# $\LaTeX$ Class for the Association for Computing Machinery\*

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#### Abstract

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

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# 1 Introduction

The Association for Computing Machinery<sup>1</sup> is the world's largest educational and scientific computing society, which delivers resources that advance computing as a science and a profession. It was one of the early adopters of TeX for its typesetting.

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

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

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

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

# 2 User's guide

This class uses many commands and customizaton 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 <a href="https://github.com/borisveytsman/acmart">https://github.com/borisveytsman/acmart</a>, <a href="https://tex.stackexchange.com">https://tex.stackexchange.com</a> or the closest TeX Users Group. The world-wide TeX Users Group is at <a href="https://tug.org/">https://tug.org/</a>; please consider joining us if you use TeX regularly.

### 2.1 Installation

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

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

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

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

Most users should not attempt to install this package themselves but should rather rely on their 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 LATEX 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 (TeXLive, MacTeX, MikTeX) of 2015 and later, so you probably have them installed. Just in case here is the list of these packages:

- amscls, http://www.ctan.org/pkg/amscls
- amsfonts, http://www.ctan.org/pkg/amsfonts
- amsmath, http://www.ctan.org/pkg/amsmath
- binhex, http://www.ctan.org/pkg/binhex
- caption, http://www.ctan.org/pkg/caption
- comment, http://www.ctan.org/pkg/comment
- cm-super, http://www.ctan.org/pkg/cm-super
- cmap, http://www.ctan.org/pkg/cmap
- draftwatermark, http://www.ctan.org/pkg/draftwatermark
- environ, http://www.ctan.org/pkg/environ
- etoolbox, http://www.ctan.org/pkg/etoolbox
- fancyhdr, http://www.ctan.org/pkg/fancyhdr
- float, http://www.ctan.org/pkg/float
- fontaxes, http://www.ctan.org/pkg/fontaxes
- geometry, http://www.ctan.org/pkg/geometry

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

# 2.2 Invocation and options

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

```
\documentclass[\langle options \rangle] \{ acmart \}
```

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

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

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

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

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

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

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

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

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

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

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

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

The option natbib is used when the corresponding  $BibT_{E}X$  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	Magning
varue	Meaning
manuscript	A manuscript. This is the default.
acmsmall	Small single-column format. Used for CIE, CSUR, DTRAP, JACM,
	JDIQ, JEA, JERIC, JETC, PACMCGIT, PACMHCI, PACMPL, TAAS,
	TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TDSCI,
	TEAC, TECS, THRI, TIIS, TIOT, TISSEC, TIST, TKDD, TMIS, TOCE,
	TOCHI, TOCL, TOCS, TOCT, TODAES, TODS, TOIS, TOIT, TOMACS,
	TOMM (formerly TOMCCAP), TOMPECS, TOMS, TOPC, TOPLAS,
	TOPS, TOS, TOSEM, TOSN, TRETS, TSAS, TSC, TSLP and TWEB, in-
	cluding 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 confer-
	ence 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 overriden 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  $\armontomath{\armontenant{acmJournal}{\langle shortName \rangle}}$  sets the name of the journal or transaction for journals and transactions. The argument is the short name of the publication *in uppercase*, for example,

Table 2: Boolean options

Option	Default	Meaning
review	false	A review version: lines are numbered and hyperlinks are colored
screen	see text	A screen version: hyperlinks are colored
natbib	true	Whether to use the natbib package (see Section 2.10)
anonymous	false	Whether to make author(s) anonymous
authorversion	false	Whether to generate a special version for the authors' personal use or posting (see Section 2.3)
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 Sec-
		tion 2.6

\acmJournal{TOMS}

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

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

\acmConference

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

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

name: the name of the conference.date: the date(s) of the conference.venue: the place of the conference.

#### Examples:

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

\acmBooktitle

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

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

\editor

In most cases, conference proceedings are edited. You can use the command  $\ensuremath{\mbox{\mbox{\mbox{ommand}}}}$  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[\langle ShortTitle \rangle] \{\langle FullTitle \rangle \}
```

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  $\{\langle subtitle \rangle\}$  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 \orcid \affiliation \email The basic commands are \author, \orcid (for the researchers registered with OR-CID, http://www.orcid.org/), \affiliation and \email. In the simplest case, you enter them in this order:

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

Do not use the LTEX \and macro! Each author deserves his or her own \author command.

Note that some formats do not typset 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{...}
```

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

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.

\position
\institution
\department
\streetaddress
\city
\state
\postcode
\country

The \affiliation and \additionalaffiliation commands are further structured to interact with the metadata extraction tools. Inside these commands you should use the \position, \institution, \department, \city, \streetaddress, \state, \postcode and \country 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 are necessary since they are used by the XML metadata extraction programs. Do not put commas or \\ between the elements of \affiliation. They will be provided automatically.

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
Sonenallee 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, \afffiliation 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 Sonenallee 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 LTEX), 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 Lagrange them itself using the information you give it. However, you can override its choice using the command \authorsaddresses{\chicknowledge}, 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 \subtitlenote \authornote While the command \thanks generates a note without a footnote mark, sometimes the authors might need notes more tightly connected to the title, subtitle or author. The 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}
```

\authornotemark

Please never use a \footnote inside an \author or \title command since this confuses the metadata extraction software. (Actually these commands now produce errors.) Sometimes one may need to have the same footnote connected to several authors. The command \authornotemark[\((number\))] adds just the footnote mark, for example,

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

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

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

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

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

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

\acmArticleSeq

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

```
\colon 200 \acmArticle{39} % The sequence number will be 39 by default \acmArticleSeq{5} % We redefine it to 5
```

Setting this number to zero suppresses the blob.

\acmSubmissionID

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

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

\acmPrice

The macro  $\acmPrice{\langle price \rangle}$  sets the price for the article, for example,

```
\acmPrice{25.00}
```

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

\acmISBN

Book-like volumes have ISBN numbers attached to them. The macro  $\acmission SBN(\langle ISBN \rangle)$  sets it. Normally it is set by the typesetter, for example,

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

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

The macro  $\acmbox{DOI}(\ackslash\del{DOI})$  sets the DOI of the article, for example,

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

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

\acmBadgeR \acmBadgeL

\acmD0I

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

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

\startPage

The macro  $\startPage{\langle page \rangle}$  sets the first page of the article in a journal or book. It is used by the typesetter.

\terms \keywords The command  $\ensuremath{\mbox{keyword}} {\ensuremath{\mbox{keyword}}, ...}$  sets keywords for the article. They must be separated by commas, for example,

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

CCSXML \ccsdesc

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

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

```
</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>
</cs2012>
\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{\ldots

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 permssion 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 LTFX.

teaserfigure

A special kind of figure is used for many two-column conference proceedings.

Table 3: Parameters for the  $\backslash$ setcopyright command

Doromotor	Maaning
Parameter	Meaning
none	The copyright and permission information is not typeset.
	(This is the option for some ACM conferences.)
acmcopyright	The authors transfer the copyright to the ACM (the "tradi-
	tional" choice).
acmlicensed	The authors retain the copyright but license the publication
	rights to ACM.
rightsretained	The authors retain the copyright and publication rights to
	themselves or somebody else.
usgov	All the authors are employees of the US government.
usgovmixed	Some authors are employees of the US government.
cagov	All the authors are employees of the Canadian government.
cagovmixed	Some authors are employees of the Canadian government.
licensedusgovmixed	Some authors are employees of the US government, and the
	publication rights are licensed to ACM.
licensedcagov	All the authors are employees of the Canadian government,
	and the publication rights are licensed to ACM.
licensedcagovmixed	Some authors are employees of the Canadian government,
	and the publication rights are licensed to ACM.
othergov	Authors are employees of a government other than the US
	or Canada.
licensedothergov	Authors are employees of a government other than the US
	or Canada, and the publication rights are licensed to ACM.
iw3c2w3	Special statement for conferences organized by IW3C2.
iw3c2w3g	Special statement for conferences organized by IW3C2,
	when some authors are approved Google employees.

Table 4: Settings for the \settopmatter command

Parameter	Values	Meaning
printccs printacmref printfolios authorsperrow	true/false true/false true/false numeric	Whether to print CCS categories Whether to print the ACM bibliographic entry Whether to print page numbers (folios) 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  $\ensuremath{\texttt{\settings}}$ . The settings and their meanings are listed in Table 4. For example,

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

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

\settopmatter{authorsperrow=4}

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

\received

The command  $\ensuremath{\mbox{received[}\langle stage\rangle]} {\langle date\rangle}$  sets the history of the publication. The  $[\langle stage\rangle]$  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}{11}
  \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 \
               & CSMA/MMSN\\
 MAC Layer
 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
screenonly

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

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

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

\grantsponsor \grantnum

acks

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

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

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

Example:

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

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

# 2.10 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 BibTeX styles other than ACM-Reference-Format.bst, and may delay the processing of the manuscript.

\citestyle

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

```
\citestyle{acmauthoryear}
```

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

\setcitestyle

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

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

One of the more common versions is

```
\setcitestyle{nosort}
```

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

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

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

There are several customized  $BibT_EX$  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,

```
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 bibliograpy corresponding to two different possibilies. 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",
                "A more perfect union",
title =
howpublished = "Video",
                "5",
day
       =
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".
                "ACM SIGGRAPH 2003 Video Review on Animation theater Program",
booktitle =
                "2003",
year =
publisher =
                "ACM Press"
                "New York, NY",
address =
                "4",
pages =
month =
                "March 21, 2008",
                "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:

```
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,

#### **2.11 Colors**

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

The ACM provides the following recommendation on color use.

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

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

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

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

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

# 2.12 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

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

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

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

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

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

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

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

\PassOptionsToPackage{dvipsnames}{xcolor}

you will pass dvipsnames to xcolor.

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

# 2.14 Currently supported publications

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DTRAP	Digital Threats: Research and Practice
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JDIQ	ACM Journal of Data and Information Quality
JEA	ACM Journal of Experimental Algorithmics
JERIC	ACM Journal of Educational Resources in Computing
JETC	ACM Journal on Emerging Technologies in Computing Systems
JOCCH	ACM Journal on Computing and Cultural Heritage
PACMCGIT	Proceedings of the ACM on Computer Graphics and Interactive Techniques
PACMHCI	PACM on Human-Computer Interaction
PACMPL	PACM on Programming Languages
POMACS	PACM on Measurement and Analysis of Computing Systems
TAAS	ACM Transactions on Autonomous and Adaptive Systems
TACCESS	ACM Transactions on Accessible Computing
TACCL33	ACM Transactions on Architecture and Code Optimization
TALG	ACM Transactions on Algorithms
TALLIP	ACM Transactions on Asian and Low-Resource Language Information
IALLII	Processing
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TDSCI	ACM Transactions on Data Science
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
THRI	ACM Transactions on Human-Robot Interaction
TIIS	ACM Transactions on Interactive Intelligent Systems
TIOT	ACM Transactions on Internet of Things
TISSEC	ACM Transactions on Information and System Security
TIST	ACM Transactions on Intelligent Systems and Technology
TKDD	ACM Transactions on Knowledge Discovery from Data
TMIS	ACM Transactions on Management Information Systems

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

Abbreviation	Publication
TOCE	ACM Transactions on Computing Education
TOCHI	ACM Transactions on Computer-Human Interaction
TOCL	ACM Transactions on Computational Logic
TOCS	ACM Transactions on Computer Systems
TOCT	ACM Transactions on Computation Theory
TODAES	ACM Transactions on Design Automation of Electronic Systems
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
TOMACS	ACM Transactions on Modeling and Computer Simulation
TOMM	ACM Transactions on Multimedia Computing, Communications and
	Applications
TOMPECS	ACM Transactions on Modeling and Performance Evaluation of Com-
	puting Systems
TOMS	ACM Transactions on Mathematical Software
TOPC	ACM Transactions on Parallel Computing
TOPLAS	ACM Transactions on Programming Languages and Systems
TOPS	ACM Transactions on Privacy and Security
TOS	ACM Transactions on Storage
TOSEM	ACM Transactions on Software Engineering and Methodology
TOSN	ACM Transactions on Sensor Networks
TRETS	ACM Transactions on Reconfigurable Technology and Systems
TSAS	ACM Transactions on Spatial Algorithms and Systems
TSC	ACM Transactions on Social Computing
TSLP	ACM Transactions on Speech and Language Processing
TWEB	ACM Transactions on the Web

# 3 Implementation

### 3.1 Identification

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

```
1 (class)\NeedsTeXFormat{LaTeX2e}
2 (*gobble)
3\ProvidesFile{acmart.dtx}
4 (/gobble)
5 (class)\ProvidesClass{acmart}
6 [2018/04/14 v1.53 Typesetting articles for the Association for
7 Computing Machinery]
  And the driver code:
8 (*gobble)
9 \documentclass{ltxdoc}
10 \usepackage{array,booktabs,amsmath,graphicx,fancyvrb,tabularx, longtable}
11 \usepackage[tt=false, type1=true]{libertine}
12 \usepackage[varqu]{zi4}
13 \usepackage[libertine]{newtxmath}
14 \usepackage[tableposition=top]{caption}
15 \usepackage{hypdoc}
16 \PageIndex
17 \CodelineIndex
18 \RecordChanges
19 \EnableCrossrefs
20 \begin{document}
21 \DocInput{acmart.dtx}
22 \end{document}
23 (/gobble)
24 (*class)
25 \def\@classname{acmart}
```

### 3.2 Preload hook

We preload acmart-preload-hook:

# 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
                manuscript, acmsmall, acmlarge, acmtog, sigconf, siggraph,
                    sigplan, sigchi, sigchi-a}[manuscript]{}{%
                    \ClassError{\@classname}{The option format must be manuscript,
                      acmsmall, acmlarge, acmtog, sigconf, siggraph,
                      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
                      \PackageInfo{\@classname}{Not using screen mode}%
                fi{\PackageError{\@classname}{The option screen can be either true or
                      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
                      \PackageInfo{\@classname}{Requiring acmthm}%
                59
                60
                      \PackageInfo{\@classname}{Suppressing acmthm}%
                    \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
                      \PackageInfo{\@classname}{Using review mode}%
                      \AtBeginDocument{\@ACM@printfoliostrue}%
                69 \else
                      \PackageInfo{\@classname}{Not using review mode}%
                71 \fi}{\PackageError{\@classname}{The option review can be either true or
                      false}}
                72
                73 \ExecuteOptionsX{review=false}
```

