

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

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Abstract

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

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1 Introduction

The Association for Computing Machinery¹ is the world's largest educational and scientific computing society, which delivers resources that advance computing as a science and a profession. It was one of the early adopters of 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, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Jamie Davis, LianTze Lim, Ben Liblit, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Tobias Pape, Mathias Rav, Andreas Reichinger, Matteo Riondato, Craig Rodkin, Bernard Rous, David Shamma, 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 customizat^on 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>
- *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 3) set this option to `true`. In the future this option may involve additional features suitable for on-screen versions of articles.

The option `natbib` is used when the corresponding BibTeX style is based on `natbib`. In most cases you do not need to set it. See Section 2.10.

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

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

Table 1: The possible values for the format option

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

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

2.3 Top matter

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

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

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

```
\acmJournal{TOMS}
```

Table 2: Boolean options

Option	Default	Meaning
review	false	A review version: lines are numbered and hyperlinks are colored
screen	see text	A screen version: hyperlinks are colored
natbib	true	Whether to use the natbib package (see Section 2.10)
anonymous	false	Whether to make author(s) anonymous
authorversion	false	Whether to generate a special version for the authors' personal use or posting (see Section 2.3)
timestamp	false	Whether to put a time stamp in the footer of each page
authordraft	false	Whether author's-draft mode is enabled
acmthm	true	Whether to define theorem-like environments, see Section 2.6

The currently recognized journals are listed in Table 3. Note that conference proceedings published in *book* form do not set this macro.

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

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

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

name: the name of the conference.

date: the date(s) of the conference.

venue: the place of the conference.

Examples:

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

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

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


Table 3: ACM publications and arguments of the \acmJournal command

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

`\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 \TeX `\and` macro! Each author deserves his or her own `\author` command.

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

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

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

Similarly you can repeat the `\email` command.

You may have several authors with the same affiliation, different affiliations, or overlapping affiliations (author A_1 is affiliated with institutions I_1 and I_2 , while author A_2 is

affiliated with I_2 only, author A_3 is affiliated with I_1 and I_3 , etc.). The recommended solution is to put the `\affiliation` commands after each author, possibly repeating them:

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

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

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

However, this format is not generally recommended.

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

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

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

<code>\position</code> <code>\institution</code> <code>\department</code> <code>\streetaddress</code> <code>\city</code> <code>\state</code> <code>\postcode</code> <code>\country</code>	<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 insitution. There could be two situations: the departments are independent, or one department is within another. In the first case, just repeat the command `\department` several times. To handle

the second case the command has an optional numerical parameter. The departments with higher numbers are higher in the organizational chart. Compare

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

and

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

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

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

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

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

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

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

will be typeset as

Fluginstitut
Sonentallee 17
123456 Helm, Germany

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

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

`\thanks` Like `amsart` (and unlike standard \LaTeX), we allow `\thanks` only *outside* of the commands `\title` and `\author`. This command is obsolete and should *not* be used in most cases. Do not list your acknowledgments or grant sponsors here. Put this information in the `acks` environment (see Section 2.9).

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

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

You can *suppress* printing authors' addresses by setting them to an empty string:

`\authorsaddresses{}`.

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

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

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

`\authornotemark` Sometimes one may need to have the same footnote connected to several authors. The command `\authornotemark[<number>]` adds just the footnote mark, for example,

```
\author{A. U. Thor}
\authornote{Both authors contributed equally to the paper}
```

```
...
\author{A. N. Other}
\authornotemark[1]
```

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

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

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

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

The articles in the same issue of a journal have a *sequence number*. It is used to vertically position the black blob on the first page of some formats. By default it is the same as the article number, but the command `\acmArticleSeq{<n>}` can be used to change it:

```
\acmArticle{39} % The sequence number will be 39 by default
\acmArticleSeq{5} % We redefine it to 5
```

Setting this number to zero suppresses the blob.

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

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

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

```
\acmPrice{25.00}
```

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

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

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

	Setting it to the empty string, as <code>\acmISBN{}</code> , suppresses printing the ISBN.
<code>\acmDOI</code>	<p>The macro <code>\acmDOI{<DOI>}</code> sets the DOI of the article, for example,</p> <pre>\acmDOI{10.1145/9999997.9999999}</pre>
	It is normally set by the typesetter. Setting it to the empty string, as <code>\acmDOI{}</code> , suppresses the DOI.
<code>\acmBadgeR</code> <code>\acmBadgeL</code>	<p>Some conference articles get special distinctions, for example, the artifact evaluation for PPOPP 2016 (see http://ctuning.org/ae/ppopp2016.html). These articles display special badges supplied by the conference organizers. This class provides commands to add these badges: <code>\acmBadgeR[<url>]{<graphics>}</code> and <code>\acmBadgeL[<url>]{<graphics>}</code>. The first command puts the badge to the right of the title, and the second one—to the left. The exception is the <code>sigchi-a</code> mode for SIGCHI extended abstracts, which puts the badges on the left margin. The arguments have the following meaning: <code>[<url>]</code>, if provided, sets the link to the badge authority in the screen version, while <code>{<graphics>}</code> sets the graphics file with the badge image. The file must be a cropped square, which is scaled to a standard size in the output. For example, if the badge image is <code>ae-logo.pdf</code>, the command is</p> <pre>\acmBadgeR[http://ctuning.org/ae/ppopp2016.html]{ae-logo}</pre>
<code>\startPage</code>	The macro <code>\startPage{<page>}</code> sets the first page of the article in a journal or book. It is used by the typesetter.
<code>\terms</code> <code>\keywords</code>	<p>The command <code>\keywords{<keyword, keyword,...>}</code> sets keywords for the article. They must be separated by commas, for example,</p> <pre>\keywords{wireless sensor networks, media access control, multi-channel, radio interference, time synchronization}</pre>
<code>CCSXML</code> <code>\ccsdesc</code>	<p>ACM publications are classified according to the ACM Computing Classification Scheme (CCS). CCS codes are used both in the typeset version of the publications <i>and</i> in the metadata in various databases. Therefore you need to provide both \TeX commands and XML metadata with the paper.</p> <p>The tool at http://dl.acm.org/ccs.cfm can be used to generate CCS codes. After you select the topics, click on “Generate CCS codes” to get results like the following:</p> <pre>\begin{CCSXML} <ccs2012> <concept> <concept_id>10010520.10010553.10010562</concept_id> <concept_desc>Computer systems organization~Embedded systems</concept_desc> <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></pre>


```

</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 4.

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

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

```

\acmYear{2016}
\copyrightyear{2015}

```

There is a special case for a personal copy that the authors may be allowed to generate for their use or a posting on a personal site (check the instructions for the specific journal or conference for the details). The document option `authorversion=true` produces a special form of the copyright statement for this case. Note that you still need the `\setcopyright` command and (optionally) `\copyrightyear` command to tell \TeX about the copyright owner and year. Also, you should be aware that due to the different sizes of the permission blocks for the printed version and authors' version, the page breaks might be different between them.

`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.

Table 4: 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 5: 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

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 5. 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.

`\received` The command `\received[<stage>]{<date>}` sets the history of the publication. The `[<stage>]` argument is optional; the default is Received for the first date and revised for the subsequent ones. For example,

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

`\maketitle` The macro `\maketitle` must be the last command in the top-matter group. That is

it must follow the commands defined in this section.

`\shortauthors` *After* the command `\maketitle`, the macro `\shortauthors` stores the names of the authors for the running head. You can redefine it if the list of author’s name is too long, e.g.,

```
\maketitle
\renewcommand{\shortauthors}{Zhou et al.}
```

2.4 Algorithms

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

2.5 Figures and tables

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

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

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

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

teaserfigure: a special figure before `\maketitle`.

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

3. Accordingly, when scaling images, one should use the following sizes:
 - (a) For `teaserfigure`, `figure` in one-column mode or `figure*` in two-column mode, use `\textwidth`. In one-column mode, you can also use `\columnwidth`, which coincides with `\textwidth` in this case.
 - (b) For `figure` in two-column mode, use `\columnwidth`.
 - (c) For `marginfigure`, use `\marginparwidth`.
 - (d) For `figure*` in SIGCHI extended abstracts, use `\fulltextwidth`.

It is strongly recommended to use the package `booktabs` [6] and follow its main principles of typography with respect to tables:

1. Never, ever use vertical rules.
2. Never use double rules.

It is also a good idea not to overuse horizontal rules.

For table *footnotes* you have several options described in the TeX FAQ [1]. The simplest one is to use a `\minipage` environment:

```
\begin{table}
\caption{Simulation Configuration}
\label{tab:conf}
\begin{minipage}{\columnwidth}
\begin{center}
\begin{tabular}{ll}
\toprule
TERRAIN\footnote{This is a table footnote. This is a
    table footnote. This is a table footnote.} &
    (200\,m$\times$200\,m) Square\\
Node Number      & 289\\
Node Placement    & Uniform\\
Application       & Many-to-Many/Gossip CBR Streams\\
Payload Size      & 32 bytes\\
Routing Layer     & GF\\
MAC Layer         & CSMA/MMSN\\
Radio Layer       & RADIO-ACCNOISE\\
Radio Bandwidth   & 250Kbps\\
Radio Range       & 20m--45m\\
\bottomrule
\end{tabular}
\end{center}
\bigskip
\footnotesize\emph{Source:} This is a table
sourcenote. This is a table sourcenote. This is a table
sourcenote.

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

sidebar
marginfigure
margintable

SIGCHI extended abstracts use margin space extensively. This package provides three environments for this with optional captions:

sidebar: textual information in the margin

marginfigure: a figure in the margin

margintable: a table in the margin

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

2.6 Theorems

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

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

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

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

2.7 Online-only and offline-only material

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

```
\section{Supplementary materials}

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

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

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

2.8 Note about anonymous mode

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

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

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

2.9 Acknowledgments

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

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

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

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

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

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

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

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

Example:

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

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

2.10 Bibliography

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

as well as the use of Bib_T_EX styles other than ACM-Reference-Format.bst, and may delay the processing of the manuscript.

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

```
\citestyle{acmauthoryear}
```

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

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

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

One of the more common versions is

```
\setcitestyle{nosort}
```

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

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

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

There are several customized Bib_T_EX 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",
}

```

2.11 Colors

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

The ACM provides the following recommendation on color use.

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

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

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

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

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

2.12 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

you will pass dvipsnames to xcolor.

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

3 Implementation

3.1 Identification

We start with a declaration of who we are. Most .dtx files put driver code in a separate .drv driver file. We roll this code into the main file and use the pseudo-guard <gobble> for it.

```
1 <class>\NeedsTeXFormat{LaTeX2e}
2 <*gobble>
3 \ProvidesFile{acmart.dtx}
4 </gobble>
5 <class>\ProvidesClass{acmart}
6 [2018/04/05 v1.51 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}
11 \usepackage[tt=false, type1=true]{libertine}
12 \usepackage[varqu]{zi4}
13 \usepackage[libertine]{newtxmath}
14 \usepackage[tableposition=top]{caption}
15 \usepackage{hypdoc}
16 \PageIndex
17 \CodelineIndex
18 \RecordChanges
19 \EnableCrossrefs
20 \begin{document}
21   \DocInput{acmart.dtx}
22 \end{document}
23 </gobble>
24 <*class>
25 \def\@classname{acmart}
```

3.2 Preload hook

We preload acmart-preload-hook:

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

3.3 Options

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

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

We use xstring to check whether user input is integer

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

format The possible formats

```

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

```

\if@ACM@screen Whether we use screen mode

```

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

```

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

```

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

```

\if@ACM@review Whether we use review mode

```

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

```

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

```

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

```

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

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

```

82 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
83   \if@ACM@natbib
84     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
85   \else
86     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
87   \fi}{\PackageError{\@classname}{The option natbib can be either true or
88     false}}
89 \ExecuteOptionsX{natbib=true}

```

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

```

90 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
91   \if@ACM@anonymous
92     \PackageInfo{\@classname}{Using anonymous mode}%
93   \else
94     \PackageInfo{\@classname}{Not using anonymous mode}%
95   \fi}{\PackageError{\@classname}{The option anonymous can be either true or
96     false}}
97 \ExecuteOptionsX{anonymous=false}

```

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

```

98 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
99   \if@ACM@timestamp
100     \PackageInfo{\@classname}{Using timestamp mode}%
101   \else
102     \PackageInfo{\@classname}{Not using timestamp mode}%
103   \fi}{\PackageError{\@classname}{The option timestamp can be either true or
104     false}}
105 \ExecuteOptionsX{timestamp=false}

```

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

```

106 \define@boolkey+{acmart.cls}[@ACM@]{authordraft}[true]{%
107   \if@ACM@authordraft
108     \PackageInfo{\@classname}{Using authordraft mode}%
109     \@ACM@timestamptrue
110     \@ACM@reviewtrue
111   \else

```

```

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

```

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

```

116 \def\ACM@fontsize{
117 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
118 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
119 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
120 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

121 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
122 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
123 \ProcessOptionsX
124 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.4 Setting switches

\if@ACM@manuscript Whether we use manuscript mode

```

125 \newif\if@ACM@manuscript

```

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

```

126 \newif\if@ACM@journal

```

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

```

127 \newif\if@ACM@sigchiamode

```

Setting up switches

```

128 \ifnum\ACM@format@nr=5\relax % siggraph
129 \ClassWarning{\@classname}{The format siggraph is now obsolete.
130     I am switching to sigconf.}
131 \setkeys{acmart.cls}{format=sigconf}
132 \fi
133 \ifnum\ACM@format@nr=0\relax
134 \@ACM@manuscripttrue
135 \else
136 \@ACM@manuscriptfalse
137 \fi
138 \@ACM@sigchiamodefalse
139 \ifcase\ACM@format@nr
140 \relax % manuscript
141 \@ACM@journaltrue
142 \or % acmsmall
143 \@ACM@journaltrue
144 \or % acmlarge
145 \@ACM@journaltrue

```



```

146 \or % acmtog
147   \@ACM@journaltrue
148 \or % sigconf
149   \@ACM@journalfalse
150 \or % siggraph
151   \@ACM@journalfalse
152 \or % sigplan
153   \@ACM@journalfalse
154 \or % sigchi
155   \@ACM@journalfalse
156 \or % sigchi-a
157   \@ACM@journalfalse
158   \@ACM@sigchiamodetrue
159 \fi

```

3.5 Loading the base class and package

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

