

# L<sup>A</sup>T<sub>E</sub>X Class for the *Association for Computing Machinery*\*

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## Abstract

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

## Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>User's guide</b>	<b>3</b>
2.1	Installation	3
2.2	Invocation and options	6
2.3	Top matter	7
2.4	Algorithms	20
2.5	Figures and tables	20
2.6	Descriptions of images	22
2.7	Theorems	22
2.8	Online-only and offline-only material	22
2.9	Note about anonymous mode	23
2.10	Acknowledgments	23
2.11	Bibliography	24
2.12	Colors	27
2.13	Other notable packages and typographic remarks	28
2.14	Counting words	28
2.15	Disabled or forbidden commands	29
2.16	Notes for wizards	29
2.17	Currently supported publications	30
2.18	A note about <code>sigchi-a</code> format	32

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<b>3</b>	<b>Implementation</b>	<b>33</b>
3.1	Identification	33
3.2	Preload hook	33
3.3	Options	33
3.4	Setting switches	37
3.5	Loading the base class and package	38
3.6	Citations	39
3.7	Paper size and paragraphing	47
3.8	Fonts	50
3.9	Image descriptions	51
3.10	Floats	52
3.11	Lists	54
3.12	Top-matter data	56
3.13	Concepts system	71
3.14	Copyright system	72
3.15	Maketitle hook	77
3.16	Typesetting top matter	77
3.17	Headers and Footers	94
3.18	Sectioning	100
3.19	TOC lists	102
3.20	Theorems	103
3.21	Balancing columns	106
3.22	Acknowledgments	107
3.23	Conditional typesetting	107
3.24	Additional bibliography commands	108
3.25	End of Class	108

# 1 Introduction

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

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

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

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

I am grateful to Michael D. Adams, Leif Andersen, Lawrence Christopher Angrave, Dirk Beyer, Andrew Black, Joachim Breitner, Benjamin Byholm, John Collins, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, Ulrike Fischer, Jason Hemann, Peter Kemp, Luis Leiva, Ben Liblit, Rholaïs Lii, LianTze Lim, Kuldeep S. Meel, Kai Mindermann, Frank Mittelbach, Serguei Mokhov, Ross Moore, John Owens, Joel Nider, Scott Pakin, Tobias Pape, Henning Pohl, Philip Quinn, Mathias Rav, Andreas Reichinger, Matteo Riondato, Craig Rodkin, Bernard Rous, Feras Saad, Kerry A. Seitz, Jr., David Shamma, Gabriel Scherer, Kartik Singhal, Christoph Sommer, Stephen Spencer, Shin Hwei Tan, Daniel Thomas, Shari Trewin, Zack Weinberg, John Wickerson and many others for their invaluable help.

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

## 2 User's guide

This class uses many commands and customization options, so it might appear intimidating for a casual user. Do not panic! Many of these commands and options can be safely left with their default values or the values recommended by your conference or journal editors. If you have problems or questions, do not hesitate to ask me directly or the community at <https://github.com/borisveytsman/acmart>, <https://tex.stackexchange.com> or the closest  $\text{\TeX}$  Users Group. The world-wide  $\text{\TeX}$  Users Group is at <https://tug.org/>; please consider joining us if you use  $\text{\TeX}$  regularly.

### 2.1 Installation

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

The latest released version of this package can be found on CTAN: <https://www.ctan.org/pkg/acmart>. The development version can be found on GitHub: <https://>

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

[github.com/borisveytsman/acmart](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.

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

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

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

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

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

- *amscs*, <http://www.ctan.org/pkg/amscs>
- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *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>
- *hyperxmp*, <http://www.ctan.org/pkg/hyperxmp>
- *iftex*, <http://www.ctan.org/pkg/iftex>
- *inconsolata*, <http://www.ctan.org/pkg/inconsolata>
- *libertine*, <http://www.ctan.org/pkg/libertine>
- *manyfoot*, <http://www.ctan.org/pkg/manyfoot>
- *microtype*, <http://www.ctan.org/pkg/microtype>
- *mmap*, <http://www.ctan.org/pkg/mmap>
- *ms*, <http://www.ctan.org/pkg/ms>
- *mweights*, <http://www.ctan.org/pkg/mweights>
- *natbib*, <http://www.ctan.org/pkg/natbib>
- *nccfoots*, <http://www.ctan.org/pkg/nccfoots>
- *newtx*, <http://www.ctan.org/pkg/newtx>
- *oberdiek*, <http://www.ctan.org/pkg/oberdiek>
- *pdftex-def*, <http://www.ctan.org/pkg/pdftex-def>
- *refcount*, <http://www.ctan.org/pkg/refcount>
- *setspace*, <http://www.ctan.org/pkg/setspace>
- *textcase*, <http://www.ctan.org/pkg/textcase>
- *totpages*, <http://www.ctan.org/pkg/totpages>
- *trimspaces*, <http://www.ctan.org/pkg/trimspaces>
- *upquote*, <http://www.ctan.org/pkg/upquote>
- *url*, <http://www.ctan.org/pkg/url>
- *xcolor*, <http://www.ctan.org/pkg/xcolor>
- *xkeyval*, <http://www.ctan.org/pkg/xkeyval>
- *xstring*, <http://www.ctan.org/pkg/xstring>

## 2.2 Invocation and options

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

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

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

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

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

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

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

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

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

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

Starting in 2020, ACM retired formats `sigchi` and `sigchi-a`. SIGCHI conferences now use `sigconf` format for their publications. If a file uses `sigchi` format, a warning is issued, and the format is automatically switched to `sigconf`. Format `sigchi-a` can be used for non-ACM documents only (see Section 2.18).

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.

Two samples in the `samples` directory, `manuscript` and `acmsmall-submission`, show manuscripts formatted for submission to ACM.

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 Bib<sub>T</sub><sub>E</sub>X style is based on `natbib`. In most cases you do not need to set it. See Section 2.11.

Table 1: The possible values for the format option

Value	Meaning
<code>manuscript</code>	A manuscript. This is the default.
<code>acmsmall</code>	Small single-column format. Used for CIE, CSUR, JACM, JDIQ, JEA, JERIC, JETC, PACMCGIT, PACMHCI, PACMPL, TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TDS, TEAC, TECS, TELO, 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, TQC, TRETS, TSAS, TSC, TSLP and TWEB, including special issues.
<code>acmlarge</code>	Large single-column format. Used for DTRAP, HEALTH, IMWUT, JOCCH, POMACS and TAP, including special issues.
<code>acmtog</code>	Large double-column format. Used for TOG, including annual conference Technical Papers.
<code>sigconf</code>	Proceedings format for most ACM conferences (with the exceptions listed below) and all ICPS volumes.
<code>sigplan</code>	Proceedings format for SIGPLAN conferences.

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.

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

The option `balance` determines whether the last page in the two column mode has balanced columns. By default it is `true`; however, it may lead to problems for some documents. Set it to `false` if you encounter compilation errors. Note that for one page documents `\balance` command might cause problems. An alternative is the (experimental) option `pbalance`, which uses the new package `pbalance` for this end.

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

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
pbalance	false	Whether to balance the last page in two column mode using pbalance package
urlbreakonhyphens	true	Whether to break urls on hyphens



data. Some of these commands, like `\title` and `\author`, should be put by the authors. Others, like `\acmVolume` and `\acmDOI`—by the editors. Below we describe these commands and mention who should issue them. These macros should be used *before* the `\maketitle` command. Note that in previous versions of ACM classes some of these commands should be used before `\maketitle`, and some after it. Now they all must be used before `\maketitle`.

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

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

```
\acmJournal{TOMS}
```

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

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

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

**name:** the name of the conference.

**date:** the date(s) of the conference.

**venue:** the place of the conference.

Examples:

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

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

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

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

`\editor`      In most cases, conference proceedings are edited. You can use the command

`\editor{<editor>}` to set the editor of the volume. This command can be repeated, for example,

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

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

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

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

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

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

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

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

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

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

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

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

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

Similarly you can repeat the `\email` command.

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

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

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

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

However, this format is not generally recommended.

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

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

`\postcode{43017-6221}}`

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

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

The fields `\institution`, `\city` and `\country` are mandatory. If they are not provided, an error or a warning is issued. Currently the absence of `\country` produces an error; ACM may change this in the future.

An example of the author block:

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

Note that the old ACM conference formats did not allow more than six authors and

required some effort from authors to achieve alignment. The new format is much better in this.

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

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

and

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

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

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

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

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

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

```
\affiliation[obeypunctuation=true]{%
  \institution{Fluginstitut}\\}
```

```

\streetaddress{Sonnenallee 17}\
\postcode{123456}
\city{Helm},
\country{Germany}}

```

will be typeset as

```

Fluginstitut
Sonnenallee 17
123456 Helm, Germany

```

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

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

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

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

```

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

```

You can *suppress* printing authors' addresses by setting them to an empty string: `\authorsaddresses{}`. Please note that authors' addresses are mandatory for journal articles.

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

```

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

```

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

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

```
\author{A. U. Thor}
\authornote{Both authors contributed equally to the paper}
...
\author{A. N. Other}
\authornotemark[1]
```

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

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

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

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

`\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{n}` can be used to change it:

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

Setting this number to zero suppresses the blob.

