@formatdoi{\@acmDOI}%
1734     \else % Conference
1735     \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1736     \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\fi
1737     \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1738     \fi
1739     \fi
1740 \fi
1741 \fi}
1742 \fi
1743 \endgroup
1744 \setcounter{footnote}{0}%
1745 \@mkabstract
1746 \if@ACM@printccs
1747 \ifx\@concepts\@empty\else\bgroup
1748     {\@specialsection{CCS Concepts}}%
1749     \@concepts\par\egroup
1750 \fi
1751 \fi
1752 \ifx\@keywords\@empty\else\bgroup
1753     {\if@ACM@journal
1754     \@specialsection{Additional Key Words and Phrases}}%
1755     \else
1756     \@specialsection{Keywords}}%
1757     \fi
1758     \@keywords\par\egroup
1759 \fi
1760 \andify\authors
1761 \andify\shortauthors
1762 \global\let\authors=\authors
1763 \global\let\shortauthors=\shortauthors
1764 \if@ACM@printacmref
1765     \@mkbibcitation
1766 \fi
1767 \hypersetup{%
1768     pdfauthor={\authors},
1769     pdftitle={\@title},
1770     pdfsubject={\@concepts},

```

```

1771 pdfkeywords={\@keywords},
1772 pdfcreator={LaTeX with acmart
1773   \csname ver@acmart.cls\endcsname\space
1774   and hyperref
1775   \csname ver@hyperref.sty\endcsname}}%
1776 \global\@topnum\z@ % this prevents floats from falling
1777   % at the top of page 1
1778 \global\@botnum\z@ % we do not want them to be on the bottom either
1779 \@printendtopmatter
1780 \@afterindentfalse
1781 \@afterheading
1782 }

```

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

```

1783 \def\@specialsection#1{%
1784   \ifcase\ACM@format@nr
1785     \relax % manuscript
1786     \par\medskip\small\noindent#1: %
1787   \or % acmsmall
1788     \par\medskip\small\noindent#1: %
1789   \or % acmlarge
1790     \par\medskip\small\noindent#1: %
1791   \or % acmtog
1792     \par\medskip\small\noindent#1: %
1793   \or % sigconf
1794     \section*{#1}%
1795   \or % siggraph
1796     \section*{#1}%
1797   \or % sigplan
1798     \paragraph*{#1}%
1799   \or % sigchi
1800     \section*{#1}%
1801   \or % sigchi-a
1802     \section*{#1}%
1803   \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.

```

1804 \def\@printtopmatter{%
1805   \ifx\@startPage\@empty
1806     \gdef\@startPage{1}%
1807   \else
1808     \setcounter{page}{\@startPage}%
1809   \fi
1810   \thispagestyle{firstpagestyle}%
1811   \noindent
1812   \ifcase\ACM@format@nr
1813     \relax % manuscript

```

```

1814 \box\mktitle@bx\par
1815 \or % acmsmall
1816 \box\mktitle@bx\par
1817 \or % acmlarge
1818 \box\mktitle@bx\par
1819 \or % acmtog
1820 \twocolumn[\box\mktitle@bx]%
1821 \or % sigconf
1822 \twocolumn[\box\mktitle@bx]%
1823 \or % siggraph
1824 \twocolumn[\box\mktitle@bx]%
1825 \or % sigplan
1826 \twocolumn[\box\mktitle@bx]%
1827 \or % sigchi
1828 \twocolumn[\box\mktitle@bx]%
1829 \or % sigchi-a
1830 \par\box\mktitle@bx\par\bigskip
1831 \if@ACM@badge
1832 \marginpar{\noindent
1833 \ifx\@acmBadgeL@image\empty\else
1834 \href{\@acmBadgeL@url}{%
1835 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1836 \hskip\@ACM@badge@skip
1837 \fi
1838 \ifx\@acmBadgeR@image\empty\else
1839 \href{\@acmBadgeR@url}{%
1840 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1841 \fi}%
1842 \fi
1843 \fi
1844 }

```

\@mktitle The title of the article

```

1845 \def\@mktitle{%
1846 \ifcase\ACM@format@nr
1847 \relax % manuscript
1848 \@mktitle@i
1849 \or % acmsmall
1850 \@mktitle@i
1851 \or % acmlarge
1852 \@mktitle@i
1853 \or % acmtog
1854 \@mktitle@i
1855 \or % sigconf
1856 \@mktitle@iii
1857 \or % siggraph
1858 \@mktitle@iii
1859 \or % sigplan
1860 \@mktitle@iii
1861 \or % sigchi

```

```

1862     \@mktitle@iii
1863     \or % sigchi-a
1864     \@mktitle@iv
1865     \fi
1866 }

\@titlefont The font to typeset the title
1867 \def\@titlefont{%
1868   \ifcase\ACM@format@nr
1869   \relax % manuscript
1870   \LARGE\sffamily\bfseries
1871   \or % acmsmall
1872   \LARGE\sffamily\bfseries
1873   \or % acmlarge
1874   \LARGE\sffamily\bfseries
1875   \or % acmtog
1876   \Huge\sffamily
1877   \or % sigconf
1878   \Huge\sffamily\bfseries
1879   \or % siggraph
1880   \Huge\sffamily\bfseries
1881   \or % sigplan
1882   \Huge\bfseries
1883   \or % sigchi
1884   \Huge\sffamily\bfseries
1885   \or % sigchi-a
1886   \Huge\bfseries
1887   \fi}

\@subtitlefont The font to typeset the subtitle
1888 \def\@subtitlefont{\normalsize
1889   \ifcase\ACM@format@nr
1890   \relax % manuscript
1891   \mdseries
1892   \or % acmsmall
1893   \mdseries
1894   \or % acmlarge
1895   \mdseries
1896   \or % acmtog
1897   \LARGE
1898   \or % sigconf
1899   \LARGE\mdseries
1900   \or % siggraph
1901   \LARGE\mdseries
1902   \or % sigplan
1903   \LARGE\mdseries
1904   \or % sigchi
1905   \LARGE\mdseries
1906   \or % sigchi-a
1907   \mdseries