```

160 \ifx\ACM@fontsize\@empty
161   \ifcase\ACM@format@nr
162     \relax % manuscript
163     \def\ACM@fontsize{9pt}%
164   \or % acmsmall
165     \def\ACM@fontsize{10pt}%
166   \or % acmlarge
167     \def\ACM@fontsize{10pt}%
168   \or % acmtog
169     \def\ACM@fontsize{9pt}%
170   \or % sigconf
171     \def\ACM@fontsize{9pt}%
172   \or % siggraph
173     \def\ACM@fontsize{9pt}%
174   \or % sigplan
175     \def\ACM@fontsize{10pt}%
176   \or % sigchi
177     \def\ACM@fontsize{10pt}%
178   \or % sigchi-a
179     \def\ACM@fontsize{10pt}%
180   \fi
181 \fi
182 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
183 \LoadClass[\ACM@fontsize, reqno]{amsart}
184 \RequirePackage{microtype}

```

We need etoolbox for delayed code

```
185 \RequirePackage{etoolbox}
```

We need totpages to calculate the number of pages and refcount to use that number

```
186 \RequirePackage{refcount}
```

```
187 \RequirePackage{totpages}
```

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

```
188 \RequirePackage{environ}
```

We use `setspace` for double spacing

```
189 \if@ACM@manuscript
```

```
190 \RequirePackage{setspace}
```

```
191 \onehalfspacing
```

```
192 \fi
```

We need `textcase` for better upcasing

```
193 \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.

```
194 \if@ACM@natbib
```

```
195 \RequirePackage{natbib}
```

```
196 \renewcommand{\bibsection}{%
```

```
197 \section*{\refname}%
```

```
198 \phantomsection\addcontentsline{toc}{section}{\refname}%
```

```
199 }
```

```
200 \renewcommand{\bibfont}{\bibliofont}
```

```
201 \renewcommand{\setcitestyle}[1]{
```

```
202 \@for\@tempa:=#1\do
```

```
203 {\def\@tempb{round}\ifx\@tempa\@tempb
```

```
204 \renewcommand\NAT@open{(\renewcommand\NAT@close{)}\fi
```

```
205 \def\@tempb{square}\ifx\@tempa\@tempb
```

```
206 \renewcommand\NAT@open{[\renewcommand\NAT@close{]}\fi
```

```
207 \def\@tempb{angle}\ifx\@tempa\@tempb
```

```
208 \renewcommand\NAT@open{$<\renewcommand\NAT@close{$>}\fi
```

```
209 \def\@tempb{curly}\ifx\@tempa\@tempb
```

```
210 \renewcommand\NAT@open{\{\renewcommand\NAT@close{\}}\fi
```

```
211 \def\@tempb{semicolon}\ifx\@tempa\@tempb
```

```
212 \renewcommand\NAT@sep{;}\fi
```

```
213 \def\@tempb{colon}\ifx\@tempa\@tempb
```

```
214 \renewcommand\NAT@sep{:}\fi
```

```
215 \def\@tempb{comma}\ifx\@tempa\@tempb
```

```
216 \renewcommand\NAT@sep{,}\fi
```

```
217 \def\@tempb{authoryear}\ifx\@tempa\@tempb
```

```
218 \NAT@numbersfalse\fi
```

```
219 \def\@tempb{numbers}\ifx\@tempa\@tempb
```

```
220 \NAT@numberstrue\NAT@superfalse\fi
```

```
221 \def\@tempb{super}\ifx\@tempa\@tempb
```

```
222 \NAT@numberstrue\NAT@supertrue\fi
```

```
223 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
```

```
224 \let\bibstyle=\@gobble\fi
```

```

225 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
226 \let\bibstyle=\@citestyle\fi
227 \def\@tempb{sort}\ifx\@tempa\@tempb
228 \def\NAT@sort{\@ne}\fi
229 \def\@tempb{nosort}\ifx\@tempa\@tempb
230 \def\NAT@sort{\@z}\fi
231 \def\@tempb{compress}\ifx\@tempa\@tempb
232 \def\NAT@cmprs{\@ne}\fi
233 \def\@tempb{nocompress}\ifx\@tempa\@tempb
234 \def\NAT@cmprs{\@z}\fi
235 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
236 \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
237 \def\@tempb{mcite}\ifx\@tempa\@tempb
238 \let\NAT@merge\@ne\fi
239 \def\@tempb{merge}\ifx\@tempa\@tempb
240 \ifnum\NAT@merge<\tw@\let\NAT@merge\tw@\fi
241 \def\@tempb{elide}\ifx\@tempa\@tempb
242 \ifnum\NAT@merge<\thr@\let\NAT@merge\thr@\fi
243 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
244 \NAT@longnamestrue\fi
245 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
246 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
247 \expandafter\NAT@find@eq\@tempa=\relax\@nil
248 \if\@tempc\relax\else
249 \expandafter\NAT@rem@eq\@tempc
250 \def\@tempb{open}\ifx\@tempa\@tempb
251 \xdef\NAT@open{\@tempc}\fi
252 \def\@tempb{close}\ifx\@tempa\@tempb
253 \xdef\NAT@close{\@tempc}\fi
254 \def\@tempb{aysep}\ifx\@tempa\@tempb
255 \xdef\NAT@aysep{\@tempc}\fi
256 \def\@tempb{yysep}\ifx\@tempa\@tempb
257 \xdef\NAT@yrsep{\@tempc}\fi
258 \def\@tempb{notesep}\ifx\@tempa\@tempb
259 \xdef\NAT@cmt{\@tempc}\fi
260 \def\@tempb{citesep}\ifx\@tempa\@tempb
261 \xdef\NAT@sep{\@tempc}\fi
262 \fi
263 }%
264 \NAT@@setcites
265 }
266 \renewcommand\citestyle[1]{%
267 \ifcsname bibstyle@#1\endcsname%
268 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
269 \else%
270 \latexerror{Undefined ‘#1’ citestyle}%
271 \fi
272 }%
273 \fi

```

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

```
274 \newcommand{\bibstyle@acmauthoryear}{%
275   \setcitestyle{%
276     authoryear,%
277     open={},close={},citesep={;},%
278     aysep={},yysep={},,%
279     notesep={, }}}
```

`\bibstyle@acmnumeric` The default numeric format:

```
280 \newcommand{\bibstyle@acmnumeric}{%
281   \setcitestyle{%
282     numbers,sort&compress,%
283     open={},close={},citesep={},,%
284     notesep={, }}}
```

The default is numeric:

```
285 \if@ACM@natbib
286 \citestyle{acmnumeric}
287 \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:

```
288 \def\@startsection#1#2#3#4#5#6{%
289   \if@noskipsec \leavevmode \fi
290   \par
291   \@tempskipa #4\relax
292   \@afterindenttrue
293   \ifdim \@tempskipa <\z@
294     \@tempskipa -\@tempskipa \@afterindentfalse
295   \fi
296   \if@nobreak
297     \everypar{}%
298   \else
299     \addpenalty\@secpenalty\addvspace\@tempskipa
300   \fi
301   \@ifstar
302     {\@ssect{#3}{#4}{#5}{#6}}%
303     {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}
304 \def\@sect#1#2#3#4#5#6[#7]#8{%
305   \edef\@toclevel{\ifnum#2=\@m 0\else\number#2\fi}%
306   \ifnum #2>\c@secnumdepth
307     \let\@svsec\@empty
308   \else
309     \refstepcounter{#1}%
310     \protected@edef\@svsec{\@secntformat{#1}\relax}%
311   \fi
312   \@tempskipa #5\relax
313   \ifdim \@tempskipa>\z@
```

```

314 \begingroup
315   #6{%
316     \@hangfrom{\hskip #3\relax\@svsec}%
317     \interlinepenalty \@M #8\@par}%
318 \endgroup
319 \csname #1mark\endcsname{#7}%
320 \ifnum #2>\c@secnumdepth \else
321   \@tochangmeasure{\csname the#1\endcsname}%
322 \fi
323 \addcontentsline{toc}{#1}{%
324   \ifnum #2>\c@secnumdepth \else
325     \protect\numberline{\csname the#1\endcsname}%
326   \fi
327   #7}%
328 \else
329   \def\@svsechd{%
330     #6{\hskip #3\relax
331       \@svsec #8}%
332     \csname #1mark\endcsname{#7}%
333     \ifnum #2>\c@secnumdepth \else
334       \@tochangmeasure{\csname the#1\endcsname\space}%
335     \fi
336     \addcontentsline{toc}{#1}{%
337       \ifnum #2>\c@secnumdepth \else
338         \protect\numberline{\csname the#1\endcsname}%
339       \fi
340       #7}}%
341 \fi
342 \@xsect{#5}}
343 \def\@xsect#1{%
344   \@tempkipa #1\relax
345   \ifdim \@tempkipa>\z@
346     \par \nobreak
347     \vskip \@tempkipa
348     \@afterheading
349   \else
350     \@nobreakfalse
351     \global\@noskipsectrue
352     \everypar{%
353       \if@noskipsec
354         \global\@noskipsecfalse
355         {\setbox\z@\lastbox}%
356         \clubpenalty\@M
357         \begingroup \@svsechd \endgroup
358         \unskip
359         \@tempkipa #1\relax
360         \hskip -\@tempkipa
361       \else
362         \clubpenalty \@clubpenalty
363         \everypar{}%

```

```

364     \fi}%
365 \fi
366 \ignorespaces}
367 \def\@seccntformat#1{\csname the#1\endcsname\quad}
368 \def\@ssect#1#2#3#4#5{%
369   \@tempskipa #3\relax
370   \ifdim \@tempskipa>\z@
371     \begingroup
372       #4{%
373         \@hangfrom{\hskip #1}%
374         \interlinepenalty \@M #5\@par}%
375     \endgroup
376   \else
377     \def\@svsechd{#4{\hskip #1\relax #5}}%
378   \fi
379   \@xsect{#3}}

```

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

```

380 \def\@starttoc#1#2{\begingroup\makeatletter
381   \setTrue{#1}%
382   \par\removelastskip\vskip\z@skip
383   \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
384     {.5\linespacing}{centering\contentsnamefont}{#2}%
385   \input{\jobname.#1}%
386   \if@files
387     \exp\newwrite\csname tf@#1\endcsname
388     \immediate\exp\openout\csname tf@#1\endcsname \jobname.#1\relax
389   \fi
390   \global\@nobreakfalse \endgroup
391   \addvspace{32\p@\@plus14\p@}%
392 }

```

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

```

393 \def\l@section{\@tocline{1}{0pt}{1pc}{2pc}{}}

```

\l@subsection The spacing in amsart is too large

```

394 \def\l@subsection{\@tocline{2}{0pt}{1pc}{3pc}{}}

```

\l@subsubsection The spacing in amsart is too large

```

395 \def\l@subsubsection{\@tocline{2}{0pt}{1pc}{5pc}{}}

```

And hyperref

```

396 \let\@footnotemark@nolink\@footnotemark
397 \let\@footnotetext@nolink\@footnotetext
398 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
399 \pdfstringdefDisableCommands{%
400   \def\unskip{}%
401   \def\textbullet{- }%

```

```

402 \def\textrightarrow{ -> }%
403 \def\footnotemark{ }%
404 }
405 \urlstyle{rm}
406 \ifcase\ACM@format@nr
407 \relax % manuscript
408 \or % acmsmall
409 \or % acmlarge
410 \or % acmtog
411 \or % sigconf
412 \or % siggraph
413 \or % sigplan
414 \urlstyle{sf}
415 \or % sigchi
416 \or % sigchi-a
417 \urlstyle{sf}
418 \fi
419 \AtEndPreamble{%
420 \if@ACM@screen
421 \hypersetup{colorlinks,
422 linkcolor=ACMRed,
423 citecolor=ACMPurple,
424 urlcolor=ACMDarkBlue,
425 filecolor=ACMDarkBlue}
426 \else
427 \hypersetup{hidelinks}
428 \fi}

Bibliography mangling.
429 \if@ACM@natbib
430 \let\cite\cite
431 \let\cite\citep
432 \let\citeANP\citeauthor
433 \let\citeNN\citeyearpar
434 \let\citeyearNP\citeyear
435 \let\citeNP\citealt
436 \DeclareRobustCommand\citeA
437 {\begingroup\NAT@swafalse
438 \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
439 \providecommand\newblock{}%
440 \else
441 \AtBeginDocument{%
442 \let\shortcite\cite%
443 \providecommand\citename[1]{#1}}
444 \fi
445 \newcommand\shortcite[2][{}]{%
446 \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:

```

447 \def\bibliographystyle#1{%
448   \ifx\@begindocumenthook\@undefined\else
449     \expandafter\AtBeginDocument
450   \fi
451   {\if@filesw
452     \immediate\write\@auxout{\string\bibstyle{#1}}%
453   \fi}}

```

Graphics and color.

```

454 \RequirePackage{graphicx}
455 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [7]:

```

456 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
457 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
458 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
459 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
460 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
461 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
462 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
463 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode

```

464 \if@ACM@authordraft
465   \RequirePackage{draftwatermark}
466   \SetWatermarkFontSize{0.5in}
467   \SetWatermarkColor[gray]{.9}
468   \SetWatermarkText{\parbox{12em}{\centering
469     Unpublished working draft.\
470     Not for distribution.}}
471 \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>.