```
\if@ACM@authorversion Whether we use author's-version mode
                          74 \define@boolkey+{acmart.cls}[@ACM@]{authorversion}[true]{%
                              \if@ACM@authorversion
                                \PackageInfo{\@classname}{Using authorversion mode}%
                          77
                              \else
                                \PackageInfo{\@classname}{Not using authorversion mode}%
                          79 \fi}{\PackageError{\@classname}{The option authorversion can be either true or
                                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]{%
                              \if@ACM@natbib
                                \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
                          84
                                \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
                              \fi}{\PackageError{\@classname}{The option natbib can be either true or
                                false}}
                          89 \ExecuteOptionsX{natbib=true}
      \if@ACM@anonymous Whether we use anonymous mode
                          90 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
                              \if@ACM@anonymous
                                \PackageInfo{\@classname}{Using anonymous mode}%
                          93
                                \PackageInfo{\@classname}{Not using anonymous mode}%
                             \fi}{\PackageError{\@classname}{The option anonymous can be either true or
                                false}}
                          97 \ExecuteOptionsX{anonymous=false}
      \if@ACM@timestamp Whether we use timestamp mode
                          98 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
                              \if@ACM@timestamp
                                \PackageInfo{\@classname}{Using timestamp mode}%
                          100
                          101
                                \PackageInfo{\@classname}{Not using timestamp mode}%
                          102
                              fi}{\PackageError{\Qclassname}} The option timestamp can be either true or
                          105 \ExecuteOptionsX{timestamp=false}
    \if@ACM@authordraft Whether we use author-draft mode
                          106 \define@boolkey+{acmart.cls}[@ACM@]{authordraft}[true]{%
                              \if@ACM@authordraft
                                \PackageInfo{\@classname}{Using authordraft mode}%
                          108
                                \@ACM@timestamptrue
                          109
                                \@ACM@reviewtrue
                          111 \else
```

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

# 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
       \def\ACM@fontsize{9pt}%
163
164 \or % acmsmall
       \def\ACM@fontsize{10pt}%
165
    \or % acmlarge
       \def\ACM@fontsize{10pt}%
168 \or % acmtog
       \def\ACM@fontsize{9pt}%
169
170 \or % sigconf
       \def\ACM@fontsize{9pt}%
171
172 \or % siggraph
      \def\ACM@fontsize{9pt}%
      \or % sigplan
174
       \def\ACM@fontsize{10pt}%
175
      \or % sigchi
176
       \def\ACM@fontsize{10pt}%
177
     \or % sigchi-a
178
179
       \def\ACM@fontsize{10pt}%
180
     \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 num-
ber
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
   \RequirePackage{natbib}
195
    \renewcommand{\bibsection}{%
196
      \section*{\refname}%
197
      198
   }
199
    \renewcommand{\bibfont}{\bibliofont}
200
    \renewcommand\setcitestyle[1]{
201
    \ensuremath{\texttt{Qfor}\ensurema:=\#1\do}
202
    203
      204
205
    \def\@tempb{square}\ifx\@tempa\@tempb
      \renewcommand\NAT@open{[}\renewcommand\NAT@close{]}\fi
206
    \def\@tempb{angle}\ifx\@tempa\@tempb
207
      \renewcommand\NAT@open{$<$}\renewcommand\NAT@close{$>$}\fi
208
    209
      210
    \def\@tempb{semicolon}\ifx\@tempa\@tempb
211
      \renewcommand\NAT@sep{;}\fi
212
    \def\@tempb{colon}\ifx\@tempa\@tempb
213
      \mbox{renewcommand}\AT@sep{;}\fi
214
    \def\@tempb{comma}\ifx\@tempa\@tempb
215
      \renewcommand\NAT@sep{,}\fi
216
217
    \def\@tempb{authoryear}\ifx\@tempa\@tempb
218
      \NAT@numbersfalse\fi
    \def\@tempb{numbers}\ifx\@tempa\@tempb
219
      \NAT@numberstrue\NAT@superfalse\fi
220
    \def\@tempb{super}\ifx\@tempa\@tempb
221
      \NAT@numberstrue\NAT@supertrue\fi
222
    \def\@tempb{nobibstyle}\ifx\@tempb
223
      \let\bibstyle=\@gobble\fi
224
```

```
\def\@tempb{bibstyle}\ifx\@tempa\@tempb
225
                          \let\bibstyle=\@citestyle\fi
226
                   227
                          \def\NAT@sort{\@ne}\fi
228
                   \def\@tempb{nosort}\ifx\@tempa\@tempb
229
                          \def\NAT@sort{\z@}\fi
230
231
                   \def\@tempb{compress}\ifx\@tempa\@tempb
232
                          \def\NAT@cmprs{\@ne}\fi
                   233
                          \def\NAT@cmprs{\@z}\fi
234
                   235
                          \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
236
                   \def\@tempb{mcite}\ifx\@tempa\@tempb
237
                          \let\NAT@merge\@ne\fi
238
                   \def\@tempb{merge}\ifx\@tempa\@tempb
239
                          240
                   \label{lide} $$ \end{area} if $x \otimes e^{\theta} . $$ \end{area} $$ if $x \otimes e^{\theta} . $$ \end{area} $$ \end{
241
                          \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ens
242
                   \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
243
                          \NAT@longnamestrue\fi
244
                   \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
245
                          \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
246
                   \expandafter\NAT@find@eq\@tempa=\relax\@nil
247
                   \if\@tempc\relax\else
248
249
                          \expandafter\NAT@rem@eq\@tempc
                          \def\ensuremath{\def\def} \
250
                              \xdef\NAT@open{\@tempc}\fi
251
252
                          \def\@tempb{close}\ifx\@tempa\@tempb
                             \xdef\NAT@close{\@tempc}\fi
253
                          254
                             \xdef\NAT@aysep{\@tempc}\fi
255
                          \def\@tempb{yysep}\ifx\@tempa\@tempb
256
257
                             \xdef\NAT@yrsep{\@tempc}\fi
                          \def\@tempb{notesep}\ifx\@tempa\@tempb
258
                             \xdef\NAT@cmt{\@tempc}\fi
259
                          \def\@tempb{citesep}\ifx\@tempa\@tempb
260
                              \xdef\NAT@sep{\dempc}\fi
261
                   \fi
262
263
                \NAT@@setcites
264
265
                \renewcommand\citestyle[1]{%
266
                      \ifcsname bibstyle@#1\endcsname%
267
                      \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
268
                      \else%
269
270
                      \@latex@error{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 \textit{MEX} 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
                 \@tempskipa #4\relax
291
                 \@afterindenttrue
292
                  293
                          \@tempskipa -\@tempskipa \@afterindentfalse
294
295
                \fi
296
                 \if@nobreak
                          \everypar{}%
297
                  \else
298
                          \addpenalty\@secpenalty\addvspace\@tempskipa
299
                 \fi
300
                  \@ifstar
301
                          {\@ssect{#3}{#4}{#5}{#6}}%
                          {\d}^{\d}_{\d}^{\#3}^{\#4}^{\#5}^{\#6}}
304 \def\@sect#1#2#3#4#5#6[#7]#8{%
                  \edsen \edse \ed
305
                  306
                          \let\@svsec\@empty
307
308
                \else
309
                          \refstepcounter{#1}%
310
                          \protected@edef\@svsec{\@seccntformat{#1}\relax}%
311 \fi
312 \@tempskipa #5\relax
313 \ifdim \@tempskipa>\z@
```

```
\begingroup
314
         #6{%
315
           \@hangfrom{\hskip #3\relax\@svsec}%
316
              \interlinepenalty \@M #8\@@par}%
317
       \endgroup
318
319
       \csname #1mark\endcsname{#7}%
320
       \ifnum #2>\c@secnumdepth \else
           \@tochangmeasure{\csname the#1\endcsname}%
321
       \fi
322
       \verb|\addcontentsline{toc}{#1}{%}|
323
         \ifnum #2>\c@secnumdepth \else
324
           \protect\numberline{\csname the#1\endcsname}%
325
         \fi
326
         #7}%
327
     \else
328
       \def\ensuremath{\sc 0}
329
         #6{\hskip #3\relax
330
         \@svsec #8}%
331
332
         \csname #1mark\endcsname{#7}%
333
         \ifnum #2>\c@secnumdepth \else
           \@tochangmeasure{\csname the#1\endcsname\space}%
334
         \fi
335
         \addcontentsline{toc}{#1}{%
336
           \ifnum #2>\c@secnumdepth \else
337
              \protect\numberline{\csname the#1\endcsname}%
338
           \fi
339
           #7}}%
340
     \fi
341
     \@xsect{#5}}
342
343 \def\@xsect#1{%
     \@tempskipa #1\relax
344
345
     \left( \cdot \right) = \left( \cdot \right) 
346
       \par \nobreak
       \vskip \@tempskipa
347
       \@afterheading
348
     \else
349
       \@nobreakfalse
350
351
       \global\@noskipsectrue
352
       \everypar{%
         \if@noskipsec
353
           \global\@noskipsecfalse
354
          {\setbox\z@\lastbox}%
355
           \clubpenalty\@M
356
           \begingroup \@svsechd \endgroup
357
358
           \unskip
359
           \@tempskipa #1\relax
360
           \hskip -\@tempskipa
361
         \else
           \clubpenalty \@clubpenalty
362
           \everypar{}%
363
```

```
\fi}%
                   364
                        \fi
                   365
                        \ignorespaces}
                   367 \def\@seccntformat#1{\csname the#1\endcsname\quad}
                   368 \def\@ssect#1#2#3#4#5{%
                        \@tempskipa #3\relax
                   370
                        \ifdim \@tempskipa>\z@
                   371
                          \begingroup
                            #4{%
                   372
                              \@hangfrom{\hskip #1}%
                   373
                                \interlinepenalty \@M #5\@@par}%
                   374
                   375
                          \endgroup
                        \else
                          \def\@svsechd{#4{\hskip #1\relax #5}}%
                   377
                        \fi
                   378
                        \@xsect{#3}}
                  The amsart package redefines \startsection. Here we redefine it again to make the
  \@startsection
                  table of contents work.
                   380 \def\@starttoc#1#2{\begingroup\makeatletter
                   381
                        \setTrue{#1}%
                        \par\removelastskip\vskip\z@skip
                   382
                        \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
                   383
                          {.5\linespacing}{\centering\contentsnamefont}{#2}%
                   384
                        \@input{\jobname.#1}%
                        \if@filesw
                   386
                          \@xp\newwrite\csname tf@#1\endcsname
                   387
                          \immediate\@xp\openout\csname tf@#1\endcsname \jobname.#1\relax
                   388
                   389
                        \global\@nobreakfalse \endgroup
                   390
                   391
                        \addvspace{32\p@\eqlus14\p@}%
                  Section spacing is more generous than for amsart
   \l@subsection
                   393 \left(1\ 10cline{1}{0pt}{1pc}{2pc}{}}
   \l@subsection The spacing in amsart is too large
                   {\tt 394 \ def\ l@subsection{\ locline{2}{0pt}{1pc}{3pc}{}}}
\lesubsubsection 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{-}%
```

```
\def\textrightarrow{ -> }%
    \def\footnotemark{}%
403
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{%
    \if@ACM@screen
421
      \hypersetup{colorlinks,
        linkcolor=ACMRed,
422
        citecolor=ACMPurple,
423
        urlcolor=ACMDarkBlue,
424
        filecolor=ACMDarkBlue}
425
426
      \hypersetup{hidelinks}
427
  Bibliography mangling.
429 \if@ACM@natbib
430 \let\citeN\cite
431 \let\cite\citep
432 \let\citeANP\citeauthor
    \let\citeNN\citeyearpar
    \let\citeyearNP\citeyear
434
    \let\citeNP\citealt
    \DeclareRobustCommand\citeA
436
       {\begingroup\NAT@swafalse
437
         \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
438
    \providecommand\newblock{}%
439
440 \else
    \AtBeginDocument{%
      \let\shortcite\cite%
443
      \providecommand\citename[1]{#1}}
444\fi
445 \newcommand\shortcite[2][]{%
```

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

```
447 \def\bibliographystyle#1{%
    \ifx\@begindocumenthook\@undefined\else
448
      \expandafter\AtBeginDocument
449
    \fi
450
      {\if@filesw
451
452
          \immediate\write\@auxout{\string\bibstyle{#1}}%
453
  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
    \RequirePackage{draftwatermark}
    \SetWatermarkFontSize{0.5in}
    \SetWatermarkColor[gray]{.9}
467
    \SetWatermarkText{\parbox{12em}{\centering}
         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
     \geometry{letterpaper,head=13pt,
     marginparwidth=6pc, heightrounded}%
477 \or % acmsmall
      \geometry{twoside=true,
478
        includeheadfoot, head=13pt, foot=2pc,
479
        paperwidth=6.75in, paperheight=10in,
480
        top=58pt, bottom=44pt, inner=46pt, outer=46pt,
481
        marginparwidth=2pc, heightrounded
482
483
     }%
484 \or % acmlarge
```

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

#### 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

\normalparindent

\endminipage

The amsart package defines the \normalparindent length and initializes it to 12pt (the value of \parindent in amsart). It is later used to set the \listparindent length in the quotation environment and the \parindent length in the \@footnotetext command. We set \normalparindent to the value of \parindent as selected by acmart for consistent paragraph indents.

```
550 \setlength\normalparindent{\parindent}
```

Footnotes require some consideration. We have several layers of footnotes: frontmatter 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@}
               We do not use footnote rules in minipages
                560 \def\endminipage{%
                561
                       \par
```

```
\unskip
                                             562
                                                            \ifvoid\@mpfootins\else
                                             563
                                                                 \vskip\skip\@mpfootins
                                             564
                                                                  \normalcolor
                                             565
                                                                 \unvbox\@mpfootins
                                             566
                                             567
                                                            \fi
                                             568
                                                            \@minipagefalse
                                                        \color@endgroup
                                             569
                                                       \egroup
                                             570
                                                        \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
         \@makefntext We do not use indentation for footnotes
                                             572 \def\@makefntext{\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
                                                            \interlinepenalty\interfootnotelinepenalty
                                             576
                                                             \protected@edef\@currentlabel{%
                                             577
                                             578
                                                                    \csname p@footnote\endcsname\@thefnmark
                                             579
                                             580
                                                             \color@begingroup
                                                                  \@makefntext{%
                                             581
                                                                       \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
                                             582
                                             583
                                                            \color@endgroup}}%
                                             584\fi
\@mpfootnotetext We want the footnotes in minipages centered:
                                             585 \long\def\@mpfootnotetext#1{%
                                                      \global\setbox\@mpfootins\vbox{%
                                                             \unvbox\@mpfootins
                                                            \reset@font\footnotesize
                                             588
                                                            \hsize\columnwidth
                                             589
                                                            \@parboxrestore
                                             590
                                                            \protected@edef\@currentlabel
                                             591
                                                                         {\csname p@mpfootnote\endcsname\@thefnmark}%
                                             592
                                                            \color@begingroup\centering
                                             593
                                             594
                                                                  \@makefntext{%
                                             595
                                                                       \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
                                                            \color@endgroup}}
         \@makefnmark AMS classes use a buggy definition of \makefnmark. We revert to the standard one.
                                             \label{lem:continuous} 597 \end{continuous} $$ 197 \
         \@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 PDFTeX and XeTeX require different incantations to make a PDF compliant with the current Acrobat bugs. Xpdf is much better.

The code below is by Ross Moore.

```
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
                                                612 \RequirePackage{cmap}
\if@ACM@newfonts
                                               Whether we load the new fonts
                                                 613 \newif\if@ACM@newfonts
                                                 614 \@ACM@newfontstrue
                                                {\tt 615 \label{libertine.sty}{} \labell{libertine.sty}{} \labell{libertine.sty}{} \labell{libertine.sty}{} \labell{libertine.sty}{} \labell{libertine.sty}{} \labell{libertin
                                                                  have the libertine package installed. Please upgrade your
                                                                  TeX}\@ACM@newfontsfalse}
                                                618 \IfFileExists{zi4.sty}{}{\ClassWarning{\@classname}{You do not
                                                                  have the zi4 package installed. Please upgrade your
                                                619
                                                                  TeX}\@ACM@newfontsfalse}
                                                 620
                                                 have the newtxmath package installed. Please upgrade your
                                                                  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.

 $636 \verb|\let\liningnums\@undefined|$ 