```

```

1908 \fi}

\mktitle@i The version of \mktitle for most journals
1909 \def\mktitle@i{\hsize=\textwidth
1910 \ACM@title@width=\hsize
1911 \ifx\acmBadgeL@image\empty\else
1912 \advance\ACM@title@width by -\ACM@badge@width
1913 \advance\ACM@title@width by -\ACM@badge@skip
1914 \fi
1915 \ifx\acmBadgeR@image\empty\else
1916 \advance\ACM@title@width by -\ACM@badge@width
1917 \advance\ACM@title@width by -\ACM@badge@skip
1918 \fi
1919 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
1920 \ifx\acmBadgeL@image\empty\else
1921 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeL@url}{%
1922 \includegraphics[width=\ACM@badge@width]{\acmBadgeL@image}}}%
1923 \hskip\ACM@badge@skip
1924 \fi
1925 \parbox[t]{\ACM@title@width}{\raggedright
1926 \@titlefont\noindent
1927 \@title
1928 \ifx\@subtitle\empty\else
1929 \par\noindent{\@subtitlefont\@subtitle}
1930 \fi}%
1931 \ifx\acmBadgeR@image\empty\else
1932 \hskip\ACM@badge@skip
1933 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeR@url}{%
1934 \includegraphics[width=\ACM@badge@width]{\acmBadgeR@image}}}%
1935 \fi
1936 \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.
1937 \def\mktitle@iii{\hsize=\textwidth
1938 \setbox\mktitle@bx=\vbox{\@titlefont\centering
1939 \ACM@title@width=\hsize
1940 \if\ACM@badge
1941 \advance\ACM@title@width by -2\ACM@badge@width
1942 \advance\ACM@title@width by -2\ACM@badge@skip
1943 \parbox[b]{\ACM@badge@width}{\strut
1944 \ifx\acmBadgeL@image\empty\else
1945 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeL@url}{%
1946 \includegraphics[width=\ACM@badge@width]{\acmBadgeL@image}}}%
1947 \fi}%
1948 \hskip\ACM@badge@skip
1949 \fi

```

```

1950 \parbox[t]{\@ACM@title@width}{\centering\@titlefont
1951 \@title
1952 \ifx\@subtitle\@empty\else
1953 \par\noindent{\@subtitlefont\@subtitle}
1954 \fi
1955 }%
1956 \if@ACM@badge
1957 \hskip\@ACM@badge@skip
1958 \parbox[b]{\@ACM@badge@width}{\strut
1959 \ifx\@acmBadgeR@image\@empty\else
1960 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1961 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1962 \fi}%
1963 \fi
1964 \par\bigskip}}%

```

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

```

1965 \def\@mktitle@iv{\hsize=\textwidth
1966 \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1967 \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1968 \noindent\@title
1969 \ifx\@subtitle\@empty\else
1970 \par\noindent\@subtitlefont\@subtitle
1971 \fi
1972 \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.

```

1973 \newbox\@ACM@commabox
1974 \def\@ACM@addtoaddress#1{%
1975 \ifvmode\else
1976 \if@ACM@affiliation@obeypunctuation\else
1977 \setbox\@ACM@commabox=\hbox{, }%
1978 \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1979 \fi\fi
1980 #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
\city
\state
\postcode
\country

```

1981 \def\streetaddress#1{\unskip\ignorespaces}
1982 \def\postcode#1{\unskip\ignorespaces}
1983 \if@ACM@journal

```

```

1984 \def\position#1{\unskip\ignorespaces}
1985 \def\institution#1{\unskip~#1\ignorespaces}
1986 \def\city#1{\unskip\ignorespaces}
1987 \def\state#1{\unskip\ignorespaces}
1988 \newcommand\department[2][0]{\unskip\ignorespaces}
1989 \def\country#1{\if@ACM@affiliation@obexpunctuation\else, \fi#1\ignorespaces}
1990 \else
1991 \def\position#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1992 \def\institution#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1993 \newcommand\department[2][0]{\if@ACM@affiliation@obexpunctuation
1994 #2\else#2\par\fi}%
1995 % \def\streetaddress#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1996 \let\city\@ACM@addtoaddress
1997 \let\state\@ACM@addtoaddress
1998 % \def\postcode#1{\if@ACM@affiliation@obexpunctuation#1\else\unskip\space#1\fi}%
1999 \let\country\@ACM@addtoaddress
2000 \fi

```

\mkauthors Typesetting the authors

```

2001 \def\mkauthors{\begingroup
2002 \hsize=\textwidth
2003 \ifcase\ACM@format@nr
2004 \relax % manuscript
2005 \mkauthors@i
2006 \or % acmsmall
2007 \mkauthors@i
2008 \or % acmlarge
2009 \mkauthors@i
2010 \or % acmtog
2011 \mkauthors@i
2012 \or % sigconf
2013 \mkauthors@iii
2014 \or % siggraph
2015 \mkauthors@iii
2016 \or % sigplan
2017 \mkauthors@iii
2018 \or % sigchi
2019 \mkauthors@iii
2020 \or % sigchi-a
2021 \mkauthors@iv
2022 \fi
2023 \endgroup
2024 }

```

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

```

2025 \def\authorfont{\Large\sffamily}

```

\affiliationfont Font for affiliations

```

2026 \def\affiliationfont{\normalsize\normalfont}