```

472 \RequirePackage{geometry}
473 \ifcase\ACM@format@nr
474 \relax % manuscript
475   \geometry{letterpaper,head=13pt,
476     marginparwidth=6pc,heightrounded}%
477 \or % acmsmall
478   \geometry{twoside=true,
479     includeheadfoot, head=13pt, foot=2pc,
480     paperwidth=6.75in, paperheight=10in,
481     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
482     marginparwidth=2pc,heightrounded
483   }%
484 \or % acmlarge

```



```

485 \geometry{twoside=true, head=13pt, foot=2pc,
486     paperwidth=8.5in, paperheight=11in,
487     includeheadfoot,
488     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
489     marginparwidth=4pc,heightrounded
490 }%
491 \or % acmtog
492 \geometry{twoside=true, head=13pt, foot=2pc,
493     paperwidth=8.5in, paperheight=11in,
494     includeheadfoot, columnsep=24pt,
495     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
496     marginparwidth=2pc,heightrounded
497 }%
498 \or % sigconf
499 \geometry{twoside=true, head=13pt,
500     paperwidth=8.5in, paperheight=11in,
501     includeheadfoot, columnsep=2pc,
502     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
503     marginparwidth=2pc,heightrounded
504 }%
505 \or % siggraph
506 \geometry{twoside=true, head=13pt,
507     paperwidth=8.5in, paperheight=11in,
508     includeheadfoot, columnsep=2pc,
509     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
510     marginparwidth=2pc,heightrounded
511 }%
512 \or % sigplan
513 \geometry{twoside=true, head=13pt,
514     paperwidth=8.5in, paperheight=11in,
515     includeheadfoot=false, columnsep=2pc,
516     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
517     marginparwidth=2pc,heightrounded
518 }%
519 \or % sigchi
520 \geometry{twoside=true, head=13pt,
521     paperwidth=8.5in, paperheight=11in,
522     includeheadfoot, columnsep=2pc,
523     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
524     marginparwidth=2pc,heightrounded
525 }%
526 \or % sigchi-a
527 \geometry{twoside=false, head=13pt,
528     paperwidth=11in, paperheight=8.5in,
529     includeheadfoot, marginparsep=72pt,
530     marginparwidth=170pt, columnsep=20pt,
531     top=72pt, bottom=72pt, left=314pt, right=72pt
532 }%
533 \@mparswitchfalse
534 \reversemarginpar

```

```

535 \fi

\parindent Paragraphing
\parskip
536 \setlength\parindent{10\p@}
537 \setlength\parskip{\z@}
538 \ifcase\ACM@format@nr
539 \relax % manuscript
540 \or % acmsmall
541 \or % acmlarge
542 \or % acmtog
543 \setlength\parindent{9\p@}%
544 \or % sigconf
545 \or % siggraph
546 \or % sigplan
547 \or % sigchi
548 \or % sigchi-a
549 \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.
550 \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.
551 \def\copyrightpermissionfootnoterule{\kern-3\p@
552 \hrule \@width \columnwidth \kern 2.6\p@}

553 \RequirePackage{manyfoot}
554 \SelectFootnoteRule[2]{copyrightpermission}
555 \DeclareNewFootnote{authorsaddresses}
556 \SelectFootnoteRule[2]{copyrightpermission}
557 \DeclareNewFootnote{copyrightpermission}

\footnoterule Tschichold’s rules:
558 \def\footnoterule{\kern-3\p@
559 \hrule \@width 4pc \kern 2.6\p@}

\endminipage We do not use footnote rules in minipages
560 \def\endminipage{%
561 \par

```

```

562 \unskip
563 \ifvoid\@mpfootins\else
564 \vskip\skip\@mpfootins
565 \normalcolor
566 \unvbox\@mpfootins
567 \fi
568 \@minipagefalse
569 \color@endgroup
570 \egroup
571 \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}

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

\@footnotetext In sigchi-a mode our footnotes are in the margin!
573 \if@ACM@sigchiamode
574 \long\def\@footnotetext#1{\marginpar{%
575 \reset@font\small
576 \interlinepenalty\interfootnotelinepenalty
577 \protected@edef\@currentlabel{%
578 \csname p@footnote\endcsname\@thefnmark
579 }%
580 \color@begingroup
581 \makefnmark{%
582 \rule{z@footnotesep}{\ignorespaces#1}\@finalstrut\strutbox}%
583 \color@endgroup}}%
584 \fi

\@mpfootnotetext We want the footnotes in minipages centered:
585 \long\def\@mpfootnotetext#1{%
586 \global\setbox\@mpfootins\vbox{%
587 \unvbox\@mpfootins
588 \reset@font\footnotesize
589 \hsize\columnwidth
590 \@parboxrestore
591 \protected@edef\@currentlabel
592 {\csname p@mpfootnote\endcsname\@thefnmark}%
593 \color@begingroup\centering
594 \makefnmark{%
595 \rule{z@footnotesep}{\ignorespaces#1}\@finalstrut\strutbox}%
596 \color@endgroup}}

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

\@textbottom Add some stretch according to David Carlisle's advice at http://tex.stackexchange.com/a/62318/5522
598 \def\@textbottom{\vskip \z@ \@plus 1pt}
599 \let\@texttop\relax

```

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.

```
600 \RequirePackage{iftex}
601 \ifPDFTeX
602 \input{glyphtounicode}
603 \pdfglyphtounicode{f_f}{FB00}
604 \pdfglyphtounicode{f_f_i}{FB03}
605 \pdfglyphtounicode{f_f_l}{FB04}
606 \pdfglyphtounicode{f_i}{FB01}
607 \pdfglyphtounicode{t_t}{00740074}
608 \pdfglyphtounicode{f_t}{00660074}
609 \pdfglyphtounicode{T_h}{00540068}
610 \pdfgentounicode=1
611 \fi
612 \RequirePackage{cmap}

\if@ACM@newfonts Whether we load the new fonts
613 \newif\if@ACM@newfonts
614 \@ACM@newfontstrue
615 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
616   have the libertine package installed. Please upgrade your
617   TeX}\@ACM@newfontsfalse}
618 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
619   have the zi4 package installed. Please upgrade your
620   TeX}\@ACM@newfontsfalse}
621 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
622   have the newtxmath package installed. Please upgrade your
623   TeX}\@ACM@newfontsfalse}

We use Libertine throughout.
624 \if@ACM@newfonts
625 \ifxetex
626   \RequirePackage[tt=false]{libertine}
627 \else
628   \RequirePackage[tt=false, type1=true]{libertine}
629 \fi
630 \RequirePackage[varqu]{zi4}
631 \RequirePackage[libertine]{newtxmath}
632 \ifxetex\else
633   \RequirePackage[T1]{fontenc}
634 \fi
635 \fi

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

```

637 \AtEndPreamble{%
638   \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

639 \if@ACM@sigchiamode
640   \renewcommand{\familydefault}{\sfdefault}
641 \fi

```

3.9 Floats

We use the caption package

```

642 \RequirePackage{caption, float}
643 \captionsetup[table]{position=top}
644 \if@ACM@journal
645   \captionsetup{labelfont={sf, small},
646     textfont={sf, small}, margin=\z@}
647   \captionsetup[figure]{name={Fig.}}
648 \else
649   \captionsetup{labelfont={bf},
650     textfont={bf}, labelsep=colon, margin=\z@}
651   \ifcase\ACM@format@nr
652     \relax % manuscript
653     \or % acmsmall
654     \or % acmlarge
655     \or % acmtog
656     \or % sigconf
657     \or % siggraph
658     \captionsetup{textfont={it}}
659     \or % sigplan
660     \captionsetup{labelfont={bf},
661       textfont={normalfont}, labelsep=period, margin=\z@}
662     \or % sigchi
663     \captionsetup[figure]{labelfont={bf, small},
664       textfont={bf, small}}
665     \or % sigchi-a
666     \captionsetup[figure]{labelfont={bf, small},
667       textfont={bf, small}}
668   \fi
669 \fi

```

sidebar The sidebar environment:

```

670 \newfloat{sidebar}{}{sbar}
671 \floatname{sidebar}{Sidebar}
672 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

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

```

`marginfigure` The `marginfigure` environment:

```
675 \newenvironment{marginfigure}{\Collect@Body\@marginfigure}{}
```

`\@marginfigure` The processing of the saved text

```
676 \long\def\@marginfigure#1{\bgroup\captionsetup{type=figure}%
677   \marginpar{\centering\small#1}\egroup}
```

`marginable` The `marginable` environment:

```
678 \newenvironment{marginable}{\Collect@Body\@marginable}{}
```

`\@marginable` The processing of the saved text

```
679 \long\def\@marginable#1{\bgroup\captionsetup{type=table}%
680   \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

```
681 \newdimen\fulltextwidth
682 \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)

```
683 \if@ACM@sigchiamode
684 \def\@dblfloat{\bgroup\columnwidth=\fulltextwidth
685   \let\@endfloatbox\@endwidefloatbox
686   \def\@fpsadddefault{\def\@fps{tp}}%
687   \@float}
688 \fi
```

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

```
689 \if@ACM@sigchiamode
690 \def\end@dblfloat{%
691   \end@float\egroup}
692 \fi
```

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

```
693 \def\@endwidefloatbox{%
694   \par\vskip\z@skip
695   \@minipagefalse
696   \outer@nobreak
697   \egroup
698   \color@endbox
699   \global\setbox\@currbox=\vbox{\moveleft
700     \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
701   \wd\@currbox=\textwidth
702 }
```

3.10 Lists

```
703 \ifcase\ACM@format@nr
704 \relax % manuscript
705 \or % acmsmall
706 \or % acmlarge
707 \or % acmtog
708 \or % sigconf
709 \or % siggraph
710 \or % sigplan
711 \def\labelenumi{\theenumi.}
712 \def\labelenumii{\theenumii.}
713 \def\labelenumiii{\theenumiii.}
714 \def\labelenumiv{\theenumiv.}
715 \or % sigchi
716 \or % sigchi-a
717 \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`.

```
718 \newdimen\@ACM@labelwidth
719 \AtBeginDocument{%
720   \setlength\labelsep{4pt}
721   \setlength{\@ACM@labelwidth}{6.5pt}
722
723   %% First-level list: when beginning after the first line of an
724   %% indented paragraph or ending before an indented paragraph, labels
725   %% should not hang to the left of the preceding/following text.
726   \setlength\leftmargini{\z@}
727   \addtolength\leftmargini{\parindent}
728   \addtolength\leftmargini{2\labelsep}
729   \addtolength\leftmargini{\@ACM@labelwidth}
730
731   %% Second-level and higher lists.
732   \setlength\leftmarginii{\z@}
733   \addtolength\leftmarginii{0.5\labelsep}
734   \addtolength\leftmarginii{\@ACM@labelwidth}
735   \setlength\leftmarginiii{\leftmarginii}
736   \setlength\leftmarginiv{\leftmarginiii}
737   \setlength\leftmarginv{\leftmarginiv}
738   \setlength\leftmarginvi{\leftmarginv}
739   \@listi}
740 \newskip\listisep
741 \listisep\smallskipamount
742 \def\@listI{\leftmargin\leftmargini
743   \labelwidth\leftmargini \advance\labelwidth-\labelsep
```

```

744 \listparindent\z@
745 \topsep\listisep}
746 \let\@listi\@listI
747 \def\@listii{\leftmargin\leftmarginii
748 \labelwidth\leftmarginii \advance\labelwidth-\labelsep
749 \topsep\z@skip}
750 \def\@listiii{\leftmargin\leftmarginiii
751 \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
752 \def\@listiv{\leftmargin\leftmarginiv
753 \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
754 \def\@listv{\leftmargin\leftmarginv
755 \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
756 \def\@listvi{\leftmargin\leftmarginvi
757 \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}

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

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
759 \renewenvironment{description}{\list{}{%
760 \labelwidth\@ACM\labelwidth
761 \let\makelabel\descriptionlabel}%
762 }{
763 \endlist
764 }
765 \let\enddescription=\endlist % for efficiency

```

3.11 Top-matter data

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

```

766 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
767 CIE,%
768 CSUR,%
769 DTRAP,%
770 IMWUT,%
771 JACM,%
772 JDIQ,%
773 JEA,%
774 JERIC,%
775 JETC,%
776 JOCCH,%
777 PACMHCI,%
778 PACMPL,%
779 POMACS,%
780 TAAS,%
781 TACCESS,%
782 TACO,%
783 TALG,%

```



```

784 TALLIP,%
785 TAP,%
786 TCPS,%
787 TEAC,%
788 TECS,%
789 THRI,%
790 TIIS,%
791 TISSEC,%
792 TIST,%
793 TKDD,%
794 TMIS,%
795 TOCE,%
796 TOCHI,%
797 TOCL,%
798 TOCS,%
799 TOCT,%
800 TODAES,%
801 TODS,%
802 TOG,%
803 TOIS,%
804 TOIT,%
805 TOMACS,%
806 TOMM,%
807 TOMPECS,%
808 TOMS,%
809 TOPC,%
810 TOPS,%
811 TOPLAS,%
812 TOS,%
813 TOSEM,%
814 TOSN,%
815 TRETs,%
816 TSAS,%
817 TSC,%
818 TSLP,%
819 TWEB%
820 }{%
821 \ifcase\@journalCode@nr
822 \relax % CIE
823 \def\@journalName{ACM Computers in Entertainment}%
824 \def\@journalNameShort{ACM Comput. Entertain.}%
825 \def\@permissionCodeOne{1544-3574}%
826 \or % CSUR
827 \def\@journalName{ACM Computing Surveys}%
828 \def\@journalNameShort{ACM Comput. Surv.}%
829 \def\@permissionCodeOne{0360-0300}%
830 \or % DTRAP
831 \def\@journalName{Digital Threats: Research and Practice}%
832 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
833 \def\@permissionCodeOne{2576-5337}%

```

```

834 \or % IMWUT
835 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
836 Wearable and Ubiquitous Technologies}%
837 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
838 \def\@permissionCodeOne{2474-9567}%
839 \@ACM@screentru
840 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
841 \or % JACM
842 \def\@journalName{Journal of the ACM}%
843 \def\@journalNameShort{J. ACM}%
844 \def\@permissionCodeOne{0004-5411}%
845 \or % JDIQ
846 \def\@journalName{ACM Journal of Data and Information Quality}%
847 \def\@journalNameShort{ACM J. Data Inform. Quality}%
848 \def\@permissionCodeOne{1936-1955}%
849 \or % JEA
850 \def\@journalName{ACM Journal of Experimental Algorithmics}%
851 \def\@journalNameShort{ACM J. Exp. Algor.}%
852 \def\@permissionCodeOne{1084-6654}%
853 \or % JERIC
854 \def\@journalName{ACM Journal of Educational Resources in Computing}%
855 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
856 \def\@permissionCodeOne{1073-0516}%
857 \or % JETC
858 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
859 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
860 \def\@permissionCodeOne{1550-4832}%
861 \or % JOCCH
862 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
863 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
864 \or % PACM HCI
865 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
866 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
867 \def\@permissionCodeOne{2573-0142}%
868 \@ACM@screentru
869 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
870 \or % PACMPL
871 \def\@journalName{Proceedings of the ACM on Programming Languages}%
872 \def\@journalNameShort{Proc. ACM Program. Lang.}%
873 \def\@permissionCodeOne{2475-1421}%
874 \@ACM@screentru
875 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
876 \or % POMACS
877 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
878 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
879 \def\@permissionCodeOne{2476-1249}%
880 \@ACM@screentru
881 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
882 \or % TAAS
883 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%

```