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

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

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

```
\acmPrice{25.00}
```

Note that you do not need to put the dollar sign here, just the amount. By default the price is \$15.00, unless the copyright is set to `usgov`, `rightsretained`, `iw3c2w3`, or `iw3c2w3g`, when it is suppressed. Note that to override the defaults you need to set the

	price <i>after</i> the <code>\setcopyright</code> command. Also, the command <code>\acmPrice{}</code> suppresses the printing of the price.
<code>\acmISBN</code>	<p>Book-like volumes have ISBN numbers attached to them. The macro <code>\acmISBN{&lt;ISBN&gt;}</code> sets it. Normally it is set by the typesetter, for example,</p> <pre>\acmISBN{978-1-4503-3916-2}</pre> <p>Setting it to the empty string, as <code>\acmISBN{}</code>, suppresses printing the ISBN.</p>
<code>\acmDOI</code>	<p>The macro <code>\acmDOI{&lt;DOI&gt;}</code> sets the DOI of the article, for example,</p> <pre>\acmDOI{10.1145/9999997.9999999}</pre> <p>It is normally set by the typesetter. Setting it to the empty string, as <code>\acmDOI{}</code>, suppresses the DOI.</p>
<code>\acmBadgeR</code> <code>\acmBadgeL</code>	<p>Some conference articles get special distinctions, for example, the artifact evaluation for PPOPP 2016 (see <a href="http://ctuning.org/ae/ppopp2016.html">http://ctuning.org/ae/ppopp2016.html</a>). These articles display special badges supplied by the conference organizers. This class provides commands to add these badges: <code>\acmBadgeR[&lt;url&gt;]{&lt;graphics&gt;}</code> and <code>\acmBadgeL[&lt;url&gt;]{&lt;graphics&gt;}</code>. The first command puts the badge to the right of the title, and the second one—to the left. The arguments have the following meaning: <code>[&lt;url&gt;]</code>, if provided, sets the link to the badge authority in the screen version, while <code>{&lt;graphics&gt;}</code> sets the graphics file with the badge image. The file must be a cropped square, which is scaled to a standard size in the output. For example, if the badge image is <code>ae-logo.pdf</code>, the command is</p> <pre>\acmBadgeR[http://ctuning.org/ae/ppopp2016.html]{ae-logo}</pre>
<code>\startPage</code>	<p>The macro <code>\startPage{&lt;page&gt;}</code> sets the first page of the article in a journal or book. It is used by the typesetter.</p>
<code>\terms</code> <code>\keywords</code>	<p>The command <code>\keywords{&lt;keyword, keyword,...&gt;}</code> sets keywords for the article. They must be separated by commas, for example,</p> <pre>\keywords{wireless sensor networks, media access control, multi-channel, radio interference, time synchronization}</pre>
CCSXML <code>\ccsdesc</code>	<p>ACM publications are classified according to the ACM Computing Classification Scheme (CCS). CCS codes are used both in the typeset version of the publications <i>and</i> in the metadata in various databases. Therefore you need to provide both TeX commands and XML metadata with the paper.</p> <p>The tool at <a href="http://dl.acm.org/ccs.cfm">http://dl.acm.org/ccs.cfm</a> can be used to generate CCS codes. After you select the topics, click on “Generate CCS codes” to get results like the following:</p> <pre>\begin{CCSXML} &lt;ccs2012&gt; &lt;concept&gt; &lt;concept_id&gt;10010520.10010553.10010562&lt;/concept_id&gt; &lt;concept_desc&gt;Computer systems organization~Embedded systems&lt;/concept_desc&gt;</pre>



```

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

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

```

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

CCS Concepts and user-defined keywords are required for all articles over two pages in length, and are optional for one- and two-page articles (or abstracts).

`\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. This command must be placed in the preamble, before `\begin{document}`.

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

Table 3: Parameters for the `\setcopyright` command

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

a special form of the copyright statement for this case. Note that you still need the `\setcopyright` command and (optionally) `\copyrightyear` command to tell  $\TeX$  about the copyright owner and year. Also, you should be aware that due to the different sizes of the permission blocks for the printed version and authors' version, the page breaks might be different between them.

abstract	The environment <code>abstract</code> must <i>precede</i> the <code>\maketitle</code> command. Again, this is different from the standard $\LaTeX$ . Putting <code>abstract</code> after <code>\maketitle</code> will trigger an error.
teaserfigure	<p>A special kind of figure is used for many two-column conference proceedings. This figure is placed just after the authors but before the main text. The environment <code>teaserfigure</code> is used for these figures. This environment must be used <i>before</i> <code>\maketitle</code>, for example,</p> <pre> \begin{teaserfigure}   \includegraphics[width=\textwidth]{sampleteaser}   \caption{This is a teaser}   \label{fig:teaser} \end{teaserfigure} </pre>

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

```
\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.

The parameter `printacmref` specifies whether to print the ACM bibliographic entry (default), or not. Note that this entry is required for all articles over one page in length, and is optional for one-page articles (abstracts).

<code>\received</code>	<p>The command <code>\received[&lt;stage&gt;]{&lt;date&gt;}</code> sets the history of the publication. The <code>[&lt;stage&gt;]</code> argument is optional; the default is Received for the first date and revised for the subsequent ones. For example,</p> <pre> \received{February 2007} \received[revised]{March 2009} \received[accepted]{June 2009} </pre>
------------------------	---

Table 4: Settings for the `\settopmatter` command

Parameter	Values	Meaning
<code>printccs</code>	true/false	Whether to print CCS categories
<code>printacmref</code>	true/false	Whether to print the ACM bibliographic entry
<code>printfolios</code>	true/false	Whether to print page numbers (folios)
<code>authorsperrow</code>	numeric	Number of authors per row for the title page in conference proceedings formats

`\maketitle` The macro `\maketitle` must be the last command in the top-matter group. That is it must follow the commands defined in this section.

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

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

## 2.4 Algorithms

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

## 2.5 Figures and tables

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

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

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

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

**teaserfigure:** a special figure before `\maketitle`.

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`.

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

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

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

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

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

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

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

## 2.6 Descriptions of images

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

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

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

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

## 2.7 Theorems

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

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

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

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

## 2.8 Online-only and offline-only material

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

```
\section{Supplementary materials}

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

\begin{screenonly}
```

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

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

## 2.9 Note about anonymous mode

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

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

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

## 2.10 Acknowledgments

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

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

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

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

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

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

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

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

Example:

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

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

## 2.11 Bibliography

The ACM uses the `natbib` package for formatting references and the `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 BibTeX entry types and fields in the ACM style file `ACM-Reference-Format.bst` that you may want to be aware of.

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

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

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

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

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

There are several special entry types. Types `online` and `game` are used 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",
}
```

Entry types `artifactsoftware`, `artifactdataset` (with synonyms `software` and `dataset`) can be used to cite software artifacts and datasets, for example,

```
@ArtifactSoftware{R,
  title = {R: A Language and Environment for Statistical Computing},
  author = {{R Core Team}},
  organization = {R Foundation for Statistical Computing},
  address = {Vienna, Austria},
  year = {2019},
  url = {https://www.R-project.org/},
}
@ArtifactDataset{UMassCitations,
  author = {Sam Anzaroot and Andrew McCallum},
  title = {{UMass} Citation Field Extraction Dataset},
  year = 2013,
  url =
    {http://www.iesl.cs.umass.edu/data/data-umasscitationfield},
  lastaccessed = {May 27, 2019}
}
```

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

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

```
@online{Obama08,
  author =      "Barack Obama",
  year   =      "2008",
  title  =      "A more perfect union",
  howpublished = "Video",
  day    =      "5",
  url    =      "http://video.google.com/videoplay?docid=6528042696351994555",
  month  =      mar,
  lastaccessed = "March 21, 2008",
}
```

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

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

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

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

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

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

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

A note about sorting. The current ACM bibliography styles always sort the entries according to authors names and publication year. There is a controversy about sorting names with “von” or “van” part: should Ludwig van Beethoven be sorted under “V” or under “B”? The American practice is to use “van” in sorting, i.e. to file van Beethoven under “V”. However, some authorities recommend to sort Dutch persons according to their last names (see e.g. [https://www.ifla.org/files/assets/cataloguing/pubs/names-of-persons\\_1996.pdf](https://www.ifla.org/files/assets/cataloguing/pubs/names-of-persons_1996.pdf)). While I do not want to take a part in this dispute, I would like to point to the old “noopsort” trick by Oren Patashnik. Add to the .bib file the line

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

and then encode the author as

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

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

The current bst style defines a number of macros for common journal names. In particular, all journals listed in Table 5 are included, so you can use strings like `journal = taccess` for *ACM Transactions on Accessible Computing*.

## 2.12 Colors

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

The ACM provides the following recommendation on color use.

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

1. The most common type of inherited Color Vision Deficiency (CVD) is red-green (in which similar-brightness colors that differ only in their amounts of red or green are often confused), and it affects up to 8% of males and 0.5% of females of Northern European descent.

2. The most common type of acquired Color Vision Deficiency (CVD) is blue-yellow (including mild cases for many older adults).
3. Most printing is in black and white.
4. Situational impairments (e.g., bright sunlight shining on a mobile screen) tend to reduce the entire color gamut, reducing color discriminability.

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

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

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

## 2.13 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

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

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

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

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

## 2.14 Counting words

Some ACM conferences use word count limits for papers. The calculation of word number for a paper with math, tables and figures is not a trivial task. Currently the authoritative word count is done by translating the PDF to text and using `wc -w` on the output.

Authors can use the package `texcount` (used by Overleaf) to get an estimate of the word count. To facilitate this one adds to the beginning of the package metacomments

```
%TC:macro \cite [option:text,text]
%TC:macro \citep [option:text,text]
%TC:macro \citet [option:text,text]
%TC:envir table 0 1
%TC:envir table* 0 1
%TC:envir tabular [ignore] word
%TC:envir displaymath 0 word
%TC:envir math 0 word
%TC:envir comment 0 0
```

and uses `\begin{math}...\end{math}` instead of dollar signs for math. Note that the count is in any case approximate, and the final decision of editors is based on PDF count.