```

Adjusting fonts for different formats

```

2027 \ifcase\ACM@format@nr
2028 \relax % manuscript
2029 \or % acmsmall
2030   \def\@authorfont{\large\sffamily}
2031   \def\@affiliationfont{\small\normalfont}
2032 \or % acmlarge
2033 \or % acmtog
2034   \def\@authorfont{\LARGE\sffamily}
2035   \def\@affiliationfont{\large}
2036 \or % sigconf
2037   \def\@authorfont{\LARGE}
2038   \def\@affiliationfont{\large}
2039 \or % siggraph
2040   \def\@authorfont{\normalsize\normalfont}
2041   \def\@affiliationfont{\normalsize\normalfont}
2042 \or % sigplan
2043   \def\@authorfont{\Large\normalfont}
2044   \def\@affiliationfont{\normalsize\normalfont}
2045 \or % sigchi
2046   \def\@authorfont{\bfseries}
2047   \def\@affiliationfont{\mdseries}
2048 \or % sigchi-a
2049   \def\@authorfont{\bfseries}
2050   \def\@affiliationfont{\mdseries}
2051 \fi

```

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

```

2052 \def\@typeset@author@line{%
2053   \andify\@currentauthors\par\noindent
2054   \@currentauthors\def\@currentauthors{}%
2055   \ifx\@currentaffiliations\@empty\else
2056     \andify\@currentaffiliations
2057     \unskip, {\@currentaffiliations}\par
2058   \fi
2059   \def\@currentaffiliations{}}

```

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

```

2060 \def\@mkauthors@i{%
2061   \def\@currentauthors{}%
2062   \def\@currentaffiliations{}%
2063   \global\let\and\@typeset@author@line
2064   \def\@author##1{%
2065     \ifx\@currentauthors\@empty
2066       \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2067     \else
2068       \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%

```



```

2069 \fi
2070 \gdef\and{}}%
2071 \def\email##1##2{%
2072 \def\affiliation##1##2{%
2073 \def\@tempa{##2}\ifx\@tempa\@empty\else
2074 \ifx\@currentaffiliations\@empty
2075 \gdef\@currentaffiliations{%
2076 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2077 \setkeys{@ACM@affiliation@}{##1}%
2078 \@affiliationfont##2}%
2079 \else
2080 \g@addto@macro{\@currentaffiliations}{\and
2081 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2082 \setkeys{@ACM@affiliation@}{##1}##2}%
2083 \fi
2084 \fi
2085 \global\let\and\@typeset@author@line}%
2086 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
2087 \noindent\addresses\@typeset@author@line
2088 \par\medskip}%
2089 }

```

`\@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

```
2090 \newbox\author@bx
```

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

```
2091 \newdimen\author@bx@wd
```

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

```
2092 \newskip\author@bx@sep
2093 \author@bx@sep=1pc\relax
```

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

```

2094 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
2095 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2096 \authorfont\@currentauthors\par\@affiliationfont
2097 \@currentaffiliation}\egroup
2098 \box\author@bx\hspace{\author@bx@sep}%
2099 \gdef\@currentauthors{}}%
2100 \gdef\@currentaffiliation{}}

```

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

```
2101 \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.

```

2102 \author@bx@wd=\textwidth\relax
2103 \advance\author@bx@wd by -\author@bx@sep\relax
2104 \ifnum\@ACM@authorsperrow>0\relax
2105   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2106 \else
2107   \ifcase\num@authorgroups
2108     \relax % 0?
2109     \or % 1=one author per row
2110     \or % 2=two authors per row
2111       \divide\author@bx@wd by \num@authorgroups\relax
2112     \or % 3=three authors per row
2113       \divide\author@bx@wd by \num@authorgroups\relax
2114     \or % 4=two authors per row (!)
2115       \divide\author@bx@wd by 2\relax
2116   \else % three authors per row
2117     \divide\author@bx@wd by 3\relax
2118   \fi
2119 \fi
2120 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2121 \gdef\@currentauthors{}%
2122 \gdef\@currentaffiliation{}%
2123 \def\@author##1{\ifx\@currentauthors\@empty
2124   \gdef\@currentauthors{\par##1}%
2125 \else
2126   \g@addto@macro\@currentauthors{\par##1}%
2127 \fi
2128 \gdef\and{}}%
2129 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2130   \gdef\@currentaffiliation{\bgroup
2131     \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2132 \else
2133   \g@addto@macro\@currentaffiliation{\par\bgroup
2134     \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2135 \fi}%
2136 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2137   \gdef\@currentaffiliation{%
2138     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2139     \setkeys{@ACM@affiliation@}{##1}##2}%
2140 \else
2141   \g@addto@macro\@currentaffiliation{\par
2142     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2143     \setkeys{@ACM@affiliation@}{##1}##2}%
2144 \fi
2145 \global\let\and\@typeset@author@bx
2146 }%

```

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

```

2147 \hsize=\textwidth
2148 \global\setbox\mktitle@bx=\vbox{\noindent
2149   \box\mktitle@bx\par\medskip\leavevmode
2150   \lineskip=1pc\relax\centering\hspace*{-1em}%
2151   \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.

```

2152 \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.

```

2153 \author@bx@wd=\columnwidth\relax
2154 \advance\author@bx@wd by -\author@bx@sep\relax
2155 \ifnum\@ACM@authorsperrow>0\relax
2156   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2157 \else
2158   \ifcase\@num@authorgroups
2159     \relax % 0?
2160   \or % 1=one author per row
2161     \else % 2=two authors per row
2162       \divide\author@bx@wd by 2\relax
2163   \fi
2164 \fi
2165 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of `\addresses`:

```

2166 \gdef\@currentauthors{}%
2167 \gdef\@currentaffiliation{}%
2168 \def\@author##1{\ifx\@currentauthors\@empty
2169   \gdef\@currentauthors{\par##1}%
2170 \else
2171   \g@addto@macro\@currentauthors{\par##1}%
2172 \fi
2173 \gdef\and{}}%
2174 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2175   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2176 \else
2177   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2178 \fi}%
2179 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2180   \gdef\@currentaffiliation{%
2181     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2182     \setkeys{@ACM@affiliation@}{##1}##2}%
2183 \else
2184   \g@addto@macro\@currentaffiliation{\par
2185     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%