```

884 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
885 \def\@permissionCodeOne{1556-4665}%
886 \or % TACCESS
887 \def\@journalName{ACM Transactions on Accessible Computing}%
888 \def\@journalNameShort{ACM Trans. Access. Comput.}%
889 \def\@permissionCodeOne{1936-7228}%
890 \or % TACO
891 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
892 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
893 \or % TALG
894 \def\@journalName{ACM Transactions on Algorithms}%
895 \def\@journalNameShort{ACM Trans. Algor.}%
896 \def\@permissionCodeOne{1549-6325}%
897 \or % TALLIP
898 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
899 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
900 \def\@permissionCodeOne{2375-4699}%
901 \or % TAP
902 \def\@journalName{ACM Transactions on Applied Perception}%
903 \or % TCPS
904 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
905 \or % TEAC
906 \def\@journalName{ACM Transactions on Economics and Computation}%
907 \or % TECS
908 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
909 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
910 \def\@permissionCodeOne{1539-9087}%
911 \or % THRI
912 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
913 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
914 \def\@permissionCodeOne{2573-9522}%
915 \or % TIIS
916 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
917 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
918 \def\@permissionCodeOne{2160-6455}%
919 \or % TISSEC
920 \def\@journalName{ACM Transactions on Information and System Security}%
921 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
922 \def\@permissionCodeOne{1094-9224}%
923 \or % TIST
924 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
925 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
926 \def\@permissionCodeOne{2157-6904}%
927 \or % TKDD
928 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
929 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
930 \def\@permissionCodeOne{1556-4681}%
931 \or % TMIS
932 \def\@journalName{ACM Transactions on Management Information Systems}%
933 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%

```

```

934 \def\@permissionCodeOne{2158-656X}%
935 \or % TOCE
936 \def\@journalName{ACM Transactions on Computing Education}%
937 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
938 \def\@permissionCodeOne{1946-6226}%
939 \or % TOCHI
940 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
941 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
942 \def\@permissionCodeOne{1073-0516}%
943 \or % TOCL
944 \def\@journalName{ACM Transactions on Computational Logic}%
945 \def\@journalNameShort{ACM Trans. Comput. Logic}%
946 \def\@permissionCodeOne{1529-3785}%
947 \or % TOCS
948 \def\@journalName{ACM Transactions on Computer Systems}%
949 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
950 \def\@permissionCodeOne{0734-2071}%
951 \or % TOCT
952 \def\@journalName{ACM Transactions on Computation Theory}%
953 \def\@journalNameShort{ACM Trans. Comput. Theory}%
954 \def\@permissionCodeOne{1942-3454}%
955 \or % TODAES
956 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
957 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
958 \def\@permissionCodeOne{1084-4309}%
959 \or % TODS
960 \def\@journalName{ACM Transactions on Database Systems}%
961 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
962 \def\@permissionCodeOne{0362-5915}%
963 \or % TOG
964 \def\@journalName{ACM Transactions on Graphics}%
965 \def\@journalNameShort{ACM Trans. Graph.}%
966 \def\@permissionCodeOne{0730-0301}%
967 \or % TOIS
968 \def\@journalName{ACM Transactions on Information Systems}%
969 \def\@permissionCodeOne{1046-8188}%
970 \or % TOIT
971 \def\@journalName{ACM Transactions on Internet Technology}%
972 \def\@journalNameShort{ACM Trans. Internet Technol.}%
973 \def\@permissionCodeOne{1533-5399}%
974 \or % TOMACS
975 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
976 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
977 \or % TOMM
978 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
979 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
980 \def\@permissionCodeOne{1551-6857}%
981 \def\@permissionCodeTwo{0100}%
982 \or % TOMPECS
983 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%

```

```

984 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
985 \def\@permissionCodeOne{2376-3639}%
986 \or % TOMS
987 \def\@journalName{ACM Transactions on Mathematical Software}%
988 \def\@journalNameShort{ACM Trans. Math. Softw.}%
989 \def\@permissionCodeOne{0098-3500}%
990 \or % TOPC
991 \def\@journalName{ACM Transactions on Parallel Computing}%
992 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
993 \def\@permissionCodeOne{1539-9087}%
994 \or % TOPS
995 \def\@journalName{ACM Transactions on Privacy and Security}%
996 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
997 \def\@permissionCodeOne{2471-2566}%
998 \or % TOPLAS
999 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1000 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1001 \def\@permissionCodeOne{0164-0925}%
1002 \or % TOS
1003 \def\@journalName{ACM Transactions on Storage}%
1004 \def\@journalNameShort{ACM Trans. Storage}%
1005 \def\@permissionCodeOne{1553-3077}%
1006 \or % TOSEM
1007 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1008 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1009 \def\@permissionCodeOne{1049-331X}%
1010 \or % TOSN
1011 \def\@journalName{ACM Transactions on Sensor Networks}%
1012 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1013 \def\@permissionCodeOne{1550-4859}%
1014 \or % TRET
1015 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1016 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1017 \def\@permissionCodeOne{1936-7406}%
1018 \or % TSAS
1019 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1020 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1021 \def\@permissionCodeOne{2374-0353}%
1022 \or % TSC
1023 \def\@journalName{ACM Transactions on Social Computing}%
1024 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1025 \def\@permissionCodeOne{2469-7818}%
1026 \or % TSLP
1027 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1028 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1029 \def\@permissionCodeOne{1550-4875}%
1030 \or % TWEB
1031 \def\@journalName{ACM Transactions on the Web}%
1032 \def\@journalNameShort{ACM Trans. Web}%
1033 \def\@permissionCodeOne{1559-1131}%

```

```

1034 \fi
1035 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1036 }{%
1037 \ClassError{\@classname}{Incorrect journal #1}%
1038 }%

\acmJournal And the syntactic sugar around it
1039 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}

The defaults:
1040 \def\@journalCode@nr{0}
1041 \def\@journalName{}%
1042 \def\@journalNameShort{\@journalName}%
1043 \def\@permissionCodeOne{XXXX-XXXX}%
1044 \def\@permissionCodeTwo{}%

\acmConference This is the conference command
1045 \newcommand\acmConference[4][{}%
1046 \gdef\acmConference@shortname{#1}%
1047 \gdef\acmConference@name{#2}%
1048 \gdef\acmConference@date{#3}%
1049 \gdef\acmConference@venue{#4}%
1050 \ifx\acmConference@shortname\empty
1051 \gdef\acmConference@shortname{#2}%
1052 \fi}
1053 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1054 DC, USA}

\acmBooktitle The book title of the conference:
\@acmBooktitle 1055 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1056 \acmBooktitle{Proceedings of \acmConference@name
1057 \ifx\acmConference@name\acmConference@shortname\else
1058 \ (\acmConference@shortname)\fi}

\@editorsAbbrev How to abbreviate editors
1059 \def\@editorsAbbrev{(Ed.)}

\@acmEditors The list of editors
1060 \def\@acmEditors{}

\editor Add a new editor to the list
1061 \def\editor#1{\ifx\@acmEditors\empty
1062 \gdef\@acmEditors{#1}%
1063 \else
1064 \gdef\@editorsAbbrev{(Eds.)}%
1065 \g@addto@macro\@acmEditors{\and#1}%
1066 \fi}

```

<code>\subtitle</code>	<p>The subtitle macro</p> <pre> 1067 \def\subtitle#1{\def\@subtitle{#1}} 1068 \subtitle{}</pre>
<code>\num@authorgroups</code>	<p>The total number of “groups”. Each group is several authors with the same affiliations(s)</p> <pre> 1069 \newcount\num@authorgroups 1070 \num@authorgroups=0\relax</pre>
<code>\num@author</code>	<p>The total number of authors</p> <pre> 1071 \newcount\num@author 1072 \num@author=0\relax</pre>
<code>\if@insideauthorgroup</code>	<p>Whether we are continuing an author group</p> <pre> 1073 \newif\if@insideauthorgroup 1074 \@insideauthorgroupfalse</pre>
<code>\author</code>	<p>Adding an author to the list of authors and addresses</p> <pre> 1075 \renewcommand\author[2][\% 1076 \global\advance\num@author by 1\relax 1077 \if@insideauthorgroup\else 1078 \global\advance\num@authorgroups by 1\relax 1079 \global\@insideauthorgrouptrue 1080 \fi 1081 \ifx\addresses\@empty 1082 \if@ACM@anonymous 1083 \gdef\addresses{\@author{Anonymous Author(s)}}% 1084 \gdef\authors{Anonymous Author(s)}% 1085 \else 1086 \gdef\addresses{\@author{#2}}% 1087 \gdef\authors{#2}% 1088 \fi 1089 \else 1090 \if@ACM@anonymous\else 1091 \g@addto@macro\addresses{\and\@author{#2}}% 1092 \g@addto@macro\authors{\and#2}% 1093 \fi 1094 \fi 1095 \if@ACM@anonymous 1096 \ifx\shortauthors\@empty 1097 \gdef\shortauthors{Anon.}% 1098 \fi 1099 \else 1100 \def\@tempa{#1}% 1101 \ifx\@tempa\@empty 1102 \ifx\shortauthors\@empty 1103 \gdef\shortauthors{#2}% 1104 \else 1105 \g@addto@macro\shortauthors{\and#2}% 1106 \fi 1107 \fi 1108 \fi 1109 \end{pre}</pre>

```

1107 \else
1108 \ifx\shortauthors\@empty
1109 \gdef\shortauthors{#1}%
1110 \else
1111 \g@addto@macro\shortauthors{\and#1}%
1112 \fi
1113 \fi
1114 \fi}

\affiliation The macro \affiliation mimics \address from amsart. Note that it has an optional
argument, which we use differently from amsart.
1115 \newcommand{\affiliation}[2][{}]{%
1116 \global\@insideauthorgroupfalse
1117 \if@ACM@anonymous\else
1118 \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1119 \fi}

@ACM@affiliation@obeypunctuation Whether to use the author's punctuation (false by default, which adds American-style
address punctuation)
1120 \define@boolkey+{@ACM@affiliation@}[@ACM@affiliation@]{obeypunctuation}%
1121 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

\additionalaffiliation Additional affiliations go to footnotes
1122 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

\@additionalaffiliation Process \additionalaffiliation inside \authornote
1123 \def\@additionalaffiliation#1{\bgroup
1124 \def\position##1{\ignorespaces}%
1125 \def\institution##1{##1\ignorespaces}%
1126 \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1127 \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1128 \let\streetaddress\position
1129 \let\city\position
1130 \let\state\position
1131 \let\postcode\position
1132 \let\country\position
1133 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.
1134 \renewcommand{\email}[2][{}]{%
1135 \if@ACM@anonymous\else
1136 \g@addto@macro\addresses{\email{#1}{#2}}%
1137 \fi}

\orcid Right now we do not typeset ORCIDs
1138 \def\orcid#1{\unskip\ignorespaces}

```


`\authorsaddresses` Setting up authors' addresses

```

1139 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1140 \authorsaddresses{\mkauthorsaddresses}

```

`\@titlenotes` The title notes

```

1141 \def\@titlenotes{}

```

`\titlenote` Adding a note to the title

```

1142 \def\titlenote#1{%
1143   \g@addto@macro\@title{\footnotemark}%
1144   \if@ACM@anonymous
1145     \g@addto@macro\@titlenotes{%
1146       \stepcounter{footnote}\footnotetext{Title note}}%
1147   \else
1148     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1149   \fi}

```

`\@subtitlenotes` The subtitle notes

```

1150 \def\@subtitlenotes{}

```

`\subtitlenote` Adding a note to the subtitle

```

1151 \def\subtitlenote#1{%
1152   \g@addto@macro\@subtitle{\footnotemark}%
1153   \if@ACM@anonymous
1154     \g@addto@macro\@subtitlenotes{%
1155       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1156   \else
1157     \g@addto@macro\@subtitlenotes{%
1158       \stepcounter{footnote}\footnotetext{#1}}%
1159   \fi}

```

`\@authornotes` The author notes

```

1160 \def\@authornotes{}

```

`\authornote` Adding a note to the author

```

1161 \def\authornote#1{%
1162   \if@ACM@anonymous\else
1163     \g@addto@macro\addresses{\@authornotemark}%
1164     \g@addto@macro\@authornotes{%
1165       \stepcounter{footnote}\footnotetext{#1}}%
1166   \fi}

```

`\authornotemark` Adding a footnote mark to the authors