The script `texcount` provides a report of word count in the document.

## 2.15 Disabled or forbidden commands

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

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

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

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

You should not load `amssymb` package since the package `acmart` defines the corresponding symbols itself.

## 2.16 Notes for wizards

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.

`\AtBeginMaketitle` Another hook is `\AtBeginMaketitle`. The commands in this hook are executed before `\maketitle`, for example,

`\AtBeginMaketitle{\acmPrice{125.00}}`

## 2.17 Currently supported publications

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

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

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

Abbreviation	Publication
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TDS	ACM/IMS Transactions on Data Science
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
TELO	ACM Transactions on Evolutionary Learning
THRI	ACM Transactions on Human-Robot Interaction
TIIS	ACM Transactions on Interactive Intelligent Systems
TIOT	ACM Transactions on Internet of Things
TISSEC	ACM Transactions on Information and System Security
TIST	ACM Transactions on Intelligent Systems and Technology
TKDD	ACM Transactions on Knowledge Discovery from Data
TMIS	ACM Transactions on Management Information Systems
TOCE	ACM Transactions on Computing Education
TOCHI	ACM Transactions on Computer-Human Interaction
TOCL	ACM Transactions on Computational Logic
TOCS	ACM Transactions on Computer Systems
TOCT	ACM Transactions on Computation Theory
TODAES	ACM Transactions on Design Automation of Electronic Systems
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
TOMACS	ACM Transactions on Modeling and Computer Simulation
TOMM	ACM Transactions on Multimedia Computing, Communications and Applications
TOMPECS	ACM Transactions on Modeling and Performance Evaluation of Computing Systems
TOMS	ACM Transactions on Mathematical Software
TOPC	ACM Transactions on Parallel Computing
TOPLAS	ACM Transactions on Programming Languages and Systems
TOPS	ACM Transactions on Privacy and Security
TOS	ACM Transactions on Storage
TOSEM	ACM Transactions on Software Engineering and Methodology
TOSN	ACM Transactions on Sensor Networks
TQC	ACM Transactions on Quantum Computing
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

Besides the publications listed in Table 5, there is a special “publication” type FACMP, a forthcoming ACM publication, reserved for new journals which are not assigned an ISSN yet.

## 2.18 A note about sigchi-a format

Starting in Spring 2020 ACM retired SIGCHI Extended Abstract format (sigchi-a). ACM will not, under any circumstances, accept documents in this format for publication and will not offer technical support to the authors who use this template.

You may use this format in the nonacm mode only, as in

```
\documentclass[sigchi-a, nonacm]{acmart}
```

sidebar  
marginfigure  
margintable

This format has large margin uses for special figures and tables. 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.

The environments figure and table produce figures and tables with the width of the text column. The environments figure\* and table\* produce “wide” figures and tables, which take a large part of the margin.

The horizontal sizes of figures are:

1. figure: \columnwidth,
2. marginfigure: \marginparwidth,
3. figure\*: \fulltextwidth.



## 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 [2021/05/01 v1.78 Typesetting articles for the Association for Computing Machinery]
```

And the driver code:

```
7 <*gobble>
8 \documentclass{ltxdoc}
9 \usepackage{array,booktabs,amsmath,graphicx,fancyvrb,tabularx, longtable}
10 \usepackage[tt=false, type1=true]{libertine}
11 \usepackage[varqu]{zi4}
12 \usepackage[libertine]{newtxmath}
13 \usepackage[tableposition=top]{caption}
14 \usepackage{hypdoc}
15 \PageIndex
16 \CodelineIndex
17 \RecordChanges
18 \EnableCrossrefs
19 \begin{document}
20   \DocInput{acmart.dtx}
21 \end{document}
22 </gobble>
23 <*class>
24 \def\@classname{acmart}
```

### 3.2 Preload hook

We preload acmart-preload-hook:

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

### 3.3 Options

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

```
29 \RequirePackage{xkeyval}
```

We use xstring to check whether user input is valid

```
30 \RequirePackage{xstring}
```

We need iftex to check the engine

```
31 \RequirePackage{iftex}
```

format The possible formats

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

\if@ACM@screen Whether we use screen mode

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

\if@ACM@urlbreakonhyphens

```
57 \define@boolkey+{acmart.cls}[\ACM@]{urlbreakonhyphens}[true]{%
58 \if@ACM@urlbreakonhyphens
59 \PackageInfo{\@classname}{Using breaking urls on hyphens}%
60 \else
61 \PackageInfo{\@classname}{Not breaking urls on hyphens}%
62 \fi}{\PackageError{\@classname}{The option urlbreakonhyphens can be either true or
63 false}}
64 \ExecuteOptionsX{urlbreakonhyphens=true}
```

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

```
65 \define@boolkey+{acmart.cls}[\ACM@]{acmthm}[true]{%
66 \if@ACM@acmthm
67 \PackageInfo{\@classname}{Requiring acmthm}%
68 \else
69 \PackageInfo{\@classname}{Suppressing acmthm}%
70 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
```

```

71     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
75     \PackageInfo{\@classname}{Using review mode}%
76     \AtBeginDocument{\@ACM@printfoliostrue}%
77   \else
78     \PackageInfo{\@classname}{Not using review mode}%
79   \fi}{\PackageError{\@classname}{The option review can be either true or
80     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
84     \PackageInfo{\@classname}{Using authorversion mode}%
85   \else
86     \PackageInfo{\@classname}{Not using authorversion mode}%
87   \fi}{\PackageError{\@classname}{The option authorversion can be either true or
88     false}}
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
92     \PackageInfo{\@classname}{Using nonacm mode}%
93     \AtBeginDocument{\@ACM@printacmreffalse}%
94     % in 'nonacm' mode we disable the "ACM Reference Format"
95     % printing by default, but this can be re-enabled by the
96     % user using \settopmatter{printacmref=true}
97   \else
98     \PackageInfo{\@classname}{Not using nonacm mode}%
99   \fi}{\PackageError{\@classname}{The option nonacm can be either true or
100     false}}
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
104     false}}
105 \ExecuteOptionsX{balance}

\if@ACM@pbalance Whether to balance the last page
106 \define@boolkey+{acmart.cls}[@ACM@]{pbalance}[true]{%}%
107   \PackageError{\@classname}{The option pbalance can be either true or
108     false}}
109 \ExecuteOptionsX{pbalance=false}

```

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

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

```

110 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
111   \if@ACM@natbib
112     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
113   \else
114     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
115   \fi}{\PackageError{\@classname}{The option natbib can be either true or
116     false}}
117 \ExecuteOptionsX{natbib=true}

```

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

```

118 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
119   \if@ACM@anonymous
120     \PackageInfo{\@classname}{Using anonymous mode}%
121   \else
122     \PackageInfo{\@classname}{Not using anonymous mode}%
123   \fi}{\PackageError{\@classname}{The option anonymous can be either true or
124     false}}
125 \ExecuteOptionsX{anonymous=false}

```

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

```

126 \define@boolkey+{acmart.cls}[@ACM@]{timestamp}[true]{%
127   \if@ACM@timestamp
128     \PackageInfo{\@classname}{Using timestamp mode}%
129   \else
130     \PackageInfo{\@classname}{Not using timestamp mode}%
131   \fi}{\PackageError{\@classname}{The option timestamp can be either true or
132     false}}
133 \ExecuteOptionsX{timestamp=false}

```

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

```

134 \define@boolkey+{acmart.cls}[@ACM@]{authordraft}[true]{%
135   \if@ACM@authordraft
136     \PackageInfo{\@classname}{Using authordraft mode}%
137     \@ACM@timestamptrue
138     \@ACM@reviewtrue
139   \else
140     \PackageInfo{\@classname}{Not using authordraft mode}%
141   \fi}{\PackageError{\@classname}{The option authordraft can be either true or
142     false}}
143 \ExecuteOptionsX{authordraft=false}

```

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

```

144 \def\ACM@fontsize{}
145 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
146 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
147 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
148 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

```

```

149 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
150 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
151 \ProcessOptionsX
152 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

### 3.4 Setting switches

```

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

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

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

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

```

#### Setting up switches

```

157 \ifnum\ACM@format@nr=5\relax % siggraph
158 \ClassWarning{\@classname}{%
159   The format siggraph is now obsolete.\MessageBreak
160   I am switching to sigconf.}
161 \setkeys{acmart.cls}{format=sigconf}
162 \fi

163 \ifnum\ACM@format@nr=7\relax % sigchi
164 \ClassWarning{\@classname}{%
165   The format sigchi is now obsolete.\MessageBreak
166   I am switching to sigconf.}
167 \setkeys{acmart.cls}{format=sigconf}
168 \fi

169 \ifnum\ACM@format@nr=8\relax % sigchi
170 \ClassWarning{\@classname}{%
171   ACM SIGCHI has retired the SIGCHI-A template\MessageBreak
172   effective immediately. ACM is keeping this template\MessageBreak
173   option available to authors who are working on legacy\MessageBreak
174   documents only. ACM will not, under any circumstances,\MessageBreak
175   accept documents in this format for publication and\MessageBreak
176   will not offer technical support to the authors who use\MessageBreak
177   this template.\MessageBreak
178   ACM SIGCHI is directing Conference leaders and\MessageBreak
179   authors to publish their articles using the SIGCONF\MessageBreak
180   template call.}
181 \fi

182 \ifnum\ACM@format@nr=0\relax
183   \@ACM@manuscripttrue