```
637 \AtEndPreamble{%
               \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
                \captionsetup{labelfont={sf, small},
                  textfont={sf, small}, margin=\z@}
           646
               \captionsetup[figure]{name={Fig.}}
           647
           648 \else
                \captionsetup{labelfont={bf},
           649
                  textfont={bf}, labelsep=colon, margin=\z@}
            650
                \ifcase\ACM@format@nr
                \relax % manuscript
           652
                \or % acmsmall
           653
                \or % acmlarge
           654
           655 \or % acmtog
           656 \or % sigconf
           657 \or % siggraph
                  \captionsetup{textfont={it}}
           658
                \or % sigplan
           659
                  \captionsetup{labelfont={bf},
           660
                     textfont={normalfont}, labelsep=period, margin=\z@}
           661
                \or % sigchi
           662
                  \captionsetup[figure]{labelfont={bf, small},
           663
           664
                     textfont={bf, small}}
                \or % sigchi-a
           665
                  \captionsetup[figure]{labelfont={bf, small},
           666
                     textfont={bf, small}}
            667
               \fi
           668
           669\fi
          The sidebar environment:
           670 \newfloat{sidebar}{}{sbar}
           671 \floatname{sidebar}{Sidebar}
           672 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}
\@sidebar The processing of the saved text
```

sidebar

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}
      margintable The margintable environment:
                    678 \newenvironment{margintable}{\Collect@Body\@margintable}{}
    \@margintable The processing of the saved text
                    679 \long\def\@margintable#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)
       \@db1float 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
                        \let\@endfloatbox\@endwidefloatbox
                        \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
                   This is the end of a wide box—we basically move everything to the left
\@endwidefloatbox
                    693 \def\@endwidefloatbox{%
                    694 \par\vskip\z@skip
                    695
                         \@minipagefalse
                    696
                        \outer@nobreak
                        \egroup
                    697
                        \color@endbox
                    698
                         \global\setbox\@currbox=\vbox{\moveleft
                           \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\labelenumii{\theenumii.}
712\def\labelenumiii{\theenumiii.}
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{%
    \setlength\labelsep{4pt}
    \step {\c M@labelwidth}{6.5pt}
721
722
    %% First-level list: when beginning after the first line of an
    %% indented paragraph or ending before an indented paragraph, labels
    %% should not hang to the left of the preceding/following text.
725
    \setlength\leftmargini{\z@}
726
    \addtolength\leftmargini{\parindent}
727
    \addtolength\leftmargini{2\labelsep}
728
    \addtolength\leftmargini{\@ACM@labelwidth}
729
730
    %% Second-level and higher lists.
731
    \setlength\leftmarginii{\z@}
732
    \addtolength\leftmarginii{0.5\labelsep}
733
    \addtolength\leftmarginii{\@ACM@labelwidth}
734
    \setlength\leftmarginiii{\leftmarginii}
735
    \setlength\leftmarginiv{\leftmarginiii}
    \setlength\leftmarginv{\leftmarginiv}
    \setlength\leftmarginvi{\leftmarginv}
738
    \@listi}
740 \newskip\listisep
741 \listisep\smallskipamount
742 \def\@listI{\leftmargin\leftmargini
743 \labelwidth\leftmargini \advance\labelwidth-\labelsep
```

```
\listparindent\z@
                         \topsep\listisep}
                    746 \let\@listi\@listI
                    747 \def\@listii{\leftmargin\leftmarginii
                    \verb| \label| width \verb| \label| advance \verb| label| width \verb| \label| sep| \\
                    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
                         \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}
                    We do not use a colon by default like amsart does:
\descriptionlabel
                    758 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}
```

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

```
759 \renewenvironment{description}{\list{}{%
      \labelwidth\@ACM@labelwidth
761
      \let\makelabel\descriptionlabel}%
762 }{
763 \endlist
764 }
765 \let\enddescription=\endlist % for efficiency
```

### 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,%
    JOCCH,%
777 PACMCGIT,%
778 PACMHCI,%
779 PACMPL,%
780 POMACS,%
781 TAAS,%
782 TACCESS,%
783 TACO,%
```

```
784 TALG,%
```

- 785 TALLIP,%
- 786 TAP,%
- 787 TCPS,%
- 788 TDSCI,%
- 789 TEAC,%
- 790 TECS,%
- 791 THRI,%
- 792 TIIS,%
- 793 TIOT,%
- 794 TISSEC,%
- 795 TIST,%
- 770 TUDD 00
- 796 TKDD,% 797 TMIS,%
- 798 TOCE,%
- 770 1002,70
- 799 TOCHI,%
- 800 TOCL,%
- 801 TOCS,%
- 802 TOCT,%
- 803 TODAES,%
- 804 TODS,%
- 805 TOG,%
- 806 TOIS,%
- 807 TOIT,%
- 808 TOMACS,%
- 809 TOMM, %
- 810 TOMPECS,%
- 811 TOMS,%
- 812 TOPC,%
- 813 TOPS,%
- 814 TOPLAS,%
- 815 TOS,%
- 816 TOSEM, %
- 817 TOSN,%
- 818 TRETS,%
- 819 TSAS,%
- 820 TSC,% 821 TSLP,%
- 822 TWEB%
- 823 }{%
- 824 \ifcase\@journalCode@nr
- 825 \relax % CIE
- 826 \def\@journalName{ACM Computers in Entertainment}%
- \def\@journalNameShort{ACM Comput. Entertain.}%
- $\verb| \def@permissionCodeOne{1544-3574}| % \\$
- 829 \or % CSUR
- 830 \def\@journalName{ACM Computing Surveys}%
- $\verb| \def@journalNameShort{ACM Comput. Surv.}| % \\$
- 832 \def\@permissionCodeOne{0360-0300}%
- 833 \or % DTRAP

```
\def\@journalName{Digital Threats: Research and Practice}%
    \def\@journalNameShort{Digit. Threat. Res. Pract.}%
    \def\@permissionCodeOne{2576-5337}%
836
837 \or % IMWUT
838 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
      Wearable and Ubiquitous Technologies}%
840 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
   \def\@permissionCodeOne{2474-9567}%
841
842 \@ACM@screentrue
\$43 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
844 \or % JACM
845 \def\@journalName{Journal of the ACM}%
    \def\@journalNameShort{J. ACM}%
    \def\@permissionCodeOne{0004-5411}%
848 \or % JDIO
849 \def\@journalName{ACM Journal of Data and Information Quality}%
850 \def\@journalNameShort{ACM J. Data Inform. Quality}%
851 \def\@permissionCodeOne{1936-1955}%
852 \or % JEA
853 \def\@journalName{ACM Journal of Experimental Algorithmics}%
854 \def\@journalNameShort{ACM J. Exp. Algor.}%
855 \def\@permissionCodeOne{1084-6654}%
856 \or % JERIC
857 \def\@journalName{ACM Journal of Educational Resources in Computing}%
    \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
    \def\@permissionCodeOne{1073-0516}%
860 \or % JETC
861 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
862 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
^{863} \def\@permissionCodeOne{1550-4832}%
864 \or % JOCCH
865 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
866 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
867 \or % PACMCGIT
868 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
    \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
    \def\@permissionCodeOne{2577-6193}%
870
    \@ACM@screentrue
    \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
873 \or % PACMHCI
    \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
875 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
876 \def\@permissionCodeOne{2573-0142}%
877 \@ACM@screentrue
878 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
879 \or % PACMPL
880 \def\@journalName{Proceedings of the ACM on Programming Languages}%
\def\@journalNameShort{Proc. ACM Program. Lang.}%
882 \def\@permissionCodeOne{2475-1421}%
```

\@ACM@screentrue

```
884 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
885 \or % POMACS
886 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
    \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
    \def\@permissionCodeOne{2476-1249}%
888
    \@ACM@screentrue
890 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
891 \or % TAAS
    \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
    \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
^{894} \def\ensuremath{@permissionCodeOne\{1556-4665\}\%}
895 \or % TACCESS
    \def\@journalName{ACM Transactions on Accessible Computing}%
    \def\@journalNameShort{ACM Trans. Access. Comput.}%
    \def\@permissionCodeOne{1936-7228}%
899 \or % TACO
900 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
901 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
903 \def\@journalName{ACM Transactions on Algorithms}%
904 \def\@journalNameShort{ACM Trans. Algor.}%
905 \def\@permissionCodeOne{1549-6325}%
906 \or % TALLIP
907 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
    \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
    \def\@permissionCodeOne{2375-4699}%
910 \or % TAP
911 \def\@journalName{ACM Transactions on Applied Perception}%
912 \or % TCPS
913 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
914 \or % TDSCI
915 \def\@journalName{ACM Transactions on Data Science}%
916 \def\@journalNameShort{ACM Trans. Data Sci.}%
917 \def\@permissionCodeOne{2577-3224}%
918 \or % TEAC
919 \def\@journalName{ACM Transactions on Economics and Computation}%
920 \or % TECS
   \def\@journalName{ACM Transactions on Embedded Computing Systems}%
    \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
    \def\@permissionCodeOne{1539-9087}%
924\or % THRI
925 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
926 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
927 \def\@permissionCodeOne{2573-9522}%
928 \or % TIIS
929 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
930 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
931 \def\@permissionCodeOne{2160-6455}%
932 \or % TIOT
```

933 \def\@journalName{ACM Transactions on Internet of Things}%

```
\def\@journalNameShort{ACM Trans. Internet Things}%
    \def\@permissionCodeOne{2577-6207}%
936 \or % TISSEC
937 \def\@journalName{ACM Transactions on Information and System Security}%
938 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
939 \def\@permissionCodeOne{1094-9224}%
940 \or % TIST
    \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
    \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
943 \def\@permissionCodeOne{2157-6904}%
944 \or % TKDD
945 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
    \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
    \def\@permissionCodeOne{1556-4681}%
948 \or % TMIS
949 \def\@journalName{ACM Transactions on Management Information Systems}%
950 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
951 \def\@permissionCodeOne{2158-656X}%
952 \or % TOCE
953 \def\@journalName{ACM Transactions on Computing Education}%
954 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
955 \def\@permissionCodeOne{1946-6226}%
956\or % TOCHT
957 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
    \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
    \def\@permissionCodeOne{1073-0516}%
    \def\@journalName{ACM Transactions on Computational Logic}%
962 \def\@journalNameShort{ACM Trans. Comput. Logic}%
963 \def\@permissionCodeOne{1529-3785}%
964 \or % TOCS
965 \def\@journalName{ACM Transactions on Computer Systems}%
966 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
967 \def\@permissionCodeOne{0734-2071}%
968 \or % TOCT
    \def\@journalName{ACM Transactions on Computation Theory}%
    \def\@journalNameShort{ACM Trans. Comput. Theory}%
    \def\@permissionCodeOne{1942-3454}%
972 \or % TODAES
973 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
    \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
975 \def\@permissionCodeOne{1084-4309}%
976 \or % TODS
977 \def\@journalName{ACM Transactions on Database Systems}%
978 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
979 \def\@permissionCodeOne{0362-5915}%
980 \or % TOG
981 \def\@journalName{ACM Transactions on Graphics}%
982 \def\@journalNameShort{ACM Trans. Graph.}%
```

\def\@permissionCodeOne{0730-0301}

```
984 \or % TOIS
     \def\@journalName{ACM Transactions on Information Systems}%
     \def\@permissionCodeOne{1046-8188}%
987 \or % TOIT
    \def\@journalName{ACM Transactions on Internet Technology}%
    \def\@journalNameShort{ACM Trans. Internet Technol.}%
990 \def\@permissionCodeOne{1533-5399}%
991 \or % TOMACS
992 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
993 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
994\or % TOMM
995 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
     \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
     \def\@permissionCodeOne{1551-6857}%
     \def\@permissionCodeTwo{0100}%
999 \or % TOMPECS
1000 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
    \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
    \def\@permissionCodeOne{2376-3639}%
1003 \or % TOMS
     \def\@journalName{ACM Transactions on Mathematical Software}%
     \def\@journalNameShort{ACM Trans. Math. Softw.}%
    \def\@permissionCodeOne{0098-3500}%
1006
1007 \or % TOPC
     \def\@journalName{ACM Transactions on Parallel Computing}%
     \def\@journalNameShort{ACM Trans. Parallel Comput.}%
     \def\@permissionCodeOne{1539-9087}%
1011 \or % TOPS
    \def\@journalName{ACM Transactions on Privacy and Security}%
     \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1013
1014 \def\@permissionCodeOne{2471-2566}%
1015 \or % TOPLAS
     \def\@journalName{ACM Transactions on Programming Languages and Systems}%
     \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
    \def\@permissionCodeOne{0164-0925}%
1018
1019 \or % TOS
     \def\@journalName{ACM Transactions on Storage}%
1020
     \def\@journalNameShort{ACM Trans. Storage}%
     \def\@permissionCodeOne{1553-3077}%
1023 \or % TOSEM
1024 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1025 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1026 \def\@permissionCodeOne{1049-331X}%
1027 \or % TOSN
1028 \def\@journalName{ACM Transactions on Sensor Networks}%
1029 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1030 \def\@permissionCodeOne{1550-4859}%
1031 \or % TRETS
1032 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
```

 ${\tt 1033} \quad \verb|\def|@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}|%$ 

```
1034 \def\@permissionCodeOne{1936-7406}%
                1035 \or % TSAS
                1036 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
                     \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
                     \def\@permissionCodeOne{2374-0353}%
                1038
                1039 \or % TSC
                     \def\@journalName{ACM Transactions on Social Computing}%
                     \def\@journalNameShort{ACM Trans. Soc. Comput.}%
                1042 \def\@permissionCodeOne{2469-7818}%
                1043 \or % TSLP
                1044 \def\@journalName{ACM Transactions on Speech and Language Processing}%
                     \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
                     \def\@permissionCodeOne{1550-4875}%
                1047 \or % TWEB
                     \def\@journalName{ACM Transactions on the Web}%
                1048
                     \def\@journalNameShort{ACM Trans. Web}%
                1050 \def\@permissionCodeOne{1559-1131}%
                1051 \fi
                1052 \ClassInfo{\@classname}{Using journal code \@journalCode}%
                1054 \ClassError{\@classname}{Incorrect journal #1}%
                1055 }%
  \acmJournal And the syntactic sugar around it
                1056 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}
                   The defaults:
                1057 \def\@journalCode@nr{0}
                1058 \def\@journalName{}%
                1059 \def\@journalNameShort{\@journalName}%
                1060 \def\@permissionCodeOne{XXXX-XXXX}%
                1061 \def\@permissionCodeTwo{}%
                This is the conference command
\acmConference
                1062 \newcommand\acmConference[4][]{%
                     \gdef\acmConference@shortname{#1}%
                1063
                1064
                      \gdef\acmConference@name{#2}%
                      \gdef\acmConference@date{#3}%
                1065
                      \gdef\acmConference@venue{#4}%
                1066
                      \ifx\acmConference@shortname\@empty
                1067
                       \gdef\acmConference@shortname{#2}%
                1068
                1069 \fi}
                1070 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
                1071 DC, USA}
\acmBooktitle The book title of the conference:
\@acmBooktitle
                1072 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
                1073 \acmBooktitle{Proceedings of \acmConference@name
                1074
                           \ifx\acmConference@name\acmConference@shortname\else
                1075
                             \ (\acmConference@shortname)\fi}
```

```
\@editorsAbbrev How to abbreviate editors
                                                             1076 \def\@editorsAbbrev{(Ed.)}
                        \@acmEditors The list of editors
                                                             1077 \def\@acmEditors{}
                                     \editor Add a new editor to the list
                                                             1078 \def\editor#1{\ifx\@acmEditors\@empty
                                                                                \gdef\@acmEditors{#1}%
                                                                          \else
                                                             1080
                                                                                \gdef\@editorsAbbrev{(Eds.)}%
                                                             1081
                                                                                \g@addto@macro\@acmEditors{\and#1}%
                                                             1082
                                                             1083 \fi}
                                \subtitle The subtitle macro
                                                             1084 \ensuremath{\verb| def\ensuremath{ \ensuremath{ \ensur
                                                             1085 \subtitle{}
                                                            The total number of "groups". Each group is several authors with the same affiliations(s)
           \num@authorgroups
                                                             1086 \newcount\num@authorgroups
                                                             1087 \num@authorgroups=0\relax
                        \num@authors
                                                            The total number of authors
                                                             1088 \newcount\num@authors
                                                             1089 \num@authors=0\relax
\if@insideauthorgroup
                                                            Whether we are continuing an author group
                                                             1090 \newif\if@insideauthorgroup
                                                             1091 \@insideauthorgroupfalse
                                                            Adding an author to the list of authors and addresses
                                     \author
                                                             1092 \renewcommand\author[2][]{%
                                                                          \global\advance\num@authors by 1\relax
                                                             1093
                                                                           \if@insideauthorgroup\else
                                                             1094
                                                                                \global\advance\num@authorgroups by 1\relax
                                                             1095
                                                                                \global\@insideauthorgrouptrue
                                                             1096
                                                             1097
                                                             1098
                                                                           \ifx\addresses\@empty
                                                                                \if@ACM@anonymous
                                                             1099
                                                                                     \gdef\addresses{\@author{Anonymous Author(s)}}%
                                                             1100
                                                                                     \gdef\authors{Anonymous Author(s)}%
                                                             1101
                                                                                \else
                                                             1102
                                                                                     \gdef\addresses{\@author{#2}}%
                                                             1103
                                                                                     \gdef\authors{#2}%
                                                             1104
                                                             1105
                                                                                \fi
                                                                           \else
                                                             1106
                                                                                \if@ACM@anonymous\else
                                                             1107
                                                                                     \g@addto@macro\addresses{\and\@author{#2}}%
                                                             1108
```

