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

# Boris Veytsman $^{\dagger}$ 2019/04/22, v1.60

#### Abstract

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

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<sup>†</sup>borisv@lk.net,boris@varphi.com

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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
- balance, http://www.ctan.org/pkg/balance
- booktabs, http://www.ctan.org/pkg/booktabs
- caption, http://www.ctan.org/pkg/caption
- comment, http://www.ctan.org/pkg/comment
- cm-super, http://www.ctan.org/pkg/cm-super
- cmap, http://www.ctan.org/pkg/cmap
- draftwatermark, http://www.ctan.org/pkg/draftwatermark
- environ, http://www.ctan.org/pkg/environ
- etoolbox, http://www.ctan.org/pkg/etoolbox
- fancyhdr, http://www.ctan.org/pkg/fancyhdr
- float, http://www.ctan.org/pkg/float

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

#### 2.2 Invocation and options

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

```
\documentclass[\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 2.11.

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

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

Table 1: The possible values for the format option

Value	Meaning
manuscript	A manuscript. This is the default.
acmsmall	Small single-column format. Used for CIE, CSUR, DTRAP, HEALTH,
	JACM, JDIQ, JEA, JERIC, JETC, PACMCGIT, PACMHCI, PACMPL,
	TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS,
	TDS, TEAC, TECS, THRI, 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, including special issues.
acmlarge	Large single-column format. Used for IMWUT, JOCCH, POMACS and
	TAP, including special issues.
acmtog	Large double-column format. Used for TOG, including annual 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.

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

The option urlbreakonhyphens determines whether URLs can be split between lines after hyphens. By default it is true. Set it to false to disallow these breaks.

#### 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.

Table 2: Boolean options

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

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,

```
\acmJournal{TOMS}
```

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

\acmConference

The macro \acmConference[ $\langle short\ name \rangle$ ]{ $\langle name \rangle$ }{ $\langle date \rangle$ }{ $\langle venue \rangle$ } 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)}
```

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

\editor

In most cases, conference proceedings are edited. You can use the command  $\ensuremath{\mbox{\mbox{\mbox{ommand}}}}$  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  $\boldsymbol{\langle subtitle \rangle}$  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 Lack and macro or commas, or \\ between the authors! Each author deserves his or her own \author command. An attempt to list several authors or their emails in one command leads to a warning or an error. This is not a bug, but the expected behavior

Note that some formats do not 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{...}
\affiliation{...}
\email{...}
\orcid{...}
\affiliation{...}
\email{...}
\author{...}
\athorid{...}
\athorid{...}
\athorid{...}
\affiliation{...}
\affiliation{...}
\affiliation{...}
\email{...}
```

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

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

However, this format is not generally recommended.

\additionalaffiliation

In some cases, too many affiliations can take too much space. The command  $\additionalaffiliation{\langle affiliation \rangle}$  creates a footnote after an author's name with the words "Also with  $\{\langle affiliation \rangle\}$ ". 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 2.10).

\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,
```

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

\titlenote \subtitlenote \authornote

\authornotemark

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}
```

Moffett Field, California 94035.}

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  $\arrowvert$  authornotemark[ $\arrowvert$ ] 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:

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  $\acmission (ISBN \ackslash)$  sets it. Normally it is set by the typesetter, for example,

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

\acmD0I

Setting it to the empty string, as  $\acmISBN{}$ , suppresses printing the ISBN. The macro  $\acmDOI{}{DOI}$  sets the DOI of the article, for example,

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

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

\acmBadgeR \acmBadgeL 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  $\mathsf{startPage}(\langle page \rangle)$  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:

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

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

\setcopyright

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

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

\copyrightyear

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

```
\acmYear{2016}
\copyrightyear{2015}
```

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

teaserfigure

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

```
\begin{teaserfigure}
\includegraphics[width=\textwidth]{sampleteaser}
```

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

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

\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  $\operatorname{settopmatter}\{\langle settings \rangle\}$ . 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}{ll}
 \toprule
 TERRAIN\footnote{This is a table footnote. This is a
   table footnote. This is a table footnote.} &
   (200\,m\times\$200\,m) Square\\
 Node Number
                & 289\\
 Node Placement & Uniform\\
 Application & Many-to-Many/Gossip CBR Streams\\
 Payload Size & 32 bytes\\
 Routing Layer & GF\\
                 & CSMA/MMSN\\
 MAC Layer
 Radio Layer
                 & RADIO-ACCNOISE\\
 Radio Bandwidth & 250Kbps\\
                 & 20m--45m\\
 Radio Range
  \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 Descriptions of images

\Description

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

The command  $\ensuremath{\mbox{Description}[\langle short\ description \rangle]} \{\langle long\ description \rangle\}$  should be placed inside every figure, teaserfigure or marginfigure environment to provide

a description of the image(s) used in the figure. Unlike \caption, which is used alongside the image, \Description is intended to be used instead of the image, for example,

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

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

#### 2.7 Theorems

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

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

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

#### 2.8 Online-only and offline-only material

printonly 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 typest only when this option is set to false. For example,

```
\section{Supplementary materials}
\begin{printonly}
Supplementary materials are available in the online version of this paper.
\end{printonly}
\begin{screenonly}
(The actual supplementary materials.)
\end{screenonly}
```

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

#### 2.9 Note about anonymous mode

anonsuppress

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

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

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

#### 2.10 Acknowledgments

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

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

acks

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

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

\grantsponsor \grantnum

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

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}.
```

#### 2.11 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  $\mbox{Bib}T_{\mbox{E\!\!/}}X$  entry types and fields in the ACM style file ACM-Reference-Format.bst that you may want to be aware of.

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

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

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

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

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

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

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

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

There are two ways to enter video or audio sources in the 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,
                "Barack Obama",
author =
                "2008",
vear
title =
                "A more perfect union",
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",
                "Solder man",
 title =
 booktitle =
                "ACM SIGGRAPH 2003 Video Review on Animation theater Program",
 year =
                "2003",
 publisher =
                "ACM Press",
                "New York, NY",
 address =
                "4",
 pages =
                "March 21, 2008",
 month =
```

```
doi = "10.9999/woot07-S422",
howpublished = "Video",
}
```

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

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

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,

A note about sorting. The current ACM bibliography styles always sort the entries according to authors names and publication year. There is a controversy about sorting names with "von" or "van" part: should Ludwig van Beethoven be sorted under "V" or under "B"? The American practice is to use "van" in sorting, i.e. to file van Beethoven under "V". However, some authorities recommend to sort Dutch persons according to their last names (see e.g. https://www.ifla.org/files/assets/cataloguing/pubs/names-of-persons\_1996.pdf). While I do not want to take a part in this dispute, I would like to point to the old "noopsort" trick by Oren Patashnik. Add to the .bib file the line

```
@PREAMBLE{"\providecommand{\noopsort}[1]{}"}
and then encode the author as
author = {Ludwig {\noopsort{Beethoven}}van Beethoven},
```

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

#### 2.12 Colors

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

The ACM provides the following recommendation on color use.

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

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

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

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

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

#### 2.13 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

#### 2.14 Disabled or forbidden commands

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

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

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

You should not abuse the command \vspace: this command may disturb the type-setting of ACM papers.

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

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

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

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

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

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

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

\PassOptionsToPackage{dvipsnames}{xcolor}

you will pass dvipsnames to xcolor.

**Important note.** This hook makes it too easy to create a manuscript that is not acceptable by the ACM. It is even easier to create a file that cannot be compiled. So

please do not use it *unless you know what you are doing*. And if you use it, *do not ask for support*. If you decide to use this hook, you are on your own.

# 2.16 Currently supported publications

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

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

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

Abbreviation	Publication
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 [2019/04/22 v1.60 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 valid
31 \RequirePackage{xstring}
```

```
format The possible formats
                             32 \define@choicekey*+{acmart.cls}{format}[\ACM@format\ACM@format@nr]{%
                             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]{%
                               \if@ACM@screen
                             51
                                   \PackageInfo{\@classname}{Using screen mode}%
                             52 \else
                                   \PackageInfo{\@classname}{Not using screen mode}%
                             54 \fi}{\PackageError{\@classname}{The option screen can be either true or
                                   false}}
                             56 \ExecuteOptionsX{screen=false}
\if@ACM@urlbreakonhyphens
                             \label{lem:cls} $$ \define@boolkey+{acmart.cls}[@ACM@]{urlbreakonhyphens}[true]{% } $$
                                \if@ACM@urlbreakonhyphens
                                   \PackageInfo{\@classname}{Using breaking urls on hyphens}%
                             59
                                   \PackageInfo{\@classname}{Not breaking urls on hyphens}%
                                \fi}{\PackageError{\@classname}{The option urlbreakonhyphens can be either true or
                                   false}}
                             64 \ExecuteOptionsX{urlbreakonhyphens=true}
           \if@ACM@acmthm Whether we define theorem-like environments.
                             65 \define@boolkey+{acmart.cls}[@ACM@]{acmthm}[true]{%
                                \if@ACM@acmthm
                                   \PackageInfo{\@classname}{Requiring acmthm}%
                                   \PackageInfo{\@classname}{Suppressing acmthm}%
                             69
                             70 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
                                   false}}
                             72 \ExecuteOptionsX{acmthm=true}
```

```
\if@ACM@review Whether we use review mode
                          73 \define@boolkey+{acmart.cls}[@ACM@]{review}[true]{%
                          74 \if@ACM@review
                                \PackageInfo{\@classname}{Using review mode}%
                          76
                                \AtBeginDocument{\@ACM@printfoliostrue}%
                                \PackageInfo{\@classname}{Not using review mode}%
                           78
                           79 \fi}{\PackageError{\@classname}{The option review can be either true or
                                false}}
                          81 \ExecuteOptionsX{review=false}
  \if@ACM@authorversion Whether we use author's-version mode
                          82 \define@boolkey+{acmart.cls}[@ACM@]{authorversion}[true]{%
                          83 \if@ACM@authorversion
                                \PackageInfo{\@classname}{Using authorversion mode}%
                              \else
                          85
                                \PackageInfo{\@classname}{Not using authorversion mode}%
                          87 \fi}{\PackageError{\@classname}{The option authorversion can be either true or
                          89 \ExecuteOptionsX{authorversion=false}
         \if@ACM@nonacm Special option for non-ACM publications using the ACM typesetting options.
                          90 \define@boolkey+{acmart.cls}[@ACM@]{nonacm}[true]{%
                           91 \if@ACM@nonacm
                                \PackageInfo{\@classname}{Using nonacm mode}%
                                \AtBeginDocument{\@ACM@printacmreffalse}%
                                % in 'nonacm' mode we disable the "ACM Reference Format"
                                % printing by default, but this can be re-enabled by the
                                % user using \settopmatter{printacmref=true}
                                \PackageInfo{\@classname}{Not using nonacm mode}%
                              fi}{\PackageError{\Qclassname}} The option nonacm can be either true or
                                false}}
                          100
                          101 \ExecuteOptionsX{nonacm=false}
        \if@ACM@balance
                         Whether to balance the last page
                          102 \define@boolkey+{acmart.cls}[@ACM@]{balance}[true]{}{%
                          103 \PackageError{\@classname}{The option balance can be either true or
                                false}}
                          105 \ExecuteOptionsX{balance}
\if@ACM@natbib@override This macro is no longer used.
                         Whether we use natbib mode
         \if@ACM@natbib
                          106 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
                          107 \if@ACM@natbib
                                \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
                          108
                          109 \else
                                \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
                          110
```

```
\fi}{\PackageError{\@classname}{The option natbib can be either true or
                      112
                      113 \ExecuteOptionsX{natbib=true}
 \if@ACM@anonymous
                     Whether we use anonymous mode
                      114 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
                      115 \if@ACM@anonymous
                            \PackageInfo{\@classname}{Using anonymous mode}%
                      116
                            \PackageInfo{\@classname}{Not using anonymous mode}%
                      118
                      119 \fi}{\PackageError{\@classname}{The option anonymous can be either true or
                            false}}
                      120
                      121 \ExecuteOptionsX{anonymous=false}
 \if@ACM@timestamp
                     Whether we use timestamp mode
                      122 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
                          \if@ACM@timestamp
                      124
                            \PackageInfo{\@classname}{Using timestamp mode}%
                      125
                            \PackageInfo{\@classname}{Not using timestamp mode}%
                      126
                      127
                          \fi}{\PackageError{\@classname}{The option timestamp can be either true or
                            false}}
                      129 \ExecuteOptionsX{timestamp=false}
                     Whether we use author-draft mode
\if@ACM@authordraft
                      130 \define@boolkey+{acmart.cls}[@ACM@]{authordraft}[true]{%
                          \if@ACM@authordraft
                            \PackageInfo{\@classname}{Using authordraft mode}%
                      132
                      133
                            \@ACM@timestamptrue
                      134
                            \@ACM@reviewtrue
                             \PackageInfo{\@classname}{Not using authordraft mode}%
                      136
                      137 \fi}{\PackageError{\@classname}{The option authordraft can be either true or
                      139 \ExecuteOptionsX{authordraft=false}
      \ACM@fontsize The font size to pass to the base class
                      140 \def\ACM@fontsize{}
                      141 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
                      142 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
                      143 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
                      144 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}
                      145 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
                      146 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
                      147 \ProcessOptionsX
                      148 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}
```

#### 3.4 Setting switches

```
\if@ACM@manuscript Whether we use manuscript mode
                           149 \newif\if@ACM@manuscript
         \if@ACM@journal
                           There are two kinds of publications: journals and books
                           150 \newif\if@ACM@journal
                           Sometimes ACM wants a journal-like publication to have conference information in the
\if@ACM@journal@bibstrip
                           bibstrip and vice versa, so we have an additional switch.
                           151 \newif\if@ACM@journal@bibstrip
                           The formatting of SIGCHI extended abstracts is quite unusual. We have a special switch
     \if@ACM@sigchiamode
                           for them.
                           152 \newif\if@ACM@sigchiamode
                              Setting up switches
                            153 \ifnum\ACM@format@nr=5\relax % siggraph
                            154 \ClassWarning{\@classname}{The format siggraph is now obsolete.
                                  I am switching to sigconf.}
                            156 \setkeys{acmart.cls}{format=sigconf}
                            157 \fi
                            158 \ifnum\ACM@format@nr=0\relax
                            159 \@ACM@manuscripttrue
                           160 \else
                           161 \@ACM@manuscriptfalse
                           162 \fi
                            163 \@ACM@sigchiamodefalse
                            164 \ifcase\ACM@format@nr
                            165 \relax % manuscript
                           166 \@ACM@journaltrue
                           167 \or % acmsmall
                            168 \@ACM@journaltrue
                            169 \or % acmlarge
                            170 \@ACM@journaltrue
                           171 \or % acmtog
                           172 \@ACM@journaltrue
                           173 \or % sigconf
                           174 \@ACM@journalfalse
                           175 \or % siggraph
                            176 \@ACM@journalfalse
                           177 \or % sigplan
                           178 \@ACM@journalfalse
                           179 \or % sigchi
                            180 \@ACM@journalfalse
                           181 \or % sigchi-a
                            182 \@ACM@journalfalse
                            183 \@ACM@sigchiamodetrue
```

184\fi

```
185 \if@ACM@journal
186 \@ACM@journal@bibstriptrue
187 \else
188 \@ACM@journal@bibstripfalse
189 \fi
```

#### 3.5 Loading the base class and package

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

```
190 \ifx\ACM@fontsize\@empty
191 \ifcase\ACM@format@nr
192
     \relax % manuscript
       \def\ACM@fontsize{9pt}%
     \or % acmsmall
194
       \def\ACM@fontsize{10pt}%
195
     \or % acmlarge
196
       \def\ACM@fontsize{10pt}%
197
198
     \or % acmtog
       \def\ACM@fontsize{9pt}%
200 \or % sigconf
       \def\ACM@fontsize{9pt}%
201
202 \or % siggraph
       \def\ACM@fontsize{9pt}%
203
204
      \or % sigplan
205
       \def\ACM@fontsize{10pt}%
      \or % sigchi
       \def\ACM@fontsize{10pt}%
207
     \or % sigchi-a
208
       \def\ACM@fontsize{10pt}%
209
210 \fi
211 \fi
212 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
213 \LoadClass[\ACM@fontsize, reqno]{amsart}
214 \RequirePackage{microtype}
   We need etoolbox for delayed code
215 \RequirePackage{etoolbox}
   Booktabs is now the default
216 \RequirePackage{booktabs}
   We need totpages to calculate the number of pages and refcount to use that num-
217 \RequirePackage{refcount}
218 \RequirePackage{totpages}
   The \collect@body macro in amsmath is defined using \def. We load environ to
access the \long version of this command
219 \RequirePackage{environ}
```

```
We use setspace for double spacing

220 \if@ACM@manuscript

221 \RequirePackage{setspace}

222 \onehalfspacing

223 \fi

We need textcase for better upcasing

224 \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.