```

```

2186     \setkeys{@ACM@affiliation@}{##1}##2}%
2187 \fi
2188 \global\let\and\@typeset@author@bx}%
2189 %

```

Actual typesetting is done by the \and macro

```

2190     \bgroup\hsize=\columnwidth
2191     \par\raggedright\leftskip=\z@
2192     \lineskip=1pc\noindent
2193     \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2194 \def\mkauthorsaddresses{%
2195   \ifnum\num@authors>1\relax
2196   Authors' \else Author's \fi
2197   \ifnum\num@authorgroups>1\relax
2198   addresses: \else address: \fi
2199   \bgroup
2200   \def\streetaddress##1{\unskip\@addpunct, ##1}%
2201   \def\postcode##1{\unskip\@addpunct, ##1}%
2202   \def\position##1{\unskip\ignorespaces}%
2203   \def\institution##1{\unskip\@addpunct, ##1}%
2204   \def\city##1{\unskip\@addpunct, ##1}%
2205   \def\state##1{\unskip\@addpunct, ##1}%
2206   \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2207   \def\country##1{\unskip\@addpunct, ##1}%
2208   \def\and{\unskip\@addpunct; }%
2209   \def\@author##1{##1}%
2210   \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
2211   \addresses
2212   \egroup}

```

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

```

2213 \def\@setaddresses{}

```

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

```

2214 \def\@authornotemark{\g@addto@macro\currentauthors{\footnotemark\relax}}

```

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

```

2215 \def\@@authornotemark#1{\g@addto@macro\currentauthors{\footnotemark[#1]}}

```

\mkteasers Typesetting the teasers

```

2216 \def\mkteasers{%
2217   \ifx\@teaserfigures\@empty\else
2218     \def\@teaser##1{\par\bigskip\bgroup
2219       \captionsetup{type=figure}##1\egroup\par}
2220     \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2221       \noindent\@Description@presentfalse
2222       \@teaserfigures\par\if@Description@present\else

```

```

2223         \global\@undescribed@imagestrue
2224         \ClassWarning{\@classname}{A possible image without
2225             description}\fi
2226     \medskip}%
2227 \fi}

\@mkabstract Typesetting the abstract
2228 \def\@mkabstract{\bgroup
2229     \ifx\@abstract\@empty\else
2230     {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2231         \if@ACM@journal
2232             \everypar{\setbox\z@\lastbox\everypar{}}\small
2233         \else
2234             \section*\@abstractname}%
2235         \fi
2236     \ignorespaces\@abstract\par}%
2237 \fi\egroup}

\@mkbibcitation Print the bibcitation format
2238 \def\@mkbibcitation{\bgroup
2239     \let\@vspace\@vspace@orig
2240     \let\@vspacer\@vspacer@orig
2241     \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2242     \def\footnotemark{}%
2243     \def\@unskip{\ignorespaces}%
2244     \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2245         inside a \string\title{} or \string\author{} command! Use
2246         \string\titlenote{} or \string\authornote{} instead!}}%
2247     \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2248         Article~\@acmArticle\ } \fi}%
2249     \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2250     \noindent\bgroup
2251     \def\@unskip{\ignorespaces}\authors\egroup. \@acmYear. \@title
2252     \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2253     \if@ACM@nonacm\else
2254         % The 'nonacm' option disables 'printacmref' by default,
2255         % and the present \@mkbibcitation definition is never used
2256         % in this case. The conditional remains useful if the user
2257         % explicitly sets \settopmatter{printacmref=true}.
2258         \if@ACM@journal@bibstrip
2259             \textit{\@journalNameShort}
2260             \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2261             \ref{TotPages}~\@pages@word.
2262         \else
2263             In \textit{\@acmBooktitle}%
2264             \ifx\@acmEditors\@empty\textit{.}\else
2265                 \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2266             \fi\
2267             ACM, New York, NY, USA%
2268             \@article@string\unskip, \ref{TotPages}~\@pages@word.

```

```

2269 \fi
2270 \fi
2271 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2272 \par\egroup}

```

\@printendtopmatter End the top matter

```

2273 \def\@printendtopmatter{\bgroup
2274 \let\@vspace\@vspace@orig
2275 \let\@vspacer\@vspacer@orig
2276 \par\bigskip
2277 \egroup}

```

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

```

2278 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

\@setauthorsaddresses

```

2279 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

3.16 Headers and Footers

We use fancyhdr for our headers and footers:

```

2280 \RequirePackage{fancyhdr}

```

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

```

2281 \let\ACM@ps@plain\ps@plain
2282 \let\ACM@ps@myheadings\ps@myheadings
2283 \let\ACM@ps@headings\ps@headings
2284 \def\ACM@restore@pagestyle{%
2285 \let\ps@plain\ACM@ps@plain
2286 \let\ps@myheadings\ACM@ps@myheadings
2287 \let\ps@headings\ACM@ps@headings}
2288 \AtBeginDocument{\ACM@restore@pagestyle}

```

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

```

2289 \if@ACM@review
2290 \newsavebox{\ACM@linecount@bx}
2291 \newlength\ACM@linecount@bxht
2292 \newcount\ACM@linecount
2293 \ACM@linecount\@ne\relax
2294 \def\ACM@mk@linecount{%
2295 \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
2296 \setlength{\ACM@linecount@bxht}{0pt}%
2297 \loop{\color{red}\scriptsize\the\ACM@linecount}\@
2298 \global\advance\ACM@linecount by \@ne
2299 \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2300 \ifdim\ACM@linecount@bxht<\textheight\repeat
2301 {\color{red}\scriptsize\the\ACM@linecount}\hfill
2302 \global\advance\ACM@linecount by \@ne}}
2303 \fi