```
\g@addto@macro\authors{\and#2}%
                                   1109
                                          \fi
                                   1110
                                        \fi
                                   1111
                                        \if@ACM@anonymous
                                   1112
                                          \ifx\shortauthors\@empty
                                   1113
                                             \gdef\shortauthors{Anon.}%
                                   1114
                                   1115
                                          \fi
                                   1116
                                        \else
                                          \def\ensuremath{\def}\
                                   1117
                                          \ifx\@tempa\@empty
                                   1118
                                             \ifx\shortauthors\@empty
                                   1119
                                               \gdef\shortauthors{#2}%
                                   1120
                                             \else
                                   1121
                                               \g@addto@macro\shortauthors{\and#2}%
                                   1122
                                             \fi
                                   1123
                                          \else
                                   1124
                                             \ifx\shortauthors\@empty
                                   1125
                                               \gdef\shortauthors{#1}%
                                   1126
                                   1127
                                   1128
                                               \g@addto@macro\shortauthors{\and#1}%
                                             \fi
                                   1129
                                          \fi
                                   1130
                                        \fi}
                                   1131
                    \affiliation The macro \affiliation mimics \address from amsart. Note that it has an optional
                                   argument, which we use differently from amsart.
                                   1132 \newcommand{\affiliation}[2][]{%
                                        \global\@insideauthorgroupfalse
                                   1133
                                        \if@ACM@anonymous\else
                                   1134
                                          \g@addto@macro\addresses{\affiliation{#1}{#2}}%
                                   1135
                                   1136
                                   Whether to use the author's punctuation (false by default, which adds American-style
@ACM@affiliation@obeypunctuation
                                   address punctuation)
                                   {\tt 1137 \setminus define@boolkey+\{@ACM@affiliation@\}[@ACM@affiliation@]\{obeypunctuation\}\%}
                                   1138 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}
          \additionalaffiliation Additional affiliations go to footnotes
                                   \label{lem:limit} $$1139 \def\additionalaffiliation{1}{\authornote(\@additionalaffiliation{$\#1$})}$
         1140 \def\@additionalaffiliation#1{\bgroup
                                        \def\position##1{\ignorespaces}%
                                   1141
                                        \def\institution##1{##1\ignorespaces}%
                                   1142
                                        \def\department{\@ifnextchar[{\@department}{\@department[]}}%
                                   1143
                                        \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
                                   1145 \let\streetaddress\position
                                        \let\city\position
                                   1147 \let\state\position
```

```
\let\postcode\position
                                                              \let\country\position
                                                             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.
                                                1151 \renewcommand{\email}[2][]{%
                                                1152 \if@ACM@anonymous\else
                                                                   \g@addto@macro\addresses{\email{#1}{\#2}}\%
                                                1153
                                                           \fi}
                                                1154
                           \orcid Right now we do not typeset ORCIDs
                                                1155 \def\orcid#1{\unskip\ignorespaces}
\authorsaddresses Setting up authors' addresses
                                                1156 \def\authorsaddresses #1{\def\@authorsaddresses{#1}}
                                                1157 \authorsaddresses{\@mkauthorsaddresses}
            \@titlenotes The title notes
                                                1158 \def\@titlenotes{}
                 \titlenote Adding a note to the title
                                                1159 \def\titlenote#1{%
                                                            \g@addto@macro\@title{\footnotemark}%
                                                              \if@ACM@anonymous
                                                1161
                                                                   \g@addto@macro\@titlenotes{%
                                                1162
                                                                        \stepcounter{footnote}\footnotetext{Title note}}%
                                                1163
                                                1164
                                                                   \label{lem:lemotes} $$ \end{title} \end{title} $$ \end{title} $$$ \end{title} $$ \end{title} $$$ \end{title} $$$ \end{title}
                                                1165
                                                           \fi}
                                                1166
     \@subtitlenotes The subtitle notes
                                                1167 \def\@subtitlenotes{}
          \subtitlenote Adding a note to the subtitle
                                                1168 \def\subtitlenote#1{%
                                                             \g@addto@macro\@subtitle{\footnotemark}%
                                                1169
                                                              \if@ACM@anonymous
                                                1170
                                                                   \verb|\g@addto@macro|@subtitlenotes{%|}|
                                                1171
                                                                        \stepcounter{footnote}\footnotetext{Subtitle note}}%
                                                1172
                                                1173
                                                                   \g@addto@macro\@subtitlenotes{%
                                                1174
                                                                        \stepcounter{footnote}\footnotetext{#1}}%
                                                1175
                                                             \fi}
                                                1176
          \@authornotes The author notes
                                                1177 \def\@authornotes{}
```

```
\authornote Adding a note to the author
                 1178 \def\authornote#1{%
                      \if@ACM@anonymous\else
                 1179
                        \g@addto@macro\addresses{\@authornotemark}%
                 1180
                 1181
                        \g@addto@macro\@authornotes{%
                 1182
                           \stepcounter{footnote}\footnotetext{#1}}%
                 1183 \fi}
\authornotemark Adding a footnote mark to the authors
                 1184 \newcommand\authornotemark[1][\relax]{%
                 1185 \ifx#1\relax\relax\relax
                 {\tt 1186 } \verb| \g@addto@macro\addresses{\@authornotemark}| %
                 1187
                      \g@add to @macro \addresses {\@@authornotemark {\#1}} \%
                 1188
                 1189 \fi}
     \acmVolume The current volume
                 1190 \def\acmVolume#1{\def\@acmVolume{#1}}
                 1191 \acmVolume{1}
     \acmNumber The current number
                 1192 \def\acmNumber#1{\def\@acmNumber{#1}}
                 1193 \acmNumber{1}
    \acmArticle The current article
                 1194 \def\acmArticle#1{\def\@acmArticle{#1}}
                 1195 \acmArticle{}
 \acmArticleSeq The sequence number
                 1196 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
                 1197 \acmArticleSeq{\@acmArticle}
       \acmYear The current year
                 1198 \def\acmYear#1{\def\@acmYear{#1}}
                 1199 \acmYear{\the\year}
      \acmMonth The current month
                 1200 \def\acmMonth#1{\def\@acmMonth{#1}}
                 1201 \acmMonth{\the\month}
   \@acmPubDate
                 The publication date
                 1203 January\or February\or March\or April\or May\or June\or
                 1204 July\or August\or September\or October\or November\or
                 1205 December\fi~\@acmYear}
      \acmPrice The price
                 1206 \def\acmPrice#1{\def\@acmPrice{#1}}
                 1207 \acmPrice{15.00}
```

```
\acmSubmissionID The submission ID
                 1208 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}
                 1209 \acmSubmissionID{}
        \acmISBN The book ISBN
                 1211 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}
         \acmDOI The paper DOI
                 1212 \def\acmDOI#1{\def\@acmDOI{#1}}
                 1213 \acmDOI{10.1145/nnnnnnn.nnnnnnn)
   \if@ACM@badge Whether to print a badge. Note that either a left or right badge triggers it:
                 1214 \newif\if@ACM@badge
                 1215 \@ACM@badgefalse
\@ACM@badge@width The width of the badge
                 1216 \newlength\@ACM@badge@width
                 1217 \setlength\@ACM@badge@width{5pc}
\@ACM@title@width The width of the badge
                 1218 \newlength\@ACM@title@width
\@ACM@badge@skip The space between the badge and the title
                 1219 \newlength\@ACM@badge@skip
                 1220 \setlength\@ACM@badge@skip{1pc}
      \acmBadgeR Setting the right badge
                 1222 \def\@acmBadgeR@url{#1}%
                 1223 \def\@acmBadgeR@image{#2}}
                 1224 \def\@acmBadgeR@url{}
                 1225 \def\@acmBadgeR@image{}
      \acmBadgeL Setting the left badge
                 1226 \newcommand\acmBadgeL[2][]{\@ACM@badgetrue
                 1227 \def\@acmBadgeL@url{#1}%
                 1228 \def\@acmBadgeL@image{#2}}
                 1229 \def\@acmBadgeL@url{}
                 1230 \def\@acmBadgeL@image{}
      \startPage The start page of the paper
                 1231 \def\startPage#1{\def\@startPage{#1}}
                 1232 \startPage{}
          \terms Terms are obsolete. We use CCS now.
                 1234
                        obsolete. I am going to ignore it}}
```

```
Keywords are mostly obsolete. We use CCS now. Still it makes sense to keep them for
                                                                compatibility.
                                                                1235 \def\keywords#1{\def\@keywords{#1}}
                                                                1236 \keywords{}
                                                               The amsart package puts abstract in a box. Since we do not know whether we will
                                 abstract
                                                                use two-column mode, we prefer to save the text
                                                                1237 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
               \@saveabstract And saving the abstract
                                                                1238 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
                                                                1239 \@saveabstract{}
                                 \@lempty The long version of \@empty (to compare with \@abstract)
                                                                1240 \long\def\@lempty{}
        \if@ACM@printccs Whether to print CCS
                                                                1241 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
                                                                1242 \if@ACM@printccs
                                                                                       \ClassInfo{\@classname}{Printing CCS}%
                                                                1243
                                                                                 \else
                                                                1244
                                                                                       \ClassInfo{\@classname}{Suppressing CCS}%
                                                                1246 \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}
\if@ACM@printacmref Whether to print the ACM bibstrip
                                                                1247 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
                                                                1248 \if@ACM@printacmref
                                                                                       \ClassInfo{\@classname}{Printing bibformat}%
                                                                1249
                                                                1250 \else
                                                                                       \ClassInfo{\@classname}{Suppressing bibformat}%
                                                                1252 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}
                                                              Whether to print folios
\if@ACM@printfolios
                                                                {\tt 1253 \setminus define@boolkey+\{@ACM@topmatter@\}[@ACM@]\{printfolios\}[true]\{\%, Bernel of the printfolios] and the printfolios of the
                                                                1254 \if@ACM@printfolios
                                                                                       \ClassInfo{\@classname}{Printing folios}%
                                                                1255
                                                                1256
                                                                                       \ClassInfo{\@classname}{Suppressing folios}%
                                                                1258 \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}
                                                                The number of authors per row. 0 means use the default algorithm.
\@ACM@authorsperrow
                                                                1259 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorsperrow}[0]{%
                                                                                \footnote{Milnight of the continuous of the co
                                                                1260
                                                                                              #1}}{\ClassWarning{\@classname}{The parameter authorsperrow must be
                                                                1261
                                                                                              numerical. Ignoring the input #1}\gdef\@ACM@authorsperrow{0}}}
                                                               The usual syntactic sugar
                  \settopmatter
                                                                1263 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}
```

```
Now the settings
            1264\settopmatter{printccs=true, printacmref=true}
            1265 \if@ACM@manuscript
            1266 \settopmatter{printfolios=true}
            1267 \else
            1268 \if@ACM@journal
                    \settopmatter{printfolios=true}
            1269
            1270 \else
                    \settopmatter{printfolios=false}
            1271
            1272 \fi
            1273 \fi
            1274 \settopmatter{authorsperrow=0}
\@received The container for the paper history
            1275 \def\@received{}
 \received The \received command
            1276 \newcommand\received[2][]{\def\@tempa{#1}%
            1277 \ifx\@tempa\@empty
            1278
                    \ifx\@received\@empty
                      \gdef\@received{Received #2}%
            1279
            1280
                    \else
                      \g@addto@macro{\@received}{; revised #2}%
            1281
                    \fi
            1282
            1283 \else
                   \ifx\@received\@empty
            1284
                      \gdef\@received{#1 #2}%
            1285
            1286
            1287
                      \g@addto@macro{\@received}{; #1 #2}%
            1288
                    \fi
            1289 \fi}
            1290 \AtEndDocument{%
            1291 \ifx\@received\@empty\else
                    \verb|\par|bigskip|noindent|small|normalfont|@received|par|
            1292
            1293 \fi}
                    Concepts system
            We exclude CCSXML stuff generated by the ACM system:
            1294 \RequirePackage{comment}
            1295 \excludecomment{CCSXML}
\@concepts This is the storage macro for concepts
            1296 \let\@concepts\@empty
  \ccsdesc The first argument is the significance, the second is the concept(s)
            1297 \newcommand\ccsdesc[2][100]{%
                \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!
                      1299 \RequirePackage{textcomp}
                      1300 \def\ccsdesc@parse#1~#2~#3~{%
                           \expandafter\ifx\csname CCS@General@#2\endcsname\relax
                             \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
                      1302
                               \textbf{#2}}%
                      1303
                      1304
                             \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
                      1305
                             \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
                      1306
                           \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
                             \csname CCS@Punctuation@#2\endcsname
                      1307
                      1308
                             \csname CCS@Specific@#2\endcsname}%
                      1309
                           \ifx#3\relax\relax\else
                      1310
                      1311
                             \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
                      1312
                               \textrightarrow\ }%
                      1313
                            \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
                      1314
                              \ifnum#1>299\textit{#3}; \else
                      1315
                              #3; \fi\fi}%
                      1316
                      1317 \fi
                      1318 \ccsdesc@parse@finish}
                      Gobble everything to \ccsdesc@parse@end
\ccdesc@parse@finish
                      1319 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}
                             Copyright system
                      3.13
                      This is from acmcopyright.sty
 \if@printcopyright Whether to print a copyright symbol
                      1320 \newif\if@printcopyright
                      1321 \@printcopyrighttrue
 \if@printpermission Whether to print the permission block
                      1322 \newif\if@printpermission
                      1323 \@printpermissiontrue
        \if@acmowned
                      Whether the ACM owns the rights to the paper
                      1324 \newif\if@acmowned
                      1325 \@acmownedtrue
                         Keys:
                      1326 \define@choicekey*{ACM@}{acmcopyrightmode}[%
                           \acm@copyrightinput\acm@copyrightmode]{none,%
                      1328
                             acmcopyright,acmlicensed,rightsretained,%
                      1329
                             usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
                             licensedcagov, licensedcagovmixed, othergov, licensedothergov, %
```

1330

```
iw3c2w3,iw3c2w3g}{%
1331
     \@printpermissiontrue
1332
     \@printcopyrighttrue
1333
     \@acmownedtrue
1334
     \ifnum\acm@copyrightmode=0\relax % none
1335
1336
      \@printpermissionfalse
1337
      \@printcopyrightfalse
      \@acmownedfalse
1338
     \fi
1339
     \ifnum\acm@copyrightmode=2\relax % acmlicensed
1340
      \@acmownedfalse
1341
1342
     \ifnum\acm@copyrightmode=3\relax % rightsretained
1343
      \@acmownedfalse
1344
      \AtBeginDocument{\acmPrice{}}%
1345
1346
     \ifnum\acm@copyrightmode=4\relax % usgov
1347
      \@printpermissiontrue
1348
1349
      \@printcopyrightfalse
1350
      \@acmownedfalse
      \AtBeginDocument{\acmPrice{}}%
1351
1352
     \ifnum\acm@copyrightmode=6\relax % cagov
1353
      \@acmownedfalse
1354
1355
     \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1356
      \@acmownedfalse
1357
1358
     \fi
     \ifnum\acm@copyrightmode=9\relax % licensedcagov
1359
      \@acmownedfalse
1360
1361
1362
     \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1363
      \@acmownedfalse
1364
     \ifnum\acm@copyrightmode=11\relax % othergov
1365
      \@acmownedtrue
1366
1367
     \ifnum\acm@copyrightmode=12\relax % licensedothergov
1368
      \@acmownedfalse
1370
1371
     \ifnum\acm@copyrightmode=13\relax % iw3c2w3
      \@acmownedfalse
1372
      \AtBeginDocument{\acmPrice{}}%
1373
1374
```

\ifnum\acm@copyrightmode=14\relax % iw3c2w3g

\AtBeginDocument{\acmPrice{}}%

1375 1376

1377

1378

\fi}

\@acmownedfalse