```

```

184 \else
185   \@ACM@manuscriptfalse
186 \fi
187 \@ACM@sigchiamodeffalse
188 \ifcase\ACM@format@nr
189 \relax % manuscript
190   \@ACM@journaltrue
191 \or % acmsmall
192   \@ACM@journaltrue
193 \or % acmlarge
194   \@ACM@journaltrue
195 \or % acmtog
196   \@ACM@journaltrue
197 \or % sigconf
198   \@ACM@journalfalse
199 \or % siggraph
200   \@ACM@journalfalse
201 \or % sigplan
202   \@ACM@journalfalse
203 \or % sigchi
204   \@ACM@journalfalse
205 \or % sigchi-a
206   \@ACM@journalfalse
207   \@ACM@sigchiamodetrue
208 \fi
209 \if@ACM@journal
210   \@ACM@journal@bibstriptrue
211 \else
212   \@ACM@journal@bibstripfalse
213 \fi

```

### 3.5 Loading the base class and package

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

```

214 \ifx\ACM@fontsize\@empty
215   \ifcase\ACM@format@nr
216   \relax % manuscript
217     \def\ACM@fontsize{9pt}%
218   \or % acmsmall
219     \def\ACM@fontsize{10pt}%
220   \or % acmlarge
221     \def\ACM@fontsize{10pt}%
222   \or % acmtog
223     \def\ACM@fontsize{9pt}%
224   \or % sigconf
225     \def\ACM@fontsize{9pt}%
226   \or % siggraph
227     \def\ACM@fontsize{9pt}%
228   \or % sigplan

```

```

229 \def\ACM@fontsize{10pt}%
230 \or % sigchi
231 \def\ACM@fontsize{9pt}%
232 \or % sigchi-a
233 \def\ACM@fontsize{10pt}%
234 \fi
235 \fi
236 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
237 \LoadClass[\ACM@fontsize, reqno]{amsart}
238 \RequirePackage{microtype}

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

    Booktabs is now the default
240 \RequirePackage{booktabs}

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

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

    We use setspace for double spacing
244 \if@ACM@manuscript
245 \RequirePackage{setspace}
246 \onehalfspacing
247 \fi

    We need textcase for better upcasing
248 \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.

```

249 \if@ACM@natbib
250 \RequirePackage{natbib}
251 \renewcommand{\bibsection}{%
252 \section*{\refname}%
253 \phantomsection\addcontentsline{toc}{section}{\refname}%
254 }
255 \renewcommand{\bibfont}{\bibliofont}
256 \renewcommand\setcitestyle[1]{
257 \@for\@tempa:=#1\do
258 {\def\@tempb{round}\ifx\@tempa\@tempb
259 \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
260 \def\@tempb{square}\ifx\@tempa\@tempb

```

```

261 \renewcommand\NAT@open{[]\renewcommand\NAT@close{[]}\fi
262 \def\@tempb{angle}\ifx\@tempa\@tempb
263 \renewcommand\NAT@open{<}\renewcommand\NAT@close{>}\fi
264 \def\@tempb{curly}\ifx\@tempa\@tempb
265 \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi
266 \def\@tempb{semicolon}\ifx\@tempa\@tempb
267 \renewcommand\NAT@sep{;}\fi
268 \def\@tempb{colon}\ifx\@tempa\@tempb
269 \renewcommand\NAT@sep{:}\fi
270 \def\@tempb{comma}\ifx\@tempa\@tempb
271 \renewcommand\NAT@sep{,}\fi
272 \def\@tempb{authoryear}\ifx\@tempa\@tempb
273 \NAT@numbersfalse\fi
274 \def\@tempb{numbers}\ifx\@tempa\@tempb
275 \NAT@numberstrue\NAT@superfalse\fi
276 \def\@tempb{super}\ifx\@tempa\@tempb
277 \NAT@numberstrue\NAT@supertrue\fi
278 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
279 \let\bibstyle=\@gobble\fi
280 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
281 \let\bibstyle=\@citestyle\fi
282 \def\@tempb{sort}\ifx\@tempa\@tempb
283 \def\NAT@sort{\@ne}\fi
284 \def\@tempb{nosort}\ifx\@tempa\@tempb
285 \def\NAT@sort{\z@}\fi
286 \def\@tempb{compress}\ifx\@tempa\@tempb
287 \def\NAT@cmprs{\@ne}\fi
288 \def\@tempb{nocompress}\ifx\@tempa\@tempb
289 \def\NAT@cmprs{\z@}\fi
290 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
291 \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
292 \def\@tempb{mcite}\ifx\@tempa\@tempb
293 \let\NAT@merge\@ne\fi
294 \def\@tempb{merge}\ifx\@tempa\@tempb
295 \ifnum\NAT@merge<\tw@\{\let\NAT@merge\tw@\}\fi
296 \def\@tempb{elide}\ifx\@tempa\@tempb
297 \ifnum\NAT@merge<\thr@\{\let\NAT@merge\thr@\}\fi
298 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
299 \NAT@longnamestrue\fi
300 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
301 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
302 \expandafter\NAT@find@eq\@tempa=\relax\@nil
303 \if\@tempc\relax\else
304 \expandafter\NAT@rem@eq\@tempc
305 \def\@tempb{open}\ifx\@tempa\@tempb
306 \xdef\NAT@open{\@tempc}\fi
307 \def\@tempb{close}\ifx\@tempa\@tempb
308 \xdef\NAT@close{\@tempc}\fi
309 \def\@tempb{aysep}\ifx\@tempa\@tempb
310 \xdef\NAT@aysep{\@tempc}\fi

```



```

311 \def\@tempb{yysep}\ifx\@tempa\@tempb
312 \xdef\NAT@yrsep{\@tempc}\fi
313 \def\@tempb{noteseq}\ifx\@tempa\@tempb
314 \xdef\NAT@cmt{\@tempc}\fi
315 \def\@tempb{citesep}\ifx\@tempa\@tempb
316 \xdef\NAT@sep{\@tempc}\fi
317 \fi
318 }%
319 \NAT@@setcites
320 }
321 \renewcommand\citestyle[1]{%
322 \ifcsname bibstyle@#1\endcsname%
323 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
324 \else%
325 \@latex@error{Undefined ‘#1’ citestyle}%
326 \fi
327 }%
328 \fi

```

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

```

329 \newcommand{\bibstyle@acmauthoryear}{%
330 \setcitestyle{%
331 authoryear,%
332 open={},close={},citesep={;},%
333 aysep={},yysep={},,%
334 noteseq={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```

335 \newcommand{\bibstyle@acmnumeric}{%
336 \setcitestyle{%
337 numbers,sort&compress,%
338 open={},close={},citesep={,},%
339 noteseq={, }}

```

The default is numeric:

```

340 \if@ACM@natbib
341 \citestyle{acmnumeric}
342 \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:

```

343 \def\@startsection#1#2#3#4#5#6{%
344 \if@noskipsec \leavevmode \fi
345 \par
346 \@tempskipa #4\relax
347 \@afterindenttrue
348 \ifdim \@tempskipa <\z@
349 \@tempskipa -\@tempskipa \@afterindentfalse

```

```

350 \fi
351 \if@nbreak
352   \everypar{}%
353 \else
354   \addpenalty\@secpenalty\addvspace\@tempskipa
355 \fi
356 \ifstar
357   {\@ssect{#3}{#4}{#5}{#6}}%
358   {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}%
359 \def\@sect#1#2#3#4#5#6[#7]#8{%
360   \edef\@toclevel{\ifnum#2=\@m 0\else\@number#2\fi}%
361   \ifnum #2>\c@secnumdepth
362     \let\@svsec\@empty
363   \else
364     \refstepcounter{#1}%
365     \protected@edef\@svsec{\@secntformat{#1}\relax}%
366   \fi
367   \@tempskipa #5\relax
368   \ifdim \@tempskipa>\z@
369     \begingroup
370       #6{%
371         \@hangfrom{\hskip #3\relax\@svsec}%
372         \interlinepenalty \@M #8\@par}%
373     \endgroup
374     \csname #1mark\endcsname{#7}%
375     \ifnum #2>\c@secnumdepth \else
376       \@tochangmeasure{\csname the#1\endcsname}%
377     \fi
378     \addcontentsline{toc}{#1}{%
379       \ifnum #2>\c@secnumdepth \else
380         \protect\numberline{\csname the#1\endcsname}%
381       \fi
382       #7}%
383   \else
384     \def\@svsechd{%
385       #6{\hskip #3\relax
386         \@svsec #8}%
387       \csname #1mark\endcsname{#7}%
388       \ifnum #2>\c@secnumdepth \else
389         \@tochangmeasure{\csname the#1\endcsname\space}%
390       \fi
391       \addcontentsline{toc}{#1}{%
392         \ifnum #2>\c@secnumdepth \else
393           \protect\numberline{\csname the#1\endcsname}%
394         \fi
395         #7}}%
396   \fi
397   \@xsect{#5}}
398 \def\@xsect#1{%
399   \@tempskipa #1\relax

```

```

400 \ifdim \@tempskipa>\z@
401   \par \nobreak
402   \vskip \@tempskipa
403   \@afterheading
404 \else
405   \@nobreakfalse
406   \global\@noskipsectrue
407   \everypar{%
408     \if@noskipsec
409       \global\@noskipsecfalse
410       {\setbox\z@\lastbox}%
411       \clubpenalty\@M
412       \begingroup \@svsechd \endgroup
413       \unskip
414       \@tempskipa #1\relax
415       \hskip -\@tempskipa
416     \else
417       \clubpenalty \@clubpenalty
418     \everypar}%
419   \fi}%
420 \fi
421 \ignorespaces}
422 \def\@secntformat#1{\csname the#1\endcsname\quad}
423 \def\@ssect#1#2#3#4#5{%
424   \@tempskipa #3\relax
425   \ifdim \@tempskipa>\z@
426     \begingroup
427     #4{%
428       \@hangfrom{\hskip #1}%
429       \interlinepenalty \@M #5\@par}%
430   \endgroup
431 \else
432   \def\@svsechd{#4{\hskip #1\relax #5}}%
433 \fi
434 \xsect{#3}}