```

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

```

2304 \def\ACM@linecountL{%
2305   \if@ACM@review
2306     \ACM@mk@linecount
2307     \begin{picture}(0,0)%
2308       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2309     \end{picture}%
2310   \fi}

```

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

```

2311 \def\ACM@linecountR{%
2312   \if@ACM@review
2313     \ACM@mk@linecount
2314     \begin{picture}(0,0)%
2315       \put(20,-22){\usebox{\ACM@linecount@bx}}%
2316     \end{picture}%
2317   \fi}

```

`\ACM@timestamp` The timestamp system

```

2318 \if@ACM@timestamp
2319   % Subtracting 30 from \time gives us the effect of rounding down despite
2320   % \numexpr rounding to nearest
2321   \newcounter{ACM@time@hours}
2322   \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2323   \newcounter{ACM@time@minutes}
2324   \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2325   \newcommand\ACM@timestamp{%
2326     \footnotesize%
2327     \ifx\@acmSubmissionID\@empty\relax\else
2328       Submission ID: \@acmSubmissionID.{ }%
2329     \fi
2330     \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2331     \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2332     Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2333   }
2334 \fi

```

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

```

2335 \def\@shortauthors{%
2336   \if@ACM@anonymous
2337     Anon.
2338     \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2339   \else\shortauthors\fi}

```

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

```

2340 \def\@headfootfont{\sffamily}

```

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

```

2341 \AtBeginDocument{%
2342 \fancypagestyle{standardpagestyle}{%
2343   \fancyhf{}%
2344   \renewcommand{\headrulewidth}{\z@}%
2345   \renewcommand{\footrulewidth}{\z@}%
2346   \def\@acmArticlePage{%
2347     \ifx\@acmArticle\empty%
2348       \if@ACM@printfolios\thepage\fi%
2349     \else%
2350       \@acmArticle\if@ACM@printfolios:\thepage\fi%
2351     \fi%
2352   }%
2353   \if@ACM@journal@bibstrip
2354     \ifcase\ACM@format@nr
2355       \relax % manuscript
2356       \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2357       \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2358       \fancyhead[RE]{\@shortauthors}%
2359       \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2360       \if@ACM@nonacm\else%
2361         \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
2362       \fi%
2363     \or % acmsmall
2364       \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2365       \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2366       \fancyhead[RE]{\@headfootfont\@shortauthors}%
2367       \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2368       \if@ACM@nonacm\else%
2369         \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2370           \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2371       \fi
2372     \or % acmlarge
2373       \fancyhead[LE]{\ACM@linecountL\@headfootfont
2374         \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2375       \fancyhead[LO]{\ACM@linecountL}%
2376       \fancyhead[RO]{\@headfootfont
2377         \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2378       \if@ACM@nonacm\else%
2379         \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2380           \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2381       \fi
2382     \or % acmtog
2383       \fancyhead[LE]{\ACM@linecountL\@headfootfont
2384         \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2385       \fancyhead[LO]{\ACM@linecountL}%
2386       \fancyhead[RE]{\ACM@linecountR}%
2387       \fancyhead[RO]{\@headfootfont
2388         \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2389       \if@ACM@nonacm\else%
2390         \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.

```



```

2391      \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2392      \fi
2393  \else % Proceedings
2394      \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2395      \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2396      \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2397      \if@ACM@nonacm\else%
2398          \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
2399              \acmConference@date, \acmConference@venue}%
2400          \fancyhead[RO]{\@headfootfont\acmConference@shortname,
2401              \acmConference@date, \acmConference@venue\ACM@linecountR}%
2402      \fi
2403  \fi
2404  \else % Proceedings
2405      \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2406      \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2407      \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2408      \if@ACM@nonacm\else%
2409          \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
2410              \acmConference@date, \acmConference@venue}%
2411          \fancyhead[RO]{\@headfootfont\acmConference@shortname,
2412              \acmConference@date, \acmConference@venue\ACM@linecountR}%
2413      \fi
2414  \fi
2415  \if@ACM@sigchiamode
2416      \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
2417  \fi
2418  \if@ACM@timestamp
2419      \fancyfoot[LO,RE]{\ACM@timestamp}
2420  \fi
2421 }%
2422 \pagestyle{standardpagestyle}
2423 }

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht
\@folio@voffset
\@folio@max
2424 \newdimen\@folio@wd
2425 \@folio@wd=\z@
2426 \newdimen\@folio@ht
2427 \@folio@ht=\z@
2428 \newdimen\@folio@voffset
2429 \@folio@voffset=\z@
2430 \def\@folio@max{1}
2431 \ifcase\ACM@format@nr
2432 \relax % manuscript
2433 \or % acmsmall
2434     \@folio@wd=45.75pt\relax
2435     \@folio@ht=1.25in\relax
2436     \@folio@voffset=.2in\relax
2437     \def\@folio@max{8}
2438 \or % acmlarge

```

```

2439 \@folio@wd=43.25pt\relax
2440 \@folio@ht=79pt\relax
2441 \@folio@voffset=.55in\relax
2442 \def\@folio@max{10}
2443 \fi

```

\@folioblob The macro to typeset the folio blob.

```

2444 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2445 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2446 \loop
2447 \ifnum\@tempcnta>\@folio@max\relax
2448 \advance\@tempcnta by - \@folio@max
2449 \repeat
2450 \advance\@tempcnta by -1\relax
2451 \@tempdima=\@folio@ht\relax
2452 \multiply\@tempdima by \the\@tempcnta\relax
2453 \advance\@tempdima by -\@folio@voffset\relax
2454 \begin{picture}(0,0)
2455 \makebox[\z@]{\raisebox{-\@tempdima}{%
2456 \rlap{%
2457 \raisebox{-0.45\@folio@ht}{\z@}{\z@}{%
2458 \rule{\@folio@wd}{\@folio@ht}}}%
2459 \parbox{\@folio@wd}{%
2460 \centering
2461 \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}%
2462 \end{picture}\fi}
2463