```
\setcopyright This is the syntactic sugar around setting keys.
                       1379 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
                       1380 \setcopyright{acmcopyright}
     \@copyrightowner Here is the owner of the copyright
                       1381 \def\@copyrightowner{%
                       1382 \ifcase\acm@copyrightmode\relax % none
                       1383 \or % acmcopyright
                       1384 Association for Computing Machinery.
                       1385 \or % acmlicensed
                       1386 Copyright held by the owner/author(s). Publication rights licensed to
                       1387
                            ACM\@.
                             \or % rightsretained
                       1388
                             Copyright held by the owner/author(s).
                       1389
                             \or % usgov
                       1390
                       1391 \or % usgovmixed
                       1392 Association for Computing Machinery.
                       1393 \or % cagov
                       1394 Crown in Right of Canada.
                       1395 \or %cagovmixed
                       1396 Association for Computing Machinery.
                       1397 \or %licensedusgovmixed
                       1398 Copyright held by the owner/author(s). Publication rights licensed to
                             ACM\@.
                       1399
                       1400
                             \or % licensedcagov
                             Crown in Right of Canada. Publication rights licensed to
                       1401
                             ACM\@.
                       1403
                             \or %licensedcagovmixed
                       1404 Copyright held by the owner/author(s). Publication rights licensed to
                       1405 ACM\@.
                       1406 \or % othergov
                       1407 Association for Computing Machinery.
                       1408 \or % licensedothergov
                       1409 Copyright held by the owner/author(s). Publication rights licensed to
                       1410 ACM\@.
                       1411 \or % ic2w3www
                       1412 IW3C2 (International World Wide Web Conference Committee), published
                       under Creative Commons CC-BY~4.0 License.
                       1414 \or % ic2w3wwwgoogle
                       1415 IW3C2 (International World Wide Web Conference Committee), published
                             under Creative Commons CC-BY-NC-ND~4.0 License.
                       1417 \fi}
          \@formatdoi Print a clickable DOI
                       {\tt 1418 \setminus def \setminus @formatdoi\#1{\setminus url{https://doi.org/\#1}}}
\@copyrightpermission The canned permission block.
```

1419 \def\@copyrightpermission{%

1420 \ifcase\acm@copyrightmode\relax % none

- 1421 \or % acmcopyright
- $^{1422}$   $\,\,$  Permission to make digital or hard copies of all or part of this
- 1423 work for personal or classroom use is granted without fee provided
- that copies are not made or distributed for profit or commercial
- advantage and that copies bear this notice and the full citation on
- the first page. Copyrights for components of this work owned by
- others than ACM must be honored. Abstracting with credit is
- 1428 permitted. To copy otherwise, or republish, to post on servers or to
- 1429 redistribute to lists, requires prior specific permission
- and\hspace\*{.5pt}/or a fee. Request permissions from
- 1431 permissions@acm.org.
- 1432 \or % acmlicensed
- 1433 Permission to make digital or hard copies of all or part of this
- 1434 work for personal or classroom use is granted without fee provided
- that copies are not made or distributed for profit or commercial
- advantage and that copies bear this notice and the full citation on
- the first page. Copyrights for components of this work owned by
- others than the author(s) must be honored. Abstracting with credit
- is permitted. To copy otherwise, or republish, to post on servers
- or to redistribute to lists, requires prior specific permission
- and\hspace\*{.5pt}/or a fee. Request permissions from
- 1442 permissions@acm.org.
- 1443 \or % rightsretained
- 1444 Permission to make digital or hard copies of part or all of this work
- for personal or classroom use is granted without fee provided that
- copies are not made or distributed for profit or commercial advantage
- $^{1447}$  and that copies bear this notice and the full citation on the first
- $_{1448}\,$  page. Copyrights for third-party components of this work must be
- honored. For all other uses, contact the
- owner\hspace\*{.5pt}/author(s).
- 1451 \or % usgov
- $^{1452}$   $\,$  This paper is authored by an employee(s) of the United States
- $\,$   $\,$   $\,$  Government and is in the public domain. Non-exclusive copying or
- redistribution is allowed, provided that the article citation is
- $_{\rm 1455}$   $\,$  given and the authors and agency are clearly identified as its
- source.
- 1457 \or % usgovmixed
- 1458 ACM acknowledges that this contribution was authored or co-authored
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```
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                                                   Government purposes only.
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                                     1525
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                                     1526
                                     1527
                                                   retains a nonexclusive, royalty-free right to publish or reproduce
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                                     1528
                                                   only.
                                     1529
                                     1530 \or % iw3c2w3
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                                     1531
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                                                   disseminate the work on their personal and corporate Web sites with
                                                   the appropriate attribution.
                                     1534
                                     1535 \or % iw3c2w3g
                                                   This paper is published under the Creative Commons
                                     1536
                                                   Attribution-NonCommercial-NoDerivs~4.0 International
                                     1537
                                                   (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
                                     1538
                                                   disseminate the work on their personal and corporate Web sites with
                                     1540
                                                   the appropriate attribution.
                                     By default, the copyright year is the same as \acmYear, but one can override this:
  \copyrightyear
                                     1542 \def\copyrightyear#1{\def\@copyrightyear{#1}}
                                     1543 \copyrightyear{\@acmYear}
\@teaserfigures The teaser figures container
                                     1544 \def\@teaserfigures{}
     teaserfigure The teaser figure
                                     1545 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}
      \@saveteaser Saving the teaser
                                     \label{longdef} $$1546 \log\left(\frac{1}{2}\right)^2 1546 \end{conjugate} $$1546 
                                    We redefine amsart \thanks so the anonymous key works
                                     1547 \renewcommand{\thanks}[1]{%
                                     1548
                                                \@ifnotempty{#1}{%
                                                     \if@ACM@anonymous
                                     1549
                                     1550
                                                          \g@addto@macro\thankses{\thanks{A note}}%
                                     1551
                                                     \g@addto@macro\thankses{\thanks{#1}}%
                                     1552
                                     1553
                                                   \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  $\theta$ .

1554 \newbox\mktitle@bx

\maketitle The (in)famous \maketitle. Note that in sigchi-a mode, authors are *not* in the title box.

Another note: there is a subtle difference between author notes, title notes and thanks. The latter two refer to the paper itself and therefore belong to the copyright/permission block. By the way, this was the default behavior of the old ACM classes.

```
1555 \def\maketitle{%
     \if@ACM@anonymous
1556
       % Anonymize omission of \author-s
1557
       \ifnum\num@authorgroups=0\author{}\fi
1558
     \fi
1559
     \begingroup
1560
     \let\@footnotemark\@footnotemark@nolink
1561
     \let\@footnotetext\@footnotetext@nolink
1562
     \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
     \global\@topnum\z@ % this prevents floats from falling
1564
                        % at the top of page 1
1565
     \global\@botnum\z@ % we do not want them to be on the bottom either
1566
     \hsize=\textwidth
1567
     \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1568
1569
     \@mktitle\if@ACM@sigchiamode\else\@mkauthors\fi\@mkteasers
1570
     \@printtopmatter
     \if@ACM@sigchiamode\@mkauthors\fi
1571
     \setcounter{footnote}{0}%
1572
     \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1573
     \@titlenotes
1574
     \@subtitlenotes
1575
     \@authornotes
     \let\@makefnmark\relax
1577
     \let\@thefnmark\relax
1578
     \let\@makefntext\noindent
1579
     \ifx\@empty\thankses\else
1580
       \footnotetextauthorsaddresses{%
1581
1582
         \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1583
     \ifx\@empty\@authorsaddresses\else
1584
        \if@ACM@anonymous\else
1585
          \if@ACM@journal
1586
            \footnotetextauthorsaddresses{%
1587
              \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1588
          \fi
1589
        \fi
1590
     \fi
1591
     \footnotetextcopyrightpermission{%
1592
       \if@ACM@authordraft
1593
           1594
1595
               Unpublished working draft. Not for distribution.}}%
1596
          \color[gray]{0.9}%
       \fi
1597
       \parindent\z@\parskip0.1\baselineskip
1598
```

```
\if@ACM@authorversion\else
1599
         \if@printpermission\@copyrightpermission\par\fi
1600
       \fi
1601
       \if@ACM@manuscript\else
1602
          \if@ACM@journal\else % Print the conference information
1603
1604
         1605
          \fi
1606
       \if@printcopyright
1607
         \copyright\ \@copyrightyear\ \@copyrightowner\\
1608
       \else
1609
        \@copyrightyear.\
1610
       \fi
1611
       \if@ACM@manuscript
1612
        Manuscript submitted to ACM\\
1613
       \else
1614
         \if@ACM@authorversion
1615
             This is the author's version of the work. It is posted here for
1616
1617
             your personal use. Not for redistribution. The definitive Version
             of Record was published in
1618
             \if@ACM@journal
1619
               \emph{\@journalName}%
1620
             \else
1621
               \emph{\@acmBooktitle}%
1622
1623
             \fi
             \ifx\@acmDOI\@empty
1624
1625
             \else
1626
               , \@formatdoi{\@acmDOI}.
1627
             \fi\\
1628
           \else
1629
             \if@ACM@journal
1630
1631
               \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
               \ifx\@acmPrice\@empty\else\ \$\@acmPrice\fi\\
1632
               \@formatdoi{\@acmDOI}%
1633
             \else % Conference
1634
               1635
               \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\\fi
1636
               \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1637
             \fi
1638
1639
           \fi
         \fi}
1640
     \endgroup
1641
     \setcounter{footnote}{0}%
1642
1643
     \@mkabstract
1644
     \if@ACM@printccs
1645
       \ifx\@concepts\@empty\else\bgroup
1646
         {\@specialsection{CCS Concepts}%
            \@concepts\par}\egroup
1647
        \fi
```

1648

```
\ifx\@keywords\@empty\else\bgroup
                   1650
                             {\if@ACM@journal
                   1651
                                 \@specialsection{Additional Key Words and Phrases}%
                   1652
                              \else
                   1653
                   1654
                                 \@specialsection{Keywords}%
                   1655
                              \fi
                                 \@keywords}\par\egroup
                   1656
                          \fi
                   1657
                         \andify\authors
                   1658
                         \andify\shortauthors
                   1659
                         \global\let\authors=\authors
                   1660
                         \global\let\shortauthors=\shortauthors
                   1661
                         \if@ACM@printacmref
                   1662
                            \@mkbibcitation
                   1663
                         \fi
                   1664
                         \hypersetup{%
                   1665
                           pdflang={English},
                   1666
                   1667
                           pdfdisplaydoctitle,
                   1668
                           pdfauthor={\authors},
                           pdftitle={\@title},
                   1669
                           pdfsubject={\@concepts},
                   1670
                           pdfkeywords={\@keywords},
                   1671
                           pdfcreator={LaTeX with acmart
                   1672
                   1673
                             \csname ver@acmart.cls\endcsname\space
                   1674
                             and hyperref
                             \csname ver@hyperref.sty\endcsname}}%
                   1675
                         \@printendtopmatter
                   1676
                         \@afterindentfalse
                   1677
                         \@afterheading
                   1678
                   1679 }
\@specialsection
                   This macro starts sections for proceedings and uses \small for journals
                   1680 \def\@specialsection#1{%
                         \ifcase\ACM@format@nr
                   1681
                   1682
                         \relax % manuscript
                   1683
                           \par\medskip\small\noindent#1: %
                         \or % acmsmall
                   1684
                           \par\medskip\small\noindent#1: %
                   1685
                         \or % acmlarge
                   1686
                           \par\medskip\small\noindent#1: %
                   1687
                   1688
                         \or % acmtog
                           \par\medskip\small\noindent#1: %
                   1689
                         \or % sigconf
                   1690
                           \section*{#1}%
                   1691
                         \or % siggraph
                   1692
                           \section*{#1}%
                   1693
                         \or % sigplan
                   1694
                   1695
                           \paragraph*{#1}%
                         \or % sigchi
```

1649

```
1697 \section*{#1}%
1698 \or % sigchi-a
1699 \section*{#1}%
1700 \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.

```
1701 \def\@printtopmatter{%
     \ifx\@startPage\@empty
1702
1703
         \gdef\@startPage{1}%
1704
     \else
         \setcounter{page}{\@startPage}%
1705
     \fi
1706
1707
     \thispagestyle{firstpagestyle}%
1708
     \noindent
1709
     \ifcase\ACM@format@nr
     \relax % manuscript
1710
       \box\mktitle@bx\par
1711
     \or % acmsmall
1712
1713
       \box\mktitle@bx\par
1714
     \or % acmlarge
1715
       \box\mktitle@bx\par
1716
     \or % acmtog
       \twocolumn[\box\mktitle@bx]%
1717
     \or % sigconf
1718
       \twocolumn[\box\mktitle@bx]%
1719
     \or % siggraph
1720
1721
       \twocolumn[\box\mktitle@bx]%
     \or % sigplan
1722
       \twocolumn[\box\mktitle@bx]%
1723
     \or % sigchi
1724
       \twocolumn[\box\mktitle@bx]%
1725
     \or % sigchi-a
1726
1727
       \par\box\mktitle@bx\par\bigskip
1728
       \if@ACM@badge
           \marginpar{\noindent
1729
             \ifx\@acmBadgeL@image\@empty\else
1730
               \href{\@acmBadgeL@url}{%
1731
                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1732
                \hskip\@ACM@badge@skip
1733
1734
             \ifx\@acmBadgeR@image\@empty\else
1735
               \href{\@acmBadgeR@url}{%
1736
                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1737
              \fi}%
1738
       \fi
1739
1740
     \fi
1741 }
```

```
\@mktitle The title of the article
                 1742 \def\@mktitle{%
                 1743 \ifcase\ACM@format@nr
                     \relax % manuscript
                 1744
                 1745
                        \@mktitle@i
                 1746
                      \or % acmsmall
                        \@mktitle@i
                 1747
                 1748 \or % acmlarge
                        \@mktitle@i
                 1749
                 1750 \or % acmtog
                        \@mktitle@i
                 1751
                 1752 \or % sigconf
                        \@mktitle@iii
                 1753
                 1754 \or % siggraph
                        \@mktitle@iii
                 1755
                      \or % sigplan
                 1756
                        \@mktitle@iii
                 1757
                      \or % sigchi
                 1758
                 1759
                        \@mktitle@iii
                      \or % sigchi-a
                 1760
                        \@mktitle@iv
                 1761
                 1762 \fi
                 1763 }
   \@titlefont The font to typeset the title
                 1764 \def\@titlefont{%
                 1765 \ifcase\ACM@format@nr
                      \relax % manuscript
                 1766
                 1767
                        \LARGE\sffamily\bfseries
                 1768 \or % acmsmall
                        \LARGE\sffamily\bfseries
                 1769
                 1770 \or % acmlarge
                 1771
                        \LARGE\sffamily\bfseries
                 1772 \or % acmtog
                 1773
                        \Huge\sffamily
                 1774
                      \or % sigconf
                        \Huge\sffamily\bfseries
                 1775
                 1776
                      \or % siggraph
                 1777
                        \Huge\sffamily\bfseries
                 1778
                      \or % sigplan
                 1779
                        \Huge\bfseries
                      \or % sigchi
                 1780
                        \Huge\sffamily\bfseries
                 1781
                      \or % sigchi-a
                 1782
                         \Huge\bfseries
                 1783
                      \fi}
                 1784
\@subtitlefont The font to typeset the subtitle
```

1785 \def\@subtitlefont{\normalsize

```
\ifcase\ACM@format@nr
             1786
                  \relax % manuscript
             1787
                    \mdseries
             1788
                  \or % acmsmall
             1789
             1790
                    \mdseries
             1791
                  \or % acmlarge
             1792
                    \mdseries
             1793
                  \or % acmtog
                     \LARGE
             1794
                  \or % sigconf
             1795
                     \LARGE\mdseries
             1796
             1797
                  \or % siggraph
                     \LARGE\mdseries
             1798
             1799
                  \or % sigplan
                     \LARGE\mdseries
             1800
                  \or % sigchi
             1801
                     \LARGE\mdseries
             1802
                  \or % sigchi-a
             1803
             1804
                     \mdseries
             1805
                  \fi}
            The version of \mktitle for most journals
\@mktitle@i
             1806 \def\@mktitle@i{\hsize=\textwidth
                  \@ACM@title@width=\hsize
                  \ifx\@acmBadgeL@image\@empty\else
             1808
                    \advance\@ACM@title@width by -\@ACM@badge@width
             1809
                    \verb|\advance|@ACM@title@width| by - \verb|\advance|@ACM@badge@skip||
             1810
                  \fi
             1811
                  \ifx\@acmBadgeR@image\@empty\else
             1812
                    \advance\@ACM@title@width by -\@ACM@badge@width
             1813
                    \advance\@ACM@title@width by -\@ACM@badge@skip
             1814
             1815
                  \setbox\mktitle@bx=\vbox{\noindent\@titlefont
             1816
                    \ifx\@acmBadgeL@image\@empty\else
             1817
                      1818
             1819
                          \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
             1820
                      \hskip\@ACM@badge@skip
             1821
                    \parbox[t]{\@ACM@title@width}{\raggedright
             1822
                      \@titlefont\noindent
             1823
                      \@title
             1824
                  \ifx\@subtitle\@empty\else
             1825
                    \par\noindent{\@subtitlefont\@subtitle}
             1826
             1827
                  \ifx\@acmBadgeR@image\@empty\else
             1828
                    \hskip\@ACM@badge@skip
             1829
                    1830
                        \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
             1831
             1832
                  \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.