```

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

```

435 \def\@starttoc#1#2{\begingroup\makeatletter
436   \setTrue{#1}%
437   \par\removelastskip\vskip\z@skip
438   \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
439   {.5\linespacing}{\centering\contentsnamefont}{#2}%
440   \@input{\jobname.#1}%
441   \if@filesw
442     \xp\newwrite\csname tf@#1\endcsname
443     \immediate\xp\openout\csname tf@#1\endcsname \jobname.#1\relax
444   \fi
445   \global\@nobreakfalse \endgroup
446   \addvspace{32\p@\@plus14\p@}%

```

```

447 }

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

\l@subsection The spacing in amsart is too large
449 \def\l@subsection{\@tocline{2}{0pt}{1pc}{3pc}{}}

\l@subsubsection The spacing in amsart is too large
450 \def\l@subsubsection{\@tocline{3}{0pt}{1pc}{5pc}{}}

We need to define footnote-related stuff before the call to hyperref (Ross Moore)

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

\@footnotetext In sigchi-a mode our footnotes are in the margin!
452 \if@ACM@sigchiamode
453 \long\def\@footnotetext#1{\marginpar{%
454   \reset@font\small
455   \interlinepenalty\interfootnotelinepenalty
456   \protected@edef\@currentlabel{%
457     \csname p@footnote\endcsname\@thefnmark
458   }}%
459   \color@begingroup
460     \@makefnmark{%
461       \rule{z@footnotesep}{\ignorespaces#1}\@finalstrut\strutbox}%
462   \color@endgroup}}%
463 \fi

\@mpfootnotetext We want the footnotes in minipages centered:
464 \long\def\@mpfootnotetext#1{%
465   \global\setbox\@mpfootins\vbox{%
466     \unvbox\@mpfootins
467     \reset@font\footnotesize
468     \hsize\columnwidth
469     \@parboxrestore
470     \protected@edef\@currentlabel
471       {\csname p@mpfootnote\endcsname\@thefnmark}%
472     \color@begingroup\centering
473       \@makefnmark{%
474         \rule{z@footnotesep}{\ignorespaces#1}\@finalstrut\strutbox}%
475     \color@endgroup}}

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

Adding hyperxmp
477 \RequirePackage{hyperxmp}

```

And now, hyperref

```
478 \let\@footnotemark@nolink\@footnotemark
479 \let\@footnotetext@nolink\@footnotetext
480 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
481 \pdfstringdefDisableCommands{%
482   \def\addtocounter#1#2{%
483     \def\unskip{%
484       \def\textbullet{- }%
485       \def\textrightarrow{ -> }%
486       \def\footnotemark{%
487     }
488 \urlstyle{rm}
489 \ifcase\ACM@format@nr
490 \relax % manuscript
491 \or % acmsmall
492 \or % acmlarge
493 \or % acmtog
494 \or % sigconf
495 \or % siggraph
496 \or % sigplan
497   \urlstyle{sf}
498 \or % sigchi
499 \or % sigchi-a
500   \urlstyle{sf}
501 \fi
502 \AtEndPreamble{%
503   \if@ACM@urlbreakonhyphens
504     \def\do@url@hyp{\do-}%
505   \fi
506   \if@ACM@screen
507     \hypersetup{colorlinks,
508       linkcolor=ACMPurple,
509       citecolor=ACMPurple,
510       urlcolor=ACMDarkBlue,
511       filecolor=ACMDarkBlue}
512   \else
513     \hypersetup{hidelinks}
514   \fi
515   \hypersetup{pdflang={en},
516     pdfdisplaydoctitle}}
```

Bibliography mangling.

```
517 \if@ACM@natbib
518   \let\citeN\cite
519   \let\cite\citep
520   \let\citeANP\citeauthor
521   \let\citeNN\citeyearpar
522   \let\citeyearNP\citeyear
523   \let\citeNP\citealt
524   \DeclareRobustCommand\citeA
```

```

525     {\begingroup\NAT@swafalse
526       \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
527     \providecommand\newblock{}%
528   \else
529     \AtBeginDocument{%
530       \let\shortcite\cite%
531       \providecommand\citename[1]{#1}}
532   \fi
533   \newcommand\shortcite[2][]{%
534     \ifNAT@numbers\cite[#1]{#2}\else\citeyearpar[#1]{#2}\fi}

```

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

```

535 \def\bibliographystyle#1{%
536   \ifx\@begindocumenthook\@undefined\else
537     \expandafter\AtBeginDocument
538   \fi
539   {\if@filesw
540     \immediate\write\@auxout{\string\bibstyle{#1}}%
541   \fi}}

```

Graphics and color.

```

542 \RequirePackage{graphicx}
543 \RequirePackage[prologue]{xcolor}

```

We define ACM colors according to [7]:

```

544 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
545 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
546 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
547 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
548 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
549 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
550 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
551 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode or sigchi-a mode

```

552 \if@ACM@authordraft
553   \RequirePackage{draftwatermark}
554   \SetWatermarkFontSize{0.5in}
555   \SetWatermarkColor[gray]{.9}
556   \SetWatermarkText{\parbox{12em}{\centering
557     Unpublished working draft.\
558     Not for distribution.}}
559 \else
560   \if@ACM@sigchiamode
561     \if@ACM@nonacm\else
562       \RequirePackage{draftwatermark}
563       \SetWatermarkFontSize{0.5in}
564       \SetWatermarkColor[gray]{.9}
565       \SetWatermarkText{\parbox{12em}{\centering

```

```

566         Legacy document. \\
567         Not for publication in an ACM venue}}
568     \fi
569 \fi
570 \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>.

```

571 \RequirePackage{geometry}
572 \ifcase\ACM@format@nr
573 \relax % manuscript
574     \geometry{letterpaper,head=13pt,
575     marginparwidth=6pc,heightrounded}%
576 \or % acmsmall
577     \geometry{twoside=true,
578     includeheadfoot, head=13pt, foot=2pc,
579     paperwidth=6.75in, paperheight=10in,
580     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
581     marginparwidth=2pc,heightrounded
582     }%
583 \or % acmlarge
584     \geometry{twoside=true, head=13pt, foot=2pc,
585     paperwidth=8.5in, paperheight=11in,
586     includeheadfoot,
587     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
588     marginparwidth=4pc,heightrounded
589     }%
590 \or % acmtog
591     \geometry{twoside=true, head=13pt, foot=2pc,
592     paperwidth=8.5in, paperheight=11in,
593     includeheadfoot, columnsep=24pt,
594     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
595     marginparwidth=2pc,heightrounded
596     }%
597 \or % sigconf
598     \geometry{twoside=true, head=13pt,
599     paperwidth=8.5in, paperheight=11in,
600     includeheadfoot, columnsep=2pc,
601     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
602     marginparwidth=2pc,heightrounded
603     }%
604 \or % siggraph
605     \geometry{twoside=true, head=13pt,
606     paperwidth=8.5in, paperheight=11in,
607     includeheadfoot, columnsep=2pc,
608     top=57pt, bottom=73pt, inner=54pt, outer=54pt,

```

```

609     marginparwidth=2pc,heightrounded
610   }%
611 \or % sigplan
612   \geometry{twoside=true, head=13pt,
613     paperwidth=8.5in, paperheight=11in,
614     includeheadfoot=false, columnsep=2pc,
615     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
616     marginparwidth=2pc,heightrounded
617   }%
618 \or % sigchi
619   \geometry{twoside=true, head=13pt,
620     paperwidth=8.5in, paperheight=11in,
621     includeheadfoot, columnsep=2pc,
622     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
623     marginparwidth=2pc,heightrounded
624   }%
625 \or % sigchi-a
626   \geometry{twoside=false, head=13pt,
627     paperwidth=11in, paperheight=8.5in,
628     includeheadfoot, marginparsep=72pt,
629     marginparwidth=170pt, columnsep=20pt,
630     top=72pt, bottom=72pt, left=314pt, right=72pt
631   }%
632   \@mparswitchfalse
633   \reversemarginpar
634 \fi

```

`\parindent` Paragraphing

```

\parskip 635 \setlength\parindent{10\p@}
636 \setlength\parskip{\z@}
637 \ifcase\ACM@format@nr
638 \relax % manuscript
639 \or % acmsmall
640 \or % acmlarge
641 \or % acmtog
642   \setlength\parindent{9\p@}%
643 \or % sigconf
644 \or % siggraph
645 \or % sigplan
646 \or % sigchi
647 \or % sigchi-a
648 \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.

```

649 \setlength\normalparindent{\parindent}

```



Footnotes require some consideration. We have several layers of footnotes: front-matter footnotes, “regular” footnotes and the special insert for the bibstrip. In the old ACM classes, the bibstrip was a `\@float`. The problem with floats is that they tend to, well, float—and we want the guarantee they stay.

We use `manyfoot` for layered footnotes instead.

`\copyrightpermissionfootnoterule` This is the footnote rule that separates the bibstrip from the rest of the paper. It is a full width rule.