```

firstpagestyle The page style for the first page only.

```

2464 \AtBeginDocument{%
2465 \fancypagestyle{firstpagestyle}{%
2466 \fancyhf{}%
2467 \renewcommand{\headrulewidth}{\z@}%
2468 \renewcommand{\footrulewidth}{\z@}%
2469 \if@ACM@journal@bibstrip
2470 \ifcase\ACM@format@nr
2471 \relax % manuscript
2472 \fancyhead[L]{\ACM@linecountL}%
2473 \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
2474 \if@ACM@nonacm\else%
2475 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2476 \fi%
2477 \or % acmsmall
2478 \if@ACM@nonacm\else%
2479 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2480 \@acmNumber, Article \@acmArticle. Publication date:
2481 \@acmPubDate.}%
2482 \fi%

```

```

2483 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2484 \fancyhead[LO]{\ACM@linecountL}%
2485 \fancyhead[RO]{\@folioblob}%
2486 \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
2487 \or % acmlarge
2488 \if@ACM@nonacm\else%
2489 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2490 \@acmNumber, Article \@acmArticle. Publication date:
2491 \@acmPubDate.}%
2492 \fi%
2493 \fancyhead[RO]{\@folioblob}%
2494 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2495 \fancyhead[LO]{\ACM@linecountL}%
2496 \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2497 \or % acmtog
2498 \if@ACM@nonacm\else%
2499 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2500 \@acmNumber, Article \@acmArticle. Publication date:
2501 \@acmPubDate.}%
2502 \fi%
2503 \fancyhead[L]{\ACM@linecountL}%
2504 \fancyhead[R]{\ACM@linecountR}%
2505 \else % Conference proceedings
2506 \fancyhead[L]{\ACM@linecountL}%
2507 \fancyhead[R]{\ACM@linecountR}%
2508 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2509 \fi
2510 \else
2511 \fancyhead[L]{\ACM@linecountL}%
2512 \fancyhead[R]{\ACM@linecountR}%
2513 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2514 \fi
2515 \if@ACM@timestamp
2516 \ifnum\ACM@format@nr=0\relax % Manuscript
2517 \fancyfoot[LO,RE]{\ACM@timestamp\quad
2518 \if@ACM@nonacm\else
2519 \footnotesize Manuscript submitted to ACM
2520 \fi}
2521 \else
2522 \fancyfoot[LO,RE]{\ACM@timestamp}
2523 \fi
2524 \fi
2525 }}

```

3.17 Sectioning

\ACM@NRadjust Ross Moore's macro.

Initially \ACM@sect@format@ just passes through its #1 argument unchanged. When a sectioning macro such as \section occurs, the \ACM@NRadjust

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

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

```

2526 \def\ACM@NRadjust#1{%
2527   \begingroup
2528   \expandafter\ifx\csname Sectionformat\endcsname\relax
2529     % do nothing when \Sectionformat is unknown
2530     \def\next{\endgroup #1}%
2531   \else
2532     \def\next{\endgroup
2533       \let\realSectionformat\Sectionformat
2534       \def\ACM@sect@format@{#1}%
2535       \let\Sectionformat\ACM@NRadjustedSectionformat
2536       %% next lines added 2018-06-17 to ensure section number is styled
2537       \let\real@adddotafter\@adddotafter
2538       \let\@adddotafter\ACM@adddotafter
2539       #1{ }% imposes the styles, but nullifies \MakeUppercase
2540       \let\@adddotafter\real@adddotafter
2541     }%
2542   \fi \next
2543 }
```

`\ACM@NRadjustedSectionformat`

```

2544 \def\ACM@NRadjustedSectionformat#1#2{%
2545   \realSectionformat{\ACM@sect@format{#1}}{#2}%
2546   \let\Sectionformat\realSectionformat}
2547 \DeclareRobustCommand{\ACM@sect@format@}{\ACM@sect@format@}
2548 \def\ACM@sect@format@null#1{#1}
2549 \let\ACM@sect@format@\ACM@sect@format@null
2550 \AtBeginDocument{%
2551   \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
2552     \let\LTX@adddotafter\@adddotafter
2553   \fi
2554 }
```

\ACM@adddotafter

```
2555 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}
```

Sectioning is different for different levels

```
2556 \renewcommand\section{\@startsection{section}{1}{\z@}%
2557 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2558 {.25\baselineskip}%
2559 {\ACM@NRadjust\@secfont}}
2560 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2561 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2562 {.25\baselineskip}%
2563 {\ACM@NRadjust\@subsecfont}}
2564 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2565 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2566 {-3.5\p@}%
2567 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}}
2568 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2569 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2570 {-3.5\p@}%
2571 {\ACM@NRadjust{\@parfont\@adddotafter}}}}
2572 \renewcommand\part{\@startsection{part}{9}{\z@}%
2573 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2574 {4\p@}%
2575 {\ACM@NRadjust\@parfont}}
```

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

```
2576 \def\section@raggedright{\@rightskip\@flushglue
2577 \rightskip\@rightskip
2578 \leftskip\z@skip
2579 \parindent\z@}
```