```

1167 \newcommand\authornotemark[1][\relax]{%
1168   \ifx#1\relax\relax\relax
1169   \g@addto@macro\addresses{\@authornotemark}%
1170   \else
1171     \g@addto@macro\addresses{\@authornotemark{#1}}%
1172   \fi}

```

<code>\acmVolume</code>	<p>The current volume</p> <pre>1173 \def\acmVolume#1{\def\@acmVolume{#1}} 1174 \acmVolume{1}</pre>
<code>\acmNumber</code>	<p>The current number</p> <pre>1175 \def\acmNumber#1{\def\@acmNumber{#1}} 1176 \acmNumber{1}</pre>
<code>\acmArticle</code>	<p>The current article</p> <pre>1177 \def\acmArticle#1{\def\@acmArticle{#1}} 1178 \acmArticle{}</pre>
<code>\acmArticleSeq</code>	<p>The sequence number</p> <pre>1179 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}} 1180 \acmArticleSeq{\@acmArticle}</pre>
<code>\acmYear</code>	<p>The current year</p> <pre>1181 \def\acmYear#1{\def\@acmYear{#1}} 1182 \acmYear{\the\year}</pre>
<code>\acmMonth</code>	<p>The current month</p> <pre>1183 \def\acmMonth#1{\def\@acmMonth{#1}} 1184 \acmMonth{\the\month}</pre>
<code>\@acmPubDate</code>	<p>The publication date</p> <pre>1185 \def\@acmPubDate{\ifcase\@acmMonth\or 1186 January\or February\or March\or April\or May\or June\or 1187 July\or August\or September\or October\or November\or 1188 December\fi~\@acmYear}</pre>
<code>\acmPrice</code>	<p>The price</p> <pre>1189 \def\acmPrice#1{\def\@acmPrice{#1}} 1190 \acmPrice{15.00}</pre>
<code>\acmSubmissionID</code>	<p>The submission ID</p> <pre>1191 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}} 1192 \acmSubmissionID{}</pre>
<code>\acmISBN</code>	<p>The book ISBN</p> <pre>1193 \def\acmISBN#1{\def\@acmISBN{#1}} 1194 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}</pre>
<code>\acmDOI</code>	<p>The paper DOI</p> <pre>1195 \def\acmDOI#1{\def\@acmDOI{#1}} 1196 \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>1197 \newif\if@ACM@badge 1198 \@ACM@badgefalse</pre>

`\@ACM@badge@width` The width of the badge
1199 `\newlength\@ACM@badge@width`
1200 `\setlength\@ACM@badge@width{5pc}`

`\@ACM@title@width` The width of the badge
1201 `\newlength\@ACM@title@width`

`\@ACM@badge@skip` The space between the badge and the title
1202 `\newlength\@ACM@badge@skip`
1203 `\setlength\@ACM@badge@skip{1pc}`

`\acmBadgeR` Setting the right badge
1204 `\newcommand\acmBadgeR[2][\@ACM@badgetrue`
1205 `\def\@acmBadgeR@url{#1}%`
1206 `\def\@acmBadgeR@image{#2}}`
1207 `\def\@acmBadgeR@url{}`
1208 `\def\@acmBadgeR@image{}`

`\acmBadgeL` Setting the left badge
1209 `\newcommand\acmBadgeL[2][\@ACM@badgetrue`
1210 `\def\@acmBadgeL@url{#1}%`
1211 `\def\@acmBadgeL@image{#2}}`
1212 `\def\@acmBadgeL@url{}`
1213 `\def\@acmBadgeL@image{}`

`\startPage` The start page of the paper
1214 `\def\startPage#1{\def\@startPage{#1}}`
1215 `\startPage{}`

`\terms` Terms are obsolete. We use CCS now.
1216 `\def\terms#1{\ClassWarning{\@classname}{The command \string\terms{}` is
1217 `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.
1218 `\def\keywords#1{\def\@keywords{#1}}`
1219 `\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
1220 `\renewenvironment{abstract}{\Collect@Body\@saveabstract}{}`

`\@saveabstract` And saving the abstract
1221 `\long\def\@saveabstract#1{\long\gdef\@abstract{#1}}`
1222 `\@saveabstract{}`

`\@empty` The long version of `\@empty` (to compare with `\@abstract`)
1223 `\long\def\@empty{}`

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

```

1224 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1225   \if@ACM@printccs
1226     \ClassInfo{\@classname}{Printing CCS}%
1227   \else
1228     \ClassInfo{\@classname}{Suppressing CCS}%
1229 \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

```

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

```

1230 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1231   \if@ACM@printacmref
1232     \ClassInfo{\@classname}{Printing bibformat}%
1233   \else
1234     \ClassInfo{\@classname}{Suppressing bibformat}%
1235 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

```

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

```

1236 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1237   \if@ACM@printfolios
1238     \ClassInfo{\@classname}{Printing folios}%
1239   \else
1240     \ClassInfo{\@classname}{Suppressing folios}%
1241 \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.

```

1242 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorssperrow}[0]{%
1243   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorssperrow to
1244     #1}}{\ClassWarning{\@classname}{The parameter authorssperrow must be
1245     numerical. Ignoring the input #1}\gdef\@ACM@authorssperrow{0}}

```

`\settopmatter` The usual syntactic sugar

```

1246 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

```

Now the settings

```

1247 \settopmatter{printccs=true, printacmref=true}
1248 \if@ACM@manuscript
1249   \settopmatter{printfolios=true}
1250 \else
1251   \if@ACM@journal
1252     \settopmatter{printfolios=true}
1253   \else
1254     \settopmatter{printfolios=false}
1255   \fi
1256 \fi
1257 \settopmatter{authorssperrow=0}

```

`\@received` The container for the paper history

```

1258 \def\@received{}

```

`\received` The `\received` command

```

1259 \newcommand\received[2][\def\tempa{#1}%
1260 \ifx\tempa\empty
1261 \ifx\@received\empty
1262 \gdef\@received{Received #2}%
1263 \else
1264 \g@addto@macro{\@received}{; revised #2}%
1265 \fi
1266 \else
1267 \ifx\@received\empty
1268 \gdef\@received{#1 #2}%
1269 \else
1270 \g@addto@macro{\@received}{; #1 #2}%
1271 \fi
1272 \fi}
1273 \AtEndDocument{%
1274 \ifx\@received\empty\else
1275 \par\bigskip\noindent\small\normalfont\@received\par
1276 \fi}

```

3.12 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1277 \RequirePackage{comment}
1278 \excludecomment{CCSXML}

```

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

```

1279 \let\@concepts\empty

```

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

```

1280 \newcommand\ccsdesc[2][100]{%
1281 \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!

```

1282 \RequirePackage{textcomp}
1283 \def\ccsdesc@parse#1~#2~#3~{%
1284 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1285 \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1286 \textbf{#2}}}%
1287 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
1288 \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1289 \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1290 \csname CCS@Punctuation@#2\endcsname
1291 \csname CCS@Specific@#2\endcsname}%
1292 \fi
1293 \ifx#3\relax\relax\else
1294 \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1295 \textrightarrow }%

```

```

1296 \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1297 \ifnum#1>499\textbf{#3}; \else
1298 \ifnum#1>299\textit{#3}; \else
1299 #3; \fi\fi}%
1300 \fi
1301 \ccsdesc@parse@finish}

```

```

\ccdesc@parse@finish Gobble everything to \ccsdesc@parse@end
1302 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}

```

3.13 Copyright system

This is from acmcopyright.sty

```

\if@printcopyright Whether to print a copyright symbol
1303 \newif\if@printcopyright
1304 \@printcopyrighttrue

\if@printpermission Whether to print the permission block
1305 \newif\if@printpermission
1306 \@printpermissiontrue

\if@acmowned Whether the ACM owns the rights to the paper
1307 \newif\if@acmowned
1308 \@acmownedtrue

```

Keys:

```

1309 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1310 \acm@copyrightinput\acm@copyrightmode]{none,%
1311 acmcopyright,acmlicensed,rightsretained,%
1312 usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1313 licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1314 iw3c2w3,iw3c2w3g}{%
1315 \@printpermissiontrue
1316 \@printcopyrighttrue
1317 \@acmownedtrue
1318 \ifnum\acm@copyrightmode=0\relax % none
1319 \@printpermissionfalse
1320 \@printcopyrightfalse
1321 \@acmownedfalse
1322 \fi
1323 \ifnum\acm@copyrightmode=2\relax % acmlicensed
1324 \@acmownedfalse
1325 \fi
1326 \ifnum\acm@copyrightmode=3\relax % rightsretained
1327 \@acmownedfalse
1328 \AtBeginDocument{\acmPrice{}}%
1329 \fi
1330 \ifnum\acm@copyrightmode=4\relax % usgov

```

```

1331 \@printpermissiontrue
1332 \@printcopyrightfalse
1333 \@acmownedfalse
1334 \AtBeginDocument{\acmPrice{}}%
1335 \fi
1336 \ifnum\acm@copyrightmode=6\relax % cagov
1337 \@acmownedfalse
1338 \fi
1339 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1340 \@acmownedfalse
1341 \fi
1342 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1343 \@acmownedfalse
1344 \fi
1345 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1346 \@acmownedfalse
1347 \fi
1348 \ifnum\acm@copyrightmode=11\relax % othergov
1349 \@acmownedtrue
1350 \fi
1351 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1352 \@acmownedfalse
1353 \fi
1354 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1355 \@acmownedfalse
1356 \AtBeginDocument{\acmPrice{}}%
1357 \fi
1358 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1359 \@acmownedfalse
1360 \AtBeginDocument{\acmPrice{}}%
1361 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1362 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1363 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1364 \def\@copyrightowner{%
1365   \ifcase\acm@copyrightmode\relax % none
1366   \or % acmcopyright
1367   Association for Computing Machinery.
1368   \or % acmlicensed
1369   Copyright held by the owner/author(s). Publication rights licensed to
1370   ACM\@.
1371   \or % rightsretained
1372   Copyright held by the owner/author(s).
1373   \or % usgov
1374   \or % usgovmixed
1375   Association for Computing Machinery.
1376   \or % cagov

```

```

1377 Crown in Right of Canada.
1378 \or %cagovmixed
1379 Association for Computing Machinery.
1380 \or %licensedusgovmixed
1381 Copyright held by the owner/author(s). Publication rights licensed to
1382 ACM\@.
1383 \or % licensedcagov
1384 Crown in Right of Canada. Publication rights licensed to
1385 ACM\@.
1386 \or %licensedcagovmixed
1387 Copyright held by the owner/author(s). Publication rights licensed to
1388 ACM\@.
1389 \or % othergov
1390 Association for Computing Machinery.
1391 \or % licensedothergov
1392 Copyright held by the owner/author(s). Publication rights licensed to
1393 ACM\@.
1394 \or % ic2w3www
1395 IW3C2 (International World Wide Web Conference Committee), published
1396 under Creative Commons CC~BY~4.0 License.
1397 \or % ic2w3wwwgoogle
1398 IW3C2 (International World Wide Web Conference Committee), published
1399 under Creative Commons CC~BY-NC-ND~4.0 License.
1400 \fi}

```

\@formatdoi Print a clickable DOI

```

1401 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1402 \def\@copyrightpermission{%
1403   \ifcase\acm@copyrightmode\relax % none
1404   \or % acmcopyright
1405     Permission to make digital or hard copies of all or part of this
1406     work for personal or classroom use is granted without fee provided
1407     that copies are not made or distributed for profit or commercial
1408     advantage and that copies bear this notice and the full citation on
1409     the first page. Copyrights for components of this work owned by
1410     others than ACM must be honored. Abstracting with credit is
1411     permitted. To copy otherwise, or republish, to post on servers or to
1412     redistribute to lists, requires prior specific permission
1413     and\hspace*{.5pt}/or a fee. Request permissions from
1414     permissions@acm.org.
1415   \or % acmlicensed
1416     Permission to make digital or hard copies of all or part of this
1417     work for personal or classroom use is granted without fee provided
1418     that copies are not made or distributed for profit or commercial
1419     advantage and that copies bear this notice and the full citation on
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1422     is permitted. To copy otherwise, or republish, to post on servers

```


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 1429 copies are not made or distributed for profit or commercial advantage
 1430 and that copies bear this notice and the full citation on the first
 1431 page. Copyrights for third-party components of this work must be
 1432 honored. For all other uses, contact the
 1433 owner\hspace*{.5pt}/author(s).
 1434 \or % usgov
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 1437 redistribution is allowed, provided that the article citation is
 1438 given and the authors and agency are clearly identified as its
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 1440 \or % usgovmixed
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 1446 \or % cagov
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 1457 otherwise, distribute, republish, or post, requires prior specific
 1458 permission and\hspace*{.5pt}/or a fee. Request permissions from
 1459 permissions@acm.org.
 1460 \or % cagovmixed
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 1470 specific permission and\hspace*{.5pt}/or a fee. Request permissions
 1471 from permissions@acm.org.
 1472 \or % licensedusgovmixed

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```

1523 the appropriate attribution.
1524 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
1525 \def\copyrightyear#1{\def\copyrightyear{#1}}
1526 \copyrightyear{\acmYear}

\@teaserfigures The teaser figures container
1527 \def\@teaserfigures{}

teaserfigure The teaser figure
1528 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
1529 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amsart \thanks so the anonymous key works
1530 \renewcommand{\thanks}[1]{%
1531 \ifnotempty{#1}{%
1532 \if@ACM@anonymous
1533 \g@addto@macro\thankses{\thanks{A note}}%
1534 \else
1535 \g@addto@macro\thankses{\thanks{#1}}%
1536 \fi}}

```

3.14 Typesetting top matter

```

\mktitle@bx Some of our formats use a two-column design. Some use a one-column design. In all
cases we use a wide title. Thus we typeset the top matter in a special box to be used in
the construction \@twocolumn[<box>].
1537 \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 copy-
right/permission block. By the way, this was the default behavior of the old ACM classes.

1538 \def\maketitle{%
1539 \if@ACM@anonymous
1540 % Anonymize omission of \author-s
1541 \ifnum\@authorgroups=0\author{}\fi
1542 \fi
1543 \begingroup
1544 \let\@footnotemark\@footnotemark@nolink
1545 \let\@footnotetext\@footnotetext@nolink
1546 \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1547 \global\@topnum\z@ % this prevents floats from falling
1548 % at the top of page 1

```

```

1549 \global\@botnum\z@ % we do not want them to be on the bottom either
1550 \hsize=\textwidth
1551 \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1552 \@mktitle\if@ACM@sigchiamode\else\mkauthors\fi\@mkteasers
1553 \@printtopmatter
1554 \if@ACM@sigchiamode\mkauthors\fi
1555 \setcounter{footnote}{0}%
1556 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1557 \@titlenotes
1558 \@subtitlenotes
1559 \@authornotes
1560 \let\@makefnmark\relax
1561 \let\@thefnmark\relax
1562 \let\@makefntext\noindent
1563 \ifx\@empty\thankses\else
1564   \footnotetextauthorsaddresses{%
1565     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1566   \fi
1567 \ifx\@empty\@authorsaddresses\else
1568   \if@ACM@anonymous\else
1569     \if@ACM@journal
1570       \footnotetextauthorsaddresses{%
1571         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1572       \fi
1573     \fi
1574   \fi
1575 \footnotetextcopyrightpermission{%
1576   \if@ACM@authordraft
1577     \raisebox{-2ex}[\z@][\z@]{\makebox[0pt][l]{\large\bfseries
1578       Unpublished working draft. Not for distribution.}}%
1579     \color[gray]{0.9}%
1580   \fi
1581   \parindent\z@\parskip0.1\baselineskip
1582   \if@ACM@authorversion\else
1583     \if@printpermission\@copyrightpermission\par\fi
1584   \fi
1585   \if@ACM@manuscript\else
1586     \if@ACM@journal\else % Print the conference information
1587       {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1588     \fi
1589   \fi
1590   \if@printcopyright
1591     \copyright\ \@copyrightyear\ \@copyrightowner\
1592   \else
1593     \@copyrightyear.\
1594   \fi
1595   \if@ACM@manuscript
1596     Manuscript submitted to ACM\
1597   \else
1598     \if@ACM@authorversion

```