```
225 \if@ACM@natbib
    \RequirePackage{natbib}
226
    \renewcommand{\bibsection}{%
227
       \section*{\refname}%
228
       \phantomsection\addcontentsline{toc}{section}{\refname}%
229
230
    \renewcommand{\bibfont}{\bibliofont}
231
    \renewcommand\setcitestyle[1]{
232
    \@for\@tempa:=#1\do
233
    234
       \renewcommand\NAT@open{(}\renewcommand\NAT@close{)}\fi
235
     \def\@tempb{square}\ifx\@tempa\@tempb
236
237
       \renewcommand\NAT@open{[}\renewcommand\NAT@close{]}\fi
     \def\@tempb{angle}\ifx\@tempa\@tempb
238
       \renewcommand\NAT@open{$<$}\renewcommand\NAT@close{$>$}\fi
239
     \def\@tempb{curly}\ifx\@tempa\@tempb
240
       241
     \def\@tempb{semicolon}\ifx\@tempa\@tempb
242
       \renewcommand\NAT@sep{;}\fi
243
     \def\@tempb{colon}\ifx\@tempb
244
245
       \renewcommand\NAT@sep{;}\fi
     \def\@tempb{comma}\ifx\@tempb\
246
       \renewcommand\NAT@sep{,}\fi
247
     \def\@tempb{authoryear}\ifx\@tempa\@tempb
248
249
       \NAT@numbersfalse\fi
250
     \def\@tempb{numbers}\ifx\@tempa\@tempb
251
       \NAT@numberstrue\NAT@superfalse\fi
     \def\@tempb{super}\ifx\@tempa\@tempb
252
       \NAT@numberstrue\NAT@supertrue\fi
253
     \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
254
       \let\bibstyle=\@gobble\fi
255
     \def\@tempb{bibstyle}\ifx\@tempb
256
257
       \let\bibstyle=\@citestyle\fi
258
     \def\@tempb{sort}\ifx\@tempa\@tempb
259
       \def\NAT@sort{\@ne}\fi
     \def\@tempb{nosort}\ifx\@tempa\@tempb
260
```

```
\def\@tempb{compress}\ifx\@tempa\@tempb
                                                                                            262
                                                                                                                       \def\NAT@cmprs{\@ne}\fi
                                                                                            263
                                                                                                                264
                                                                                                                       \def\NAT@cmprs{\z@}\fi
                                                                                            265
                                                                                                                266
                                                                                            267
                                                                                                                       \def\NAT@sort{\ene}\def\NAT@cmprs{\ene}\fi
                                                                                                                \def\@tempb{mcite}\ifx\@tempa\@tempb
                                                                                            268
                                                                                                                       \let\NAT@merge\@ne\fi
                                                                                            269
                                                                                                                \def\@tempb{merge}\ifx\@tempa\@tempb
                                                                                            270
                                                                                                                       \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\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
                                                                                            271
                                                                                            272
                                                                                                                \def\@tempb{elide}\ifx\@tempa\@tempb
                                                                                            273
                                                                                                                       \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\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
                                                                                                                \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
                                                                                            274
                                                                                                                       \NAT@longnamestrue\fi
                                                                                            275
                                                                                                                \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
                                                                                            276
                                                                                                                       277
                                                                                                                \expandafter\NAT@find@eq\@tempa=\relax\@nil
                                                                                            278
                                                                                            279
                                                                                                                \if\@tempc\relax\else
                                                                                            280
                                                                                                                       \expandafter\NAT@rem@eq\@tempc
                                                                                                                       \def\@tempb{open}\ifx\@tempa\@tempb
                                                                                            281
                                                                                                                          \xdef\NAT@open{\@tempc}\fi
                                                                                            282
                                                                                                                       \def\@tempb{close}\ifx\@tempb
                                                                                            283
                                                                                                                          \xdef\NAT@close{\@tempc}\fi
                                                                                            284
                                                                                            285
                                                                                                                       \def\@tempb{aysep}\ifx\@tempa\@tempb
                                                                                                                          \xdef\NAT@aysep{\@tempc}\fi
                                                                                                                       \def\@tempb{yysep}\ifx\@tempa\@tempb
                                                                                            287
                                                                                                                          \xdef\NAT@yrsep{\@tempc}\fi
                                                                                            288
                                                                                                                       \def\@tempb{notesep}\ifx\@tempa\@tempb
                                                                                            289
                                                                                                                          \xdef\NAT@cmt{\empc}\fi
                                                                                            290
                                                                                                                       \def\@tempb{citesep}\ifx\@tempa\@tempb
                                                                                            291
                                                                                            292
                                                                                                                           \xdef\NAT@sep{\@tempc}\fi
                                                                                            293
                                                                                                                \fi
                                                                                            294
                                                                                                            }%
                                                                                                             \NAT@@setcites
                                                                                            295
                                                                                            296
                                                                                                             \renewcommand\citestyle[1]{%
                                                                                            297
                                                                                                                   \ifcsname bibstyle@#1\endcsname%
                                                                                            298
                                                                                                                    \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
                                                                                            300
                                                                                            301
                                                                                                                   \@latex@error{Undefined '#1' citestyle}%
                                                                                            302
                                                                                                                   \fi
                                                                                            303
                                                                                                         }%
                                                                                            304 \fi
                                                                                         The default author-year format:
\bibstyle@acmauthoryear
                                                                                            305 \newcommand{\bibstyle@acmauthoryear}{%
                                                                                                          \setcitestyle{%
                                                                                            306
                                                                                            307
                                                                                                                   authoryear,%
                                                                                            308
                                                                                                                   open={[},close={]},citesep={;},%
```

\def\NAT@sort{\z@}\fi

```
aysep={},yysep={,},%
                        309
                              notesep={, }}}
                       310
\bibstyle@acmnumeric The default numeric format:
                       311 \newcommand{\bibstyle@acmnumeric}{%
                           \setcitestyle{%
                       312
                              numbers, sort&compress, %
                       313
                              open={[},close={]},citesep={,},%
                              notesep={, }}}
                          The default is numeric:
                        316 \if@ACM@natbib
                       317 \citestyle{acmnumeric}
                       318\fi
```

\@startsection Before we call hyperref, we redefine \startsection commands to their LATEX defaults since the amsart ones are too AMS-specific. We need to do this early since we want hyperref to have a chance to redefine them again:

```
319 \def\@startsection#1#2#3#4#5#6{%
               \if@noskipsec \leavevmode \fi
321
                 \par
                \@tempskipa #4\relax
322
                \@afterindenttrue
323
                \ifdim \@tempskipa <\z@
                        \@tempskipa -\@tempskipa \@afterindentfalse
325
                \if@nobreak
                        \everypar{}%
328
329
                        \addpenalty\@secpenalty\addvspace\@tempskipa
330
                \fi
331
332
                 \@ifstar
                        {\@ssect{#3}{#4}{#5}{#6}}%
                        {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}}
334
335 \def\@sect#1#2#3#4#5#6[#7]#8{%
                 \edge{\colevel{\colevel{\colevel{\colevel}}} % $$ \edge{\colevel{\colevel{\colevel}} } $$ \edge{\colevel{\colevel}} $$ \edge{\colevel{\colevel}} $$ \edge{\colevel{\colevel}} $$ \edge{\colevel{\colevel}} $$ \edge{\colevel} $$ \edge{\colevel
336
                 \ifnum #2>\c@secnumdepth
337
                        \let\@svsec\@empty
338
339
                 \else
                        \refstepcounter{#1}%
340
                         \protected@edef\@svsec{\@seccntformat{#1}\relax}%
341
                 \fi
342
                 \@tempskipa #5\relax
343
                 \left( \cdot \right) = \left( \cdot \right)
344
                        \begingroup
345
                                #6{%
346
                                        \@hangfrom{\hskip #3\relax\@svsec}%
347
                                               \interlinepenalty \@M #8\@@par}%
348
                        \endgroup
349
```

```
\csname #1mark\endcsname{#7}%
350
                   \ifnum #2>\c@secnumdepth \else
351
                               \@tochangmeasure{\csname the#1\endcsname}%
352
                   \fi
353
                   \addcontentsline{toc}{#1}{%}
354
355
                         \ifnum #2>\c@secnumdepth \else
356
                               \protect\numberline{\csname the#1\endcsname}%
                         \fi
357
                         #7}%
358
             \else
359
                   \def\@svsechd{\%}
360
361
                         #6{\hskip #3\relax
                         \@svsec #8}%
362
                         \csname #1mark\endcsname{#7}%
363
                         \ifnum #2>\c@secnumdepth \else
364
                               \@tochangmeasure{\csname the#1\endcsname\space}%
365
366
                         \addcontentsline{toc}{#1}{%}
367
                               \ifnum #2>\c@secnumdepth \else
369
                                     \protect\numberline{\csname the#1\endcsname}%
370
                               #7}}%
371
             \fi
372
             \@xsect{#5}}
373
374 \def\@xsect#1{%
             \@tempskipa #1\relax
             \ifdim \@tempskipa>\z@
376
                   \par \nobreak
377
                   \vskip \@tempskipa
378
                   \@afterheading
379
380
             \else
381
                   \@nobreakfalse
382
                   \global\@noskipsectrue
                   \everypar{%
383
                         \if@noskipsec
384
                               \global\@noskipsecfalse
385
                            {\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc}^{\sc}_{\sc
386
387
                               \clubpenalty\@M
                               \begingroup \@svsechd \endgroup
                               \unskip
389
                               \@tempskipa #1\relax
390
                               \hskip -\@tempskipa
391
                         \else
392
                               \clubpenalty \@clubpenalty
393
394
                               \everypar{}%
395
                         \fi}%
396
            \fi
             \ignorespaces}
398 \def\@seccntformat#1{\csname the#1\endcsname\quad}
399 \def\@ssect#1#2#3#4#5{%
```

```
\@tempskipa #3\relax
                                             400
                                                       \ifdim \@tempskipa>\z@
                                             401
                                                            \begingroup
                                             402
                                                                 #4{%
                                             403
                                                                      \@hangfrom{\hskip #1}%
                                             404
                                                                          \interlinepenalty \@M \#5\@@par}%
                                             405
                                                            \endgroup
                                             406
                                             407
                                                       \else
                                                            \def\@svsechd{#4{\hskip #1\relax #5}}%
                                             408
                                                       \fi
                                             409
                                                       \@xsect{#3}}
                                             410
     \@startsection
                                          The amsart package redefines \startsection. Here we redefine it again to make the
                                           table of contents work.
                                            411 \def\@starttoc#1#2{\begingroup\makeatletter
                                                      \setTrue{#1}%
                                            412
                                                       \par\removelastskip\vskip\z@skip
                                            413
                                                       \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
                                                            {.5\linespacing}{\centering\contentsnamefont}{#2}%
                                                       \@input{\jobname.#1}%
                                             416
                                                       \if@filesw
                                            417
                                                            \@xp\newwrite\csname tf@#1\endcsname
                                             418
                                                            \immediate\@xp\openout\csname tf@#1\endcsname \jobname.#1\relax
                                            419
                                             420
                                                      \fi
                                                      \global\@nobreakfalse \endgroup
                                             422 \addvspace{32\p@\@plus14\p@}%
                                            423 }
       \l@subsection
                                          Section spacing is more generous than for amsart
                                            424 \end{1}{0pt}{1pc}{2pc}{}
       \l@subsection The spacing in amsart is too large
                                            425 \end{0.0} \label{eq:coline} 425 \end{0.0} \label{eq:coli
\l@subsubsection The spacing in amsart is too large
                                             426 \def\l@subsubsection{\@tocline{2}{0pt}{1pc}{5pc}{}}
                                                   We need to define foonote-related stuff before the call to hyperref (Ross Moore)
         \@makefntext We do not use indentation for footnotes
                                            427 \def\@makefntext{\noindent\@makefnmark}
     \@footnotetext In sigchi-a mode our footnotes are in the margin!
                                            428 \if@ACM@sigchiamode
                                            429 \long\def\@footnotetext#1{\marginpar{%
                                                            \reset@font\small
                                                            \interlinepenalty\interfootnotelinepenalty
                                             431
                                                            \protected@edef\@currentlabel{%
                                                                   \csname p@footnote\endcsname\@thefnmark
                                             433
```

```
434
                          }%
                          \color@begingroup
                   435
                            \@makefntext{%
                   436
                              \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
                   437
                          \color@endgroup}}%
                   438
                   439∖fi
\@mpfootnotetext
                  We want the footnotes in minipages centered:
                   440 \long\def\@mpfootnotetext#1{%
                       \global\setbox\@mpfootins\vbox{%
                          \unvbox\@mpfootins
                          \reset@font\footnotesize
                   443
                          \hsize\columnwidth
                   444
                          \@parboxrestore
                   446
                          \protected@edef\@currentlabel
                               {\csname p@mpfootnote\endcsname\@thefnmark}%
                   447
                   448
                          \color@begingroup\centering
                            \@makefntext{%
                   449
                              \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
                   450
                          \color@endgroup}}
                   451
    \@makefnmark AMS classes use a buggy definition of \makefnmark. We revert to the standard one.
                   452 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}
                      And now, hyperref
                   453 \let\@footnotemark@nolink\@footnotemark
                   454 \let\@footnotetext@nolink\@footnotetext
                   455 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
                   456 \pdfstringdefDisableCommands{%
                   457 \def\addtocounter#1#2{}%
                   458 \def\unskip{}%
                   459 \def\textbullet{-}%
                       \def\textrightarrow{ -> }%
                        \def\footnotemark{}%
                   461
                   462 }
                   463 \urlstyle{rm}
                   464 \ifcase\ACM@format@nr
                   465 \relax % manuscript
                   466 \or % acmsmall
                   467 \or % acmlarge
                   468 \or % acmtog
                   469 \or % sigconf
                   470 \or % siggraph
                   471 \or % sigplan
                   472 \urlstyle{sf}
                   473 \or % sigchi
                   474 \or % sigchi-a
                   475 \urlstyle{sf}
                   476 \fi
```

```
\if@ACM@urlbreakonhyphens
                     478
                            479
                          \fi
                     480
                          \if@ACM@screen
                     481
                     482
                            \hypersetup{colorlinks,
                     483
                              linkcolor=ACMPurple,
                              citecolor=ACMPurple,
                     484
                              urlcolor=ACMDarkBlue,
                     485
                              filecolor=ACMDarkBlue}
                     486
                            \else
                     487
                            \hypersetup{hidelinks}
                     488
                     489
                          \hypersetup{pdflang={en},
                     490
                            pdfdisplaydoctitle}}
                     491
                        Bibliography mangling.
                     492 \if@ACM@natbib
                         \let\citeN\cite
                         \let\cite\citep
                          \let\citeANP\citeauthor
                          \let\citeNN\citeyearpar
                          \let\citeyearNP\citeyear
                          \let\citeNP\citealt
                     498
                          \DeclareRobustCommand\citeA
                     499
                             {\begingroup\NAT@swafalse
                     500
                               501
                         \providecommand\newblock{}%
                     502
                     503 \else
                          \AtBeginDocument{%
                     505
                            \let\shortcite\cite%
                            \providecommand\citename[1]{#1}}
                     506
                     507 \fi
                     508 \newcommand\shortcite[2][]{%
                         \ifNAT@numbers\cite[#1]{#2}\else\citeyearpar[#1]{#2}\fi}
\bibliographystyle
                    The amsart package redefines \bibliographystyle since it prefers the AMS bibliographystyle since it prefers the AMS bibliographystyle
                    phy style. We turn it back to the LaTeX definition:
                     510 \def\bibliographystyle#1{%
                         \ifx\@begindocumenthook\@undefined\else
                     511
                            \expandafter\AtBeginDocument
                     512
                     513
                     514
                               \immediate\write\@auxout{\string\bibstyle{#1}}%
                     515
                             \fi}}
                     516
                        Graphics and color.
                     517 \RequirePackage{graphicx}
                     518 \RequirePackage[prologue]{xcolor}
```

477 \AtEndPreamble{%

```
We define ACM colors according to [7]:
519 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
520 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
521 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
522 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
523 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
524 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
525 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
526 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}
  Author-draft mode
527 \if@ACM@authordraft
    \RequirePackage{draftwatermark}
    \SetWatermarkFontSize{0.5in}
529
    \SetWatermarkColor[gray]{.9}
    \SetWatermarkText{\parbox{12em}{\centering}
532
        Unpublished working draft.\\
533
        Not for distribution. }}
534 \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.

```
535 \RequirePackage{geometry}
536 \ifcase\ACM@format@nr
537 \relax % manuscript
     \geometry{letterpaper,head=13pt,
     marginparwidth=6pc, heightrounded}%
540 \or % acmsmall
     \geometry{twoside=true,
541
       includeheadfoot, head=13pt, foot=2pc,
542
       paperwidth=6.75in, paperheight=10in,
543
       top=58pt, bottom=44pt, inner=46pt, outer=46pt,
544
       marginparwidth=2pc, heightrounded
545
     }%
546
547 \or % acmlarge
     \geometry{twoside=true, head=13pt, foot=2pc,
548
       paperwidth=8.5in, paperheight=11in,
549
       includeheadfoot,
550
       top=78pt, bottom=114pt, inner=81pt, outer=81pt,
551
552
       marginparwidth=4pc, heightrounded
553
       }%
554 \or % acmtog
     \geometry{twoside=true, head=13pt, foot=2pc,
555
       paperwidth=8.5in, paperheight=11in,
556
       includeheadfoot, columnsep=24pt,
557
558
        top=52pt, bottom=75pt, inner=52pt, outer=52pt,
```

```
}%
             560
             561 \or % sigconf
                   \geometry{twoside=true, head=13pt,
             562
                     paperwidth=8.5in, paperheight=11in,
             563
                     includeheadfoot, columnsep=2pc,
             565
                     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
                     marginparwidth=2pc,heightrounded
             566
                     }%
             567
             568\or % siggraph
                   \geometry{twoside=true, head=13pt,
             569
             570
                     paperwidth=8.5in, paperheight=11in,
             571
                     includeheadfoot, columnsep=2pc,
                     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
             572
                     marginparwidth=2pc,heightrounded
             573
                     }%
             574
             575 \or % sigplan
                   \geometry{twoside=true, head=13pt,
             576
             577
                     paperwidth=8.5in, paperheight=11in,
             578
                     includeheadfoot=false, columnsep=2pc,
                     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
             579
                     marginparwidth=2pc,heightrounded
             580
                     }%
             581
             582 \or % sigchi
                   \geometry{twoside=true, head=13pt,
             583
             584
                     paperwidth=8.5in, paperheight=11in,
                     includeheadfoot, columnsep=2pc,
             585
                     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
             586
                     marginparwidth=2pc,heightrounded
             587
                     }%
             588
             589 \or % sigchi-a
                   \geometry{twoside=false, head=13pt,
             591
                     paperwidth=11in, paperheight=8.5in,
                     includeheadfoot, marginparsep=72pt,
             592
             593
                     marginparwidth=170pt, columnsep=20pt,
             594
                     top=72pt, bottom=72pt, left=314pt, right=72pt
             595
                     \@mparswitchfalse
             596
             597
                     \reversemarginpar
             598\fi
\parindent
            Paragraphing
  \parskip
             599 \setlength\parindent{10\p@}
             600 \setlength\parskip{\z@}
             601 \ifcase\ACM@format@nr
             602 \relax % manuscript
             603 \or % acmsmall
             604 \or % acmlarge
             605 \or % acmtog
             606 \setlength\parindent{9\p@}%
```

marginparwidth=2pc, heightrounded

```
607 \or % sigconf
608 \or % siggraph
609\or % sigplan
610 \or % sigchi
611 \or % sigchi-a
612\fi
```