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

```
\@subsecfont
2580 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont
2581 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont
2582 \def\@subsubsecfont{\sffamily\itshape}
2583 \def\@parfont{\itshape}
2584 \setcounter{secnumdepth}{3}
2585 \ifcase\ACM@format@nr
2586 \relax % manuscript
2587 \or % acmsmall
2588 \or % acmlarge
2589 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2590 \def\@subsecfont{\sffamily\large\section@raggedright}
2591 \or % acmtog
2592 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2593 \def\@subsecfont{\sffamily\large\section@raggedright}
2594 \or % sigconf
2595 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2596 \def\@subsecfont{\bfseries\Large\section@raggedright}
```

```

2597 \or % siggraph
2598 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2599 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2600 \or % sigplan
2601 \def\@secfont{\bfseries\Large\section@raggedright}
2602 \def\@subsecfont{\bfseries\section@raggedright}
2603 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2604   {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2605   {.25\baselineskip}%
2606   {\@subsubsecfont}}
2607 \def\@subsubsecfont{\bfseries\section@raggedright}
2608 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2609   {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2610   {-3.5\p@}%
2611   {\@parfont\@addspaceafter}}
2612 \def\@parfont{\bfseries\itshape}
2613 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2614   {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2615   {-3.5\p@}%
2616   {\@subparfont\@addspaceafter}}
2617 \def\@subparfont{\itshape}
2618 \or % sigchi
2619 \setcounter{secnumdepth}{1}
2620 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2621 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2622 \or % sigchi-a
2623 \setcounter{secnumdepth}{0}
2624 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2625 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2626 \fi

```

\@adddotafter Add punctuation after a sectioning command

```
2627 \def\@adddotafter#1{#1\@addpunct{.}}
```

\@addspaceafter Add space after a sectioning command

```
2628 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

3.18 TOC lists

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

```
2629 \providecommand*\@dotsep{4.5}
```

3.19 Theorems

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

```
2630 \def\@acmplainbodyfont{\itshape}
```

`\acmplainindent` The amount to indent the acmplain theorem style.
2631 `\def\acmplainindent{\parindent}`

`\acmplainheadfont` The font to typeset the head of the acmplain theorem style.
2632 `\def\acmplainheadfont{\scshape}`

`\acmplainnotefont` The font to typeset the note of the acmplain theorem style.
2633 `\def\acmplainnotefont{\@empty}`

Customization of the acmplain theorem style:

2634 `\ifcase\ACM@format@nr`
2635 `\relax % manuscript`
2636 `\or % acmsmall`
2637 `\or % acmlarge`
2638 `\or % acmtog`
2639 `\or % sigconf`
2640 `\or % siggraph`
2641 `\or % sigplan`
2642 `\def\acmplainbodyfont{\itshape}`
2643 `\def\acmplainindent{\z@}`
2644 `\def\acmplainheadfont{\bfseries}`
2645 `\def\acmplainnotefont{\normalfont}`
2646 `\or % sigchi`
2647 `\or % sigchi-a`
2648 `\fi`

`acmplain` The acmplain theorem style

2649 `\newtheoremstyle{acmplain}%`
2650 `{.5\baselineskip\@plus.2\baselineskip`
2651 `\@minus.2\baselineskip}% space above`
2652 `{.5\baselineskip\@plus.2\baselineskip`
2653 `\@minus.2\baselineskip}% space below`
2654 `{\acmplainbodyfont}% body font`
2655 `{\acmplainindent}% indent amount`
2656 `{\acmplainheadfont}% head font`
2657 `{.}% punctuation after head`
2658 `{.5em}% spacing after head`
2659 `{\thmname{#1}\thmnumber{ #2}\thmnote{ {\acmplainnotefont{#3}}}}% head spec`

`\acmdefinitionbodyfont` The font to typeset the body of the acmdefinition theorem style.
2660 `\def\acmdefinitionbodyfont{\normalfont}`

`\acmdefinitionindent` The amount to indent the acmdefinition theorem style.
2661 `\def\acmdefinitionindent{\parindent}`

`\acmdefinitionheadfont` The font to typeset the head of the acmdefinition theorem style.
2662 `\def\acmdefinitionheadfont{\itshape}`

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

```
2663 \def\@acmdefinitionnotefont{\@empty}
```

Customization of the acmdefinition theorem style:

```
2664 \ifcase\ACM@format@nr
2665 \relax % manuscript
2666 \or % acmsmall
2667 \or % acmlarge
2668 \or % acmtog
2669 \or % sigconf
2670 \or % siggraph
2671 \or % sigplan
2672 \def\@acmdefinitionbodyfont{\normalfont}
2673 \def\@acmdefinitionindent{\z@}
2674 \def\@acmdefinitionheadfont{\bfseries}
2675 \def\@acmdefinitionnotefont{\normalfont}
2676 \or % sigchi
2677 \or % sigchi-a
2678 \fi
```

`acmdefinition` The acmdefinition theorem style

```
2679 \newtheoremstyle{acmdefinition}%
2680 { .5\baselineskip\@plus.2\baselineskip
2681   \@minus.2\baselineskip}% space above
2682 { .5\baselineskip\@plus.2\baselineskip
2683   \@minus.2\baselineskip}% space below
2684 {\@acmdefinitionbodyfont}% body font
2685 {\@acmdefinitionindent}% indent amount
2686 {\@acmdefinitionheadfont}% head font
2687 { .}% punctuation after head
2688 { .5em}% spacing after head
2689 {\thmname{#1}\thmnumber{ #2}\thmnote{ \@acmdefinitionnotefont{#3}}}% head spec
```

Make acmplain the default theorem style.