```
1834 \def\@mktitle@iii{\hsize=\textwidth
                   \setbox\mktitle@bx=\vbox{\@titlefont\centering
             1835
             1836
                     \@ACM@title@width=\hsize
             1837
                     \if@ACM@badge
             1838
                       \advance\@ACM@title@width by -2\@ACM@badge@width
                       \advance\@ACM@title@width by -2\@ACM@badge@skip
             1839
                       \parbox[b]{\@ACM@badge@width}{\strut
             1840
                         \ifx\@acmBadgeL@image\@empty\else
             1841
                           1842
                           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
             1843
                         \fi}%
                       \hskip\@ACM@badge@skip
             1845
                     \fi
             1846
                     \parbox[t]{\@ACM@title@width}{\centering\@titlefont
             1847
                       \@title
             1848
             1849
                       \ifx\@subtitle\@empty\else
             1850
                         \par\noindent{\@subtitlefont\@subtitle}
             1851
                       \fi
                     }%
             1852
                     \if@ACM@badge
             1853
                       \hskip\@ACM@badge@skip
             1854
                       \parbox[b]{\@ACM@badge@width}{\strut
             1855
                         \ifx\@acmBadgeR@image\@empty\else
             1856
                           1857
                           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
             1858
                         \fi}%
             1859
                     \fi
             1860
                     \par\bigskip}}%
             1861
            The version of \@mktitle for sigchi-a
\@mktitle@iv
             1862 \def\@mktitle@iv{\hsize=\textwidth
                   1863
                     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
             1864
             1865
                     \noindent\@title
                    \ifx\@subtitle\@empty\else
             1866
                      \par\noindent\@subtitlefont\@subtitle
             1867
                    \fi
             1868
                    \par\bigskip}}%
             1869
```

\@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.

```
1870 \newbox\@ACM@commabox
             1871 \def\@ACM@addtoaddress#1{%
             1872 \ifvmode\else
                   \if@ACM@affiliation@obeypunctuation\else
             1873
                   \setbox\@ACM@commabox=\hbox{, }%
             1874
             1875
                   \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
             1876
                 \fi\fi
                #1}
             1877
 \institution
            Theoretically we can define the macros for \affiliation inside the \@mkauthors-style
    \position commands. However, this would lead to a strange error if an author uses them outside
  \department \affiliation. Of course we can make them produce an error message, but...
\streetaddress 1878 \def\streetaddress#1{\unskip\ignorespaces}
       \city 1879 \def\postcode#1{\unskip\ignorespaces}
      \state 1880 \if@ACM@journal
    \postcode 1881 \def\position#1{\unskip\ignorespaces}
             1882
                 \def\institution#1{\unskip~#1\ignorespaces}
    \country
                 \def\city#1{\unskip\ignorespaces}
                 \def\state#1{\unskip\ignorespaces}
             1884
                 \newcommand\department[2][0]{\unskip\ignorespaces}
             1885
             1887 \else
                 1889
                 1890
                   #2\else#2\par\fi}%
             1891
             1893 \let\city\@ACM@addtoaddress
             1894 \let\state\@ACM@addtoaddress
             1895% \def\postcode#1{\if@ACM@affiliation@obeypunctuation#1\else\unskip\space#1\fi}%
             1896 \let\country\@ACM@addtoaddress
             1897 \fi
            Typesetting the authors
  \@mkauthors
             1898 \def\@mkauthors{\begingroup
                 \hsize=\textwidth
                 \ifcase\ACM@format@nr
             1900
             1901 \relax % manuscript
                   \@mkauthors@i
             1902
             1903 \or % acmsmall
                   \@mkauthors@i
             1904
                 \or % acmlarge
             1905
                   \@mkauthors@i
             1906
                 \or % acmtog
             1907
                  \@mkauthors@i
             1908
             1909
                 \or % sigconf
                  \@mkauthors@iii
             1910
```

```
\or % siggraph
                        1911
                               \@mkauthors@iii
                        1912
                             \or % sigplan
                        1913
                               \@mkauthors@iii
                        1914
                        1915 \or % sigchi
                        1916
                               \@mkauthors@iii
                        1917
                             \or % sigchi-a
                               \@mkauthors@iv
                        1918
                            \fi
                        1919
                             \endgroup
                        1920
                        1921 }
         \@authorfont Somehow different conferences use different fonts for author names. Why?
                        1922 \def\@authorfont{\Large\sffamily}
    \@affiliationfont Font for affiliations
                        1923 \def\@affiliationfont{\normalsize\normalfont}
                           Adjusting fonts for different formats
                        1924 \ifcase\ACM@format@nr
                        1925 \relax % manuscript
                        1926 \or % acmsmall
                        1927 \def\@authorfont{\large\sffamily}
                        1928 \def\@affiliationfont{\small\normalfont}
                        1929 \or % acmlarge
                        1930 \or % acmtog
                        1931 \def\@authorfont{\LARGE\sffamily}
                        1932 \def\@affiliationfont{\large}
                        1933 \or % sigconf
                        1934 \def\@authorfont{\LARGE}
                        1935 \def\@affiliationfont{\large}
                        1936 \or % siggraph
                        1937 \def\@authorfont{\normalsize\normalfont}
                        1938 \def\@affiliationfont{\normalsize\normalfont}
                        1939 \or % sigplan
                        1940 \def\@authorfont{\Large\normalfont}
                             \def\@affiliationfont{\normalsize\normalfont}
                        1942 \or % sigchi
                        1943 \def\@authorfont{\bfseries}
                        1944 \def\@affiliationfont{\mdseries}
                        1945 \or % sigchi-a
                        1946 \def\@authorfont{\bfseries}
                        1947 \def\@affiliationfont{\mdseries}
                        1948 \fi
\@typeset@author@line At this point we have \@currentauthors and \@currentaffiliations. We typeset
                        them in the journal style
                        1949 \def\@typeset@author@line{%
                        1950 \andify\@currentauthors\par\noindent
```

```
\@currentauthors\def\@currentauthors{}%
                1951
                      \ifx\@currentaffiliations\@empty\else
                1952
                        \andify\@currentaffiliations
                1953
                          \unskip, {\@currentaffiliations}\par
                1954
                      \fi
                1955
                      \def\@currentaffiliations{}}
\@mkauthors@i
                This version is used in most journal formats. Note that \and between authors with the
                same affiliation becomes _and_:
                1957 \def\@mkauthors@i{%
                      \def\@currentauthors{}%
                      \def\@currentaffiliations{}%
                      \global\let\and\@typeset@author@line
                1960
                      \def\@author##1{%
                1961
                        \ifx\@currentauthors\@empty
                1962
                          \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
                1963
                1964
                        \else
                1965
                           \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
                1966
                        1967
                      \def\email##1##2{}%
                1968
                      \def\affiliation##1##2{%
                1969
                        \def\@tempa{\##2}\ifx\@tempa\@empty\else
                1970
                           \ifx\@currentaffiliations\@empty
                1971
                              \gdef\@currentaffiliations{%
                1972
                                \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                1973
                                \setkeys{@ACM@affiliation@}{##1}%
                1974
                                \@affiliationfont##2}%
                1975
                           \else
                1976
                             \g@addto@macro{\@currentaffiliations}{\and
                1977
                1978
                               \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                                \setkeys{@ACM@affiliation@}{##1}##2}%
                          \fi
                1980
                1981
                         \global\let\and\@typeset@author@line}%
                1982
                      \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
                1983
                        \noindent\addresses\@typeset@author@line
                1984
                       \par\medskip}%
                1986 }
                The \@mkauthors@ii command was the version used in acmtog. It is no longer neces-
\@mkauthors@ii
    \author@bx The box to put an individual author in
                1987 \newbox\author@bx
                The width of the author box
\author@bx@wd
                1988 \newdimen\author@bx@wd
```

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

```
1989 \newskip\author@bx@sep
1990 \author@bx@sep=1pc\relax
```

#### \@typeset@author@bx

Typesetting the box with authors. Note that in sigchi-a the box is not centered.

```
1991 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
1992 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
1993 \@authorfont\@currentauthors\par\@affiliationfont
1994 \@currentaffiliation}\egroup
1995 \box\author@bx\hspace{\author@bx@sep}%
1996 \gdef\@currentauthors{}%
1997 \gdef\@currentaffiliation{}}
```

#### \@mkauthors@iii

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

1998 \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 ( $\author@bx@sep$ )/N –  $\author@bx@sep$ , where N is the number of boxes per row.

```
\author@bx@wd=\textwidth\relax
1999
     \advance\author@bx@wd by -\author@bx@sep\relax
2000
     \ifnum\@ACM@authorsperrow>0\relax
2001
       \divide\author@bx@wd by \@ACM@authorsperrow\relax
2002
2003
     \else
2004
       \ifcase\num@authorgroups
       \relax % 0?
2005
       \or % 1=one author per row
2006
       \or % 2=two authors per row
2007
          \divide\author@bx@wd by \num@authorgroups\relax
2008
       \or % 3=three authors per row
2009
          \divide\author@bx@wd by \num@authorgroups\relax
2010
       \or % 4=two authors per row (!)
2011
          \divide\author@bx@wd by 2\relax
2012
       \else % three authors per row
2013
          \divide\author@bx@wd by 3\relax
2014
       \fi
2015
2016
     \fi
     \advance\author@bx@wd by -\author@bx@sep\relax
Now, parsing of \addresses:
     \gdef\@currentauthors{}%
2018
     \gdef\@currentaffiliation{}%
2019
     \def\@author##1{\ifx\@currentauthors\@empty
2020
       \gdef\@currentauthors{\par##1}%
2021
     \else
2022
       \g@addto@macro\@currentauthors{\par##1}%
2023
     \fi
2024
     2025
     \def\email##1##2{\ifx\@currentaffiliation\@empty
```

```
\gdef\@currentaffiliation{\nolinkurl{##2}}%
2027
     \else
2028
       2029
2030
     \fi}%
     \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2031
       \gdef\@currentaffiliation{%
2032
         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2033
         \setkeys{@ACM@affiliation@}{##1}##2}%
2034
2035
     \else
       \g@addto@macro\@currentaffiliation{\par
2036
         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2037
         \setkeys{@ACM@affiliation@}{##1}##2}%
2038
     \fi
2039
     \global\let\and\@typeset@author@bx
2040
2041 }%
Actual typesetting is done by the \and macro:
     \hsize=\textwidth
2042
     \global\setbox\mktitle@bx=\vbox{\noindent
2043
       \box\mktitle@bx\par\medskip\leavevmode
2044
2045
       \lineskip=1pc\relax\centering\hspace*{-1em}%
       \addresses\let\and\@typeset@author@bx\and\par\bigskip}}
2046
```

\@mkauthors@iv

The sigchi-a version. We put authors in the main text with no more than 2 authors per line, unless overriden.

```
2047 \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 ( $\author@bx@sep$ )/N —  $\author@bx@sep$ , where N is the number of boxes per row.

```
\author@bx@wd=\columnwidth\relax
2048
     \advance\author@bx@wd by -\author@bx@sep\relax
2049
     \ifnum\@ACM@authorsperrow>0\relax
2050
       \divide\author@bx@wd by \@ACM@authorsperrow\relax
2051
2052
     \else
       \ifcase\num@authorgroups
2053
       \relax % 0?
2054
       \or % 1=one author per row
2055
       \else % 2=two authors per row
2056
           \divide\author@bx@wd by 2\relax
2057
       \fi
2058
2059
     \advance\author@bx@wd by -\author@bx@sep\relax
2060
Now, parsing of \addresses:
     \gdef\@currentauthors{}%
2061
2062
     \gdef\@currentaffiliation{}%
     \def\@author##1{\ifx\@currentauthors\@empty
2063
       \gdef\@currentauthors{\par##1}%
2064
```

```
\g@addto@macro\@currentauthors{\par##1}%
                      2066
                            \fi
                      2067
                            2068
                            \def\email##1##2{\ifx\@currentaffiliation\@empty
                      2069
                              \gdef\@currentaffiliation{\nolinkurl{##2}}%
                      2070
                      2071
                            \else
                              \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
                      2072
                      2073
                            \fi}%
                            \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
                      2074
                              \gdef\@currentaffiliation{%
                      2075
                                \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                      2076
                                     \setkeys{@ACM@affiliation@}{##1}##2}%
                      2077
                      2078
                            \else
                              \g@addto@macro\@currentaffiliation{\par
                      2079
                                \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                      2080
                                \setkeys{@ACM@affiliation@}{##1}##2}%
                      2081
                           \fi
                      2082
                      2083
                            2084 %
                      Actual typesetting is done by the \and macro
                              \bgroup\hsize=\columnwidth
                              \par\raggedright\leftskip=\z@
                      2086
                      2087
                              \lineskip=1pc\noindent
                              \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}
                      2088
                      Typesetting authors' addresses in the footnote style
\@mkauthorsaddresses
                      2089 \def\@mkauthorsaddresses{%
                           \ifnum\num@authors>1\relax
                      2090
                            Authors' \else Author's \fi
                      2091
                            \ifnum\num@authorgroups>1\relax
                      2092
                            addresses: \else address: \fi
                      2093
                            \bgroup
                      2094
                            \def\streetaddress##1{\unskip\@addpunct, ##1}%
                      2095
                            \def\postcode##1{\unskip\@addpunct, ##1}%
                      2096
                            \def\position##1{\unskip\ignorespaces}%
                      2097
                            \def\institution##1{\unskip\@addpunct, ##1}%
                      2098
                            \def\city##1{\unskip\@addpunct, ##1}%
                      2099
                            \def\state##1{\unskip\@addpunct, ##1}%
                      2100
                            \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
                      2101
                            \def\country##1{\unskip\@addpunct, ##1}%
                      2102
                            \def\and{\unskip\@addpunct; }%
                      2103
                            \def\@author##1{##1}%
                      2104
                            \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
                      2105
                            \addresses
                      2106
                           \egroup}
                      2107
      \@setaddresses
                      This is an amsart macro that we do not need.
                      2108 \def\@setaddresses{}
```