### \normalparindent

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

613 \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.

```
614 \def\copyrightpermissionfootnoterule{\kern-3\p@
                615 \hrule \@width \columnwidth \kern 2.6\p@}
                616 \RequirePackage{manyfoot}
                617 \SelectFootnoteRule[2]{copyrightpermission}
                618 \DeclareNewFootnote{authorsaddresses}
                619 \SelectFootnoteRule[2]{copyrightpermission}
                620 \DeclareNewFootnote{copyrightpermission}
\footnoterule Tschichold's rules:
```

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

### \endminipage

We do not use footnote rules in minipages

```
623 \def\endminipage{%
       \par
624
625
       \unskip
       \ifvoid\@mpfootins\else
626
         \vskip\skip\@mpfootins
627
         \normalcolor
628
629
         \unvbox\@mpfootins
630
       \fi
       \@minipagefalse
631
     \color@endgroup
632
633
    \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
635 \def\@textbottom{\vskip \z@ \@plus 1pt} 636 \let\@texttop\relax
```

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

```
637 \ifcase\ACM@format@nr
638 \relax % manuscript
639 \or % acmsmall
640 \or % acmlarge
641 \or % acmtog
642 \flushbottom
643 \or % sigconf
644 \flushbottom
645 \or % siggraph
646 \flushbottom
647 \or % sigplan
648 \flushbottom
649 \or % sigchi
650 \flushbottom
651 \or % sigchi-a
652\fi
```

## 3.8 Fonts

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

The code below is by Ross Moore.

```
653 \RequirePackage{iftex}
                   654 \ifPDFTeX
                   655 \input{glyphtounicode}
                   656 \pdfglyphtounicode{f_f}{FB00}
                   657 \neq f_i \}{FB03}
                   658 \pdfglyphtounicode{f_f_l}{FB04}
                   659 \pdfglyphtounicode{f_i}{FB01}
                   660 \pdfglyphtounicode{t_t}{0074 0074}
                   661 \pdfglyphtounicode{f_t}{0066 0074}
                   662 \pdfglyphtounicode{T_h}{0054 0068}
                   663 \pdfgentounicode=1
                   664\fi
                   665 \RequirePackage{cmap}
\if@ACM@newfonts Whether we load the new fonts
                   666 \newif\if@ACM@newfonts
                   667 \@ACM@newfontstrue
                   668 \IfFileExists{libertine.sty}{}{\ClassWarning{\@classname}{You do not
```

have the libertine package installed. Please upgrade your

```
TeX}\@ACM@newfontsfalse}
                                                                                            670
                                                                                            \label{lem:condition} \begin{tabular}{l} $$ \arring(\className){You do not all the conditions of the
                                                                                                                    have the zi4 package installed. Please upgrade your
                                                                                                                    TeX}\@ACM@newfontsfalse}
                                                                                             {\it 674 \ LifFileExists \{ newtxmath.sty \} \{ \ Lass Warning \{ \ Class Name \} \{ You do not a support of the property of the pro
                                                                                                                    have the newtxmath package installed. Please upgrade your
                                                                                            676
                                                                                                                    TeX}\@ACM@newfontsfalse}
                                                                                                      We use Libertine throughout.
                                                                                            677 \if@ACM@newfonts
                                                                                            678 \RequirePackage[T1]{fontenc}
                                                                                            679 \ifxetex
                                                                                            680 \RequirePackage[tt=false]{libertine}
                                                                                            681 \setmonofont{inconsolata}
                                                                                            683 \RequirePackage[tt=false, type1=true]{libertine}
                                                                                            684\fi
                                                                                            685 \RequirePackage[varqu]{zi4}
                                                                                            686 \RequirePackage[libertine]{newtxmath}
                                                                                            687\fi
                                           \liningnums Libertine defines \liningnums, which makes fontspec unhappy. While we do not use
                                                                                          fontspec, some users do.
                                                                                            688 \let\liningnums\@undefined
                                                                                            689 \AtEndPreamble{%
                                                                                            690 \DeclareTextFontCommand{\liningnums}{\libertineLF}}
                                                                                                      The SIGCHI extended abstracts are sans serif:
                                                                                             691 \if@ACM@sigchiamode
                                                                                            692 \renewcommand{\familydefault}{\sfdefault}
                                                                                            693 \fi
                                                                                          3.9
                                                                                                           Image descriptions
\if@Description@present A local switch: whether there is a description in the given figure
                                                                                            694 \newif\if@Description@present
                                                                                            695 \@Description@presenttrue
   \if@undescribed@images
                                                                                         A global switch whether some images were not described
                                                                                            696 \newif\if@undescribed@images
                                                                                            697 \@undescribed@imagesfalse
                                       \Description The Description macro right now just sets switches
                                                                                            698 \newcommand\Description[2][]{\global\@Description@presenttrue\ignorespaces}
                                                                                                      The global warning
                                                                                             699 \AtEndDocument{\if@undescribed@images
                                                                                             700 \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}
```

## Hooks for figures and tables

```
701 \AtBeginEnvironment{figure}{\@Description@presentfalse
702 \let\@vspace\@vspace@orig
703 \let\@vspacer\@vspacer@orig}
704 \AtBeginEnvironment{figure*}{\@Description@presentfalse
705 \let\@vspace\@vspace@orig
706 \let\@vspacer\@vspacer@orig}
707 \AtEndEnvironment{figure}{\if@Description@present\else
708 \global\@undescribed@imagestrue
709 \ClassWarning{\@classname}{A possible image without description}\fi}
710 \AtEndEnvironment{figure*}{\if@Description@present\else
711 \global\@undescribed@imagestrue
712 \ClassWarning{\@classname}{A possible image without description}\fi}
713 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
714 \let\@vspacer\@vspacer@orig}
715 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
716 \let\@vspacer\@vspacer@orig}
```

### 3.10 Floats

We use the caption package

```
717 \RequirePackage{caption, float}
718 \captionsetup[table]{position=top}
719 \if@ACM@journal
720 \captionsetup{labelfont={sf, small},
      textfont={sf, small}, margin=\z@}
722 \captionsetup[figure]{name={Fig.}}
723 \else
724 \captionsetup{labelfont={bf},
      textfont={bf}, labelsep=colon, margin=\z@}
725
    \ifcase\ACM@format@nr
726
     \relax % manuscript
    \or % acmsmall
728
    \or % acmlarge
729
    \or % acmtog
730
731 \or % sigconf
732 \or % siggraph
733
      \captionsetup{textfont={it}}
    \or % sigplan
734
      \captionsetup{labelfont={bf},
735
         textfont={normalfont}, labelsep=period, margin=\z@}
736
     \or % sigchi
737
      \captionsetup[figure]{labelfont={bf, small},
738
         textfont={bf, small}}
739
      \captionsetup[table]{labelfont={bf, small},
740
         textfont={bf, small}}
741
    \or % sigchi-a
742
      \captionsetup[figure]{labelfont={bf, small},
743
         textfont={bf, small}}
744
```

```
\captionsetup[table]{labelfont={bf, small},
                 745
                          textfont={bf, small}}
                 746
                 747 \fi
                 748\fi
                The sidebar environment:
       sidebar
                 749 \newfloat{sidebar}{}{sbar}
                 750 \floatname{sidebar}{Sidebar}
                 751 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}
     \@sidebar The processing of the saved text
                 752 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
                 753 \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
                 754 \marginpar{\small#1}\egroup}
  marginfigure The marginfigure environment:
                 755 \newenvironment{marginfigure}{\Collect@Body\@marginfigure}{}
\@marginfigure The processing of the saved text
                 756 \long\def\@marginfigure#1{\bgroup
                 757 \let\@vspace\@vspace@orig
                     \let\@vspacer\@vspacer@orig
                     \captionsetup{type=figure}%
                     \marginpar{\@Description@presentfalse\centering
                 760
                        \small#1\if@Description@present\else
                 761
                          \global\@undescribed@imagestrue
                 762
                          \ClassWarning{\@classname}{A possible image without description}
                 763
                          \fi}%
                 764
                 765
                    \egroup}
  margintable The margintable environment:
                 766 \newenvironment{margintable}{\Collect@Body\@margintable}{}
 \@margintable The processing of the saved text
                 767 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
                 768 \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
                    \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
                 770 \newdimen\fulltextwidth
                 771 \fulltextwidth=\dimexpr(\textwidth+\marginparwidth+\marginparsep)
    \@dblfloat
                We redefine the double-float command. First, we make the size bigger. Second, our
                default position is going to be tp (to give marginalia a chance)
                 772 \if@ACM@sigchiamode
                 773 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
```

```
\let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
                         \let\@endfloatbox\@endwidefloatbox
                         \def\@fpsadddefault{\def\@fps{tp}}%
                    777 \@float}
                    778\fi
    \end@dblfloat And the end. Just adding a \bgroup.
                    779 \if@ACM@sigchiamode
                    780 \def\end@dblfloat{%
                           \end@float\egroup}
                    781
                    782\fi
                   This is the end of a wide box—we basically move everything to the left
\@endwidefloatbox
                    783 \def\@endwidefloatbox{%
                         \par\vskip\z@skip
                    785
                         \@minipagefalse
                    786
                         \outer@nobreak
                    787
                         \egroup
                         \color@endbox
                    788
                         \global\setbox\@currbox=\vbox{\moveleft
                    789
                           \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
                    790
                    791 \wd\@currbox=\textwidth
                    792 }
                    3.11 Lists
                    793 \ifcase\ACM@format@nr
                    794 \relax % manuscript
                    795 \or % acmsmall
                    796 \or % acmlarge
                    797 \or % acmtog
```

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.

808 \newdimen\@ACM@labelwidth

801 \def\labelenumi{\theenumi.}
802 \def\labelenumii{\theenumii.}
803 \def\labelenumiii{\theenumiii.}
804 \def\labelenumiv{\theenumiv.}

798 \or % sigconf 799 \or % siggraph 800 \or % sigplan

805\or % sigchi 806\or % sigchi-a

807\fi

```
\setlength\labelsep{4pt}
                                         810
                                                   \setlength{\@ACM@labelwidth}{6.5pt}
                                         811
                                         812
                                                   %% First-level list: when beginning after the first line of an
                                         813
                                                   %% indented paragraph or ending before an indented paragraph, labels
                                                   %% should not hang to the left of the preceding/following text.
                                         815
                                                   \setlength\leftmargini{\z@}
                                         816
                                                   \addtolength\leftmargini{\parindent}
                                         817
                                                   \addtolength\leftmargini{2\labelsep}
                                         818
                                                   \addtolength\leftmargini{\@ACM@labelwidth}
                                         819
                                          820
                                                   %% Second-level and higher lists.
                                                   \setlength\leftmarginii{\z@}
                                          822
                                                   \addtolength\leftmarginii{0.5\labelsep}
                                          823
                                                   \addtolength\leftmarginii{\@ACM@labelwidth}
                                          824
                                                   \setlength\leftmarginiii{\leftmarginii}
                                                   \setlength\leftmarginiv{\leftmarginiii}
                                                   \setlength\leftmarginv{\leftmarginiv}
                                                   \setlength\leftmarginvi{\leftmarginv}
                                         829 \@listi}
                                          830 \newskip\listisep
                                          831 \listisep\smallskipamount
                                          832 \def\@listI{\leftmargin\leftmargini
                                                  \labelwidth\leftmargini \advance\labelwidth-\labelsep
                                                   \listparindent\z@
                                                   \topsep\listisep}
                                          836 \let\@listi\@listI
                                          837 \def\@listii{\leftmargin\leftmarginii
                                                   \labelwidth\leftmarginii \advance\labelwidth-\labelsep
                                                   \topsep\z@skip}
                                          840 \end{figure} \label{lem:eq:automation} 1840 \end{figure} \la
                                          841 \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
                                         842 \def\@listiv{\leftmargin\leftmarginiv
                                         843 \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
                                          844 \def\@listv{\leftmargin\leftmarginv
                                          845 \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
                                          846 \def\@listvi{\leftmargin\leftmarginvi
                                                  \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}
\descriptionlabel We do not use a colon by default like amsart does:
                                         848 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}
                                        Make the description environment indentation consistent with that of the itemize
          \description
                                        and enumerate environments.
                                         849 \renewenvironment{description}{\list{}{%}
                                                       \labelwidth\@ACM@labelwidth
                                         850
                                         851
                                                       \let\makelabel\descriptionlabel}%
                                          852 }{
                                         853 \endlist
```

809 \AtBeginDocument{%

```
854}
855\let\enddescription=\endlist % for efficiency
```

# 3.12 Top-matter data

TOIS,%

TOIT,%

897

898

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

```
856 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
857
    CIE,%
858
    CSUR,%
    DTRAP,%
859
    HEALTH,%
860
861
     IMWUT,%
     JACM,%
     JDIQ,%
863
     JEA,%
864
865
     JERIC,%
     JETC,%
866
    JOCCH,%
867
    PACMCGIT,%
    PACMHCI,%
869
    PACMPL,%
870
    POMACS,%
871
    TAAS,%
872
    TACCESS,%
873
874
    TACO,%
    TALG,%
875
876
    TALLIP,%
877
    TAP,%
    TCPS,%
878
    TDS,%
879
    TEAC,%
880
    TECS,%
882
    THRI,%
    TIIS,%
883
    TIOT,%
884
885
    TISSEC,%
    TIST,%
886
887
    TKDD,%
888
    TMIS,%
889
    TOCE,%
890
    TOCHI,%
    TOCL,%
891
    TOCS,%
892
893
    TOCT,%
    TODAES,%
895
    TODS,%
896
    TOG,%
```

```
TOMACS,%
899
    TOMM,%
900
    TOMPECS,%
901
    TOMS,%
902
903 TOPC,%
904
    TOPS,%
905
    TOPLAS,%
906 TOS,%
    TOSEM,%
907
    TOSN,%
908
    TRETS,%
909
    TSAS,%
    TSC,%
    TSLP,%
912
    TWEB%
913
914 }{%
915 \ifcase\@journalCode@nr
916 \relax % CIE
917 \def\@journalName{ACM Computers in Entertainment}%
    \def\@journalNameShort{ACM Comput. Entertain.}%
    \def\@permissionCodeOne{1544-3574}%
920 \or % CSUR
    \def\@journalName{ACM Computing Surveys}%
    \def\@journalNameShort{ACM Comput. Surv.}%
    \def\@permissionCodeOne{0360-0300}%
924 \or % DTRAP
    \def\@journalName{Digital Threats: Research and Practice}%
    \def\@journalNameShort{Digit. Threat. Res. Pract.}%
    \def\@permissionCodeOne{2576-5337}%
928 \or % HEALTH
    \def\@journalName{ACM Transactions on Computing for Healthcare}%
    \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
    \def\@permissionCodeOne{2637-8051}%
932 \or % IMWUT
    \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
933
      Wearable and Ubiquitous Technologies}%
934
   \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
935
    \def\@permissionCodeOne{2474-9567}%
    \@ACM@screentrue
    \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
939 \or % JACM
    \def\@journalName{Journal of the ACM}%
    \def\@journalNameShort{J. ACM}%
942 \def\@permissionCodeOne{0004-5411}%
943 \or % JDIQ
944 \def\@journalName{ACM Journal of Data and Information Quality}%
945 \def\@journalNameShort{ACM J. Data Inform. Quality}%
    \def\@permissionCodeOne{1936-1955}%
947 \or % JEA
948 \def\@journalName{ACM Journal of Experimental Algorithmics}%
```

```
\def\@journalNameShort{ACM J. Exp. Algor.}%
    \def\@permissionCodeOne{1084-6654}%
951 \or % JERIC
952 \def\@journalName{ACM Journal of Educational Resources in Computing}%
953 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
\del{local_permissionCodeOne{1073-0516}%} \def{\endownermissionCodeOne{1073-0516}%}
955 \or % JETC
956 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
    \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
958 \def\@permissionCodeOne{1550-4832}%
959 \or % JOCCH
   \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
    \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
962 \or % PACMCGIT
963 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
    \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
965 \def\@permissionCodeOne{2577-6193}%
966 \@ACM@screentrue
967 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
968 \or % PACMHCI
    \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
   \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
970
971 \def\@permissionCodeOne{2573-0142}%
    \@ACM@screentrue
972
    974 \or % PACMPL
975 \def\@journalName{Proceedings of the ACM on Programming Languages}%
    \def\@journalNameShort{Proc. ACM Program. Lang.}%
976
    \def\@permissionCodeOne{2475-1421}%
977
    \@ACM@screentrue
979 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
980 \or % POMACS
981 \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}%
   \@ACM@screentrue
    \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
985
986 \or % TAAS
    \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
    \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
    \def\@permissionCodeOne{1556-4665}%
990 \or % TACCESS
991 \def\@journalName{ACM Transactions on Accessible Computing}%
992 \def\@journalNameShort{ACM Trans. Access. Comput.}%
993 \def\@permissionCodeOne{1936-7228}%
994 \or % TACO
995 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
996 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
997 \or % TALG
```