```
2690 \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.

```
2691 \AtEndPreamble{%
2692   \if@ACM@acmthm
2693     \theoremstyle{acmplain}
2694     \ifundefined{theorem}{%
2695       \newtheorem{theorem}{Theorem}[section]}
```



```

2696 }{}
2697 \@ifundefined{conjecture}{%
2698 \newtheorem{conjecture}[theorem]{Conjecture}
2699 }{}
2700 \@ifundefined{proposition}{%
2701 \newtheorem{proposition}[theorem]{Proposition}
2702 }{}
2703 \@ifundefined{lemma}{%
2704 \newtheorem{lemma}[theorem]{Lemma}
2705 }{}
2706 \@ifundefined{corollary}{%
2707 \newtheorem{corollary}[theorem]{Corollary}
2708 }{}
2709 \theoremstyle{acmdefinition}
2710 \@ifundefined{example}{%
2711 \newtheorem{example}[theorem]{Example}
2712 }{}
2713 \@ifundefined{definition}{%
2714 \newtheorem{definition}[theorem]{Definition}
2715 }{}
2716 \fi
2717 \theoremstyle{acmplain}
2718 }

\@proofnamefont The font to typeset the proof name.
2719 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
2720 \def\@proofindent{\indent}

Customization of the proof environment.
2721 \ifcase\ACM@format@nr
2722 \relax % manuscript
2723 \or % acmsmall
2724 \or % acmlarge
2725 \or % acmtog
2726 \or % sigconf
2727 \or % siggraph
2728 \or % sigplan
2729 \def\@proofnamefont{\itshape}
2730 \def\@proofindent{\noindent}
2731 \or % sigchi
2732 \or % sigchi-a
2733 \fi

proof We want some customization of the proof environment.
2734 \renewenvironment{proof}[1][\proofname]{\par
2735 \pushQED{\qed}%
2736 \normalfont \topsep6\p@\@plus6\p@\relax

```

```

2737 \trivlist
2738 \item[@proofindent\hskip\labelsep
2739       {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2740 }{%
2741 \popQED\endtrivlist\endpfalse
2742 }

```

3.20 Balancing columns

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

```

2743 \AtEndPreamble{%
2744 \if@ACM@balance
2745 \ifcase\ACM@format@nr
2746 \relax % manuscript
2747 \global\@ACM@balancefalse
2748 \or % acmsmall
2749 \global\@ACM@balancefalse
2750 \or % acmlarge
2751 \global\@ACM@balancefalse
2752 \or % acmtog
2753 \RequirePackage{balance}%
2754 \or % sigconf
2755 \RequirePackage{balance}%
2756 \or % siggraph
2757 \RequirePackage{balance}%
2758 \or % sigplan
2759 \RequirePackage{balance}%
2760 \or % sigchi
2761 \RequirePackage{balance}%
2762 \or % sigchi-a
2763 \global\@ACM@balancefalse
2764 \fi
2765 \fi
2766 }
2767 \AtEndDocument{%
2768 \if@ACM@balance
2769 \if@twocolumn
2770 \balance
2771 \fi\fi}

```

3.21 Acknowledgments

```

\acksname
2772 \newcommand\acksname{Acknowledgments}

\acks This is a comment-like structure
2773 \specialcomment{acks}{%
2774 \begingroup
2775 \section*{\acksname}

```

```

2776 \phantomsection\addcontentsline{toc}{section}{\acksname}
2777 }{%
2778 \endgroup
2779 }

```

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

```

2780 \def\grantsponsor#1#2#3{#2}

```

`\grantnum`

```

2781 \newcommand\grantnum[3][[]]{#3%
2782 \def\@tempa{#1}\ifx\@tempa\empty\else\space(\url{#1})\fi}

```

3.22 Conditional typesetting

We use the comment package for conditional typesetting:

```

2783 \AtEndPreamble{%
2784 \if@ACM@screen
2785 \includecomment{screenonly}
2786 \excludecomment{printonly}
2787 \else
2788 \excludecomment{screenonly}
2789 \includecomment{printonly}
2790 \fi
2791 \if@ACM@anonymous
2792 \excludecomment{anonsuppress}
2793 \excludecomment{acks}
2794 \else
2795 \includecomment{anonsuppress}
2796 \fi}

```

3.23 Additional bibliography commands

`\showeprint` The command `\showeprint` has two arguments: the (optional) prefix and the eprint number. Right now the only prefix we understand is the (lowercase) word ‘arxiv’ (see <http://arxiv.org/hypertex/bibstyles/>).

```

2797 \newcommand\showeprint[2][arxiv]{%
2798 \def\@tempa{#1}%
2799 \ifx\@tempa\empty\def\@tempa{arxiv}\fi
2800 \def\@tempb{arxiv}%
2801 \ifx\@tempa\@tempb
2802 \arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2803 \fi}

```

3.24 End of Class

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

```

2804 \let\@vspace@orig=\vspace
2805 \let\@vspacer@orig=\vspacer

```

```

2806 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
2807     only be used to provide space above/below surrounding
2808     objects}}{}{}
2809 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should
2810     only be used to provide space above/below surrounding
2811     objects}}{}{}

```

```

\ACM@origbaselinestretch We produce an error if the user tries to change \baselinestretch
2812 \let\ACM@origbaselinestretch\baselinestretch
2813 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
2814     \ClassError{\@classname}{An attempt to redefine
2815         \string\baselinestretch\space detected. Please do not do this for
2816         ACM submissions!}\fi}

2817 \normalsize\normalfont\frenchspacing
2818 </class>

```

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Change History

1.48	General: Added prologue option to xcolor	42	Documentation changes (closes https://github.com/borisveytsman/acmart/issues/13)	30
	Bib code cleanup (Zack Weinberg)	30		
	Documentation update (siggraph)	30		
1.49	General: New journal: DTRAP	30	v1.03	
1.53	General: New journals: PACMCGIT, TIOT, TDSCI	30	\@formatdoi: Added macro	68
	Rearranged docs	30	\if@ACM@authorversion: Added macro	32
1.54	General: Moved footnote stuff before hyperref call (Ross Moore)	30	\maketitle: Added special case of authorversion	71
1.56	General: Documented \Description	30	General: Added anonsuppress environment	30
1.57	General: Booktabs package is now the default	30	Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	30
1.58	General: Changes in samples (Enrico Gregorio)	30	v1.04	
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v1.00			\acmDOI: Name change by Matthew Fluet	62
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	Defined ACM colors	30	v1.05	
	Explicitly put draft option (closes https://github.com/borisveytsman/acmart/issues/4)	33	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	30
	Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/acmart/issues/5)	30	Patched \setcitestyle command; closes https://github.com/borisveytsman/acmart/issues/19	30
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