```

1599      This is the author's version of the work. It is posted here for
1600      your personal use. Not for redistribution. The definitive Version
1601      of Record was published in
1602      \if@ACM@journal
1603          \emph{\@journalName}%
1604      \else
1605          \emph{\@acmBooktitle}%
1606      \fi
1607      \ifx\@acmDOI\@empty
1608          .
1609      \else
1610          , \@formatdoi{\@acmDOI}.
1611      \fi\\
1612  \else
1613      \if@ACM@journal
1614          \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1615          \ifx\@acmPrice\@empty\else\ \$\@acmPrice\fi\\
1616          \@formatdoi{\@acmDOI}%
1617      \else % Conference
1618          \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1619          \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\fi
1620          \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1621      \fi
1622  \fi
1623  \fi}
1624 \endgroup
1625 \setcounter{footnote}{0}%
1626 \@mkabstract
1627 \if@ACM@printccs
1628     \ifx\@concepts\@empty\else\bgroup
1629         {\@specialsection{CCS Concepts}}%
1630         \@concepts\par\egroup
1631     \fi
1632 \fi
1633 \ifx\@keywords\@empty\else\bgroup
1634     {\if@ACM@journal
1635         \@specialsection{Additional Key Words and Phrases}%
1636     \else
1637         \@specialsection{Keywords}%
1638     \fi
1639     \@keywords}\par\egroup
1640 \fi
1641 \andify\authors
1642 \andify\shortauthors
1643 \global\let\authors=\authors
1644 \global\let\shortauthors=\shortauthors
1645 \if@ACM@printacmref
1646     \@mkbibcitation
1647 \fi
1648 \hypersetup{%

```

```

1649 pdflang={English},
1650 pdfdisplaydoctitle,
1651 pdfauthor={\authors},
1652 pdftitle={\@title},
1653 pdfsubject={\@concepts},
1654 pdfkeywords={\@keywords},
1655 pdfcreator={LaTeX with acmart
1656   \csname ver@acmart.cls\endcsname\space
1657   and hyperref
1658   \csname ver@hyperref.sty\endcsname}}%
1659 \@printendtopmatter
1660 \@afterindentfalse
1661 \@afterheading
1662 }

```

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

```

1663 \def\@specialsection#1{%
1664   \ifcase\ACM@format@nr
1665   \relax % manuscript
1666   \par\medskip\small\noindent#1: %
1667   \or % acmsmall
1668   \par\medskip\small\noindent#1: %
1669   \or % acmlarge
1670   \par\medskip\small\noindent#1: %
1671   \or % acmtog
1672   \par\medskip\small\noindent#1: %
1673   \or % sigconf
1674   \section*{#1}%
1675   \or % siggraph
1676   \section*{#1}%
1677   \or % sigplan
1678   \paragraph*{#1}%
1679   \or % sigchi
1680   \section*{#1}%
1681   \or % sigchi-a
1682   \section*{#1}%
1683   \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.

```

1684 \def\@printtopmatter{%
1685   \ifx\@startPage\@empty
1686     \gdef\@startPage{1}%
1687   \else
1688     \setcounter{page}{\@startPage}%
1689   \fi
1690   \thispagestyle{firstpagestyle}%
1691   \noindent

```

```

1692 \ifcase\ACM@format@nr
1693 \relax % manuscript
1694 \box\mktitle@bx\par
1695 \or % acmsmall
1696 \box\mktitle@bx\par
1697 \or % acmlarge
1698 \box\mktitle@bx\par
1699 \or % acmtog
1700 \twocolumn[\box\mktitle@bx]%
1701 \or % sigconf
1702 \twocolumn[\box\mktitle@bx]%
1703 \or % siggraph
1704 \twocolumn[\box\mktitle@bx]%
1705 \or % sigplan
1706 \twocolumn[\box\mktitle@bx]%
1707 \or % sigchi
1708 \twocolumn[\box\mktitle@bx]%
1709 \or % sigchi-a
1710 \par\box\mktitle@bx\par\bigskip
1711 \if@ACM@badge
1712 \marginpar{\noindent
1713 \ifx\@acmBadgeL@image\@empty\else
1714 \href{\@acmBadgeL@url}{%
1715 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1716 \hskip\@ACM@badge@skip
1717 \fi
1718 \ifx\@acmBadgeR@image\@empty\else
1719 \href{\@acmBadgeR@url}{%
1720 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1721 \fi}%
1722 \fi
1723 \fi
1724 }

```

\@mktitle The title of the article

```

1725 \def\@mktitle{%
1726 \ifcase\ACM@format@nr
1727 \relax % manuscript
1728 \@mktitle@i
1729 \or % acmsmall
1730 \@mktitle@i
1731 \or % acmlarge
1732 \@mktitle@i
1733 \or % acmtog
1734 \@mktitle@i
1735 \or % sigconf
1736 \@mktitle@iii
1737 \or % siggraph
1738 \@mktitle@iii
1739 \or % sigplan

```

```

1740     \@mktitle@iii
1741     \or % sigchi
1742     \@mktitle@iii
1743     \or % sigchi-a
1744     \@mktitle@iv
1745     \fi
1746 }

\@titlefont The font to typeset the title
1747 \def\@titlefont{%
1748     \ifcase\ACM@format@nr
1749     \relax % manuscript
1750     \LARGE\sffamily\bfseries
1751     \or % acmsmall
1752     \LARGE\sffamily\bfseries
1753     \or % acmlarge
1754     \LARGE\sffamily\bfseries
1755     \or % acmtog
1756     \Huge\sffamily
1757     \or % sigconf
1758     \Huge\sffamily\bfseries
1759     \or % siggraph
1760     \Huge\sffamily\bfseries
1761     \or % sigplan
1762     \Huge\bfseries
1763     \or % sigchi
1764     \Huge\sffamily\bfseries
1765     \or % sigchi-a
1766     \Huge\bfseries
1767     \fi}

\@subtitlefont The font to typeset the subtitle
1768 \def\@subtitlefont{\normalsize
1769     \ifcase\ACM@format@nr
1770     \relax % manuscript
1771     \mdseries
1772     \or % acmsmall
1773     \mdseries
1774     \or % acmlarge
1775     \mdseries
1776     \or % acmtog
1777     \LARGE
1778     \or % sigconf
1779     \LARGE\mdseries
1780     \or % siggraph
1781     \LARGE\mdseries
1782     \or % sigplan
1783     \LARGE\mdseries
1784     \or % sigchi
1785     \LARGE\mdseries

```



```

1786 \or % sigchi-a
1787 \mdseries
1788 \fi}

\mktitle@i The version of \mktitle for most journals
1789 \def\mktitle@i{\hsize=\textwidth
1790 \ACM@title@width=\hsize
1791 \ifx\@acmBadgeL@image\@empty\else
1792 \advance\ACM@title@width by -\ACM@badge@width
1793 \advance\ACM@title@width by -\ACM@badge@skip
1794 \fi
1795 \ifx\@acmBadgeR@image\@empty\else
1796 \advance\ACM@title@width by -\ACM@badge@width
1797 \advance\ACM@title@width by -\ACM@badge@skip
1798 \fi
1799 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
1800 \ifx\@acmBadgeL@image\@empty\else
1801 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
1802 \includegraphics[width=\ACM@badge@width]{\@acmBadgeL@image}}}%
1803 \hskip\ACM@badge@skip
1804 \fi
1805 \parbox[t]{\ACM@title@width}{\raggedright
1806 \@titlefont\noindent
1807 \@title
1808 \ifx\@subtitle\@empty\else
1809 \par\noindent{\@subtitlefont\@subtitle}
1810 \fi}%
1811 \ifx\@acmBadgeR@image\@empty\else
1812 \hskip\ACM@badge@skip
1813 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1814 \includegraphics[width=\ACM@badge@width]{\@acmBadgeR@image}}}%
1815 \fi
1816 \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.
1817 \def\mktitle@iii{\hsize=\textwidth
1818 \setbox\mktitle@bx=\vbox{\@titlefont\centering
1819 \ACM@title@width=\hsize
1820 \if@ACM@badge
1821 \advance\ACM@title@width by -2\ACM@badge@width
1822 \advance\ACM@title@width by -2\ACM@badge@skip
1823 \parbox[b]{\ACM@badge@width}{\strut
1824 \ifx\@acmBadgeL@image\@empty\else
1825 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
1826 \includegraphics[width=\ACM@badge@width]{\@acmBadgeL@image}}}%
1827 \fi}%

```

```

1828     \hskip\@ACM@badge@skip
1829   \fi
1830   \parbox[t]{\@ACM@title@width}{\centering\@titlefont
1831     \@title
1832     \ifx\@subtitle\@empty\else
1833       \par\noindent{\@subtitlefont\@subtitle}
1834     \fi
1835   }%
1836   \if@ACM@badge
1837     \hskip\@ACM@badge@skip
1838     \parbox[b]{\@ACM@badge@width}{\strut
1839       \ifx\@acmBadgeR@image\@empty\else
1840         \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1841           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1842       \fi}%
1843   \fi
1844   \par\bigskip}}%

```

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

```

1845 \def\@mktitle@iv{\hsize=\textwidth
1846   \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1847     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1848     \noindent\@title
1849     \ifx\@subtitle\@empty\else
1850       \par\noindent\@subtitlefont\@subtitle
1851     \fi
1852   \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.

```

1853 \newbox\@ACM@commabox
1854 \def\@ACM@addtoaddress#1{%
1855   \ifvmode\else
1856     \if@ACM@affiliation@obeypunctuation\else
1857       \setbox\@ACM@commabox=\hbox{, }%
1858       \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1859     \fi\fi
1860   #1}

```

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

```

\streetaddress 1861 \def\streetaddress#1{\unskip\ignorespaces}
\city
\state
\postcode
\country

```

```

1862 \def\postcode#1{\unskip\ignorespaces}
1863 \if@ACM@journal
1864   \def\position#1{\unskip\ignorespaces}
1865   \def\institution#1{\unskip~#1\ignorespaces}
1866   \def\city#1{\unskip\ignorespaces}
1867   \def\state#1{\unskip\ignorespaces}
1868   \newcommand\department[2][0]{\unskip\ignorespaces}
1869   \def\country#1{\if@ACM@affiliation@obexpunctuation\else, \fi#1\ignorespaces}
1870 \else
1871   \def\position#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1872   \def\institution#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1873   \newcommand\department[2][0]{\if@ACM@affiliation@obexpunctuation
1874     #2\else#2\par\fi}%
1875 % \def\streetaddress#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
1876 \let\city\@ACM@addtoaddress
1877 \let\state\@ACM@addtoaddress
1878 % \def\postcode#1{\if@ACM@affiliation@obexpunctuation#1\else\unskip\space#1\fi}%
1879 \let\country\@ACM@addtoaddress
1880 \fi

```

\@mkauthors Typesetting the authors

```

1881 \def\@mkauthors{\begingroup
1882   \hsize=\textwidth
1883   \ifcase\ACM@format@nr
1884     \relax % manuscript
1885     \@mkauthors@i
1886   \or % acmsmall
1887     \@mkauthors@i
1888   \or % acmlarge
1889     \@mkauthors@i
1890   \or % acmtog
1891     \@mkauthors@i
1892   \or % sigconf
1893     \@mkauthors@iii
1894   \or % siggraph
1895     \@mkauthors@iii
1896   \or % sigplan
1897     \@mkauthors@iii
1898   \or % sigchi
1899     \@mkauthors@iii
1900   \or % sigchi-a
1901     \@mkauthors@iv
1902   \fi
1903 \endgroup
1904 }

```

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

```

1905 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont Font for affiliations

```
1906 \def\@affiliationfont{\normalsize\normalfont}
```

Adjusting fonts for different formats

```
1907 \ifcase\ACM@format@nr
1908 \relax % manuscript
1909 \or % acmsmall
1910   \def\@authorfont{\large\sffamily}
1911   \def\@affiliationfont{\small\normalfont}
1912 \or % acmlarge
1913 \or % acmtog
1914   \def\@authorfont{\LARGE\sffamily}
1915   \def\@affiliationfont{\large}
1916 \or % sigconf
1917   \def\@authorfont{\LARGE}
1918   \def\@affiliationfont{\large}
1919 \or % siggraph
1920   \def\@authorfont{\normalsize\normalfont}
1921   \def\@affiliationfont{\normalsize\normalfont}
1922 \or % sigplan
1923   \def\@authorfont{\Large\normalfont}
1924   \def\@affiliationfont{\normalsize\normalfont}
1925 \or % sigchi
1926   \def\@authorfont{\bfseries}
1927   \def\@affiliationfont{\mdseries}
1928 \or % sigchi-a
1929   \def\@authorfont{\bfseries}
1930   \def\@affiliationfont{\mdseries}
1931 \fi
```

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

```
1932 \def\@typeset@author@line{%
1933   \andify\@currentauthors\par\noindent
1934   \@currentauthors\def\@currentauthors{}%
1935   \ifx\@currentaffiliations\@empty\else
1936     \andify\@currentaffiliations
1937     \unskip, {\@currentaffiliations}\par
1938   \fi
1939   \def\@currentaffiliations{}}
```

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

```
1940 \def\@mkauthors@i{%
1941   \def\@currentauthors{}%
1942   \def\@currentaffiliations{}%
1943   \global\let\and\@typeset@author@line
1944   \def\@author##1{%
1945     \ifx\@currentauthors\@empty
1946       \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
```

```

1947 \else
1948 \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
1949 \fi
1950 \gdef\and{}}%
1951 \def\email##1##2{}%
1952 \def\affiliation##1##2{
1953 \def\@tempa{##2}\ifx\@tempa\@empty\else
1954 \ifx\@currentaffiliations\@empty
1955 \gdef\@currentaffiliations{
1956 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
1957 \setkeys{@ACM@affiliation@}{##1}%
1958 \@affiliationfont##2}%
1959 \else
1960 \g@addto@macro{\@currentaffiliations}{\and
1961 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
1962 \setkeys{@ACM@affiliation@}{##1}##2}%
1963 \fi
1964 \fi
1965 \global\let\and\@typeset@author@line}%
1966 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
1967 \noindent\addresses\@typeset@author@line
1968 \par\medskip}%
1969 }

```

`\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

```
1970 \newbox\author@bx
```

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

```
1971 \newdimen\author@bx@wd
```

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

```
1972 \newskip\author@bx@sep
1973 \author@bx@sep=1pc\relax
```

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

```

1974 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
1975 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
1976 \@authorfont\@currentauthors\par\@affiliationfont
1977 \@currentaffiliation}\egroup
1978 \box\author@bx\hspace{\author@bx@sep}%
1979 \gdef\@currentauthors{}}%
1980 \gdef\@currentaffiliation{}}

```

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

```
1981 \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.