998 \def\@journalName{ACM Transactions on Algorithms}%

```
\def\@journalNameShort{ACM Trans. Algor.}%
     \def\@permissionCodeOne{1549-6325}%
1000
1001 \or % TALLIP
1002 \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}%
1005 \or % TAP
1006 \def\@journalName{ACM Transactions on Applied Perception}%
1007 \or % TCPS
1008 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1009 \or % TDS
    \def\@journalName{ACM Transactions on Data Science}%
     \def\@journalNameShort{ACM Trans. Data Sci.}%
     \def\@permissionCodeOne{2577-3224}%
1013 \or % TEAC
1014 \def\@journalName{ACM Transactions on Economics and Computation}%
1015 \or % TECS
1016 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
    \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1018 \def\@permissionCodeOne{1539-9087}%
1019 \or % THRI
     \def\@journalName{ACM Transactions on Human-Robot Interaction}%
     \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
1021
     \def\@permissionCodeOne{2573-9522}%
1022
1023 \or % TIIS
    \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
     \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
     \def\@permissionCodeOne{2160-6455}%
1026
1027 \or % TIOT
    \def\@journalName{ACM Transactions on Internet of Things}%
     \def\@journalNameShort{ACM Trans. Internet Things}%
1029
1030 \def\@permissionCodeOne{2577-6207}%
1031 \or % TISSEC
     \def\@journalName{ACM Transactions on Information and System Security}%
     \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1033
    \def\@permissionCodeOne{1094-9224}%
1034
1035 \or % TIST
     \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1036
     \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
     \def\@permissionCodeOne{2157-6904}%
1039 \or % TKDD
     \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1040
     \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1042 \def\@permissionCodeOne{1556-4681}%
1043 \or % TMIS
1044 \def\@journalName{ACM Transactions on Management Information Systems}%
1045 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1046 \def\@permissionCodeOne{2158-656X}%
1047 \or % TOCE
```

1048 \def\@journalName{ACM Transactions on Computing Education}%

```
\def\@journalNameShort{ACM Trans. Comput. Educ.}%
     \def\@permissionCodeOne{1946-6226}%
1050
1051 \or % TOCHI
1052 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
     \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
     \def\@permissionCodeOne{1073-0516}%
1055 \or % TOCL
     \def\@journalName{ACM Transactions on Computational Logic}%
1056
     \def\@journalNameShort{ACM Trans. Comput. Logic}%
1057
     \def\@permissionCodeOne{1529-3785}%
1058
1059 \or % TOCS
     \def\@journalName{ACM Transactions on Computer Systems}%
     \def\@journalNameShort{ACM Trans. Comput. Syst.}%
     \def\@permissionCodeOne{0734-2071}%
1063 \or % TOCT
     \def\@journalName{ACM Transactions on Computation Theory}%
    \def\@journalNameShort{ACM Trans. Comput. Theory}%
1066 \def\@permissionCodeOne{1942-3454}%
1067 \or % TODAES
1068 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
    \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1070 \def\@permissionCodeOne{1084-4309}%
1071 \or % TODS
    \def\@journalName{ACM Transactions on Database Systems}%
     \def\@journalNameShort{ACM Trans. Datab. Syst.}%
     \def\@permissionCodeOne{0362-5915}%
1075 \or % TOG
     \def\@journalName{ACM Transactions on Graphics}%
     \def\@journalNameShort{ACM Trans. Graph.}%
1077
     \def\@permissionCodeOne{0730-0301}
1078
1079 \or % TOIS
1080 \def\@journalName{ACM Transactions on Information Systems}%
    \def\@permissionCodeOne{1046-8188}%
1082 \or % TOIT
     \def\@journalName{ACM Transactions on Internet Technology}%
1083
     \def\@journalNameShort{ACM Trans. Internet Technol.}%
     \def\@permissionCodeOne{1533-5399}%
1085
1086 \or % TOMACS
     \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
     \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1089 \or % TOMM
1090 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
     \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1092 \def\@permissionCodeOne{1551-6857}%
1093 \def\@permissionCodeTwo{0100}%
1094 \or % TOMPECS
1095 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1096 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1097 \def\@permissionCodeOne{2376-3639}%
```

1098 \or % TOMS

```
\def\@journalName{ACM Transactions on Mathematical Software}%
     \def\@journalNameShort{ACM Trans. Math. Softw.}%
1100
    \def\@permissionCodeOne{0098-3500}%
1101
1102 \or % TOPC
1103 \def\@journalName{ACM Transactions on Parallel Computing}%
     \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1105 \def\@permissionCodeOne{1539-9087}%
1106 \or % TOPS
     \def\@journalName{ACM Transactions on Privacy and Security}%
1107
     \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1108
     \def\@permissionCodeOne{2471-2566}%
1110 \or % TOPLAS
    \def\@journalName{ACM Transactions on Programming Languages and Systems}%
     \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
     \def\@permissionCodeOne{0164-0925}%
1114 \or % TOS
1115 \def\@journalName{ACM Transactions on Storage}%
    \def\@journalNameShort{ACM Trans. Storage}%
1117 \def\@permissionCodeOne{1553-3077}%
1118 \or % TOSEM
1119 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
     \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1121 \def\@permissionCodeOne{1049-331X}%
1122 \or % TOSN
    \def\@journalName{ACM Transactions on Sensor Networks}%
1123
     \def\@journalNameShort{ACM Trans. Sensor Netw.}%
     \def\@permissionCodeOne{1550-4859}%
1126 \or % TRETS
1127 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
     \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
    \def\@permissionCodeOne{1936-7406}%
1130 \or % TSAS
     \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
     \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1133 \def\@permissionCodeOne{2374-0353}%
1134 \or % TSC
     \def\@journalName{ACM Transactions on Social Computing}%
1135
     \def\@journalNameShort{ACM Trans. Soc. Comput.}%
     \def\@permissionCodeOne{2469-7818}%
1138 \or % TSLP
     \def\@journalName{ACM Transactions on Speech and Language Processing}%
    \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
    \def\@permissionCodeOne{1550-4875}%
1142 \or % TWEB
    \def\@journalName{ACM Transactions on the Web}%
    \def\@journalNameShort{ACM Trans. Web}%
1145 \def\@permissionCodeOne{1559-1131}%
1147 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1148 }{%
```

```
1149 \ClassError{\@classname}{Incorrect journal #1}%
                 1150 }%
    \acmJournal And the syntactic sugar around it
                 1151 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
                 1152 \global\@ACM@journal@bibstriptrue}
                     The defaults:
                 1153 \def\@journalCode@nr{0}
                 1154 \def\@journalName{}%
                 1155 \def\@journalNameShort{\@journalName}%
                 1156 \def\@permissionCodeOne{XXXX-XXXX}%
                 1157 \def\@permissionCodeTwo{}%
 \acmConference This is the conference command
                 1158 \newcommand\acmConference[4][]{%
                       \gdef\acmConference@shortname{#1}%
                 1159
                       \gdef\acmConference@name{#2}%
                 1160
                       \gdef\acmConference@date{#3}%
                 1161
                       \gdef\acmConference@venue{#4}%
                       \ifx\acmConference@shortname\@empty
                 1163
                         \gdef\acmConference@shortname{#2}%
                 1164
                 1165
                       \global\@ACM@journal@bibstripfalse
                 1166
                 1167 }
                 1168 \if@ACM@journal\else
                 1169 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
                 1170 DC, USA}%
                 1171 \fi
 \acmBooktitle The book title of the conference:
 \@acmBooktitle
                 1172 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
                 1173 \triangle CMBooktitle{Proceedings of \acmConference@name}
                            \ifx\acmConference@name\acmConference@shortname\else
                 1174
                              \ (\acmConference@shortname)\fi}
                 1175
\@editorsAbbrev How to abbreviate editors
                 1176 \def\@editorsAbbrev{(Ed.)}
   \@acmEditors The list of editors
                 1177 \def\@acmEditors{}
        \editor Add a new editor to the list
                 1178 \def\editor#1{\ifx\@acmEditors\@empty
                         \gdef\@acmEditors{#1}%
                 1179
                       \else
                 1180
                         \gdef\@editorsAbbrev{(Eds.)}%
                 1181
                 1182
                         \g@addto@macro\\@acmEditors{\and#1}\%
                 1183 \fi}
```

```
\subtitle The subtitle macro
                        1184 \def\subtitle#1{\def\@subtitle{#1}}
                        1185 \subtitle{}
                       The total number of "groups". Each group is several authors with the same affiliations(s)
    \num@authorgroups
                        1186 \newcount\num@authorgroups
                        1187 \num@authorgroups=0\relax
         \num@authors
                       The total number of authors
                        1188 \newcount\num@authors
                        1189 \num@authors=0\relax
\if@insideauthorgroup
                       Whether we are continuing an author group
                        1190 \newif\if@insideauthorgroup
                        1191 \@insideauthorgroupfalse
                       Adding an author to the list of authors and addresses
              \author
                        1192 \renewcommand\author[2][]{%
                        1193
                             \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
                                 authors in the same \string\author\space macro!}}{}%
                        1194
                             \global\advance\num@authors by 1\relax
                        1195
                             \if@insideauthorgroup\else
                        1196
                               \global\advance\num@authorgroups by 1\relax
                        1197
                        1198
                               \global\@insideauthorgrouptrue
                             \fi
                        1199
                             \ifx\addresses\@empty
                        1200
                               \if@ACM@anonymous
                        1201
                                 \gdef\addresses{\@author{Anonymous Author(s)%
                        1202
                                   1203
                                      \@acmSubmissionID\fi}}%
                        1204
                        1205
                                 \gdef\authors{Anonymous Author(s)}%
                        1206
                                 \gdef\addresses{\@author{#2}}%
                        1207
                                 \gdef\authors{#2}%
                        1208
                               \fi
                        1209
                             \else
                        1210
                               \if@ACM@anonymous\else
                        1211
                                 \g@addto@macro\addresses{\and\@author{#2}}%
                        1212
                                 \g@addto@macro\authors{\and#2}%
                        1213
                        1214
                               \fi
                             \fi
                        1215
                             \if@ACM@anonymous
                        1216
                               \ifx\shortauthors\@empty
                        1217
                        1218
                                 \gdef\shortauthors{Anon.
                        1219
                                   \ifx\@acmSubmissionID\@empty\else Submission Id:
                        1220
                                   \@acmSubmissionID\fi}%
                               \fi
                        1221
                             \else
                        1222
```

 $\def\ensuremath{\def}{\#1}$ %

```
\ifx\@tempa\@empty
                                1224
                                          \ifx\shortauthors\@empty
                                1225
                                            \gdef\shortauthors{#2}%
                                1226
                                          \else
                                1227
                                            \g@addto@macro\shortauthors{\and#2}%
                                1228
                                          \fi
                                1229
                                1230
                                        \else
                                          \ifx\shortauthors\@empty
                                1231
                                            \gdef\shortauthors{#1}%
                                1232
                                          \else
                                1233
                                            \g@addto@macro\shortauthors{\and#1}%
                                 1234
                                          \fi
                                 1235
                                       \fi
                                 1236
                                     \fi}
                                1237
                   \affiliation
                                The macro \affiliation mimics \address from amsart. Note that it has an optional
                                argument, which we use differently from amsart.
                                1238 \newcommand{\affiliation}[2][]{%
                                      \global\@insideauthorgroupfalse
                                      \if@ACM@anonymous\else
                                1240
                                       \g@addto@macro\addresses{\affiliation{#1}{#2}}%
                                1241
                                     \fi}
                                1242
@ACM@affiliation@obeypunctuation
                                Whether to use the author's punctuation (false by default, which adds American-style
                                address punctuation)
                                 1243 \define@boolkey+{@ACM@affiliation@}[@ACM@affiliation@]{obeypunctuation}%
                                1244 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}
                                Additional affiliations go to footnotes
         \additionalaffiliation
                                \@additionalaffiliation Process \additionalaffiliation inside \authornote
                                1246 \def\@additionalaffiliation#1{\bgroup
                                     \def\position##1{\ignorespaces}%
                                1247
                                     \def\institution##1{##1\ignorespaces}%
                                1248
                                     \def\department{\@ifnextchar[{\@department}{\@department[]}}%
                                     \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
                                1251 \let\streetaddress\position
                                1252 \let\city\position
                                1253 \let\state\position
                                     \let\postcode\position
                                     \let\country\position
                                     Also with #1\unskip.\egroup}
                                The macro \email mimics \email from amsart. Again, it has an optional argument that
                         \email
                                we do not currently need but keep for possible future use.
                                1257 \renewcommand{\email}[2][]{%
                                     1259
                                          addresses in the same \string\email\space macro!}}{}%
```

```
\if@ACM@anonymous\else
                                                                  1260
                                                                                           \g@addto@macro\addresses{\email{#1}{\#2}}\%
                                                                  1261
                                                                                    \fi}
                                                                  1262
                                     \orcid Right now we do not typeset ORCIDs
                                                                  1263 \def\orcid#1{\unskip\ignorespaces}
\authorsaddresses
                                                                 Setting up authors' addresses
                                                                  {\tt 1264 \backslash def\backslash authors addresses \#1} {\tt 1264 \backslash
                                                                  1265 \authorsaddresses{\@mkauthorsaddresses}
                 \@titlenotes The title notes
                                                                  1266 \def\@titlenotes{}
                        \titlenote Adding a note to the title
                                                                  1267 \def\titlenote#1{%
                                                                                    \g@addto@macro\@title{\footnotemark}%
                                                                  1268
                                                                                     \if@ACM@anonymous
                                                                  1269
                                                                  1270
                                                                                            \g@addto@macro\@titlenotes{%
                                                                                                   \stepcounter{footnote}\footnotetext{Title note}}%
                                                                  1271
                                                                  1272
                                                                                    \else
                                                                                           \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
                                                                  1273
                                                                  1274
                                                                                 \fi}
       \@subtitlenotes The subtitle notes
                                                                  1275 \def\@subtitlenotes{}
              \subtitlenote Adding a note to the subtitle
                                                                  1276 \def\subtitlenote#1{%
                                                                                    \g@addto@macro\@subtitle{\footnotemark}%
                                                                                     \if@ACM@anonymous
                                                                  1278
                                                                                            \g@addto@macro\@subtitlenotes{%
                                                                  1279
                                                                                                   \stepcounter{footnote}\footnotetext{Subtitle note}}%
                                                                  1280
                                                                  1281
                                                                                     \else
                                                                   1282
                                                                                            \g@addto@macro\@subtitlenotes{%
                                                                  1283
                                                                                                   \stepcounter{footnote}\footnotetext{#1}}%
                                                                  1284
              \@authornotes The author notes
                                                                  1285 \def\@authornotes{}
                     \authornote Adding a note to the author
                                                                  1286 \def\authornote#1{%
                                                                  1287
                                                                                   \if@ACM@anonymous\else
                                                                                           \g@addto@macro\addresses{\@authornotemark}%
                                                                  1288
                                                                  1289
                                                                                            \g@addto@macro\@authornotes{%
                                                                                                   \stepcounter{footnote}\footnotetext{#1}}%
                                                                  1290
                                                                                  \fi}
                                                                  1291
```

```
\authornotemark Adding a footnote mark to the authors
                  1292 \newcommand\authornotemark[1][\relax]{%
                  1293 \ifx#1\relax\relax\relax
                  1294 \g@addto@macro\addresses{\@authornotemark}%
                  1295 \else
                       \g@addto@macro\addresses{\@@authornotemark{#1}}%
      \acmVolume The current volume
                  1299 \acmVolume{1}
      \acmNumber The current number
                  1301 \acmNumber{1}
     \acmArticle The current article
                  1303 \acmArticle{}
  \acmArticleSeq The sequence number
                  1304 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
                  1305 \acmArticleSeq{\@acmArticle}
        \acmYear
                 The current year
                  1306 \def\acmYear#1{\def\@acmYear{#1}}
                  1307 \acmYear{\the\year}
       \acmMonth The current month
                  1308 \def\acmMonth#1{\def\@acmMonth{#1}}
                  1309 \acmMonth{\the\month}
    \@acmPubDate The publication date
                  {\tt 1310 \backslash def \backslash @acmPubDate \{ \backslash if case \backslash @acmMonth \backslash or \}}
                  1311 January\or February\or March\or April\or May\or June\or
                  1312 July\or August\or September\or October\or November\or
                  1313 December\fi^\@acmYear}
       \acmPrice The price
                  1314 \def\acmPrice#1{\def\@acmPrice{#1}}
                  1315 \acmPrice{15.00}
\acmSubmissionID The submission ID
                  {\tt 1316 \backslash def\backslash acmSubmissionID\#1\{\backslash def\backslash @acmSubmissionID\{\#1\}\}}
                  1317 \acmSubmissionID{}
        \acmISBN The book ISBN
                  1318 \def\acmISBN#1{\def\@acmISBN{#1}}
```