```
650 \def\copyrightpermissionfootnoterule{\kern-3\p@
651   \hrule \@width \columnwidth \kern 2.6\p@}

652 \RequirePackage{manyfoot}
653 \SelectFootnoteRule[2]{copyrightpermission}
654 \DeclareNewFootnote{authorsaddresses}
655 \SelectFootnoteRule[2]{copyrightpermission}
656 \DeclareNewFootnote{copyrightpermission}
```

`\footnoterule` Tschichold’s rules:

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

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

```
659 \def\endminipage{%
660   \par
661   \unskip
662   \ifvoid\@mpfootins\else
663     \vskip\skip\@mpfootins
664     \normalcolor
665     \unvbox\@mpfootins
666   \fi
667   \@minipagefalse
668   \color@endgroup
669   \egroup
670   \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
```

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

```
671 \def\@textbottom{\vskip \z@ \@plus 1pt}
672 \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.

```
673 \ifcase\ACM@format@nr
674 \relax % manuscript
675 \or % acmsmall
676 \or % acmlarge
677 \or % acmtog
678   \flushbottom
679 \or % sigconf
```

```

680 \flushbottom
681 \or % siggraph
682 \flushbottom
683 \or % sigplan
684 \flushbottom
685 \or % sigchi
686 \flushbottom
687 \or % sigchi-a
688 \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.

```

689 \ifPDFTeX
690 \input{glyphtounicode}
691 \pdfglyphtounicode{f_f}{FB00}
692 \pdfglyphtounicode{f_f_i}{FB03}
693 \pdfglyphtounicode{f_f_l}{FB04}
694 \pdfglyphtounicode{f_i}{FB01}
695 \pdfglyphtounicode{t_t}{0074 0074}
696 \pdfglyphtounicode{f_t}{0066 0074}
697 \pdfglyphtounicode{T_h}{0054 0068}
698 \pdfgentounicode=1
699 \RequirePackage{cmap}
700 \fi

```

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

```

701 \newif\if@ACM@newfonts
702 \@ACM@newfontstrue
703 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
704   have the libertine package installed. Please upgrade your
705   TeX}\@ACM@newfontsfalse}
706 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
707   have the inconsolata (zi4.sty) package installed. Please upgrade your
708   TeX}\@ACM@newfontsfalse}
709 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
710   have the newtxmath package installed. Please upgrade your
711   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

712 \if@ACM@newfonts
713 \RequirePackage[T1]{fontenc}
714 % Note that the order in which packages are loaded matters,
715 % and the correct order depends on the LaTeX engine used.
716 % See https://github.com/borisveytsman/acmart/issues/402
717 % and https://github.com/borisveytsman/acmart/issues/410
718 \ifxetex

```

```

719 \RequirePackage[libertine]{newtxmath}
720 \RequirePackage[tt=false]{libertine}
721 \setmonofont[StylisticSet=3]{inconsolata}
722 \else
723 \ifluatex
724 \RequirePackage[libertine]{newtxmath}
725 \RequirePackage[tt=false]{libertine}
726 \setmonofont[StylisticSet=3]{inconsolata}
727 \else
728 \RequirePackage[tt=false, type1=true]{libertine}
729 \RequirePackage[varqu]{zi4}
730 \RequirePackage[libertine]{newtxmath}
731 \fi
732 \fi
733 \fi

```

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

```

734 \let\liningnums\@undefined
735 \AtEndPreamble{%
736 \DeclareTextFontCommand{\liningnums}{\libertineLF}}

```

The SIGCHI extended abstracts are sans serif:

```

737 \if@ACM@sigchiamode
738 \renewcommand{\familydefault}{\sfdefault}
739 \fi

```

### 3.9 Image descriptions

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

```

740 \newif\if@Description@present
741 \@Description@presenttrue

```

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

```

742 \newif\if@undescrbed@images
743 \@undescrbed@imagesfalse

```

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

```

744 \newcommand\Description[2][\global\@Description@presenttrue\ignorespaces}

```

The global warning

```

745 \AtEndDocument{\if@undescrbed@images
746 \ClassWarningNoLine{\@classname}{Some images may lack descriptions}\fi}

```

Hooks for figures and tables. We also patch `algorithm` and `algorithm*` in case somebody uses them.

```

747 \AtBeginEnvironment{figure}{\@Description@presentfalse
748 \let\@vspace\@vspace@orig
749 \let\@vspacer\@vspacer@orig}

```

```

750 \AtBeginEnvironment{figure*}{\@Description@presentfalse
751   \let\@vspace\@vspace@orig
752   \let\@vspacer\@vspacer@orig}
753 \AtEndEnvironment{figure}{\if@Description@present\else
754   \global\@undescrbed@imagestrue
755   \ClassWarning{\@classname}{A possible image without description}\fi}
756 \AtEndEnvironment{figure*}{\if@Description@present\else
757   \global\@undescrbed@imagestrue
758   \ClassWarning{\@classname}{A possible image without description}\fi}
759 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
760   \let\@vspacer\@vspacer@orig}
761 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
762   \let\@vspacer\@vspacer@orig}
763 \AtBeginEnvironment{algorithm}{\let\@vspace\@vspace@orig
764   \let\@vspacer\@vspacer@orig}
765 \AtBeginEnvironment{algorithm*}{\let\@vspace\@vspace@orig
766   \let\@vspacer\@vspacer@orig}
767 \AtBeginEnvironment{lstlisting}{\let\@vspace\@vspace@orig
768   \let\@vspacer\@vspacer@orig}
769 \AtBeginEnvironment{lstlisting*}{\let\@vspace\@vspace@orig
770   \let\@vspacer\@vspacer@orig}
771 \AtBeginEnvironment{minted}{\let\@vspace\@vspace@orig
772   \let\@vspacer\@vspacer@orig}
773 \AtBeginEnvironment{minted*}{\let\@vspace\@vspace@orig
774   \let\@vspacer\@vspacer@orig}
775 \AtBeginEnvironment{listing}{\let\@vspace\@vspace@orig
776   \let\@vspacer\@vspacer@orig}
777 \AtBeginEnvironment{listing*}{\let\@vspace\@vspace@orig
778   \let\@vspacer\@vspacer@orig}
779

```

### 3.10 Floats

We use the caption package

```

780 \RequirePackage{caption, float}
781 \captionsetup[table]{position=top}
782 \if@ACM@journal
783   \captionsetup{labelfont={sf, small},
784     textfont={sf, small}, margin=\z@}
785   \captionsetup[figure]{name={Fig.}}
786 \else
787   \captionsetup{labelfont={bf},
788     textfont={bf}, labelsep=colon, margin=\z@}
789   \ifcase\ACM@format@nr
790     \relax % manuscript
791     \or % acmsmall
792     \or % acmlarge
793     \or % acmtog
794     \or % sigconf

```

```

795 \or % siggraph
796   \captionsetup{textfont={it}}
797 \or % sigplan
798   \captionsetup{labelfont={bf},
799     textfont={normalfont}, labelsep=period, margin=\z@}
800 \or % sigchi
801   \captionsetup[figure]{labelfont={bf, small},
802     textfont={bf, small}}
803   \captionsetup[table]{labelfont={bf, small},
804     textfont={bf, small}}
805 \or % sigchi-a
806   \captionsetup[figure]{labelfont={bf, small},
807     textfont={bf, small}}
808   \captionsetup[table]{labelfont={bf, small},
809     textfont={bf, small}}
810 \fi
811 \fi

sidebar The sidebar environment:
812 \newfloat{sidebar}{}{sbar}
813 \floatname{sidebar}{Sidebar}
814 \renewenvironment{sidebar}{}{\Collect@Body\@sidebar}{}

\@sidebar The processing of the saved text
815 \long\def\@sidebar#1{\bgroup\let\@vspace\@vspace@orig
816   \let\@vspacer\@vspacer@orig\captionsetup{type=sidebar}%
817   \marginpar{\small#1}\egroup}

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

\@marginfigure The processing of the saved text
819 \long\def\@marginfigure#1{\bgroup
820   \let\@vspace\@vspace@orig
821   \let\@vspacer\@vspacer@orig
822   \captionsetup{type=figure}%
823   \marginpar{\@Description@presentfalse\centering
824     \small#1\if@Description@present\else
825       \global\@undescrbed@imagestrue
826       \ClassWarning{\@classname}{A possible image without description}
827       \fi}%
828   \egroup}

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

\@margintable The processing of the saved text
830 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
831   \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
832   \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
833 \newdimen\fulltextwidth
834 \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)
835 \if@ACM@sigchiamode
836 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
837 \let\@vspace\@vspace@orig\columnwidth=\fulltextwidth
838 \let\@endfloatbox\@endwidefloatbox
839 \def\@fpsaddddefault{\def\@fps{tp}}}%
840 \@float}
841 \fi

\enddblfloat And the end. Just adding a \bgroup.
842 \if@ACM@sigchiamode
843 \def\enddblfloat{%
844 \endfloat\egroup}
845 \fi

\@endwidefloatbox This is the end of a wide box—we basically move everything to the left
846 \def\@endwidefloatbox{%
847 \par\vskip\z@skip
848 \@minipagefalse
849 \outer@nobreak
850 \egroup
851 \color@endbox
852 \global\setbox\@currbox=\vbox{\moveleft
853 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
854 \wd\@currbox=\textwidth
855 }
```

### 3.11 Lists

```
856 \ifcase\ACM@format@nr
857 \relax % manuscript
858 \or % acmsmall
859 \or % acmlarge
860 \or % acmtog
861 \or % sigconf
862 \or % siggraph
863 \or % sigplan
864 \def\labelenumi{\theenumi.}
865 \def\labelenumii{\theenumii.}
866 \def\labelenumiii{\theenumiii.}
867 \def\labelenumiv{\theenumiv.}
```