```

1982 \author@bx@wd=\textwidth\relax
1983 \advance\author@bx@wd by -\author@bx@sep\relax
1984 \ifnum\@ACM@authorsperrow>0\relax
1985   \divide\author@bx@wd by \@ACM@authorsperrow\relax
1986 \else
1987   \ifcase\num@authorgroups
1988     \relax % 0?
1989     \or % 1=one author per row
1990     \or % 2=two authors per row
1991       \divide\author@bx@wd by \num@authorgroups\relax
1992     \or % 3=three authors per row
1993       \divide\author@bx@wd by \num@authorgroups\relax
1994     \or % 4=two authors per row (!)
1995       \divide\author@bx@wd by 2\relax
1996   \else % three authors per row
1997     \divide\author@bx@wd by 3\relax
1998   \fi
1999 \fi
2000 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of `\addresses`:

```

2001 \gdef\@currentauthors{}%
2002 \gdef\@currentaffiliation{}%
2003 \def\@author##1{\ifx\@currentauthors\@empty
2004   \gdef\@currentauthors{\par##1}%
2005 \else
2006   \g@addto@macro\@currentauthors{\par##1}%
2007 \fi
2008 \gdef\and{}}%
2009 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2010   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2011 \else
2012   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2013 \fi}%
2014 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2015   \gdef\@currentaffiliation{%
2016     \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2017     \setkeys{@ACM@affiliation@}{##1}##2}%
2018 \else
2019   \g@addto@macro\@currentaffiliation{\par
2020     \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2021     \setkeys{@ACM@affiliation@}{##1}##2}%
2022 \fi
2023 \global\let\and\@typeset@author@bx
2024 }%

```

Actual typesetting is done by the \and macro:

```

2025 \hsize=\textwidth
2026 \global\setbox\mktitle@bx=\vbox{\noindent
2027   \box\mktitle@bx\par\medskip\leavevmode
2028   \lineskip=1pc\relax\centering\hspace*{-1em}%
2029   \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.

```

2030 \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.

```

2031 \author@bx@wd=\columnwidth\relax
2032 \advance\author@bx@wd by -\author@bx@sep\relax
2033 \ifnum\@ACM@authorsperrow>0\relax
2034   \divide\author@bx@wd by \@ACM@authorsperrow\relax
2035 \else
2036   \ifcase\@num@authorgroups
2037     \relax % 0?
2038     \or % 1=one author per row
2039     \else % 2=two authors per row
2040       \divide\author@bx@wd by 2\relax
2041   \fi
2042 \fi
2043 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2044 \gdef\@currentauthors{}%
2045 \gdef\@currentaffiliation{}%
2046 \def\@author##1{\ifx\@currentauthors\@empty
2047   \gdef\@currentauthors{\par##1}%
2048 \else
2049   \g@addto@macro\@currentauthors{\par##1}%
2050 \fi
2051 \gdef\and{}}%
2052 \def\@email##1##2{\ifx\@currentaffiliation\@empty
2053   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2054 \else
2055   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2056 \fi}%
2057 \def\@affiliation##1##2{\ifx\@currentaffiliation\@empty
2058   \gdef\@currentaffiliation{%
2059     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2060     \setkeys{@ACM@affiliation@}{##1}##2}%
2061 \else
2062   \g@addto@macro\@currentaffiliation{\par
2063     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%

```

```

2064      \setkeys{@ACM@affiliation@}{##1}##2}%
2065 \fi
2066 \global\let\and\@typeset@author@bx}%
2067 %

Actual typesetting is done by the \and macro
2068 \bgroup\hsize=\columnwidth
2069 \par\raggedright\leftskip=\z@
2070 \lineskip=1pc\noindent
2071 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2072 \def\@mkauthorsaddresses{%
2073   \ifnum\num@authors>1\relax
2074   Authors' \else Author's \fi
2075   \ifnum\num@authorgroups>1\relax
2076   addresses: \else address: \fi
2077   \bgroup
2078   \def\streetaddress##1{\unskip\@addpunct, ##1}%
2079   \def\postcode##1{\unskip\@addpunct, ##1}%
2080   \def\position##1{\unskip\ignorespaces}%
2081   \def\institution##1{\unskip\@addpunct, ##1}%
2082   \def\city##1{\unskip\@addpunct, ##1}%
2083   \def\state##1{\unskip\@addpunct, ##1}%
2084   \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2085   \def\country##1{\unskip\@addpunct, ##1}%
2086   \def\and{\unskip\@addpunct; }%
2087   \def\@author##1{##1}%
2088   \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
2089   \addresses
2090   \egroup}

```

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

```

2091 \def\@setaddresses{}

```

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

```

2092 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}

```

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

```

2093 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}

```

\@mkteasers Typesetting the teasers

```

2094 \def\@mkteasers{%
2095   \ifx\@teaserfigures\@empty\else
2096     \def\@teaser##1{\par\bigskip\bgroup
2097       \captionsetup{type=figure}##1\egroup\par}
2098     \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
2099       \noindent\@teaserfigures\par\medskip}%
2100   \fi}

```


\mkabstract Typesetting the abstract

```
2101 \def\mkabstract{\bgroup
2102   \ifx\@abstract\@empty\else
2103     {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2104     \if@ACM@journal
2105       \everypar{\setbox\z@\lastbox\everypar{}}\small
2106     \else
2107       \section*{Abstract}%
2108     \fi
2109     \ignorespaces\@abstract\par}%
2110 \fi\egroup}
```

\mkbibcitation Print the bibcitation format

```
2111 \def\mkbibcitation{\bgroup
2112   \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2113   \def\footnotemark{}%
2114   \def\@unskip{\ignorespaces}%
2115   \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2116     inside a \string\title{} or \string\author{} command! Use
2117     \string\titlenote{} or \string\authornote{} instead!}}%
2118   \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2119     Article~\@acmArticle\ } \fi}%
2120   \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2121   \noindent\authors. \@acmYear. \@title
2122   \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2123   \if@ACM@journal
2124     \textit{\@journalNameShort}
2125     \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2126     \ref{TotPages}~\@pages@word.
2127   \else
2128     In \textit{\@acmBooktitle}%
2129     \ifx\@acmEditors\@empty\textit{.}\else
2130       \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2131     \fi\
2132     ACM, New York, NY, USA%
2133     \@article@string\unskip, \ref{TotPages}~\@pages@word.
2134   \fi
2135   \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2136 \par\egroup}
```

\@printendtopmatter End the top matter

```
2137 \def\@printendtopmatter{\par\bigskip}
```

\@setthanks We redefine \setthanks using \long

```
2138 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}
```

\@setauthorsaddresses

```
2139 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}
```

3.15 Headers and Footers

We use fancyhdr for our headers and footers:

```
2140 \RequirePackage{fancyhdr}

\ACM@linecount@bx This is the box displayed in review mode
2141 \if@ACM@review
2142   \newsavebox{\ACM@linecount@bx}
2143   \newlength\ACM@linecount@bxht
2144   \newcount\ACM@linecount
2145   \ACM@linecount\@ne\relax
2146   \def\ACM@mk@linecount{%
2147     \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
2148       \setlength{\ACM@linecount@bxht}{0pt}%
2149       \loop{\color{red}\scriptsize\the\ACM@linecount}\
2150         \global\advance\ACM@linecount by \@ne
2151       \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2152       \ifdim\ACM@linecount@bxht<\textheight\repeat
2153         {\color{red}\scriptsize\the\ACM@linecount}\hfill
2154       \global\advance\ACM@linecount by \@ne}}}%
2155 \fi

\ACM@linecountL How to display the box on the left
2156 \def\ACM@linecountL{%
2157   \if@ACM@review
2158     \ACM@mk@linecount
2159     \begin{picture}(0,0)%
2160       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2161     \end{picture}%
2162   \fi}

\ACM@linecountR How to display the box on the right
2163 \def\ACM@linecountR{%
2164   \if@ACM@review
2165     \ACM@mk@linecount
2166     \begin{picture}(0,0)%
2167       \put(20,-22){\usebox{\ACM@linecount@bx}}%
2168     \end{picture}%
2169   \fi}

\ACM@timestamp The timestamp system
2170 \if@ACM@timestamp
2171   % Subtracting 30 from \time gives us the effect of rounding down despite
2172   % \numexpr rounding to nearest
2173   \newcounter{ACM@time@hours}
2174   \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2175   \newcounter{ACM@time@minutes}
2176   \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2177   \newcommand\ACM@timestamp{%
```

```

2178 \footnotesize%
2179 \ifx\@acmSubmissionID\@empty\relax\else
2180 Submission ID: \@acmSubmissionID.{ }%
2181 \fi
2182 \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2183 \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2184 Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2185 }
2186 \fi

\@shortauthors Even if the author redefined \shortauthors, we do not print it in the headers when in
anonymous mode:
2187 \def\@shortauthors{\if@ACM@anonymous Anon.\else\shortauthors\fi}

\@headfootfont The font to typeset header and footer text.
2188 \def\@headfootfont{\sffamily}

standardpagestyle The page style for all pages but the first one The page style for all pages but the first one
2189 \fancypagestyle{standardpagestyle}{%
2190 \fancyhf{}%
2191 \renewcommand{\headrulewidth}{\z@}%
2192 \renewcommand{\footrulewidth}{\z@}%
2193 \ifcase\ACM@format@nr
2194 \relax % manuscript
2195 \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2196 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2197 \fancyhead[RE]{\@shortauthors}%
2198 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2199 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
2200 \or % acmsmall
2201 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
2202 \fancyhead[RO]{\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
2203 \fancyhead[RE]{\@headfootfont\@shortauthors}%
2204 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2205 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2206 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2207 \or % acmlarge
2208 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2209 \@acmArticle\if@ACM@printfolios:\thepage\fi\quad\textbullet\quad\@shortauthors}%
2210 \fancyhead[LO]{\ACM@linecountL}%
2211 \fancyhead[RO]{\@headfootfont
2212 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
2213 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2214 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2215 \or % acmtog
2216 \fancyhead[LE]{\ACM@linecountL\@headfootfont
2217 \@acmArticle\if@ACM@printfolios:\thepage\fi\quad\textbullet\quad\@shortauthors}%
2218 \fancyhead[LO]{\ACM@linecountL}%
2219 \fancyhead[RE]{\ACM@linecountR}%

```

```

2220 \fancyhead[R0]{\@headfootfont
2221 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi\ACM@linecountR}%
2222 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2223 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2224 \else % Proceedings
2225 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2226 \fancyhead[L0]{\ACM@linecountL\@headfootfont\shorttitle}%
2227 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2228 \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
2229 \acmConference@date, \acmConference@venue}%
2230 \fancyhead[R0]{\@headfootfont\acmConference@shortname,
2231 \acmConference@date, \acmConference@venue\ACM@linecountR}%
2232 \fi
2233 \if@ACM@sigchiamode
2234 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
2235 \fi
2236 \if@ACM@timestamp
2237 \fancyfoot[LO,RE]{\ACM@timestamp}
2238 \fi
2239 }
2240 \pagestyle{standardpagestyle}

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht
\@folio@voffset
\@folio@max
2241 \newdimen\@folio@wd
2242 \@folio@wd=\z@
2243 \newdimen\@folio@ht
2244 \@folio@ht=\z@
2245 \newdimen\@folio@voffset
2246 \@folio@voffset=\z@
2247 \def\@folio@max{1}
2248 \ifcase\ACM@format@nr
2249 \relax % manuscript
2250 \or % acmsmall
2251 \@folio@wd=45.75pt\relax
2252 \@folio@ht=1.25in\relax
2253 \@folio@voffset=.2in\relax
2254 \def\@folio@max{8}
2255 \or % acmlarge
2256 \@folio@wd=43.25pt\relax
2257 \@folio@ht=79pt\relax
2258 \@folio@voffset=.55in\relax
2259 \def\@folio@max{10}
2260 \fi

\@folioblob The macro to typeset the folio blob.
2261 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2262 \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2263 \loop

```

```

2264 \ifnum\@tempcnta>\@folio@max\relax
2265 \advance\@tempcnta by - \@folio@max
2266 \repeat
2267 \advance\@tempcnta by -1\relax
2268 \@tempdima=\@folio@ht\relax
2269 \multiply\@tempdima by \the\@tempcnta\relax
2270 \advance\@tempdima by -\@folio@voffset\relax
2271 \begin{picture}(0,0)
2272 \makebox[\z@]{\raisebox{-\@tempdima}{%
2273 \rlap{%
2274 \raisebox{-0.45\@folio@ht}{\z@}{\z@}{%
2275 \rule{\@folio@wd}{\@folio@ht}}}%
2276 \parbox{\@folio@wd}{%
2277 \centering
2278 \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}}
2279 \end{picture}\fi}
2280

```

firstpagestyle The page style for the first page only.

```

2281 \fancypagestyle{firstpagestyle}{%
2282 \fancyhf{}%
2283 \renewcommand{\headrulewidth}{\z@}%
2284 \renewcommand{\footrulewidth}{\z@}%
2285 \ifcase\ACM@format@nr
2286 \relax % manuscript
2287 \fancyhead[L]{\ACM@linecountL}%
2288 \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
2289 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2290 \or % acmsmall
2291 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2292 \@acmNumber, Article \@acmArticle. Publication date:
2293 \@acmPubDate.}%
2294 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2295 \fancyhead[LO]{\ACM@linecountL}%
2296 \fancyhead[RO]{\@folioblob}%
2297 \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
2298 \or % acmlarge
2299 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2300 \@acmNumber, Article \@acmArticle. Publication date:
2301 \@acmPubDate.}%
2302 \fancyhead[RO]{\@folioblob}%
2303 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2304 \fancyhead[LO]{\ACM@linecountL}%
2305 \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
2306 \or % acmtog
2307 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2308 \@acmNumber, Article \@acmArticle. Publication date:
2309 \@acmPubDate.}%
2310 \fancyhead[L]{\ACM@linecountL}%