1319 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}

```
\acmDOI The paper DOI
                  1320 \def\acmDOI#1{\def\@acmDOI{#1}}
                  1321 \acmDOI{10.1145/nnnnnnn.nnnnnnn}
   \if@ACM@badge Whether to print a badge. Note that either a left or right badge triggers it:
                  1322 \newif\if@ACM@badge
                  1323 \@ACM@badgefalse
\@ACM@badge@width The width of the badge
                  1324 \newlength\@ACM@badge@width
                  1325 \setlength\@ACM@badge@width{5pc}
\@ACM@title@width The width of the badge
                  1326 \newlength\@ACM@title@width
\@ACM@badge@skip The space between the badge and the title
                  1327 \newlength\@ACM@badge@skip
                  1328 \setlength\@ACM@badge@skip{1pc}
      \acmBadgeR Setting the right badge
                  1330 \def\@acmBadgeR@url{#1}%
                  1331 \def\@acmBadgeR@image{#2}}
                  1332 \def\@acmBadgeR@url{}
                  1333 \def\@acmBadgeR@image{}
      \acmBadgeL Setting the left badge
                  1335 \def\@acmBadgeL@url{#1}%
                  1336 \def\@acmBadgeL@image{#2}}
                  1337 \def\@acmBadgeL@url{}
                  1338 \def\@acmBadgeL@image{}
      \startPage The start page of the paper
                  1339 \def\startPage#1{\def\@startPage{#1}}
                  1340 \startPage{}
          \terms Terms are obsolete. We use CCS now.
                  1341 \det terms #1{ClassWarning{\eclassname}{The command <math>string terms{}} is
                         obsolete. I am going to ignore it}}
        \keywords Keywords are mostly obsolete. We use CCS now. Still it makes sense to keep them for
                  compatibility.
                  1343 \def\keywords#1{\def\@keywords{#1}}
                  1344 \keywords{}
        abstract
                  The amsart package puts abstract in a box. Since we do not know whether we will
                  use two-column mode, we prefer to save the text
                   1345 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
```

```
\@saveabstract And saving the abstract
                     1346 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
                     1347 \@saveabstract{}
           \@lempty The long version of \@empty (to compare with \@abstract)
                     1348 \long\def\@lempty{}
   \if@ACM@printccs Whether to print CCS
                     1349 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
                     1350 \if@ACM@printccs
                             \ClassInfo{\@classname}{Printing CCS}%
                     1351
                          \else
                     1352
                             \ClassInfo{\@classname}{Suppressing CCS}%
                     1353
                     1354 \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}
\if@ACM@printacmref Whether to print the ACM bibstrip
                     1355 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
                          \if@ACM@printacmref
                             \ClassInfo{\@classname}{Printing bibformat}%
                     1357
                     1358 \else
                             \ClassInfo{\@classname}{Suppressing bibformat}%
                     1359
                     1360 \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}
\if@ACM@printfolios Whether to print folios
                     1361 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
                     1362 \if@ACM@printfolios
                             \ClassInfo{\@classname}{Printing folios}%
                     1363
                           \else
                     1364
                             \ClassInfo{\@classname}{Suppressing folios}%
                     1365
                     1366 \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}
\@ACM@authorsperrow
                     The number of authors per row. 0 means use the default algorithm.
                     1367 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorsperrow}[0]{%
                           \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorsperrow to
                               #1}}{\ClassWarning{\@classname}{The parameter authorsperrow must be
                     1369
                               numerical. Ignoring the input #1}\gdef\@ACM@authorsperrow\{0\}}
                     1370
      \settopmatter The usual syntactic sugar
                     1371 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}
                         Now the settings
                     1372 \settopmatter{printccs=true, printacmref=true}
                      1373 \if@ACM@manuscript
                     1374 \settopmatter{printfolios=true}
                     1375 \else
                          \if@ACM@journal
                     1376
                             \settopmatter{printfolios=true}
                     1377
                     1378 \else
```

```
1380
                     \fi
                1381 \fi
                1382 \settopmatter{authorsperrow=0}
    \@received The container for the paper history
                1383 \def\@received{}
     \received The \received command
                1384 \newcommand\received[2][]{\def\@tempa{#1}%
                1385 \ifx\@tempa\@empty
                1386
                        \ifx\@received\@empty
                          \gdef\@received{Received #2}%
                1387
                1388
                1389
                          \g@addto@macro{\@received}{; revised #2}%
                        \fi
                1390
                1391
                      \else
                        \ifx\@received\@empty
                1392
                          \gdef\@received{#1 #2}%
                1393
                        \else
                1394
                          \g@addto@macro{\@received}{; #1 #2}%
                1395
                1396
                        \fi
                1397 \fi}
                1398 \AtEndDocument{%
                     \ifx\@received\@empty\else
                1399
                        \par\bigskip\noindent\small\normalfont\@received\par
                1400
                     \fi}
                1401
                        Concepts system
                3.13
                We exclude CCSXML stuff generated by the ACM system:
                1402 \RequirePackage{comment}
                1403 \excludecomment{CCSXML}
                This is the storage macro and counter for concepts
    \@concepts
                1404 \let\@concepts\@empty
                1405 \newcounter{@concepts}
      \ccsdesc The first argument is the significance, the second is the concept(s)
                1406 \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!
                1408 \RequirePackage{textcomp}
                1409 \def\ccsdesc@parse#1~#2~#3~{%
                1410 \stepcounter{@concepts}%
                1411 \expandafter\ifx\csname CCS@General@#2\endcsname\relax
```

\settopmatter{printfolios=false}

```
\textbf{#2}}%
                     1413
                            \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{; }%
                     1414
                            \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
                     1415
                          \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
                     1416
                            \csname CCS@Punctuation@#2\endcsname
                     1417
                     1418
                            \csname CCS@Specific@#2\endcsname}%
                     1419
                          \ifx#3\relax\relax\else
                     1420
                            \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
                     1421
                              \textrightarrow\ }%
                     1422
                          1423
                            \addtocounter{@concepts}{-1}%
                     1424
                            1425
                            1426
                            #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
                     1427
                        \fi
                     1428
                     1429 \ccsdesc@parse@finish}
                    Gobble everything to \ccsdesc@parse@end
\ccdesc@parse@finish
                     1430 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}
                     3.14 Copyright system
                     This is from acmcopyright.sty
                    Whether to print a copyright symbol
 \if@printcopyright
                     1431 \newif\if@printcopyright
                     1432 \@printcopyrighttrue
                    Whether to print the permission block
\if@printpermission
                     1433 \newif\if@printpermission
                     1434 \@printpermissiontrue
       \if@acmowned Whether the ACM owns the rights to the paper
                     1435 \newif\if@acmowned
                     1436 \@acmownedtrue
                        Keys:
                     1437 \define@choicekey*{ACM@}{acmcopyrightmode}[%
                         \acm@copyrightinput\acm@copyrightmode]{none,%
                            acmcopyright,acmlicensed,rightsretained,%
                     1439
                            usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
                     1440
                            {\tt licensed cagov, licensed cagov mixed, other gov, licensed other gov, \%}
                     1441
                            iw3c2w3,iw3c2w3g}{%
                     1442
                          \@printpermissiontrue
                     1443
                          \@printcopyrighttrue
                     1444
                          \@acmownedtrue
                     1445
                          \ifnum\acm@copyrightmode=0\relax % none
```

\expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\

```
\@printcopyrightfalse
                   1448
                          \@acmownedfalse
                   1449
                   1450
                         \ifnum\acm@copyrightmode=2\relax % acmlicensed
                   1451
                   1452
                          \@acmownedfalse
                   1453
                         \ifnum\acm@copyrightmode=3\relax % rightsretained
                   1454
                          \@acmownedfalse
                   1455
                          \AtBeginDocument{\acmPrice{}}%
                   1456
                   1457
                         \ifnum\acm@copyrightmode=4\relax % usgov
                   1458
                          \@printpermissiontrue
                          \@printcopyrightfalse
                   1460
                          \@acmownedfalse
                   1461
                          \AtBeginDocument{\acmPrice{}}%
                   1462
                   1463
                         \ifnum\acm@copyrightmode=6\relax % cagov
                   1464
                   1465
                          \@acmownedfalse
                   1466
                         \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
                   1467
                         \@acmownedfalse
                   1468
                   1469
                         \ifnum\acm@copyrightmode=9\relax % licensedcagov
                   1470
                          \@acmownedfalse
                   1471
                   1472
                         \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
                   1473
                          \@acmownedfalse
                   1474
                   1475
                         \ifnum\acm@copyrightmode=11\relax % othergov
                   1476
                          \@acmownedtrue
                   1477
                   1478
                         \fi
                   1479
                         \ifnum\acm@copyrightmode=12\relax % licensedothergov
                         \@acmownedfalse
                   1480
                         \fi
                   1481
                         \ifnum\acm@copyrightmode=13\relax % iw3c2w3
                   1482
                          \@acmownedfalse
                   1483
                          \AtBeginDocument{\acmPrice{}}%
                   1484
                   1485
                         \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
                   1486
                   1487
                          \@acmownedfalse
                   1488
                          \AtBeginDocument{\acmPrice{}}%
                         \fi}
                   1489
   \setcopyright
                   This is the syntactic sugar around setting keys.
                   1490 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
                   1491 \setcopyright{acmcopyright}
\@copyrightowner Here is the owner of the copyright
```

**\@printpermissionfalse** 

```
1492 \def\@copyrightowner{%
```

- 1493 \ifcase\acm@copyrightmode\relax % none
- 1494 \or % acmcopyright
- 1495 Association for Computing Machinery.
- 1496 \or % acmlicensed
- 1497 Copyright held by the owner/author(s). Publication rights licensed to
- 1498 ACM\@.
- 1499 \or % rightsretained
- 1500 Copyright held by the owner/author(s).
- 1501 \or % usgov
- 1502 \or % usgovmixed
- 1503 Association for Computing Machinery.
- 1504 \or % cagov
- 1505 Crown in Right of Canada.
- 1506 \or %cagovmixed
- 1507 Association for Computing Machinery.
- 1508 \or %licensedusgovmixed
- 1509 Copyright held by the owner/author(s). Publication rights licensed to
- 1510 ACM\@.
- 1511 \or % licensedcagov
- 1512 Crown in Right of Canada. Publication rights licensed to
- 1513 ACM\@.
- 1514 \or %licensedcagovmixed
- 1515 Copyright held by the owner/author(s). Publication rights licensed to
- 1516 ACM\@.
- 1517 \or % othergov
- 1518 Association for Computing Machinery.
- 1519 \or % licensedothergov
- 1520 Copyright held by the owner/author(s). Publication rights licensed to
- 1521 ACM\@.
- 1522 \or % ic2w3www
- 1523 IW3C2 (International World Wide Web Conference Committee), published
- under Creative Commons CC-BY~4.0 License.
- 1525 \or % ic2w3wwwgoogle
- 1526 IW3C2 (International World Wide Web Conference Committee), published
- under Creative Commons CC-BY-NC-ND~4.0 License.
- 1528 \fi}

## \@formatdoi Print a clickable DOI

1529 \def\@formatdoi#1{\url{https://doi.org/#1}}

# $\verb|\@copyrightpermission| The canned permission block.$

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- 1531 \ifcase\acm@copyrightmode\relax % none
- 1532 \or % acmcopyright
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                        the appropriate attribution.
                 1651
                 1652 \fi}
\copyrightyear
                 By default, the copyright year is the same as \acmYear, but one can override this:
                 1653 \def\copyrightyear#1{\def\@copyrightyear{#1}}
                 1654 \copyrightyear{\@acmYear}
\@teaserfigures The teaser figures container
                 1655 \def\@teaserfigures{}
  teaserfigure The teaser figure
                  1656 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}
   \@saveteaser
                 Saving the teaser
                 1657 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}
                 We redefine amsart \thanks so the anonymous key works
                 1658 \renewcommand{\thanks}[1]{%
                       \@ifnotempty{#1}{%
                 1659
                 1660
                         \if@ACM@anonymous
                 1661
                           \g@addto@macro\thankses{\thanks{A note}}%
                 1662
                         \g@addto@macro\thankses{\thanks{#1}}%
                 1663
                 1664
                        \fi}}
                        Typesetting top matter
                 3.15
                 Some of our formats use a two-column design. Some use a one-column design. In all
    \mktitle@bx
                 cases we use a wide title. Thus we typeset the top matter in a special box to be used in
                 the construction \ensuremath{\langle etwocolumn[\langle box \rangle]}.
                  1665 \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.

```
1666 \def\maketitle{%
    \if@ACM@anonymous
1667
       % Anonymize omission of \author-s
1668
       \ifnum\num@authorgroups=0\author{}\fi
1669
1670
     \begingroup
1671
     \let\@vspace\@vspace@orig
1672
     \let\@vspacer\@vspacer@orig
1673
     \let\@footnotemark\@footnotemark@nolink
1674
1675
     \let\@footnotetext\@footnotetext@nolink
     \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1676
     \hsize=\textwidth
1677
     \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1678
     \@mktitle\if@ACM@sigchiamode\else\@mkauthors\fi\@mkteasers
1679
     \@printtopmatter
1680
     \if@ACM@sigchiamode\@mkauthors\fi
     \setcounter{footnote}{0}%
1682
     \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1683
     \@titlenotes
1684
     \@subtitlenotes
1685
     \@authornotes
1686
     \let\@makefnmark\relax
1687
     \let\@thefnmark\relax
     \let\@makefntext\noindent
     \ifx\@empty\thankses\else
1690
       \footnotetextauthorsaddresses{%
1691
         \def \par{\left( \end{1.5} \right)} \
1692
     \fi
1693
     \ifx\@empty\@authorsaddresses\else
1694
        \if@ACM@anonymous\else
1695
1696
          \if@ACM@journal@bibstrip
            \footnotetextauthorsaddresses{%
1697
              \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1698
          \fi
1699
1700
        \fi
1701
     \fi
1702
     \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1703
       \if@ACM@authordraft
           1704
               Unpublished working draft. Not for distribution. \}\%
1705
          \color[gray]{0.9}%
1706
1707
       \fi
       \verb|\parindent|z@\parskip0.1| baselineskip|
1708
1709
       \if@ACM@authorversion\else
         \if@printpermission\@copyrightpermission\par\fi
1710
1711
```

```
\if@ACM@manuscript\else
1712
                                                        \if@ACM@journal@bibstrip\else % Print the conference information
1713
                                                  \label{lem:conference} $$ \left( \sum_{n=0}^{\infty} \operatorname{conference} \right) = \operatorname{conference} \left(
1714
                                                        \fi
1715
                                      \fi
1716
1717
                                      \if@printcopyright
1718
                                                  \copyright\ \@copyrightyear\ \@copyrightowner\\
1719
                                      \else
                                                  \@copyrightyear.\
1720
                                      \fi
1721
                                      \if@ACM@manuscript
1722
1723
                                                Manuscript submitted to ACM\\
1724
                                      \else
                                                  \if@ACM@authorversion
1725
                                                                       This is the author's version of the work. It is posted here for
1726
                                                                       your personal use. Not for redistribution. The definitive Version
1727
                                                                       of Record was published in
1728
                                                                       \if@ACM@journal@bibstrip
1729
1730
                                                                                   \emph{\@journalName}%
1731
                                                                                   \emph{\@acmBooktitle}%
1732
                                                                       \fi
1733
                                                                       \ifx\@acmDOI\@empty
1734
1735
                                                                       \else
1736
1737
                                                                                   , \@formatdoi{\@acmDOI}.
                                                                       \fi\\
1738
                                                             \else
1739
                                                                       \if@ACM@nonacm\else
1740
                                                                                  \if@ACM@journal@bibstrip
1741
                                                                                             \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1742
1743
                                                                                             \ifx\end{area} \end{area} \end{
1744
                                                                                             \@formatdoi{\@acmDOI}%
                                                                                  \else % Conference
1745
                                                                                             \ \ \ \ ACM^{SBN^{empty}} = ACM^{SBN^{empty}}
1746
                                                                                             \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\\fi
1747
                                                                                             1748
                                                                                  \fi
1749
1750
                                                                       \fi
                                                            \fi
1751
1752
                                                  \fi}
                                      \fi
1753
                            \endgroup
1754
                            \setcounter{footnote}{0}%
1755
1756
                            \@mkabstract
1757
                            \if@ACM@printccs
1758
                            \ifx\@concepts\@empty\else\bgroup
1759
                                                  {\@specialsection{CCS Concepts}%
                                                                  \@concepts\par}\egroup
1760
                                            \fi
```

```
\ifx\@keywords\@empty\else\bgroup
                   1763
                             {\if@ACM@journal
                   1764
                                 \@specialsection{Additional Key Words and Phrases}%
                   1765
                              \else
                   1766
                   1767
                                 \@specialsection{Keywords}%
                   1768
                              \fi
                                 \@keywords}\par\egroup
                   1769
                          \fi
                   1770
                         \andify\authors
                   1771
                         \andify\shortauthors
                   1772
                         \global\let\authors=\authors
                         \global\let\shortauthors=\shortauthors
                         \if@ACM@printacmref
                   1775
                            \@mkbibcitation
                   1776
                         \fi
                   1777
                         \hypersetup{%
                   1778
                           pdfauthor={\authors},
                   1779
                   1780
                           pdftitle={\@title},
                   1781
                           pdfsubject={\@concepts},
                           pdfkeywords={\@keywords},
                   1782
                           pdfcreator={LaTeX with acmart
                   1783
                             \csname ver@acmart.cls\endcsname\space
                   1784
                             and hyperref
                   1785
                             \csname ver@hyperref.sty\endcsname}}%
                   1786
                   1787
                         \global\@topnum\z@ % this prevents floats from falling
                                             % at the top of page 1
                   1788
                         \global\@botnum\z@ % we do not want them to be on the bottom either
                   1789
                         \@printendtopmatter
                   1790
                         \@afterindentfalse
                   1791
                         \@afterheading
                   1792
                   1793 }
                   This macro starts sections for proceedings and uses \small for journals
\@specialsection
                   1794 \def\@specialsection#1{%
                        \ifcase\ACM@format@nr
                   1795
                   1796
                         \relax % manuscript
                           \par\medskip\small\noindent#1: %
                   1797
                         \or % acmsmall
                   1798
                           \par\medskip\small\noindent#1: %
                   1799
                         \or % acmlarge
                   1800
                           \par\medskip\small\noindent#1: %
                   1801
                   1802
                         \or % acmtog
                           \par\medskip\small\noindent#1: %
                   1803
                         \or % sigconf
                   1804
                           \section*{#1}%
                   1805
                         \or % siggraph
                   1806
                           \section*{#1}%
                   1807
                   1808
                         \or % sigplan
                   1809
                           \paragraph*{#1}%
```

```
1810 \or % sigchi
1811 \section*{#1}%
1812 \or % sigchi-a
1813 \section*{#1}%
1814 \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.