\else

2065

```
\@authornotemark Adding a footnote mark to authors. This version adds a "normal" footnote mark.
                                                            2109 \ensuremath{\ensuremath} \ensuremath{\ensuremath} \ensuremath} \ensuremath{\ensuremath} \ensuremath} \ensuremath{\ensuremath} \ensuremath} \ensuremath{\ensuremath} \ensuremath} \ensuremath{\ensuremath} \ensuremath} \ens
\@@authornotemark Adding a footnote mark to authors with a given number
                                                            2110 \end{converse} $$ 2110 \end{converse} 
                   \@mkteasers Typesetting the teasers
                                                            2111 \def\@mkteasers{%
                                                                          \ifx\@teaserfigures\@empty\else
                                                            2113
                                                                                   \def\@teaser##1{\par\bigskip\bgroup
                                                                                         \captionsetup{type=figure}##1\egroup\par}
                                                            2114
                                                                                   \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
                                                            2115
                                                                                   \noindent\@teaserfigures\par\medskip}%
                                                            2116
                                                            2117
                                                                          \fi}
               \@mkabstract Typesetting the abstract
                                                            2118 \def\@mkabstract{\bgroup
                                                                            \ifx\@abstract\@lempty\else
                                                                            {\phantomsection\addcontentsline{toc}{section}{Abstract}%
                                                            2120
                                                                                   \if@ACM@journal
                                                            2121
                                                                                            \everypar{\setbox\z@\lastbox\everypar{}}\small
                                                            2122
                                                            2123
                                                                                   \else
                                                            2124
                                                                                        \section*{Abstract}%
                                                                                   \fi
                                                            2125
                                                                               \ignorespaces\@abstract\par}%
                                                            2126
                                                            2127
                                                                            \fi\egroup}
      \@mkbibcitation Print the bibcitation format
                                                            2128 \def\@mkbibcitation{\bgroup
                                                            2129 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
                                                                            \def\footnotemark{}%
                                                            2131
                                                                            \def\\{\unskip{} \ignorespaces}%
                                                                             \def\footnote{\ClassError{\@classname}{Please do note use footnotes
                                                            2132
                                                                                          inside a \string\title{} or \string\author{} command! Use
                                                            2133
                                                                                          \string\titlenote{} or \string\authornote{} instead!}}%
                                                            2134
                                                                             \def\@article@string{\ifx\@acmArticle\@empty{\ }\else,
                                                            2135
                                                                                   Article \@acmArticle \fi}%
                                                            2136
                                                                             \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
                                                                             \noindent\authors. \@acmYear. \@title
                                                            2138
                                                                             \ifx\@subtitle\@empty. \else: \@subtitle. \fi
                                                            2139
                                                                             \if@ACM@journal
                                                            2140
                                                                                      \textit{\@journalNameShort}
                                                            2141
                                                                                      \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
                                                            2142
                                                            2143
                                                                                      \ref{TotPages}~\@pages@word.
                                                            2145
                                                                                      In \textit{\@acmBooktitle}%
                                                            2146
                                                                                      \ifx\@acmEditors\@empty\textit{.}\else
                                                                                             \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
                                                            2147
                                                                                      \fi\
                                                            2148
```

```
ACM, New York, NY, USA%
                                                                                       2149
                                                                                                                              \@article@string\unskip, \ref{TotPages}~\@pages@word.
                                                                                       2150
                                                                                                         \fi
                                                                                       2151
                                                                                       \verb| lifx\encormous | with the proposed of the
                                                                                       2153 \par\egroup}
        2154 \def\@printendtopmatter{\par\bigskip}
                                      \@setthanks We redefine \setthanks using \long
                                                                                       2155 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}
\@setauthorsaddresses
                                                                                       2156 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}
                                                                                       3.15 Headers and Footers
                                                                                       We use fancyhdr for our headers and footers:
                                                                                       2157 \RequirePackage{fancyhdr}
               \ACM@linecount@bx
                                                                                      This is the box displayed in review mode
                                                                                       2158 \if@ACM@review
                                                                                                         \newsavebox{\ACM@linecount@bx}
                                                                                       2159
                                                                                                          \newlength\ACM@linecount@bxht
                                                                                       2160
                                                                                                          \newcount\ACM@linecount
                                                                                       2161
                                                                                                          \ACM@linecount\@ne\relax
                                                                                       2162
                                                                                                           \def\ACM@mk@linecount{%
                                                                                       2163
                                                                                                                  \addinecount@bx\[4em][t]{\parbox[t]{4em}{%}} \addinecount@bx\[4e
                                                                                       2164
                                                                                                                                  \setlength{\ACM@linecount@bxht}{0pt}%
                                                                                       2165
                                                                                                                                  \loop{\color{red}\scriptsize\the\ACM@linecount}\
                                                                                       2166
                                                                                                                                  \global\advance\ACM@linecount by \@ne
                                                                                       2167
                                                                                                                                  \addtolength{\ACM@linecount@bxht}{\baselineskip}%
                                                                                       2168
                                                                                                                                  \ifdim\ACM@linecount@bxht<\textheight\repeat
                                                                                       2169
                                                                                                                                  {\color{red}\scriptsize\the\ACM@linecount}\hfill
                                                                                       2170
                                                                                                                                  \global\advance\ACM@linecount by \@ne}}}
                                                                                       2171
                                                                                      2172 \fi
                      \ACM@linecountL How to display the box on the left
                                                                                       2173 \def\ACM@linecountL{%
                                                                                       2174 \if@ACM@review
                                                                                                           \ACM@mk@linecount
                                                                                       2175
                                                                                                          \begin{picture}(0,0)%
                                                                                       2176
                                                                                                                  \put(-26, -22){\usebox{\ACM@linecount@bx}}%
                                                                                       2177
                                                                                                         \end{picture}%
                                                                                       2178
                                                                                      2179
                                                                                                         \fi}
                      \ACM@linecountR How to display the box on the right
```

2180 \def\ACM@linecountR{%

```
\if@ACM@review
                  2181
                       \ACM@mk@linecount
                  2182
                       \begin{picture}(0,0)%
                  2183
                         \put(20,-22){\usebox{\ACM@linecount@bx}}%
                  2184
                  2185
                       \end{picture}%
                       \fi}
                  2186
                  The timestamp system
   \ACM@timestamp
                  2187 \if@ACM@timestamp
                  2188
                       % Subtracting 30 from \time gives us the effect of rounding down despite
                       % \numexpr rounding to nearest
                  2189
                       \newcounter{ACM@time@hours}
                  2190
                       \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
                  2191
                       \newcounter{ACM@time@minutes}
                      \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
                       \newcommand\ACM@timestamp{%
                  2194
                         \footnotesize%
                  2195
                         \ifx\@acmSubmissionID\@empty\relax\else
                  2196
                         Submission ID: \@acmSubmissionID.{ }%
                  2197
                  2198
                         \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
                  2199
                         \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
                         Page \thepage\ of \@startPage--\pageref*{TotPages}.%
                  2201
                  2202
                      }
                  2203\fi
   \@shortauthors Even if the author redefined \shortauthors, we do not print it in the headers when in
                  anonymous mode:
                  2204 \def\@shortauthors{\if@ACM@anonymous Anon.\else\shortauthors\fi}
   \@headfootfont The font to typeset header and footer text.
                  2205 \def\@headfootfont{\sffamily}
standardpagestyle The page style for all pages but the first one The page style for all pages but the first one
                  2206 \fancypagestyle{standardpagestyle}{%
                      \fancyhf{}%
                       \renewcommand{\headrulewidth}{\z@}%
                       \renewcommand{\footrulewidth}{\z@}%
                  2209
                       \ifcase\ACM@format@nr
                  2210
                       \relax % manuscript
                  2211
                         \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
                  2212
                         \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
                  2213
                         \fancyhead[RE]{\@shortauthors}%
                         \fancyhead[L0]{\ACM@linecountL\shorttitle}%
                  2215
                         \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
                  2216
                       \or % acmsmall
                  2217
                        2218
                        \fancyhead[RO]{\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
                  2219
                         2220
```

```
\fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                 2222
                                               \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
                                 2223
                                           \or % acmlarge
                                 2224
                                               \fancyhead[LE]{\ACM@linecountL\@headfootfont
                                 2225
                                               \@acmArticle\if@ACM@printfolios:\thepage\fi\quad\textbullet\quad\@shortauthors}%
                                 2226
                                               \fancyhead[L0]{\ACM@linecountL}%
                                 2227
                                 2228
                                               \fancyhead[RO]{\@headfootfont
                                               \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
                                 2229
                                              \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                 2230
                                               \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
                                 2231
                                           \or % acmtog
                                 2232
                                               \fancyhead[LE]{\ACM@linecountL\@headfootfont
                                 2233
                                               \@acmArticle\if@ACM@printfolios:\thepage\fi\quad\textbullet\quad\@shortauthors}%
                                 2234
                                               \fancyhead[L0]{\ACM@linecountL}%
                                 2235
                                               \fancyhead[RE]{\ACM@linecountR}%
                                 2236
                                               \fancyhead[RO]{\@headfootfont
                                 2237
                                               2238
                                              \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                 2239
                                               \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
                                 2240
                                 2241
                                           \else % Proceedings
                                               \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
                                 2242
                                               \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
                                 2243
                                               \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
                                 2244
                                               \fancyhead[LE]{\ACM@linecountL\@headfootfont\acmConference@shortname,
                                 2245
                                                    \acmConference@date, \acmConference@venue}%
                                               \fancyhead[RO]{\@headfootfont\acmConference@shortname,
                                 2247
                                                    \acmConference@date, \acmConference@venue\ACM@linecountR}%
                                 2248
                                 2249
                                           \if@ACM@sigchiamode
                                 2250
                                                 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
                                 2251
                                           \fi
                                 2252
                                 2253
                                           \if@ACM@timestamp
                                 2254
                                                 \fancyfoot[LO,RE]{\ACM@timestamp}
                                           \fi
                                 2255
                                 2256 }
                                 2257 \pagestyle{standardpagestyle}
         \@folio@wd
                                 Folio blob width, height, offsets and max number
         \@folio@ht
                                 2258 \newdimen\@folio@wd
\@folio@voffset
                                 2259 \@folio@wd=\z@
                                 2260 \newdimen\@folio@ht
       \@folio@max
                                 2261 \ensuremath{\mbox{\sc oflio}\mbox{\sc olio}\mbox{\sc olio}\
                                 2262 \newdimen\@folio@voffset
                                 2263 \@folio@voffset=\z@
                                 2264 \def\@folio@max{1}
                                 2265 \ifcase\ACM@format@nr
                                 2266 \relax % manuscript
                                 2267 \or % acmsmall
                                 2268 \@folio@wd=45.75pt\relax
```

\fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%

2221

```
\ensuremath{\texttt{Qfolio@ht=1.25in}\ensuremath{\texttt{relax}}}
                2269
                     \@folio@voffset=.2in\relax
                2270
                    \def\@folio@max{8}
                2271
                2272 \or % acmlarge
                2273 \@folio@wd=43.25pt\relax
                     \@folio@ht=79pt\relax
                     \@folio@voffset=.55in\relax
                    \def\@folio@max{10}
                2276
                2277 \fi
  \@folioblob The macro to typeset the folio blob.
                2278 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
                    \ifnum\@tempcnta=0\relax\else
                First, we calculate \@acmArticleSeq modulo \@folio@max
                2280
                        \ifnum\@tempcnta>\@folio@max\relax
                2281
                         \advance\@tempcnta by - \@folio@max
                2282
                      \repeat
                2283
                       \advance\@tempcnta by -1\relax
                2284
                       \@tempdima=\@folio@ht\relax
                2285
                       \multiply\@tempdima by \the\@tempcnta\relax
                2286
                       2287
                2288
                       \begin{picture}(0,0)
                       \mbox[\z@]{\raisebox{-\end{-}}}
                2289
                           \rlap{%
                2290
                             \raisebox{-0.45\@folio@ht}[\z@][\z@]{%
                2291
                               \rule{\@folio@wd}{\@folio@ht}}}%
                2292
                           \parbox{\@folio@wd}{%
                2293
                2294
                             \centering
                             \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}
                2295
                     \end{picture}\fi}
               The page style for the first page only.
firstpagestyle
                2298 \fancypagestyle{firstpagestyle}{%
                     \fancyhf{}%
                     \renewcommand{\headrulewidth}{\z@}%
                2300
                     \renewcommand{\footrulewidth}{\z@}%
                2301
                     \ifcase\ACM@format@nr
                2302
                     \relax % manuscript
                2303
                       \fancyhead[L]{\ACM@linecountL}%
                2304
                       2305
                       \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
                2306
                     \or % acmsmall
                2307
                      \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                2308
                       \@acmNumber, Article \@acmArticle. Publication date:
                2309
                       \@acmPubDate.}%
                2310
                2311
                       \fancyhead[LE]{\ACM@linecountL\@folioblob}%
                2312
                       \fancyhead[L0]{\ACM@linecountL}%
```

```
\fancyhead[RO]{\@folioblob}%
                         2313
                                \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
                         2314
                              \or % acmlarge
                         2315
                                \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                         2316
                                \@acmNumber, Article \@acmArticle. Publication date:
                         2317
                                \@acmPubDate.}%
                         2318
                         2319
                                \fancyhead[RO]{\@folioblob}%
                                \fancyhead[LE]{\ACM@linecountL\@folioblob}%
                         2320
                                \fancyhead[L0]{\ACM@linecountL}%
                         2321
                                \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
                         2322
                              \or % acmtog
                         2323
                                \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                         2324
                                \@acmNumber, Article \@acmArticle. Publication date:
                                \@acmPubDate.}%
                         2326
                                \fancyhead[L]{\ACM@linecountL}%
                         2327
                                \fancyhead[R]{\ACM@linecountR}%
                         2328
                              \else % Conference proceedings
                         2329
                                \fancyhead[L]{\ACM@linecountL}%
                         2330
                                \fancyhead[R]{\ACM@linecountR}%
                         2331
                         2332
                                \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
                         2333
                              \if@ACM@timestamp
                         2334
                                \ifnum\ACM@format@nr=0\relax % Manuscript
                         2335
                                \foot[LO,RE]{\ACM@timestamp\quad}
                         2336
                         2337
                                   \footnotesize Manuscript submitted to ACM}
                                 \else
                         2338
                                \fancyfoot[LO,RE]{\ACM@timestamp}
                         2339
                         2340
                                \fi
                              \fi
                         2341
                         2342 }
                        The following code by Ross Moore protects against changes by the totpages package:
\ACM@restore@pagestyle
                         2343 \let\ACM@ps@plain\ps@plain
                         2344 \let\ACM@ps@myheadings\ps@myheadings
                         2345 \let\ACM@ps@headings\ps@headings
                         2346 \def\ACM@restore@pagestyle{%
                              \let\ps@plain\ACM@ps@plain
                         2347
                              \let\ps@myheadings\ACM@ps@myheadings
                              \let\ps@headings\ACM@ps@headings}
                         2350 \AtBeginDocument{\ACM@restore@pagestyle}
                         3.16
                                Sectioning
                         Sectioning is different for different levels
                         2351 \renewcommand\section{\@startsection{section}{1}{\z@}%
                             \{-.75\baselineskip \eqrup -2\p@ \eqrup -.2\p@}
                              {.25\baselineskip}%
                              {\@secfont}}
                         2355 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
```

```
2356 {-.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                           2357 {.25\baselineskip}%
                                           2358 {\@subsecfont}}
                                           2359 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{10pt}%
                                           2360 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                           2361 {-3.5\p@}%
                                           2362 {\@subsubsecfont\@adddotafter}}
                                           2363 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
                                           2364 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                           2365 {-3.5\p@}%
                                           2366 {\@parfont\@adddotafter}}
                                           2367 \renewcommand\part{\@startsection{part}{9}{\z@}%
                                           2368 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
                                           2369
                                                    {4\p@}%
                                           2370 {\@parfont}}
                                           Special version of \raggedright compatible with \MakeUppercase
\section@raggedright
                                           2371 \def\section@raggedright{\@rightskip\@flushglue
                                           2372 \rightskip\@rightskip
                                           2373 \leftskip\z@skip
                                           2374 \parindent\z@}
                      \@secfont Fonts for sections etc. are different for different formats.
               \verb|\ensuremath{\verb| \ensuremath{\verb| \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\e
          \@subsubsecfont 2376 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
                      \@parfont 2377 \def\@subsubsecfont{\sffamily\itshape}
                                           2378 \def\@parfont{\itshape}
                                           2379 \setcounter{secnumdepth}{3}
                                           2380 \ifcase\ACM@format@nr
                                           2381 \relax % manuscript
                                           2382 \or % acmsmall
                                           2383 \or % acmlarge
                                           2384 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
                                           2385 \def\@subsecfont{\sffamily\large\section@raggedright}
                                           2386 \or % acmtog
                                           2387 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
                                           2388 \def\@subsecfont{\sffamily\large\section@raggedright}
                                           2389 \or % sigconf
                                           2390 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
                                           2391 \def\@subsecfont{\bfseries\Large\section@raggedright}
                                           2392 \or % siggraph
                                           2393 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
                                           2394 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
                                           2395 \or % sigplan
                                           2396 \def\@secfont{\bfseries\Large\section@raggedright}
                                           2397 \def\@subsecfont{\bfseries\section@raggedright}
                                           {-.75\baselineskip \eqnus -2\p@ \eqnus -.2\p@}%
                                           2399
                                                        {.25\baselineskip}%
                                           2400
                                                        {\@subsubsecfont}}
```

```
2402 \def\@subsubsecfont{\bfseries\section@raggedright}
                 2403 \ \end{2403} \ \end{2403} \ \end{2403} \ \end{2403}
                       {-.5\baselineskip \eqnus -2\p@ \eqnus -.2\p@}%
                 2404
                        \{-3.5\p@\}\%
                 2405
                        {\@parfont\@addspaceafter}}
                 2406
                 2407 \def\@parfont{\bfseries\itshape}
                 2408 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
                        {-.5\baselineskip \eqnus -2\p@ \eqnus -.2\p@}%
                 2409
                        \{-3.5\p@\}\%
                 2410
                        {\@subparfont\@addspaceafter}}
                 2411
                 2412 \def\@subparfont{\itshape}
                 2413 \or % sigchi
                 2414 \setcounter{secnumdepth}{1}
                 2415 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
                 2416 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
                 2417 \or % sigchi-a
                 2418 \setcounter{secnumdepth}{0}
                 2419 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
                 2420 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
                 2421\fi
 \@adddotafter Add punctuation after a sectioning command
                 2422 \ensuremath{\mbox{def}\mbox{@addotafter#1{#1}@addpunct{.}}}
\@addspaceafter Add space after a sectioning command
                 2423 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

#### 3.17 TOC lists

\@dotsep

Related to the \tableofcontents are all the horizontal fillers. Base LTEX 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.

2424 \providecommand\*\@dotsep{4.5}

#### 3.18 Theorems

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

2425 \def\@acmplainbodyfont{\itshape}

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

2426 \def\@acmplainindent{\parindent}

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

2427 \def\@acmplainheadfont{\scshape}

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

 ${\tt 2428 \setminus def \setminus @acmplainnotefont \{ \setminus @empty \}}$ 