```

```

2311 \fancyhead[R]{\ACM@linecountR}%
2312 \else % Conference proceedings
2313 \fancyhead[L]{\ACM@linecountL}%
2314 \fancyhead[R]{\ACM@linecountR}%
2315 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2316 \fi
2317 \if@ACM@timestamp
2318 \ifnum\ACM@format@nr=0\relax % Manuscript
2319 \fancyfoot[LO,RE]{\ACM@timestamp\quad
2320 \footnotesize Manuscript submitted to ACM}
2321 \else
2322 \fancyfoot[LO,RE]{\ACM@timestamp}
2323 \fi
2324 \fi
2325 }

```

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

```

2326 \let\ACM@ps@plain\ps@plain
2327 \let\ACM@ps@myheadings\ps@myheadings
2328 \let\ACM@ps@headings\ps@headings
2329 \def\ACM@restore@pagestyle{%
2330 \let\ps@plain\ACM@ps@plain
2331 \let\ps@myheadings\ACM@ps@myheadings
2332 \let\ps@headings\ACM@ps@headings}
2333 \AtBeginDocument{\ACM@restore@pagestyle}

```

3.16 Sectioning

Sectioning is different for different levels

```

2334 \renewcommand\section{\@startsection{section}{1}{\z@}%
2335 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2336 {.25\baselineskip}%
2337 {\@secfont}}
2338 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2339 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2340 {.25\baselineskip}%
2341 {\@subsecfont}}
2342 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{10pt}%
2343 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2344 {-3.5\p@}%
2345 {\@subsubsecfont\@adddotafter}}
2346 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2347 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2348 {-3.5\p@}%
2349 {\@parfont\@adddotafter}}
2350 \renewcommand\part{\@startsection{part}{9}{\z@}%
2351 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2352 {4\p@}%
2353 {\@parfont}}

```

```

\section@raggedright Special version of \raggedright compatible with \MakeUppercase
2354 \def\section@raggedright{\@rightskip\@flushglue
2355 \rightskip\@rightskip
2356 \leftskip\z@skip
2357 \parindent\z@}

\@secfont Fonts for sections etc. are different for different formats.
\@subsecfont
\@subsubsecfont
\@parfont
2358 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2359 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2360 \def\@subsubsecfont{\sffamily\itshape}
2361 \def\@parfont{\itshape}
2362 \setcounter{secnumdepth}{3}
2363 \ifcase\ACM@format@nr
2364 \or % manuscript
2365 \or % acmsmall
2366 \or % acmlarge
2367 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2368 \def\@subsecfont{\sffamily\large\section@raggedright}
2369 \or % acmtog
2370 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2371 \def\@subsecfont{\sffamily\large\section@raggedright}
2372 \or % sigconf
2373 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2374 \def\@subsecfont{\bfseries\Large\section@raggedright}
2375 \or % siggraph
2376 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2377 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2378 \or % sigplan
2379 \def\@secfont{\bfseries\Large\section@raggedright}
2380 \def\@subsecfont{\bfseries\section@raggedright}
2381 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2382 {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2383 {0.25\baselineskip}%
2384 {\@subsubsecfont}}
2385 \def\@subsubsecfont{\bfseries\section@raggedright}
2386 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2387 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2388 {-3.5\p@}%
2389 {\@parfont\@addspaceafter}}
2390 \def\@parfont{\bfseries\itshape}
2391 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2392 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2393 {-3.5\p@}%
2394 {\@subparfont\@addspaceafter}}
2395 \def\@subparfont{\itshape}
2396 \or % sigchi
2397 \setcounter{secnumdepth}{1}
2398 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2399 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2400 \or % sigchi-a

```

```

2401 \setcounter{secnumdepth}{0}
2402 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2403 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2404 \fi

```

`\@adddotafter` Add punctuation after a sectioning command

```
2405 \def\@adddotafter#1{#1\@addpunct{.}}
```

`\@addspaceafter` Add space after a sectioning command

```
2406 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

3.17 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.

```
2407 \providecommand*\@dotsep{4.5}
```

3.18 Theorems

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

```
2408 \def\@acmplainbodyfont{\itshape}
```

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

```
2409 \def\@acmplainindent{\parindent}
```

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

```
2410 \def\@acmplainheadfont{\scshape}
```

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

```
2411 \def\@acmplainnotefont{\@empty}
```

Customization of the `acmplain` theorem style:

```

2412 \ifcase\ACM@format@nr
2413 \relax % manuscript
2414 \or % acmsmall
2415 \or % acmlarge
2416 \or % acmtog
2417 \or % sigconf
2418 \or % siggraph
2419 \or % sigplan
2420 \def\@acmplainbodyfont{\itshape}
2421 \def\@acmplainindent{\z@}
2422 \def\@acmplainheadfont{\bfseries}
2423 \def\@acmplainnotefont{\normalfont}
2424 \or % sigchi
2425 \or % sigchi-a
2426 \fi

```


acmplain The acmplain theorem style

```
2427 \newtheoremstyle{acmplain}%
2428   {.5\baselineskip\@plus.2\baselineskip
2429     \@minus.2\baselineskip}% space above
2430   {.5\baselineskip\@plus.2\baselineskip
2431     \@minus.2\baselineskip}% space below
2432   {\@acmplainbodyfont}% body font
2433   {\@acmplainindent}% indent amount
2434   {\@acmplainheadfont}% head font
2435   {.}% punctuation after head
2436   {.5em}% spacing after head
2437   {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont{#3}}}}% head spec
```

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

```
2438 \def\@acmdefinitionbodyfont{\normalfont}
```

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

```
2439 \def\@acmdefinitionindent{\parindent}
```

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

```
2440 \def\@acmdefinitionheadfont{\itshape}
```

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

```
2441 \def\@acmdefinitionnotefont{\@empty}
```

Customization of the acmdefinition theorem style:

```
2442 \ifcase\ACM@format@nr
2443 \relax % manuscript
2444 \or % acmsmall
2445 \or % acmlarge
2446 \or % acmtog
2447 \or % sigconf
2448 \or % siggraph
2449 \or % sigplan
2450 \def\@acmdefinitionbodyfont{\normalfont}
2451 \def\@acmdefinitionindent{\z@}
2452 \def\@acmdefinitionheadfont{\bfseries}
2453 \def\@acmdefinitionnotefont{\normalfont}
2454 \or % sigchi
2455 \or % sigchi-a
2456 \fi
```

acmdefinition The acmdefinition theorem style

```
2457 \newtheoremstyle{acmdefinition}%
2458   {.5\baselineskip\@plus.2\baselineskip
2459     \@minus.2\baselineskip}% space above
2460   {.5\baselineskip\@plus.2\baselineskip
2461     \@minus.2\baselineskip}% space below
2462   {\@acmdefinitionbodyfont}% body font
```

```

2463 {\@acmdefinitionindent}% indent amount
2464 {\@acmdefinitionheadfont}% head font
2465 {.}% punctuation after head
2466 {.5em}% spacing after head
2467 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont{#3}}}}% head spec

```

Make acmplain the default theorem style.

```

2468 \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.

```

2469 \AtEndPreamble{%
2470   \if@ACM@acmthm
2471     \theoremstyle{acmplain}
2472     \@ifundefined{theorem}{%
2473       \newtheorem{theorem}{Theorem}[section]
2474     }{}
2475     \@ifundefined{conjecture}{%
2476       \newtheorem{conjecture}[theorem]{Conjecture}
2477     }{}
2478     \@ifundefined{proposition}{%
2479       \newtheorem{proposition}[theorem]{Proposition}
2480     }{}
2481     \@ifundefined{lemma}{%
2482       \newtheorem{lemma}[theorem]{Lemma}
2483     }{}
2484     \@ifundefined{corollary}{%
2485       \newtheorem{corollary}[theorem]{Corollary}
2486     }{}
2487     \theoremstyle{acmdefinition}
2488     \@ifundefined{example}{%
2489       \newtheorem{example}[theorem]{Example}
2490     }{}
2491     \@ifundefined{definition}{%
2492       \newtheorem{definition}[theorem]{Definition}
2493     }{}
2494   \fi
2495   \theoremstyle{acmplain}
2496 }

```

`\@proofnamefont` The font to typeset the proof name.

```

2497 \def\@proofnamefont{\scshape}

```

\@proofindent Whether or not to indent proofs.

```
2498 \def\@proofindent{\indent}
```

Customization of the proof environment.

```
2499 \ifcase\ACM@format@nr
2500 \relax % manuscript
2501 \or % acmsmall
2502 \or % acmlarge
2503 \or % acmtog
2504 \or % sigconf
2505 \or % siggraph
2506 \or % sigplan
2507 \def\@proofnamefont{\itshape}
2508 \def\@proofindent{\noindent}
2509 \or % sigchi
2510 \or % sigchi-a
2511 \fi
```

proof We want some customization of the proof environment.

```
2512 \renewenvironment{proof}[1][\proofname]{\par
2513 \pushQED{\qed}%
2514 \normalfont \topsep6\p@\@plus6\p@\relax
2515 \trivlist
2516 \item[\@proofindent\hskip\labelsep
2517 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2518 }{%
2519 \popQED\endtrivlist\@endpfalse
2520 }
```

3.19 Acknowledgments

\acks This is a comment-like structure

```
2521 \specialcomment{acks}{%
2522 \begingroup
2523 \section*{Acknowledgments}
2524 \phantomsection\addcontentsline{toc}{section}{Acknowledgments}
2525 }{%
2526 \endgroup
2527 }
```

\grantsponsor We just typeset the name of the sponsor

```
2528 \def\grantsponsor#1#2#3{#2}
```

\grantnum

```
2529 \newcommand\grantnum[3][\#3%
2530 \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

3.20 Conditional typesetting

We use the comment package for conditional typesetting:

```
2531 \AtEndPreamble{%
2532 \if@ACM@screen
2533   \includecomment{screenonly}
2534   \excludecomment{printonly}
2535 \else
2536   \excludecomment{screenonly}
2537   \includecomment{printonly}
2538 \fi
2539 \if@ACM@anonymous
2540   \excludecomment{anonsuppress}
2541   \excludecomment{acks}
2542 \else
2543   \includecomment{anonsuppress}
2544 \fi}
```

3.21 Additional bibliography commands

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

```
2545 \newcommand\showeprint[2][arxiv]{%
2546   \def\@tempa{#1}%
2547   \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
2548   \def\@tempb{arxiv}%
2549   \ifx\@tempa\@tempb
2550     arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2551   \fi}
```

3.22 End of Class

```
2552 \normalsize\normalfont\frenchspacing
2553 </class>
```

References

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Change History

1.48	General: Added prologue option to xcolor 40 Bib code cleanup (Zack Weinberg) 29 Documentation update (siggraph) . 29	v1.04	\acmArticleSeq: Name change by Matthew Fluet 58 \acmDOI: Name change by Matthew Fluet 58 \acmISBN: Name change by Matthew Fluet 58 General: Updated bibliography for siggraph 29
1.49	General: New journal: DTRAP 29	v1.05	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib 29 Patched \setcitestyle command; closes https: //github.com/borisveytsman/ acmart/issues/1) 29 Defined ACM colors 29 Explicitly put draft option (closes https: //github.com/borisveytsman/ acmart/issues/4) 32 Set headheight to 1pc for all formats (closes https: //github.com/borisveytsman/ acmart/issues/5) 29
v1.00	General: First released version 29	v1.06	\@ACM@badge@skip: Added macro . . 59 \@ACM@badge@width: Added macro . 59 \@ACM@title@width: Added macro . 59 \@mktitle@i: Added processing badges 73 Made generic 73 \@mktitle@ii: Now this macro is obsolete 73 \@mktitle@iii: Added processing badges 73 Made more generic 73 \@mktitle@iv: Made more generic . 74 \@printtopmatter: Added processing badges 70 \@subtitlefont: Added macro 72 \@titlefont: Added macro 72 \acmBadgeL: Added macro 59 \acmBadgeR: Added macro 59 \if@ACM@badge: Added macro 58
v1.01	General: Changed hyperref colors in screen mode (closes https: //github.com/borisveytsman/ acmart/issues/1) 29 Defined ACM colors 29 Explicitly put draft option (closes https: //github.com/borisveytsman/ acmart/issues/4) 32 Set headheight to 1pc for all formats (closes https: //github.com/borisveytsman/ acmart/issues/5) 29	v1.07	\maketitle: Corrected a bug with abstract footnotes 67 Corrected a bug with permssion and footnotes order 67
v1.02	General: Added TOPS and TSC (closes https: //github.com/borisveytsman/ acmart/issues/12) 29 Documentation changes (closes https: //github.com/borisveytsman/ acmart/issues/13) 29	v1.08	General: SIGPLAN reformatting by Matthew Fluet 29 Typos corrected (Tobias Pape) . . . 29
v1.03	\@formatdoi: Added macro 64 \if@ACM@authorversion: Added macro 31 \maketitle: Added special case of authorversion 67 General: Added anonsuppress environment 29 Added authorversion option (closes https: //github.com/borisveytsman/ acmart/issues/9) 29		

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1868, 1878, 1937,	1846, 1966, 2026, 2098	355, 370, 383, 537,
2078, 2079, 2080,	<code>\vskip</code> 347, 382, 564, 598, 694	582, 595, 598, 646,
2081, 2082, 2083,	<code>\vtop</code> 1975	650, 661, 726, 732,
2084, 2085, 2086,		744, 1547, 1549,
2088, 2114, 2133, 2139	W	1565, 1571, 1577,
<code>\unvbox</code> 566, 571, 587	<code>\wd</code> 701, 1858	1581, 1801, 1813,
<code>\upshape</code> 758	<code>\write</code> 452	1825, 1840, 2069,
<code>\url</code> 1401, 2530	X	2105, 2191, 2192,
<code>\urlstyle</code> ... 405, 414, 417	<code>\xdef</code> 251,	2242, 2244, 2246,
<code>\usebox</code> 2160, 2167	253, 255, 257, 259, 261	2272, 2274, 2283,
<code>\usepackage</code>	Y	2284, 2334, 2338,
. 10, 11, 12, 13, 14, 15	<code>\year</code> 1182, 2182	2350, 2357, 2381,
V		2386, 2391, 2421, 2451
<code>\vbox</code> 586,	Z	<code>\z@skip</code> 382, 694, 749, 2356
699, 1799, 1818,	<code>\z@</code> .. 230, 293, 313, 345,	