```
1815 \def\@printtopmatter{%
1816
     \ifx\@startPage\@empty
        \gdef\@startPage{1}%
1817
     \else
1818
        \setcounter{page}{\@startPage}%
1819
     \fi
1820
     \thispagestyle{firstpagestyle}%
1821
     \noindent
1822
     \ifcase\ACM@format@nr
1823
     \relax % manuscript
1824
        \box\mktitle@bx\par
1825
     \or % acmsmall
1826
       \box\mktitle@bx\par
1827
1828
     \or % acmlarge
1829
       \box\mktitle@bx\par
1830
     \or % acmtog
       \twocolumn[\box\mktitle@bx]%
1831
     \or % sigconf
1832
       \twocolumn[\box\mktitle@bx]%
1833
1834
     \or % siggraph
       \twocolumn[\box\mktitle@bx]%
1835
1836
     \or % sigplan
       \twocolumn[\box\mktitle@bx]%
1837
     \or % sigchi
1838
       \twocolumn[\box\mktitle@bx]%
1839
     \or % sigchi-a
1840
        \par\box\mktitle@bx\par\bigskip
1841
1842
        \if@ACM@badge
           \marginpar{\noindent
1843
             \ifx\@acmBadgeL@image\@empty\else
1844
               \href{\@acmBadgeL@url}{%
1845
                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1846
                \hskip\@ACM@badge@skip
1847
              \fi
1848
             \ifx\@acmBadgeR@image\@empty\else
1849
               \href{\@acmBadgeR@url}{%
1850
                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1851
              \fi}%
1852
       \fi
1853
1854
     \fi
1855 }
```

```
\@mktitle The title of the article
                 1856 \def\@mktitle{%
                 1857 \ifcase\ACM@format@nr
                      \relax % manuscript
                 1858
                 1859
                         \@mktitle@i
                 1860
                      \or % acmsmall
                         \@mktitle@i
                 1861
                 1862 \or % acmlarge
                         \@mktitle@i
                 1863
                 1864 \or % acmtog
                         \@mktitle@i
                 1865
                 1866
                     \or % sigconf
                         \@mktitle@iii
                 1867
                      \or % siggraph
                 1868
                         \@mktitle@iii
                 1869
                      \or % sigplan
                 1870
                         \@mktitle@iii
                 1871
                       \or % sigchi
                 1872
                 1873
                         \@mktitle@iii
                       \or % sigchi-a
                 1874
                         \@mktitle@iv
                 1875
                      \fi
                 1876
                 1877 }
   \@titlefont The font to typeset the title
                 1878 \def\@titlefont{%
                 1879 \ifcase\ACM@format@nr
                       \relax % manuscript
                 1880
                 1881
                         \LARGE\sffamily\bfseries
                 1882
                      \or % acmsmall
                         \LARGE\sffamily\bfseries
                 1883
                      \or % acmlarge
                 1884
                 1885
                         \LARGE\sffamily\bfseries
                 1886
                      \or % acmtog
                 1887
                         \Huge\sffamily
                 1888
                      \or % sigconf
                         \Huge\sffamily\bfseries
                 1889
                 1890
                       \or % siggraph
                 1891
                         \Huge\sffamily\bfseries
                 1892
                       \or % sigplan
                 1893
                         \Huge\bfseries
                       \or % sigchi
                 1894
                         \Huge\sffamily\bfseries
                 1895
                       \or % sigchi-a
                 1896
                          \Huge\bfseries
                 1897
                      \fi}
                 1898
\@subtitlefont The font to typeset the subtitle
```

1899 \def\@subtitlefont{\normalsize

```
\ifcase\ACM@format@nr
             1900
                  \relax % manuscript
             1901
                    \mdseries
             1902
                  \or % acmsmall
             1903
             1904
                    \mdseries
             1905
                  \or % acmlarge
             1906
                    \mdseries
             1907
                  \or % acmtog
                     \LARGE
             1908
                  \or % sigconf
             1909
                     \LARGE\mdseries
             1910
             1911
                  \or % siggraph
                     \LARGE\mdseries
             1912
             1913
                  \or % sigplan
                     \LARGE\mdseries
             1914
                  \or % sigchi
             1915
                     \LARGE\mdseries
             1916
                  \or % sigchi-a
             1917
             1918
                     \mdseries
             1919
                  \fi}
            The version of \mktitle for most journals
\@mktitle@i
             1920 \def\@mktitle@i{\hsize=\textwidth
                  \@ACM@title@width=\hsize
                  \ifx\@acmBadgeL@image\@empty\else
             1922
                    \advance\@ACM@title@width by -\@ACM@badge@width
             1923
                    \verb|\advance|@ACM@title@width| by - \verb|\advance|@ACM@badge@skip||
             1924
                  \fi
             1925
                  \ifx\@acmBadgeR@image\@empty\else
             1926
                    \advance\@ACM@title@width by -\@ACM@badge@width
             1927
                    \advance\@ACM@title@width by -\@ACM@badge@skip
             1928
             1929
                  \setbox\mktitle@bx=\vbox{\noindent\@titlefont
             1930
                    \ifx\@acmBadgeL@image\@empty\else
             1931
                      1932
             1933
                          \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
             1934
                      \hskip\@ACM@badge@skip
             1935
                    \parbox[t]{\@ACM@title@width}{\raggedright
             1936
                      \@titlefont\noindent
             1937
                      \@title
             1938
                  \ifx\@subtitle\@empty\else
             1939
                    \par\noindent{\@subtitlefont\@subtitle}
             1940
             1941
                  \ifx\@acmBadgeR@image\@empty\else
             1942
                    \hskip\@ACM@badge@skip
             1943
                    1944
                        \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
             1945
             1946
                  \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.

```
1948 \def\@mktitle@iii{\hsize=\textwidth
            1949
                   \setbox\mktitle@bx=\vbox{\@titlefont\centering
            1950
                     \@ACM@title@width=\hsize
            1951
                     \if@ACM@badge
            1952
                       \advance\@ACM@title@width by -2\@ACM@badge@width
                       \advance\@ACM@title@width by -2\@ACM@badge@skip
            1953
                       \parbox[b]{\@ACM@badge@width}{\strut
            1954
                        \ifx\@acmBadgeL@image\@empty\else
            1955
                          1956
            1957
                           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
            1958
                        \fi}%
                       \hskip\@ACM@badge@skip
            1959
            1960
                     \parbox[t]{\@ACM@title@width}{\centering\@titlefont
            1961
                       \@title
            1962
            1963
                       \ifx\@subtitle\@empty\else
             1964
                        \par\noindent{\@subtitlefont\@subtitle}
            1965
                       \fi
                     }%
            1966
                     \if@ACM@badge
            1967
                       \hskip\@ACM@badge@skip
            1968
                       \parbox[b]{\@ACM@badge@width}{\strut
            1969
                        \ifx\@acmBadgeR@image\@empty\else
             1970
                          1971
                           \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
            1972
                         \fi}%
            1973
                     \fi
            1974
                     \par\bigskip}}%
            The version of \@mktitle for sigchi-a
\@mktitle@iv
            1976 \def\@mktitle@iv{\hsize=\textwidth
                   1977
                     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
            1978
            1979
                     \noindent\@title
                    \ifx\@subtitle\@empty\else
            1980
                      \par\noindent\@subtitlefont\@subtitle
            1981
                    \fi
            1982
                    \par\bigskip}}%
            1983
```

\@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.

```
1984 \newbox\@ACM@commabox
              1985 \def\@ACM@addtoaddress#1{%
              1986
                  \ifvmode\else
                     \if@ACM@affiliation@obeypunctuation\else
              1987
                     \setbox\@ACM@commabox=\hbox{, }%
              1988
              1989
                     \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
              1990
                   \fi\fi
              1991
                  #1}
 \institution
              Theoretically we can define the macros for \affiliation inside the \@mkauthors-style
    \position commands. However, this would lead to a strange error if an author uses them outside
  \department \affiliation. Of course we can make them produce an error message, but...
\streetaddress 1992 \def\streetaddress#1{\unskip\ignorespaces}
       \city 1993 \def\postcode#1{\unskip\ignorespaces}
       \state 1994\if@ACM@journal
    \postcode 1995 \def\position#1{\unskip\ignorespaces}
              1996
                   \def\institution#1{\unskip~#1\ignorespaces}
     \country
                   \def\city#1{\unskip\ignorespaces}
                   \def\state#1{\unskip\ignorespaces}
              1998
                   \newcommand\department[2][0]{\unskip\ignorespaces}
              1999
              2000 \def\country#1{\if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
              2001 \else
                   \def\institution#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
              2003
                   2004
                     #2\else#2\par\fi}%
              2005
              2006 % \def\streetaddress#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
              2007 \let\city\@ACM@addtoaddress
              2008 \let\state\@ACM@addtoaddress
              2010 \let\country\@ACM@addtoaddress
              2011\fi
              Typesetting the authors
  \@mkauthors
              2012 \def\@mkauthors{\begingroup
                  \hsize=\textwidth
              2013
              2014 \ifcase\ACM@format@nr
              2015 \relax % manuscript
                    \@mkauthors@i
              2016
              2017 \or % acmsmall
                    \@mkauthors@i
              2018
              2019 \or % acmlarge
                    \@mkauthors@i
              2020
                  \or % acmtog
              2021
                    \@mkauthors@i
              2022
              2023
                   \or % sigconf
                    \@mkauthors@iii
              2024
```

```
\or % siggraph
                        2025
                               \@mkauthors@iii
                        2026
                             \or % sigplan
                        2027
                               \@mkauthors@iii
                        2028
                             \or % sigchi
                        2029
                               \@mkauthors@iii
                        2030
                        2031
                             \or % sigchi-a
                               \@mkauthors@iv
                        2032
                             \fi
                        2033
                             \endgroup
                        2034
                        2035 }
         \@authorfont Somehow different conferences use different fonts for author names. Why?
                        2036 \def\@authorfont{\Large\sffamily}
    \@affiliationfont Font for affiliations
                        2037 \def\@affiliationfont{\normalsize\normalfont}
                           Adjusting fonts for different formats
                        2038 \ifcase\ACM@format@nr
                        2039 \relax % manuscript
                        2040 \or % acmsmall
                        2041 \def\@authorfont{\large\sffamily}
                        2042 \def\@affiliationfont{\small\normalfont}
                        2043 \or % acmlarge
                        2044 \or % acmtog
                        2045 \def\@authorfont{\LARGE\sffamily}
                        2046 \def\@affiliationfont{\large}
                        2047 \or % sigconf
                        \verb| \def @ authorfont{\LARGE}| \\
                        2049 \def\@affiliationfont{\large}
                        2050 \or % siggraph
                        2051 \def\@authorfont{\normalsize\normalfont}
                        2052 \def\@affiliationfont{\normalsize\normalfont}
                        2053 \or % sigplan
                        2054 \def\@authorfont{\Large\normalfont}
                             \def\@affiliationfont{\normalsize\normalfont}
                        2056 \or % sigchi
                        2057
                             \def\@authorfont{\bfseries}
                        2058
                             \def\@affiliationfont{\mdseries}
                        2059 \or % sigchi-a
                        2060 \def\@authorfont{\bfseries}
                        2061 \def\@affiliationfont{\mdseries}
                        2062\fi
\@typeset@author@line At this point we have \@currentauthors and \@currentaffiliations. We typeset
                        them in the journal style
                        2063 \def\@typeset@author@line{%
                        2064 \andify\@currentauthors\par\noindent
```

```
\@currentauthors\def\@currentauthors{}%
                2065
                      \ifx\@currentaffiliations\@empty\else
                2066
                        \andify\@currentaffiliations
                2067
                          \unskip, {\@currentaffiliations}\par
                2068
                      \fi
                2069
                2070
                      \def\@currentaffiliations{}}
\@mkauthors@i
                This version is used in most journal formats. Note that \and between authors with the
                same affiliation becomes _and_:
                2071 \def\@mkauthors@i{%
                      \def\@currentauthors{}%
                      \def\@currentaffiliations{}%
                      \global\let\and\@typeset@author@line
                2074
                      \def\@author##1{%
                2075
                        \ifx\@currentauthors\@empty
                2076
                          \gdef\@currentauthors{\@authorfont\MakeTextUppercase{##1}}%
                2077
                2078
                        \else
                2079
                           \g@addto@macro{\@currentauthors}{\and\MakeTextUppercase{##1}}%
                2080
                        \gdef\and{}}%
                2081
                      \def\email##1##2{}%
                2082
                      \def\affiliation##1##2{%
                2083
                        \def\@tempa{\##2}\ifx\@tempa\@empty\else
                2084
                           \ifx\@currentaffiliations\@empty
                2085
                               \gdef\@currentaffiliations{%
                2086
                                 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                2087
                                 \setkeys{@ACM@affiliation@}{##1}%
                2088
                                 \@affiliationfont##2}%
                2089
                           \else
                2090
                              \g@addto@macro{\@currentaffiliations}{\and
                2091
                2092
                                \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                2093
                                \setkeys{@ACM@affiliation@}{##1}##2}%
                          \fi
                2094
                2095
                          \global\let\and\@typeset@author@line}%
                2096
                      \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
                2097
                        \noindent\addresses\@typeset@author@line
                2098
                       \par\medskip}%
                2099
                2100 }
                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
                2101 \newbox\author@bx
\author@bx@wd The width of the author box
                2102 \newdimen\author@bx@wd
```

```
\author@bx@sep The separation between author boxes
2103 \newskip\author@bx@sep
```

2104 \author@bx@sep=1pc\relax

\@typeset@author@bx

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

```
2105 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
2106 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2107 \@authorfont\@currentauthors\par\@affiliationfont
2108 \@currentaffiliation}\egroup
2109 \box\author@bx\hspace{\author@bx@sep}%
2110 \gdef\@currentauthors{}%
2111 \gdef\@currentaffiliation{}}
```

\@mkauthors@iii

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

2112 \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
2113
     \advance\author@bx@wd by -\author@bx@sep\relax
2114
     \ifnum\@ACM@authorsperrow>0\relax
2115
       \divide\author@bx@wd by \@ACM@authorsperrow\relax
2116
2117
     \else
2118
       \ifcase\num@authorgroups
       \relax % 0?
2119
       \or % 1=one author per row
2120
       \or % 2=two authors per row
2121
          \divide\author@bx@wd by \num@authorgroups\relax
2122
       \or % 3=three authors per row
2123
          \divide\author@bx@wd by \num@authorgroups\relax
2124
       \or % 4=two authors per row (!)
2125
2126
          \divide\author@bx@wd by 2\relax
       \else % three authors per row
2127
          \divide\author@bx@wd by 3\relax
2128
       \fi
2129
2130
     \fi
     \advance\author@bx@wd by -\author@bx@sep\relax
Now, parsing of \addresses:
     \gdef\@currentauthors{}%
2132
     \gdef\@currentaffiliation{}%
     \def\@author##1{\ifx\@currentauthors\@empty
2134
       \gdef\@currentauthors{\par##1}%
2135
     \else
2136
       \g@addto@macro\@currentauthors{\par##1}%
2137
     \fi
2138
     2139
     \def\email##1##2{\ifx\@currentaffiliation\@empty
```

```
\gdef\@currentaffiliation{\bgroup
2141
         \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2142
     \else
2143
       \g@addto@macro\@currentaffiliation{\par\bgroup
2144
         \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2145
2146
     \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2147
2148
       \gdef\@currentaffiliation{%
         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2149
         \setkeys{@ACM@affiliation@}{##1}##2}%
2150
2151
     \else
       \g@addto@macro\@currentaffiliation{\par
2152
         \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2153
          \setkeys{@ACM@affiliation@}{##1}##2}%
2154
     \fi
2155
     \global\let\and\@typeset@author@bx
2156
2157 }%
Actual typesetting is done by the \and macro:
     \hsize=\textwidth
2158
     \global\setbox\mktitle@bx=\vbox{\noindent
2159
       \box\mktitle@bx\par\medskip\leavevmode
2160
       \lineskip=1pc\relax\centering\hspace*{-1em}%
       \addresses\let\and\@typeset@author@bx\and\par\bigskip}}
2162
```

\@mkauthors@iv

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

```
2163 \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 (\textwidth - \author@bx@sep)/N - \author@bx@sep, where N is the number of boxes per row.

```
\author@bx@wd=\columnwidth\relax
2164
     \advance\author@bx@wd by -\author@bx@sep\relax
2165
     \ifnum\@ACM@authorsperrow>0\relax
2166
       \divide\author@bx@wd by \@ACM@authorsperrow\relax
2167
2168
       \ifcase\num@authorgroups
2169
       \relax % 0?
2170
       \or % 1=one author per row
2171
       \else % 2=two authors per row
2172
           \divide\author@bx@wd by 2\relax
2173
       \fi
2174
2175
     \advance\author@bx@wd by -\author@bx@sep\relax
2176
Now, parsing of \addresses:
     \gdef\@currentauthors{}%
     \gdef\@currentaffiliation{}%
2178
```

```
\gdef\@currentauthors{\par##1}%
                                                 2180
                                                             \else
                                                 2181
                                                                 \g@addto@macro\@currentauthors{\par##1}%
                                                 2182
                                                            \fi
                                                 2183
                                                             2184
                                                             \def\email##1##2{\ifx\@currentaffiliation\@empty
                                                 2185
                                                 2186
                                                                 \gdef\@currentaffiliation{\nolinkurl{##2}}%
                                                 2187
                                                             \else
                                                                 \g@add to @macro \end{filiation} \par \nolinkur \filiation{par \nolin
                                                 2188
                                                 2189
                                                             \fi}%
                                                             2190
                                                                 \gdef\@currentaffiliation{%
                                                 2191
                                                                      \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                                                 2192
                                                                                 \setkeys{@ACM@affiliation@}{##1}##2}%
                                                 2193
                                                             \else
                                                 2194
                                                                 \g@addto@macro\@currentaffiliation{\par
                                                 2195
                                                                      \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
                                                 2196
                                                                      \setkeys{@ACM@affiliation@}{##1}##2}%
                                                 2197
                                                 2198
                                                             \global\let\and\@typeset@author@bx}%
                                                 2199
                                                 2200 %
                                                 Actual typesetting is done by the \and macro
                                                                 \bgroup\hsize=\columnwidth
                                                 2201
                                                                 \par\raggedright\leftskip=\z@
                                                 2202
                                                                 \lineskip=1pc\noindent
                                                 2203
                                                                 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}
                                                 2204
                                                Typesetting authors' addresses in the footnote style
\@mkauthorsaddresses
                                                 2205 \def\@mkauthorsaddresses{%
                                                            \ifnum\num@authors>1\relax
                                                 2206
                                                             Authors' \else Author's \fi
                                                 2207
                                                             \ifnum\num@authorgroups>1\relax
                                                 2208
                                                             addresses: \else address: \fi
                                                 2209
                                                 2210
                                                            \bgroup
                                                             \def\streetaddress##1{\unskip\@addpunct, ##1}%
                                                 2211
                                                             \def\postcode##1{\unskip\@addpunct, ##1}%
                                                 2212
                                                             \def\position##1{\unskip\ignorespaces}%
                                                 2213
                                                             \def\institution##1{\unskip\@addpunct, ##1}%
                                                 2214
                                                             \def\city##1{\unskip\@addpunct, ##1}%
                                                 2215
                                                             \def\state##1{\unskip\@addpunct, ##1}%
                                                 2216
                                                             \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
                                                 2217
                                                             \def\country##1{\unskip\@addpunct, ##1}%
                                                 2218
                                                             \def\and{\unskip\@addpunct; }%
                                                 2219
                                                             \def\@author##1{##1}%
                                                 2220
                                                            \def\email##1##2{\unskip\@addpunct, \nolinkurl{##2}}%
                                                 2221
                                                            \addresses
                                                 2222
                                                 2223
                                                            \egroup}
```