```

868 \or % sigchi
869 \or % sigchi-a
870 \fi

```

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

```

871 \newdimen\@ACM@labelwidth
872 \AtBeginDocument{%
873   \setlength\labelsep{4pt}
874   \setlength{\@ACM@labelwidth}{6.5pt}
875
876   %% First-level list: when beginning after the first line of an
877   %% indented paragraph or ending before an indented paragraph, labels
878   %% should not hang to the left of the preceding/following text.
879   \setlength\leftmargini{\z@}
880   \addtolength\leftmargini{\parindent}
881   \addtolength\leftmargini{2\labelsep}
882   \addtolength\leftmargini{\@ACM@labelwidth}
883
884   %% Second-level and higher lists.
885   \setlength\leftmarginii{\z@}
886   \addtolength\leftmarginii{0.5\labelsep}
887   \addtolength\leftmarginii{\@ACM@labelwidth}
888   \setlength\leftmarginiii{\leftmarginii}
889   \setlength\leftmarginiv{\leftmarginiii}
890   \setlength\leftmarginv{\leftmarginiv}
891   \setlength\leftmarginvi{\leftmarginv}
892   \@listi}
893 \newskip\listisep
894 \listisep\smallskipamount
895 \def\@listI{\leftmargin\leftmargini
896   \labelwidth\leftmargini \advance\labelwidth-\labelsep
897   \listparindent\z@
898   \topsep\listisep}
899 \let\@listi\@listI
900 \def\@listii{\leftmargin\leftmarginii
901   \labelwidth\leftmarginii \advance\labelwidth-\labelsep
902   \topsep\z@skip}
903 \def\@listiii{\leftmargin\leftmarginiii
904   \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
905 \def\@listiv{\leftmargin\leftmarginiv
906   \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
907 \def\@listv{\leftmargin\leftmarginv
908   \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
909 \def\@listvi{\leftmargin\leftmarginvi
910   \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}

```

```

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

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
912 \renewenvironment{description}{\list{}{%
913   \labelwidth\@ACM@labelwidth
914   \let\makelabel\descriptionlabel}%
915 }{
916   \endlist
917 }
918 \let\enddescription=\endlist % for efficiency

```

### 3.12 Top-matter data

```

\if@ACM@maketitle@typeset The switch to check whether \maketitle is already typeset. It is initially false, and
setting top matter when it is true is wrong.
919 \newif\if@ACM@maketitle@typeset
920 \@ACM@maketitle@typesetfalse

```

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

```

921 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
922   CIE,%
923   CSUR,%
924   DGOV,%
925   DTRAP,%
926   HEALTH,%
927   IMWUT,%
928   JACM,%
929   JDIQ,%
930   JEA,%
931   JERIC,%
932   JETC,%
933   JOCCH,%
934   PACMCGIT,%
935   PACMHCI,%
936   PACMPL,%
937   POMACS,%
938   TAAS,%
939   TACCESS,%
940   TACO,%
941   TALG,%
942   TALLIP,%
943   TAP,%
944   TCPS,%
945   TDS,%
946   TEAC,%
947   TECS,%
948   TELO,%

```



949 THRI,%  
 950 TIIS,%  
 951 TIOT,%  
 952 TISSEC,%  
 953 TIST,%  
 954 TKDD,%  
 955 TMIS,%  
 956 TOCE,%  
 957 TOCHI,%  
 958 TOCL,%  
 959 TOCS,%  
 960 TOCT,%  
 961 TODAES,%  
 962 TODS,%  
 963 TOG,%  
 964 TOIS,%  
 965 TOIT,%  
 966 TOMACS,%  
 967 TOMM,%  
 968 TOMPECS,%  
 969 TOMS,%  
 970 TOPC,%  
 971 TOPS,%  
 972 TOPLAS,%  
 973 TOS,%  
 974 TOSEM,%  
 975 TOSN,%  
 976 TQC,%  
 977 TRETs,%  
 978 TSAS,%  
 979 TSC,%  
 980 TSLP,%  
 981 TWEB,%  
 982 FACMP%  
 983 }{%  
 984 \ifcase\@journalCode@nr  
 985 \relax % CIE  
 986 \def\@journalName{ACM Computers in Entertainment}%  
 987 \def\@journalNameShort{ACM Comput. Entertain.}%  
 988 \def\@permissionCodeOne{1544-3574}%  
 989 \or % CSUR  
 990 \def\@journalName{ACM Computing Surveys}%  
 991 \def\@journalNameShort{ACM Comput. Surv.}%  
 992 \def\@permissionCodeOne{0360-0300}%  
 993 \or % DGOV  
 994 \def\@journalName{Digital Government: Research and Practice}%  
 995 \def\@journalNameShort{Digit. Gov. Res. Pract.}%  
 996 \def\@permissionCodeOne{2639-0175}%  
 997 \or % DTRAP  
 998 \def\@journalName{Digital Threats: Research and Practice}%

```

999 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
1000 \def\@permissionCodeOne{2576-5337}%
1001 \or % HEALTH
1002 \def\@journalName{ACM Transactions on Computing for Healthcare}%
1003 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
1004 \def\@permissionCodeOne{2637-8051}%
1005 \or % IMWUT
1006 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
1007     Wearable and Ubiquitous Technologies}%
1008 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
1009 \def\@permissionCodeOne{2474-9567}%
1010 \@ACM@screentru
1011 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1012 \or % JACM
1013 \def\@journalName{Journal of the ACM}%
1014 \def\@journalNameShort{J. ACM}%
1015 \def\@permissionCodeOne{0004-5411}%
1016 \or % JDIQ
1017 \def\@journalName{ACM Journal of Data and Information Quality}%
1018 \def\@journalNameShort{ACM J. Data Inform. Quality}%
1019 \def\@permissionCodeOne{1936-1955}%
1020 \or % JEA
1021 \def\@journalName{ACM Journal of Experimental Algorithmics}%
1022 \def\@journalNameShort{ACM J. Exp. Algor.}%
1023 \def\@permissionCodeOne{1084-6654}%
1024 \or % JERIC
1025 \def\@journalName{ACM Journal of Educational Resources in Computing}%
1026 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
1027 \def\@permissionCodeOne{1073-0516}%
1028 \or % JETC
1029 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
1030 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
1031 \def\@permissionCodeOne{1550-4832}%
1032 \or % JOCCH
1033 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
1034 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
1035 \or % PACMCGIT
1036 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
1037 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
1038 \def\@permissionCodeOne{2577-6193}%
1039 \@ACM@screentru
1040 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1041 \or % PACMHCI
1042 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
1043 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
1044 \def\@permissionCodeOne{2573-0142}%
1045 \@ACM@screentru
1046 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1047 \or % PACMPL
1048 \def\@journalName{Proceedings of the ACM on Programming Languages}%

```

```

1049 \def\@journalNameShort{Proc. ACM Program. Lang.}%
1050 \def\@permissionCodeOne{2475-1421}%
1051 \@ACM@screentruer
1052 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1053 \or % POMACS
1054 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
1055 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
1056 \def\@permissionCodeOne{2476-1249}%
1057 \@ACM@screentruer
1058 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1059 \or % TAAS
1060 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
1061 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
1062 \def\@permissionCodeOne{1556-4665}%
1063 \or % TACCESS
1064 \def\@journalName{ACM Transactions on Accessible Computing}%
1065 \def\@journalNameShort{ACM Trans. Access. Comput.}%
1066 \def\@permissionCodeOne{1936-7228}%
1067 \or % TACO
1068 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
1069 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
1070 \or % TALG
1071 \def\@journalName{ACM Transactions on Algorithms}%
1072 \def\@journalNameShort{ACM Trans. Algor.}%
1073 \def\@permissionCodeOne{1549-6325}%
1074 \or % TALLIP
1075 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
1076 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
1077 \def\@permissionCodeOne{2375-4699}%
1078 \or % TAP
1079 \def\@journalName{ACM Transactions on Applied Perception}%
1080 \or % TCPS
1081 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1082 \or % TDS
1083 \def\@journalName{ACM/IMS Transactions on Data Science}%
1084 \def\@journalNameShort{ACM/IMS Trans. Data Sci.}%
1085 \def\@permissionCodeOne{2577-3224}%
1086 \or % TEAC
1087 \def\@journalName{ACM Transactions on Economics and Computation}%
1088 \or % TECS
1089 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1090 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1091 \def\@permissionCodeOne{1539-9087}%
1092 \or % TELO
1093 \def\@journalName{ACM Transactions on Evolutionary Learning}%
1094 \def\@journalNameShort{ACM Trans. Evol. Learn.}%
1095 \def\@permissionCodeOne{2688-3007}%
1096 \or % THRI
1097 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1098 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%

```