```
Customization of the acmplain theorem style:
                          2429 \ifcase\ACM@format@nr
                          2430 \relax % manuscript
                          2431 \or % acmsmall
                          2432 \or % acmlarge
                          2433 \or % acmtog
                          2434 \or % sigconf
                          2435 \or % siggraph
                          2436 \or % sigplan
                          2437 \def\@acmplainbodyfont{\itshape}
                          2438 \def\@acmplainindent{\z@}
                          2439 \def\@acmplainheadfont{\bfseries}
                          2440 \def\@acmplainnotefont{\normalfont}
                          2441 \or % sigchi
                          2442 \or % sigchi-a
                          2443 \fi
               acmplain The acmplain theorem style
                          2444 \newtheoremstyle{acmplain}%
                          2445 {.5\baselineskip\@plus.2\baselineskip
                          2446
                                 \@minus.2\baselineskip}% space above
                          2447 {.5\baselineskip\@plus.2\baselineskip
                          2448
                                 \@minus.2\baselineskip}% space below
                          2449 {\@acmplainbodyfont}% body font
                          2450 {\@acmplainindent}% indent amount
                          2451 {\@acmplainheadfont}% head font
                          2452 {.}% punctuation after head
                          2453 {.5em}% spacing after head
                          2454 {\thmname{#1}\thmnumber{ #2}\thmnote{ (\@acmplainnotefont(#3)}}}% head spec
\@acmdefinitionbodyfont The font to typeset the body of the acmdefinition theorem style.
                          2455 \def\@acmdefinitionbodyfont{\normalfont}
  \@acmdefinitionindent The amount to indent the acmdefinition theorem style.
                          2456 \def\@acmdefinitionindent{\parindent}
\@acmdefinitionheadfont The font to typeset the head of the acmdefinition theorem style.
                          2457 \def\@acmdefinitionheadfont{\itshape}
                         The font to typeset the note of the acmdefinition theorem style.
\@acmdefinitionnotefont
                          2458 \def\@acmdefinitionnotefont{\@empty}
                             Customization of the acmdefinition theorem style:
                          2459 \ifcase\ACM@format@nr
                          2460 \relax % manuscript
                          2461 \or % acmsmall
                          2462 \or % acmlarge
                          2463 \or % acmtog
                          2464 \or % sigconf
```

```
2465 \or % siggraph
               2466 \or % sigplan
                    \def\@acmdefinitionbodyfont{\normalfont}
                    \def\@acmdefinitionindent{\z@}
               2468
                    \def\@acmdefinitionheadfont{\bfseries}
               2469
                    \def\@acmdefinitionnotefont{\normalfont}
               2471 \or % sigchi
               2472 \or % sigchi-a
               2473 \fi
acmdefinition
              The acmdefinition theorem style
               2474 \newtheoremstyle{acmdefinition}%
                    {.5\baselineskip\@plus.2\baselineskip
                       \@minus.2\baselineskip}% space above
               2477
                     {.5\baselineskip\@plus.2\baselineskip
                       \@minus.2\baselineskip}% space below
               2478
                    {\@acmdefinitionbodyfont}% body font
               2479
                     {\@acmdefinitionindent}% indent amount
               2480
                     {\@acmdefinitionheadfont}% head font
               2481
                     {.}% punctuation after head
                     {.5em}% spacing after head
                    {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont(#3)}}}% head spec
```

Make acmplain the default theorem style.

```
2485 \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 <a href="https://github.com/borisveytsman/acmart/issues/138">https://github.com/borisveytsman/acmart/issues/138</a>). 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.

```
2486 \AtEndPreamble{%
     \if@ACM@acmthm
2487
     \theoremstyle{acmplain}
2488
     \@ifundefined{theorem}{%
2489
     \newtheorem{theorem}{Theorem}[section]
2490
2491
     \@ifundefined{conjecture}{%
     \newtheorem{conjecture}[theorem]{Conjecture}
2494
     \@ifundefined{proposition}{%
2495
     \newtheorem{proposition}[theorem]{Proposition}
2496
2497
     \@ifundefined{lemma}{%
2498
     \newtheorem{lemma}[theorem]{Lemma}
2500
```

```
\@ifundefined{corollary}{%
                 2501
                       \newtheorem{corollary}[theorem]{Corollary}
                 2502
                 2503
                       }{}
                       \theoremstyle{acmdefinition}
                 2504
                       \@ifundefined{example}{%
                 2505
                       \newtheorem{example}[theorem]{Example}
                       }{}
                 2507
                       \@ifundefined{definition}{%
                 2508
                       \newtheorem{definition}[theorem]{Definition}
                 2509
                 2510
                       }{}
                       \fi
                 2511
                       \theoremstyle{acmplain}
                 2512
                 2513 }
\@proofnamefont The font to typeset the proof name.
                 2514 \def\@proofnamefont{\scshape}
 \@proofindent Whether or not to indent proofs.
                 2515 \def\@proofindent{\indent}
                     Customization of the proof environment.
                 2516 \ifcase\ACM@format@nr
                 2517 \relax % manuscript
                 2518 \or % acmsmall
                 2519 \or % acmlarge
                 2520 \or % acmtog
                 2521 \or % sigconf
                 2522 \or % siggraph
                 2523 \or % sigplan
                 2524 \def\@proofnamefont{\itshape}
                 2525 \def\@proofindent{\noindent}
                 2526 \or % sigchi
                 2527 \or % sigchi-a
                 2528\fi
          proof We want some customization of the proof environment.
                 2529 \renewenvironment{proof}[1][\proofname]{\par
                 2530 \pushQED{\qed}%
                      \normalfont \topsep6\p@\@plus6\p@\relax
                 2531
                      \trivlist
                 2532
                       \item[\@proofindent\hskip\labelsep
                 2533
                             {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
                 2534
                 2535 }{%
                      \popQED\endtrivlist\@endpefalse
                 2537 }
```

### 3.19 Acknowledgments

\acks This is a comment-like structure

```
2538 \specialcomment{acks}{%
2539 \begingroup
2540 \section*{Acknowledgments}
2541 \phantomsection\addcontentsline{toc}{section}{Acknowledgments}
2542 }{%
2543 \endgroup
2544 }

\grantsponsor We just typeset the name of the sponsor
2545 \def\grantsponsor#1#2#3{#2}

\grantnum
2546 \newcommand\grantnum[3][]{#3%
2547 \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

# 3.20 Conditional typesetting

We use the comment package for conditional typesetting:

```
2548 \AtEndPreamble{%
2549 \if@ACM@screen
2550 \includecomment{screenonly}
2551 \excludecomment{printonly}
2552 \else
2553 \excludecomment{screenonly}
2554 \includecomment{printonly}
2555 \fi
2556 \if@ACM@anonymous
2557 \excludecomment{anonsuppress}
2558 \excludecomment{acks}
2559 \else
2560 \includecomment{anonsuppress}
2561 \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/).

# 3.22 End of Class

2569 \normalsize\normalfont\frenchspacing 2570  $\langle$ /class $\rangle$ 

### References

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- [10] Nicola L. C. Talbot. *User Manual for glossaries.sty v4.25*, June 2016. http://www.ctan.org/pkg/subcaption.
- [11] David Carlisle. *The textcase package*, October 2004. http://www.ctan.org/pkg/textcase.

# **Change History**

1.48	//github.com/borisveytsman/	
General: Added prologue option to	acmart/issues/9) 2	29
xcolor 40	v1.04	
Bib code cleanup (Zack Weinberg) 29	\acmArticleSeq: Name change by	
Documentation update (siggraph) . 29		58
1.49	\acmDOI: Name change by Matthew	
General: New journal: DTRAP 29		59
1.53	\acmISBN: Name change by Matthew	
General: New journals: PACMCGIT,		59
TIOT, TDSCI 29	General: Updated bibliography for	
Rearranged docs	20 1	29
	v1.05	
v1.00	General: Added processing doi	
General: First released version 29	numbers for acmsiggraph and doi	
v1.01	OI .	29
General: Changed hyperref colors in	Patched \setcitestyle command;	
screen mode (closes https:	closes https:	
<pre>//github.com/borisveytsman/ acmart/issues/1) 29</pre>	//github.com/borisveytsman/	00
acmart/issues/1)		29
Explicitly put draft option (closes	v1.06	59
https:		59 59
//github.com/borisveytsman/		59
acmart/issues/4) 32	\@mktitle@i: Added processing	J
Set headheight to 1pc for all		73
formats (closes https:	8	73
//github.com/borisveytsman/	\@mktitle@ii: Now this macro is	, ,
acmart/issues/5) 29		74
v1.02	\@mktitle@iii: Added processing	
General: Added TOPS and TSC (closes		74
https:	Made more generic	74
//github.com/borisveytsman/	\@mktitle@iv: Made more generic . 7	74
acmart/issues/12) 29	\@printtopmatter: Added processing	
Documentation changes (closes	badges	71
https:	\@subtitlefont: Added macro	72
//github.com/borisveytsman/	\@titlefont: Added macro	72
acmart/issues/13) 29	\acmBadgeL: Added macro	59
v1.03	S .	59
\@formatdoi: Added macro 64	\if@ACM@badge: Added macro	59
\if@ACM@authorversion: Added	v1.07	
macro	\maketitle: Corrected a bug with	
\maketitle: Added special case of	abstract footnotes	68
authorversion 68	Corrected a bug with permssion	
General: Added anonsuppress	and footnotes order	68
environment	v1.08	
Added authorversion option (closes	General: SIGPLAN reformatting by	
https:	Matthew Fluet	29

Typos corrected (Tobias Pape) 29	General: Font adjustments for
v1.09	acmsmall
General: Revert SIGPLAN caption	Increased font size for ACM Large 33
rules	Print bibliographic information by
v1.10	default for the proceedings 61
\maketitle: Corrected a bug with doi	standardpagestyle: Added headers
in manuscript and author vertsion,	for sigs
https:	Expanded headers for sigchi-a 83
//github.com/borisveytsman/	Suppressed folios if sig 83
acmart/issues/36 68	v1.14
General: Changes of	\bibstyle@acmauthoryear: Moved
'licensedothergov' wording 62	def of \bibstyle@acmauthoryear
standardpagestyle: Reversed folios	before use
location	\bibstyle@acmnumeric: Moved def of
v1.11	\bibstyle@numeric before use 36
General: Customization of ACM	General: \citestyle updates
theorem styles and proof	(Matthew Fluet) 29
environment by Matthew Fluet 29	Patched \citestyle 34
v1.12	v1.15
\@marginfigure: Now centering by	\@ACM@addtoaddress: Added macro 74
default	\@mkauthors@iii: New authors
\@margintable: Now centering by	system
default	\@shortauthors: Introduced macro . 83
\@parfont: Moved to	\@typeset@author@bx: Moved to
\section@raggedright 87	separate macro
\copyrightpermissionfootnoterule:	\acks: Added macro 91
Added macro 42	\affiliation: Added code for author
\descriptionlabel: Redefined 48	groups
\footnoterule: Made shorter 42	\author: Added code for author
\if@ACM@natbib@override: Added	groups
macro	\city: Added macro 75
\if@ACM@newfonts: Added macro 44	\country: Added macro
\maketitle: Moved thankses to	\department: Added macro 75
copyrightpermission box 68	\grantnum: Added macro 92
\section@raggedright: Introduced	\grantsponsor: Added macro 92
macro87	\if@insideauthorgroup: Introduced
General: Added graceful behavior	macro
when libertine fonts are absent 44	\institution: Added macro 75
	\num@authorgroups: Renamed 55
Documentation updates 29	\orcid: Introduced macro 57
v1.13	\position: Added macro 75
\@mpfootnotetext: Made minipage	\postcode: Added macro 75
footnotes centered 43	\state: Added macro 75
\bibliographystyle: Redefined	\streetaddress: Added macro 75
macro	standardpagestyle: Better handling
\bibstyle@acmauthoryear: Added	of anonymous mode 83
macro	v1.16
\bibstyle@acmnumeric: Added	\@headfootfont: Added macro 83
macro	General: Formatting header/footer
\if@ACM@printfolios: Added macro 60	(Matthew Fluet) 29

	standardpagestyle: Customize		v1.21	
	header/footer text font	83	\showeprint: Added macro	92
v1.	17		v1.22	
	\@makefnmark: Redefined	43	General: More bibliography changes	
	\@mkauthors: TOG now uses the same		for Aptara	29
	authors block as other journals	75	v1.23	
	\@mkauthors@ii: Deleted	77	General: Add PACMPL journal option	29
	\@mkbibcitation: Added \nobreak	81	v1.24	
	Changed format for sigs	81	General: Add IMWUT journal option	48
	\acmArticle: The default is now		v1.25	
	numerical	58	General: Updated PACMPL	48
	\acmMonth: The default must be		v1.26	
	numerical. Closes #50	58	General: Corrected \shortcite bug .	29
	\acmNumber: The default is now	30	Documentation typos fixed (thanks	
	numerical	58	to Stephen Spencer)	29
	\acmVolume: The default is now	30	v1.27	
	numerical	58	\if@ACM@printccs: Typo corrected .	60
	\acmYear: The default is now	30	v1.28	
		58	\ccsdesc@parse: Change from \to to	
	numerical		\textrightarrow (Matteo	
	\description: Decreased indent	48	Riondato)	62
	\grantnum: Added url	92	General: Corrected option natbib	
	\grantsponsor: Renamed	92	behavior	36
	\if@ACM@printacmref: Renamed		Got rid of warnings in pdf keywords	
	from \if@ACM@printbib	60	v1.29	
	General: Slightly decreased margins		\@mkabstract: Removed spurious	
	for sigs	40	indentation (John Wickerson)	81
	standardpagestyle: Added paper		\ccsdesc@parse: Add spacing after	
	title to sigs	83	bullet and around rightarrow;	
v1.:			semicolon separators no longer in	
	\@mkauthors@i: Now we andify		bold/italic (John Wickerson)	62
	affiliations	77	General: Increased head to 13pt	40
	\@typeset@author@line: Added		standardpagestyle: Corrected	
	macro	76	printfolios (Matthew Fluet)	83
	General: Natbib is now the default for		v1.30	
	all formats	29	\department: Added optional	
v1.	19		parameter	75
	\@mkabstract: Include 'Abstract' in		General: Added \frenchspacing	93
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