\def\@author##1{\ifx\@currentauthors\@empty

2179

```
\@setaddresses This is an amsart macro that we do not need.
                    2224 \def\@setaddresses{}
 \@authornotemark Adding a footnote mark to authors. This version adds a "normal" footnote mark.
                    {\tt 2225 \ def\ @authornote mark \ g@add to @macro \ @current authors \{\ footnote mark \ relax\}\}}
\@@authornotemark   Adding a footnote mark to authors with a given number
                    {\tt 2226 \ def\@@authornotemark\#1\{\g@addto@macro\@currentauthors\{\footnotemark[\#1]\}\}}
      \@mkteasers Typesetting the teasers
                    2227 \def\@mkteasers{%
                          \ifx\@teaserfigures\@empty\else
                            \def\@teaser##1{\par\bigskip\bgroup
                    2229
                              \captionsetup{type=figure}##1\egroup\par}
                    2230
                            \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
                    2231
                              \noindent\@Description@presentfalse
                    2232
                              \@teaserfigures\par\if@Description@present\else
                    2233
                    2234
                                  \global\@undescribed@imagestrue
                                 \ClassWarning{\@classname}{A possible image without
                    2235
                                    description}\fi
                    2236
                            \medskip}%
                    2237
                         \fi}
                    2238
     \ensuremath{\verb{\ensuremath{$\setminus$}}} Typesetting the abstract
                    2239 \def\@mkabstract{\bgroup
                         \ifx\@abstract\@lempty\else
                          {\phantomsection\addcontentsline{toc}{section}{Abstract}%
                    2242
                            \if@ACM@journal
                               \everypar{\setbox\z@\lastbox\everypar{}}\small
                    2243
                    2244
                            \else
                    2245
                              \section*{\abstractname}%
                    2246
                           \ignorespaces\@abstract\par}%
                    2247
                          \fi\egroup}
  \@mkbibcitation Print the bibcitation format
                    2249 \def\@mkbibcitation{\bgroup
                          \let\@vspace\@vspace@orig
                    2250
                          \let\@vspacer\@vspacer@orig
                    2251
                    2252 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
                          \def\footnotemark{}%
                    2253
                          \def\\{\unskip{} \ignorespaces}%
                    2254
                          \def\footnote{\ClassError{\@classname}{Please do not use footnotes
                    2255
                              inside a \string\title{} or \string\author{} command! Use
                    2256
                              \string\titlenote{} or \string\authornote{} instead!}}%
                    2257
                          \def\@article@string{\ifx\@acmArticle\@empty{\ }\else,
                    2258
                            Article \@acmArticle \fi}%
                    2259
                          \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
                          \noindent\bgroup
```

```
\def\\{\unskip{}, \ignorespaces}\authors\egroup. \@acmYear. \@title
                        2262
                             \ifx\@subtitle\@empty. \else: \@subtitle. \fi
                        2263
                             \if@ACM@nonacm\else
                        2264
                               % The 'nonacm' option disables 'printacmref' by default,
                        2265
                               % and the present \@mkbibcitation definition is never used
                        2266
                               \ensuremath{\mbox{\%}} in this case. The conditional remains useful if the user
                        2267
                        2268
                               % explicitly sets \settopmatter{printacmref=true}.
                               \if@ACM@journal@bibstrip
                        2269
                                   \textit{\@journalNameShort}
                        2270
                                   \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
                        2271
                                  \ref{TotPages}~\@pages@word.
                        2272
                        2273
                               \else
                                   In \textit{\@acmBooktitle}%
                        2274
                                   \ifx\@acmEditors\@empty\textit{.}\else
                        2275
                                    2276
                                   \fi\
                        2277
                                   ACM, New York, NY, USA%
                        2278
                                    \@article@string\unskip, \ref{TotPages}~\@pages@word.
                        2279
                               \fi
                        2280
                        2281
                            \fi
                        2282 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
                        2283 \par\egroup}
   \@printendtopmatter End the top matter
                        2284 \def\@printendtopmatter{\bgroup
                             \let\@vspace\@vspace@orig
                        2285
                        2286
                             \let\@vspacer\@vspacer@orig
                        2287
                             \par\bigskip
                        2288 \egroup}
           \@setthanks
                        We redefine \setthanks using \long
                        2289 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}
 \@setauthorsaddresses
                        2290 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}
                        3.16
                              Headers and Footers
                        We use fancyhdr for our headers and footers:
                        2291 \RequirePackage{fancyhdr}
\ACM@restore@pagestyle The following code by Ross Moore protects against changes by the totpages package:
                        2292 \let\ACM@ps@plain\ps@plain
                        2293 \let\ACM@ps@myheadings\ps@myheadings
                        2294 \let\ACM@ps@headings\ps@headings
                        2295 \def\ACM@restore@pagestyle{%
                        2296 \let\ps@plain\ACM@ps@plain
                             \let\ps@myheadings\ACM@ps@myheadings
                        2298 \let\ps@headings\ACM@ps@headings}
                        2299 \AtBeginDocument{\ACM@restore@pagestyle}
```

```
\ACM@linecount@bx This is the box displayed in review mode
                    2300 \if@ACM@review
                    2301
                         \newsavebox{\ACM@linecount@bx}
                          \newlength\ACM@linecount@bxht
                    2302
                    2303
                          \newcount\ACM@linecount
                    2304
                          \ACM@linecount\@ne\relax
                    2305
                          \def\ACM@mk@linecount{%
                           \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
                    2306
                                \setlength{\ACM@linecount@bxht}{0pt}%
                    2307
                                \label{loop{color{red}\scriptsize} \label{loop{color{red}\scriptsize}} \\
                    2308
                    2309
                                \global\advance\ACM@linecount by \@ne
                                \addtolength{\ACM@linecount@bxht}{\baselineskip}%
                    2310
                                \ifdim\ACM@linecount@bxht<\textheight\repeat
                    2311
                                {\color{red}\scriptsize\the\ACM@linecount}\hfill
                    2312
                                \global\advance\ACM@linecount by \@ne}}}
                    2313
                    2314 \fi
  \ACM@linecountL How to display the box on the left
                    2315 \def\ACM@linecountL{%
                    2316 \if@ACM@review
                         \ACM@mk@linecount
                    2318
                         \begin{picture}(0,0)%
                           \put(-26, -22){\usebox{\ACM@linecount@bx}}%
                    2319
                         \end{picture}%
                    2320
                    2321
                         \fi}
  \ACM@linecountR How to display the box on the right
                    2322 \def\ACM@linecountR{%
                    2323 \if@ACM@review
                    2324
                         \ACM@mk@linecount
                         \begin{picture}(0,0)%
                    2325
                           \put(20,-22){\accepted ACM@linecount@bx}}\%
                    2326
                    2327
                         \end{picture}%
                         \fi}
                    2328
   \ACM@timestamp The timestamp system
                    2329 \if@ACM@timestamp
                    2330 % Subtracting 30 from \time gives us the effect of rounding down despite
                         % \numexpr rounding to nearest
                    2331
                         \newcounter{ACM@time@hours}
                    2332
                          \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
                    2333
                    2334
                          \newcounter{ACM@time@minutes}
                         \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
                    2335
                          \newcommand\ACM@timestamp{%
                    2336
                           \footnotesize%
                    2337
                           \ifx\@acmSubmissionID\@empty\relax\else
                    2338
                           Submission ID: \@acmSubmissionID.{ }%
                    2339
                    2340
                           \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }\%
                    2341
```

```
\two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{.}%
                   2342
                          Page \thepage\ of \@startPage--\pageref*{TotPages}.%
                   2343
                   2344
                        }
                   2345 \fi
   \@shortauthors Even if the author redefined \shortauthors, we do not print it in the headers when in
                   anonymous mode:
                   2346 \def\@shortauthors{%
                   2347 \if@ACM@anonymous
                          Anon.
                   2348
                          \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
                   2349
                        \else\shortauthors\fi}
   \@headfootfont
                  The font to typeset header and footer text.
                   2351 \def\@headfootfont{\sffamily\footnotesize}
standardpagestyle The page style for all pages but the first one The page style for all pages but the first one
                   2352 \AtBeginDocument{%
                   2353 \fancypagestyle{standardpagestyle}{%
                   2354
                        \fancyhf{}%
                         \renewcommand{\headrulewidth}{\z@}%
                   2355
                         \renewcommand{\footrulewidth}{\z@}%
                   2356
                         \def\@acmArticlePage{%
                   2357
                          \ifx\@acmArticle\empty%
                   2358
                            \if@ACM@printfolios\thepage\fi%
                   2359
                          \else%
                   2360
                             \@acmArticle\if@ACM@printfolios:\thepage\fi%
                   2361
                          \fi%
                   2362
                   2363
                         \if@ACM@journal@bibstrip
                   2364
                          \ifcase\ACM@format@nr
                   2365
                          \relax % manuscript
                   2366
                             2367
                             \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
                   2368
                             \fancyhead[RE]{\@shortauthors}%
                   2369
                             \fancyhead[LO]{\ACM@linecountL\shorttitle}%
                   2370
                             \if@ACM@nonacm\else%
                   2371
                               \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
                   2372
                             \fi%
                   2373
                           \or % acmsmall
                   2374
                             \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
                   2375
                             \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
                   2376
                   2377
                             \fancyhead[RE]{\@headfootfont\@shortauthors}%
                             \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
                   2378
                            \if@ACM@nonacm\else%
                   2379
                            \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                   2380
                              \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
                   2381
                             \fi
                   2382
                           \or % acmlarge
                   2383
```

```
\fancyhead[LE]{\ACM@linecountL\@headfootfont
2384
         \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2385
         \fancyhead[L0]{\ACM@linecountL}%
2386
         \footnotemark
2387
           \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2388
         \if@ACM@nonacm\else%
2389
2390
        \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2391
          \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
         \fi
2392
       \or % acmtog
2393
         \fancyhead[LE]{\ACM@linecountL\@headfootfont
2394
           \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
         \fancyhead[LO]{\ACM@linecountL}%
         \fancyhead[RE]{\ACM@linecountR}%
2397
         \fancyhead[RO]{\@headfootfont
2398
           \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2399
         \if@ACM@nonacm\else%
2400
        \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2401
          \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2402
2403
         \fi
2404
       \else % Proceedings
         \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2405
         \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2406
         \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2407
         \if@ACM@nonacm\else%
2408
           \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
2409
             \acmConference@shortname,
2410
             \acmConference@date, \acmConference@venue}%
2411
           2412
             \acmConference@shortname,
2413
             \acmConference@date, \acmConference@venue\ACM@linecountR}%
2414
2415
         \fi
2416
       \fi
     \else % Proceedings
2417
       \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2418
       \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2419
       2420
       \if@ACM@nonacm\else%
2421
         \fancyhead[LE]{\ACM@linecountL\@headfootfont
2422
           \acmConference@shortname,
2423
           \acmConference@date, \acmConference@venue}%
2424
         \fancyhead[RO]{\@headfootfont
2425
           \acmConference@shortname,
2426
           \acmConference@date, \acmConference@venue\ACM@linecountR}%
2427
2428
       \fi
2429
     \fi
2430
     \if@ACM@sigchiamode
2431
        \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
     \fi
2432
     \if@ACM@timestamp
```

```
\fancyfoot[LO,RE]{\ACM@timestamp}
                                                                    2434
                                                                                       \fi
                                                                    2435
                                                                    2436 }%
                                                                    2437 \pagestyle{standardpagestyle}
                                                                    2438 }
                    \@folio@wd
                                                                   Folio blob width, height, offsets and max number
                    \@folio@ht
                                                                   2439 \newdimen\@folio@wd
\@folio@voffset 2440 \@folio@wd=\z@
                                                                  2441 \newdimen\@folio@ht
                \@folio@max
                                                                    2442 \ensuremath{\mbox{\sc oflio}\mbox{\sc olio}\mbox{\sc olio}\
                                                                    2443 \newdimen\@folio@voffset
                                                                    2444 \@folio@voffset=\z@
                                                                    2445 \def\@folio@max{1}
                                                                    2446 \ifcase\ACM@format@nr
                                                                    2447 \relax % manuscript
                                                                    2448 \or % acmsmall
                                                                    2449 \@folio@wd=45.75pt\relax
                                                                    2450 \@folio@ht=1.25in\relax
                                                                    2451 \@folio@voffset=.2in\relax
                                                                    2452 \def\@folio@max{8}
                                                                    2453 \or % acmlarge
                                                                    2454 \@folio@wd=43.25pt\relax
                                                                                         \@folio@ht=79pt\relax
                                                                                         \@folio@voffset=.55in\relax
                                                                    2456
                                                                                        \def\@folio@max{10}
                                                                    2457
                                                                    2458 \fi
                \@folioblob The macro to typeset the folio blob.
                                                                    2459 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
                                                                    2460 \ifnum\@tempcnta=0\relax\else
                                                                    First, we calculate \@acmArticleSeq modulo \@folio@max
                                                                    2461
                                                                    2462
                                                                                                     \ifnum\@tempcnta>\@folio@max\relax
                                                                                                          \advance\@tempcnta by - \@folio@max
                                                                    2463
                                                                                              \repeat
                                                                    2464
                                                                                                 \advance\@tempcnta by -1\relax
                                                                    2465
                                                                                                 \@tempdima=\@folio@ht\relax
                                                                    2466
                                                                                                 \multiply\@tempdima by \the\@tempcnta\relax
                                                                    2467
                                                                                                 \advance\@tempdima by -\@folio@voffset\relax
                                                                    2468
                                                                                                 \begin{picture}(0,0)
                                                                    2469
                                                                                                 \mbox[\z@]{\raisebox{-\empdima}{%}}
                                                                    2470
                                                                    2471
                                                                                                                          \arrowvert = 0.45\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{\ensuremath{0.45}\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensur
                                                                    2472
                                                                                                                                  \rule{\@folio@wd}{\@folio@ht}}}%
                                                                    2473
                                                                                                                  \parbox{\@folio@wd}{%
                                                                    2474
                                                                                                                          \centering
                                                                    2475
                                                                    2476
                                                                                                                          \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}
                                                                                          \end{picture}\fi}
```

\else

```
The page style for the first page only.
firstpagestyle
                                    2479 \AtBeginDocument{%
                                    2480 \fancypagestyle{firstpagestyle}{%
                                               \fancyhf{}%
                                    2481
                                                2482
                                                \renewcommand{\footrulewidth}{\z@}%
                                    2483
                                                \if@ACM@journal@bibstrip
                                    2484
                                                    \ifcase\ACM@format@nr
                                    2486
                                                    \relax % manuscript
                                                         \fancyhead[L]{\ACM@linecountL}%
                                    2487
                                                         \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
                                    2488
                                                         \if@ACM@nonacm\else%
                                    2489
                                                             \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
                                    2490
                                                         \fi%
                                    2491
                                                    \or % acmsmall
                                    2492
                                                         \if@ACM@nonacm\else%
                                    2493
                                                       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                    2494
                                                             \@acmNumber, Article \@acmArticle. Publication date:
                                    2495
                                                             \@acmPubDate.}%
                                    2496
                                                         \fi%
                                    2497
                                                         \fancyhead[LE]{\ACM@linecountL\@folioblob}%
                                    2498
                                    2499
                                                         \fancyhead[L0]{\ACM@linecountL}%
                                                         \footnote{Months} \footnote{Monts} \footnote{Months} \footnote{M
                                    2500
                                                         \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
                                    2501
                                                    \or % acmlarge
                                    2502
                                                        \if@ACM@nonacm\else%
                                    2503
                                                       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                    2504
                                                             \@acmNumber, Article \@acmArticle. Publication date:
                                    2505
                                                             \@acmPubDate.}%
                                    2506
                                                         \fi%
                                    2507
                                                         \fancyhead[RO]{\@folioblob}%
                                    2508
                                                         \fancyhead[LE]{\ACM@linecountL\@folioblob}%
                                    2509
                                                         \fancyhead[L0]{\ACM@linecountL}%
                                    2510
                                                         \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
                                    2511
                                    2512
                                                    \or % acmtog
                                                        \if@ACM@nonacm\else%
                                    2513
                                                       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
                                    2514
                                                             \@acmNumber, Article \@acmArticle. Publication date:
                                    2515
                                                             \@acmPubDate.}%
                                    2516
                                                         \fi%
                                    2517
                                                         2518
                                                         \fancyhead[R]{\ACM@linecountR}%
                                    2519
                                    2520
                                                    \else % Conference proceedings
                                                         \fancyhead[L]{\ACM@linecountL}%
                                    2521
                                                         \fancyhead[R]{\ACM@linecountR}%
                                    2522
                                                         \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
                                    2523
                                    2524
                                                    \fi
```

```
\fancyhead[L]{\ACM@linecountL}%
2526
       \fancyhead[R]{\ACM@linecountR}%
2527
       \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2528
2529
     \fi
     \if@ACM@timestamp
2530
       \ifnum\ACM@format@nr=0\relax % Manuscript
2531
2532
       \fancyfoot[LO,RE]{\ACM@timestamp\quad
2533
          \if@ACM@nonacm\else
            \footnotesize Manuscript submitted to ACM
2534
          \fi}
2535
       \else
2536
       \fancyfoot[LO,RE]{\ACM@timestamp}
2537
2538
     \fi
2539
2540 }}
```

### 3.17 Sectioning

\ACM@NRadjust Ross Moore's macro.

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

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

```
2541 \def\ACM@NRadjust#1{%
2542 \begingroup
    \expandafter\ifx\csname Sectionformat\endcsname\relax
    % do nothing when \Sectionformat is unknown
2544
     \def\next{\endgroup #1}%
2545
2546 \else
    \def\next{\endgroup
2547
     \let\realSectionformat\Sectionformat
2548
     \def\ACM@sect@format@{#1}%
2549
     2550
```

```
\let\real@adddotafter\@adddotafter
                                2552
                                      \let\@adddotafter\ACM@adddotafter
                                2553
                                      #1{}% imposes the styles, but nullifies \MakeUppercase
                                2554
                                      \let\@adddotafter\real@adddotafter
                                2555
                                2556 }%
                                2557 \fi \next
                                2558 }
\ACM@NR@adjustedSectionformat
                                2559 \def\ACM@NR@adjustedSectionformat#1#2{%
                                2560 \realSectionformat{\ACM@sect@format{#1}}{#2}%
                                2561 \let\Sectionformat\realSectionformat}
                                2562 \DeclareRobustCommand{\ACM@sect@format}{\ACM@sect@format@}
                                2563 \def\ACM@sect@format@null#1{#1}
                                2564 \let\ACM@sect@format@\ACM@sect@format@null
                                2565 \AtBeginDocument{%
                                2566 \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
                                2567 \let\LTX@adddotafter\@adddotafter
                                2568 \fi
                                2569 }
             \ACM@adddotafter
                                2570 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}
                                    Sectioning is different for different levels
                                2571 \renewcommand\section{\@startsection{section}{1}{\z@}%
                                2572 {-.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                2573 {.25\baselineskip}%
                                2574 {\ACM@NRadjust\@secfont}}
                                2575 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
                                2576 {-.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                2577 {.25\baselineskip}%
                                2578 {\ACM@NRadjust\@subsecfont}}
                                {\tt 2579 \ lenswoommand \ subsubsection \{\ estartsection \{subsubsection\} \{3\} \{\ ze\} \}}
                                2580 \quad \{-.5\baselineskip \eqlus -2\p@ \eqlus -.2\p@}%
                                2581
                                     \{-3.5\p@\}\%
                                2582 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}
                                2583 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
                                2584 {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                                2585 {-3.5\p@}%
                                2586 {\ACM@NRadjust{\@parfont\@adddotafter}}}
                                2587 \renewcommand\part{\@startsection{part}{9}{\z@}%
                                2588 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
                                2589 {4\p@}%
                                2590 {\ACM@NRadjust\@parfont}}
         \section@raggedright Special version of \raggedright compatible with \MakeUppercase
                                2591 \def\section@raggedright{\@rightskip\@flushglue
```

2551 %% next lines added 2018-06-17 to ensure section number is styled

```
2592 \rightskip\@rightskip
                      \leftskip\z@skip
                 2593
                 2594 \parindent\z@}
      \@secfont Fonts for sections etc. are different for different formats.
   \@subsecfont 2595\def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont 2596 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
      \@parfont 2597 \def\@subsubsecfont{\sffamily\itshape}
                 2598 \def\@parfont{\itshape}
                 2599 \setcounter{secnumdepth}{3}
                 2600 \ifcase\ACM@format@nr
                 2601 \relax % manuscript
                 2602 \or % acmsmall
                 2603 \or % acmlarge
                 2604 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
                 2605 \def\@subsecfont{\sffamily\large\section@raggedright}
                 2607 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
                 2608 \def\@subsecfont{\sffamily\large\section@raggedright}
                 2609 \or % sigconf
                 2610 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
                 2611 \def\@subsecfont{\bfseries\Large\section@raggedright}
                 2612 \or % siggraph
                 2613 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
                 2614 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
                 2615 \or % sigplan
                 2616 \def\@secfont{\bfseries\Large\section@raggedright}
                 2617 \def\@subsecfont{\bfseries\section@raggedright}
                 2618 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
                       {-.75\baselineskip \eqno -2\p@ \eqno -.2\p@}%
                        {.25\baselineskip}%
                 2620
                       {\@subsubsecfont}}
                 2621
                 2622 \def\@subsubsecfont{\bfseries\section@raggedright}
                 2623 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
                       {-.5\baselineskip \eqnus -2\p@ \eqnus -.2\p@}%
                 2624
                        \{-3.5\p@\}\%
                 2625
                        {\@parfont\@addspaceafter}}
                 2627 \def\@parfont{\bfseries\itshape}
                 2628 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
                       {-.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
                 2629
                       \{-3.5\p@\}\%
                 2630
                        {\@subparfont\@addspaceafter}}
                 2632 \def\@subparfont{\itshape}
                 2633 \or % sigchi
                 2634 \setcounter{secnumdepth}{1}
                 2635 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
                 2636 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
                 2637 \or % sigchi-a
                 2638 \setcounter{secnumdepth}{0}
                 2639 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
```

\@adddotafter Add punctuation after a sectioning command

2642 \def\@adddotafter#1{#1\@addpunct{.}}

\@addspaceafter Add space after a sectioning command

2643 \def\@addspaceafter#1{#1\@addpunct{\enspace}}

### 3.18 TOC lists

\@dotser

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.

2644 \providecommand\*\@dotsep{4.5}

### 3.19 Theorems

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

2645 \def\@acmplainbodyfont{\itshape}

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

 ${\tt 2646 \setminus def \setminus @acmplainindent \{ \setminus parindent \}}$ 

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

2647 \def\@acmplainheadfont{\scshape}

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

2648 \def\@acmplainnotefont{\@empty}

Customization of the acmplain theorem style:

2649 \ifcase\ACM@format@nr 2650 \relax % manuscript

2651 \or % acmsmall

2652 \or % acmlarge

2653 \or % acmtog

2654 \or % sigconf

2655 \or % siggraph

2656 \or % sigplan

2657 \def\@acmplainbodyfont{\itshape}

2658 \def\@acmplainindent{\z@}

2659 \def\@acmplainheadfont{\bfseries}

2660 \def\@acmplainnotefont{\normalfont}

2661\or % sigchi

2662 \or % sigchi-a

2663\fi

```
acmplain The acmplain theorem style
                          2664 \newtheoremstyle{acmplain}%
                               {.5\baselineskip\@plus.2\baselineskip
                          2665
                                 \@minus.2\baselineskip}% space above
                          2666
                          2667
                               {.5\baselineskip\@plus.2\baselineskip
                          2668
                                 \@minus.2\baselineskip}% space below
                               {\@acmplainbodyfont}% body font
                          2669
                               {\@acmplainindent}% indent amount
                          2670
                          2671 {\@acmplainheadfont}% head font
                          2672 {.}% punctuation after head
                          2673 {.5em}% spacing after head
                          2674 {\thmname{#1}\thmnumber{ #2}\thmnote{ (\@acmplainnotefont(#3))}}% head spec
                         The font to typeset the body of the acmdefinition theorem style.
\@acmdefinitionbodyfont
                          2675 \def\@acmdefinitionbodyfont{\normalfont}
  \@acmdefinitionindent
                         The amount to indent the acmdefinition theorem style.
                          2676 \def\@acmdefinitionindent{\parindent}
\@acmdefinitionheadfont
                         The font to typeset the head of the acmdefinition theorem style.
                          2677 \def\@acmdefinitionheadfont{\itshape}
\@acmdefinitionnotefont
                         The font to typeset the note of the acmdefinition theorem style.
                          2678 \def\@acmdefinitionnotefont{\@empty}
                             Customization of the acmdefinition theorem style:
                          2679 \ifcase\ACM@format@nr
                          2680 \relax % manuscript
                          2681 \or % acmsmall
                          2682 \or % acmlarge
                          2683 \or % acmtog
                          2684 \or % sigconf
                          2685 \or % siggraph
                          2686 \or % sigplan
                          2687 \def\@acmdefinitionbodyfont{\normalfont}
                          2688 \def\@acmdefinitionindent{\z@}
                          2689 \def\@acmdefinitionheadfont{\bfseries}
                          2690 \def\@acmdefinitionnotefont{\normalfont}
                          2691 \or % sigchi
                          2692 \or % sigchi-a
                          2693 \fi
          acmdefinition The acmdefinition theorem style
                          2694 \newtheoremstyle{acmdefinition}%
                               {.5\baselineskip\@plus.2\baselineskip
                          2695
                                 \@minus.2\baselineskip}% space above
                          2696
                               {.5\baselineskip\@plus.2\baselineskip
                          2697
                          2698
                                 \@minus.2\baselineskip}% space below
                               {\@acmdefinitionbodyfont}% body font
```

```
2700 {\@acmdefinitionindent}% indent amount
2701 {\@acmdefinitionheadfont}% head font
2702 {.}% punctuation after head
2703 {.5em}% spacing after head
2704 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont(#3)}}}% head spec
```

Make acmplain the default theorem style.

```
2705 \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.

```
2706 \AtEndPreamble{%
                       \if@ACM@acmthm
                  2707
                       \theoremstyle{acmplain}
                       \@ifundefined{theorem}{%
                  2710
                       \newtheorem{theorem}{Theorem}[section]
                  2711
                       \@ifundefined{conjecture}{%
                  2712
                       \newtheorem{conjecture}[theorem]{Conjecture}
                  2713
                  2714
                       \@ifundefined{proposition}{%
                  2716
                       \newtheorem{proposition}[theorem]{Proposition}
                  2717
                       }{}
                       \@ifundefined{lemma}{%
                  2718
                       \newtheorem{lemma}[theorem]{Lemma}
                  2719
                       \@ifundefined{corollary}{%
                  2722
                       \newtheorem{corollary}[theorem]{Corollary}
                  2723
                       \theoremstyle{acmdefinition}
                  2724
                       \@ifundefined{example}{%
                  2725
                  2726
                       \newtheorem{example}[theorem]{Example}
                  2727
                       \@ifundefined{definition}{%
                  2728
                  2729
                       \newtheorem{definition}[theorem]{Definition}
                  2730
                       }{}
                       \fi
                  2731
                       \theoremstyle{acmplain}
                  2732
                  2733 }
\@proofnamefont The font to typeset the proof name.
```

2734 \def\@proofnamefont{\scshape}

```
\@proofindent Whether or not to indent proofs.
2735 \def\@proofindent{\indent}
```

Customization of the proof environment.

```
2736 \ifcase\ACM@format@nr
       2737 \relax % manuscript
       2738 \or % acmsmall
       2739 \or % acmlarge
       2740 \or % acmtog
       2741 \or % sigconf
       2742 \or % siggraph
       2743 \or % sigplan
       2744 \def\@proofnamefont{\itshape}
           \def\@proofindent{\noindent}
       2746 \or % sigchi
       2747 \or % sigchi-a
       2748 \fi
proof We want some customization of the proof environment.
       \pushQED{\qed}%
       2750
            \normalfont $$ \operatorname{p@\plus6\p@\relax} $
       2751
            \trivlist
            \item[\@proofindent\hskip\labelsep
       2753
                  {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
       2754
       2755 }{%
            \popQED\endtrivlist\@endpefalse
```

### 3.20 Balancing columns

2756 2757 }

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

```
2758 \AtEndPreamble{%
     \if@ACM@balance
2759
2760
       \ifcase\ACM@format@nr
2761
       \relax % manuscript
             \global\@ACM@balancefalse
2762
           \or % acmsmall
2763
             \global\@ACM@balancefalse
2764
           \or % acmlarge
2765
             \global\@ACM@balancefalse
2766
2767
           \or % acmtog
              \RequirePackage{balance}%
2768
           \or % sigconf
2769
              \RequirePackage{balance}%
2770
           \or % siggraph
2771
              \RequirePackage{balance}%
2772
2773
           \or % sigplan
2774
              \RequirePackage{balance}%
```

```
\or % sigchi
2775
              \RequirePackage{balance}%
2776
           \or % sigchi-a
2777
              \global\@ACM@balancefalse
2778
       \fi
2779
2780 \fi
2781 }
2782 \AtEndDocument{%
2783 \if@ACM@balance
2784 \if@twocolumn
2785 \balance
2786 \fi\fi}
```

### 3.21 Acknowledgments

```
\acksname
```

```
2787 \newcommand\acksname{Acknowledgments}
```

```
\acks This is a comment-like structure
```

```
2788 \specialcomment{acks}{%
2789 \begingroup
2790 \section*{\acksname}
2791 \phantomsection\addcontentsline{toc}{section}{\acksname}
2792 }{%
2793 \endgroup
2794 }
```

\grantsponsor

We just typeset the name of the sponsor

2795 \def\grantsponsor#1#2#3{#2}

\grantnum

```
2796 \newcommand\grantnum[3][]{#3%
2797 \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

## 3.22 Conditional typesetting

We use the comment package for conditional typesetting:

```
2798 \AtEndPreamble{%
2799 \if@ACM@screen
2800 \includecomment{screenonly}
2801 \excludecomment{printonly}
2802 \else
2803 \excludecomment{screenonly}
2804 \includecomment{printonly}
2805 \fi
2806 \if@ACM@anonymous
2807 \excludecomment{anonsuppress}
2808 \excludecomment{acks}
```

```
2809 \else
2810 \includecomment{anonsuppress}
2811\fi}
```

#### Additional bibliography commands 3.23

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/).

```
2812 \newcommand\showeprint[2][arxiv]{%
    \def\@tempa{#1}%
2813
    \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
2814
2815 \def\@tempb{arxiv}%
    \ifx\@tempa\@tempb
        arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2818 \fi}
```

### 3.24 End of Class

objects}}{}{}

```
We do not disable \vspace, but add warning to it
\vspace
       2819 \let\@vspace@orig=\@vspace
       2820 \let\@vspacer@orig=\@vspacer
       2821 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
       2822
             only be used to provide space above/below surrounding
             objects}}{}{}
       2823
       only be used to provide space above/below surrounding
```

\ACM@origbaselinestretch We produce an error if the user tries to change \baselinestretch

```
2827 \let\ACM@origbaselinestretch\baselinestretch
2828 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
2829 \ClassError{\@classname}{An attempt to redefine
2830
       \string\baselinestretch\space detected. Please do not do this for
       ACM submissions!}\fi}
2831
```

```
2832 \normalsize\normalfont\frenchspacing
2833 (/class)
```

### References

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# **Change History**

1.48	v1.02	
General: Added prologue option to	General: Added TOPS and TSC (closes	
xcolor 43	https:	
Bib code cleanup (Zack Weinberg) 31	//github.com/borisveytsman/	
Documentation update (siggraph) . 31	acmart/issues/12) 3	31
1.49	Documentation changes (closes	
General: New journal: DTRAP 31	https:	
1.53	<pre>//github.com/borisveytsman/</pre>	
General: New journals: PACMCGIT,	acmart/issues/13)	31
TIOT, TDSCI31	v1.03	
Rearranged docs 31	\@formatdoi: Added macro 6	69
1.54	\if@ACM@authorversion: Added	
General: Moved footnote stuff before	macro	33
hyperref call (Ross Moore) 31	\maketitle: Added special case of	
1.56	authorversion	72
General: Documented \Description 31	General: Added anonsuppress	
1.57	environment	31
	Added authorversion option (closes	
General: Booktabs package is now the default	https:	
	//github.com/borisveytsman/	
1.58	acmart/issues/9)	31
General: Changes in samples (Enrico	v1.04	
Gregorio)	\acmArticleSeq: Name change by	
2		63
renamed to TDSCI 31	\acmD0I: Name change by Matthew	
1.60	Fluet	64
\if@ACM@urlbreakonhyphens:	\acmISBN: Name change by Matthew	
introduced macro 32	Fluet	63
General: New option:	General: Updated bibliography for	
urlbreakonhyphens 31	siggraph	31
4.00	v1.05	
v1.00	General: Added processing doi	
General: First released version 31	numbers for acmsiggraph and doi	
v1.01	numbers for sigproc.bib	31
General: Changed hyperref colors in	Patched \setcitestyle command;	
screen mode (closes https:	closes https:	
//github.com/borisveytsman/	<pre>//github.com/borisveytsman/</pre>	
acmart/issues/1) 31	acmart/issues/19 3	31
Defined ACM colors 31	v1.06	
Explicitly put draft option (closes	\@ACM@badge@skip: Added macro 6	64
https:	\@ACM@badge@width: Added macro . 6	64
//github.com/borisveytsman/		64
acmart/issues/4) 34	\@mktitle@i: Added processing	
Set headheight to 1pc for all	e	78
formats (closes https:	8	78
<pre>//github.com/borisveytsman/</pre>	\@mktitle@ii: Now this macro is	
acmart/issues/5) 31	obsolete	79

\@mktitle@iii: Added processing	\if@ACM@newfonts: Added macro 47
badges	\maketitle: Moved thankses to
Made more generic 79	copyrightpermission box
\@mktitle@iv: Made more generic . 79	\section@raggedright: Introduced
\@printtopmatter: Added processing	macro
badges	General: Added graceful behavior
\@subtitlefont: Added macro 77	when libertine fonts are absent 47
\@titlefont: Added macro 77	Documentation updates 31
\acmBadgeL: Added macro 64	v1.13
\acmBadgeR: Added macro 64	\@mpfootnotetext: Made minipage
\if@ACM@badge: Added macro 64	footnotes centered 42
v1.07	\bibliographystyle: Redefined
\maketitle: Corrected a bug with	macro 43
abstract footnotes	\bibstyle@acmauthoryear: Added
Corrected a bug with permssion	macro
and footnotes order	\bibstyle@acmnumeric: Added
v1.08	macro
General: SIGPLAN reformatting by	\if@ACM@printfolios: Added macro 65
Matthew Fluet	General: Font adjustments for
Typos corrected (Tobias Pape) 31	acmsmall
v1.09	Increased font size for ACM Large 36
General: Revert SIGPLAN caption	Print bibliographic information by
rules	default for the proceedings 65
v1.10	standardpagestyle: Added headers
\maketitle: Corrected a bug with doi	for sigs
in manuscript and author vertsion,	Expanded headers for sigchi-a 89
https:	Suppressed folios if sig 89
//github.com/borisveytsman/	v1.14
acmart/issues/36 72	\bibstyle@acmauthoryear: Moved
General: Changes of	def of \bibstyle@acmauthoryear
'licensedothergov' wording 67	before use
standardpagestyle: Reversed folios	\bibstyle@acmnumeric: Moved def of
location	\bibstyle@numeric before use 39
v1.11	General: \citestyle updates
General: Customization of ACM	(Matthew Fluet)
theorem styles and proof	Patched \citestyle 37
environment by Matthew Fluet 31	v1.15
v1.12	\@ACM@addtoaddress: Added macro 79
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