```

1099 \def\@permissionCodeOne{2573-9522}%
1100 \or % TIIS
1101 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
1102 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1103 \def\@permissionCodeOne{2160-6455}%
1104 \or % TIOT
1105 \def\@journalName{ACM Transactions on Internet of Things}%
1106 \def\@journalNameShort{ACM Trans. Internet Things}%
1107 \def\@permissionCodeOne{2577-6207}%
1108 \or % TISSEC
1109 \def\@journalName{ACM Transactions on Information and System Security}%
1110 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1111 \def\@permissionCodeOne{1094-9224}%
1112 \or % TIST
1113 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1114 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1115 \def\@permissionCodeOne{2157-6904}%
1116 \or % TKDD
1117 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1118 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1119 \def\@permissionCodeOne{1556-4681}%
1120 \or % TMIS
1121 \def\@journalName{ACM Transactions on Management Information Systems}%
1122 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1123 \def\@permissionCodeOne{2158-656X}%
1124 \or % TOCE
1125 \def\@journalName{ACM Transactions on Computing Education}%
1126 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1127 \def\@permissionCodeOne{1946-6226}%
1128 \or % TOCHI
1129 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1130 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1131 \def\@permissionCodeOne{1073-0516}%
1132 \or % TOCL
1133 \def\@journalName{ACM Transactions on Computational Logic}%
1134 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1135 \def\@permissionCodeOne{1529-3785}%
1136 \or % TOCS
1137 \def\@journalName{ACM Transactions on Computer Systems}%
1138 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1139 \def\@permissionCodeOne{0734-2071}%
1140 \or % TOCT
1141 \def\@journalName{ACM Transactions on Computation Theory}%
1142 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1143 \def\@permissionCodeOne{1942-3454}%
1144 \or % TODAES
1145 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1146 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1147 \def\@permissionCodeOne{1084-4309}%
1148 \or % TODS

```

```

1149 \def\@journalName{ACM Transactions on Database Systems}%
1150 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1151 \def\@permissionCodeOne{0362-5915}%
1152 \or % TOG
1153 \def\@journalName{ACM Transactions on Graphics}%
1154 \def\@journalNameShort{ACM Trans. Graph.}%
1155 \def\@permissionCodeOne{0730-0301}%
1156 \or % TOIS
1157 \def\@journalName{ACM Transactions on Information Systems}%
1158 \def\@permissionCodeOne{1046-8188}%
1159 \or % TOIT
1160 \def\@journalName{ACM Transactions on Internet Technology}%
1161 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1162 \def\@permissionCodeOne{1533-5399}%
1163 \or % TOMACS
1164 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1165 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1166 \or % TOMM
1167 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1168 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1169 \def\@permissionCodeOne{1551-6857}%
1170 \def\@permissionCodeTwo{0100}%
1171 \or % TOMPECS
1172 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1173 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1174 \def\@permissionCodeOne{2376-3639}%
1175 \or % TOMS
1176 \def\@journalName{ACM Transactions on Mathematical Software}%
1177 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1178 \def\@permissionCodeOne{0098-3500}%
1179 \or % TOPC
1180 \def\@journalName{ACM Transactions on Parallel Computing}%
1181 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1182 \def\@permissionCodeOne{1539-9087}%
1183 \or % TOPS
1184 \def\@journalName{ACM Transactions on Privacy and Security}%
1185 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1186 \def\@permissionCodeOne{2471-2566}%
1187 \or % TOPLAS
1188 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1189 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1190 \def\@permissionCodeOne{0164-0925}%
1191 \or % TOS
1192 \def\@journalName{ACM Transactions on Storage}%
1193 \def\@journalNameShort{ACM Trans. Storage}%
1194 \def\@permissionCodeOne{1553-3077}%
1195 \or % TOSEM
1196 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1197 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1198 \def\@permissionCodeOne{1049-331X}%

```

```

1199 \or % TOSN
1200 \def\@journalName{ACM Transactions on Sensor Networks}%
1201 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1202 \def\@permissionCodeOne{1550-4859}%
1203 \or % TQC
1204 \def\@journalName{ACM Transactions on Quantum Computing}%
1205 \def\@journalNameShort{ACM Trans. Quantum Comput.}%
1206 \def\@permissionCodeOne{2643-6817}%
1207 \or % TRET
1208 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1209 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1210 \def\@permissionCodeOne{1936-7406}%
1211 \or % TSAS
1212 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1213 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1214 \def\@permissionCodeOne{2374-0353}%
1215 \or % TSC
1216 \def\@journalName{ACM Transactions on Social Computing}%
1217 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1218 \def\@permissionCodeOne{2469-7818}%
1219 \or % TSLP
1220 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1221 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1222 \def\@permissionCodeOne{1550-4875}%
1223 \or % TWEB
1224 \def\@journalName{ACM Transactions on the Web}%
1225 \def\@journalNameShort{ACM Trans. Web}%
1226 \def\@permissionCodeOne{1559-1131}%
1227 \else % FACMP, a dummy journal
1228 \def\@journalName{Forthcoming ACM Publication}%
1229 \def\@journalNameShort{ACM Forthcoming}%
1230 \def\@permissionCodeOne{XXXX-XXXX}%
1231 \fi
1232 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1233 }{%
1234 \ClassError{\@classname}{Incorrect journal #1}%
1235 }%

```

\acmJournal And the syntactic sugar around it

```

1236 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1237 \global\@ACM@journal@bibstriptrue}

```

The defaults:

```

1238 \def\@journalCode@nr{0}
1239 \def\@journalName{}%
1240 \def\@journalNameShort{\@journalName}%
1241 \def\@permissionCodeOne{XXXX-XXXX}%
1242 \def\@permissionCodeTwo{}%

```

`\acmConference` This is the conference command

```

1243 \newcommand\acmConference[4][\%
1244   \gdef\acmConference@shortname{#1}%
1245   \gdef\acmConference@name{#2}%
1246   \gdef\acmConference@date{#3}%
1247   \gdef\acmConference@venue{#4}%
1248   \ifx\acmConference@shortname\empty
1249     \gdef\acmConference@shortname{#2}%
1250   \fi
1251   \global\@ACM@journal@bibstripfalse
1252 }
1253 \if@ACM@journal\else
1254 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1255   DC, USA}%
1256 \fi

```

`\acmBooktitle` The book title of the conference:

`\@acmBooktitle`

```

1257 \def\acmBooktitle#1{\gdef\acmBooktitle{#1}}
1258 \acmBooktitle{}
1259 \ifx\acmConference@name\undefined\else
1260 \acmBooktitle{Proceedings of \acmConference@name
1261   \ifx\acmConference@name\acmConference@shortname\else
1262     \ (\acmConference@shortname)\fi}
1263 \fi

```

`\@editorsAbbrev` How to abbreviate editors

```

1264 \def\@editorsAbbrev{(Ed.)}

```

`\@acmEditors` The list of editors

```

1265 \def\@acmEditors{}

```

`\editor` Add a new editor to the list

```

1266 \def\editor#1{\ifx\@acmEditors\empty
1267   \gdef\@acmEditors{#1}%
1268   \else
1269     \gdef\@editorsAbbrev{(Eds.)}%
1270     \g@addto@macro\@acmEditors{\and#1}%
1271   \fi}

```

`\subtitle` The subtitle macro

```

1272 \def\subtitle#1{\def\@subtitle{#1}}
1273 \subtitle{}

```

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

```

1274 \newcount\num@authorgroups
1275 \num@authorgroups=0\relax

```

`\num@author` The total number of authors

```

1276 \newcount\num@author
1277 \num@author=0\relax

```

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

```
1278 \newif\if@insideauthorgroup
1279 \@insideauthorgroupfalse
```

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

Note that we want to typeset the link to the author's orcid if known. The problem is, we know the orcid only after the author is entered. The trick is based on the idea that `\csname... \endcsname` is `\relax` unless defined. Therefore we typeset authors by the special macro `\csname typeset@author\the\num@authors\endcsname`, which is defined by `\orcid` command.

```
1280 \renewcommand\author[2][{}%
1281   \IfSubStr{\detokenize{#2}}{,}{\ClassWarning{\@classname}{Do not put several
1282     authors in the same \string\author\space macro!}}{}%
1283   \global\advance\num@authors by 1\relax
1284   \if@insideauthorgroup\else
1285     \global\advance\num@authorgroups by 1\relax
1286     \global\@insideauthorgrouptrue
1287   \fi
1288   \ifx\addresses\@empty
1289     \if@ACM@anonymous
1290       \gdef\addresses{\@author{Anonymous Author(s)}%
1291         \ifx\@acmSubmissionID\@empty\else\Submission Id:
1292           \@acmSubmissionID\fi}%
1293       \gdef\authors{Anonymous Author(s)}%
1294     \else
1295       \expandafter\gdef\expandafter\addresses\expandafter{%
1296         \expandafter\@author\expandafter{%
1297           \csname typeset@author\the\num@authors\endcsname{#2}}}%
1298       \gdef\authors{#2}%
1299     \fi
1300   \else
1301     \if@ACM@anonymous\else
1302       \expandafter\g@addto@macro\expandafter\addresses\expandafter{%
1303         \expandafter\and\expandafter\@author\expandafter{%
1304           \csname typeset@author\the\num@authors\endcsname{#2}}}%
1305       \g@addto@macro\authors{\and#2}%
1306     \fi
1307   \fi
1308   \if@ACM@anonymous
1309     \ifx\shortauthors\@empty
1310       \gdef\shortauthors{Anon.
1311         \ifx\@acmSubmissionID\@empty\else Submission Id:
1312           \@acmSubmissionID\fi}%
1313     \fi
1314   \else
1315     \def\@tempa{#1}%
1316     \ifx\@tempa\@empty
1317       \ifx\shortauthors\@empty
1318         \gdef\shortauthors{#2}%
```



```

1319     \else
1320       \g@addto@macro\shortauthors{\and#2}%
1321     \fi
1322   \else
1323     \ifx\shortauthors\@empty
1324       \gdef\shortauthors{#1}%
1325     \else
1326       \g@addto@macro\shortauthors{\and#1}%
1327     \fi
1328   \fi
1329 \fi}

```

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

```

1330 \newcommand{\affiliation}[2][{}]{%
1331   \global\@insideauthorgroupfalse
1332   \if@ACM@anonymous\else
1333     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1334   \fi}

```

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

```

1335 \define@boolkey+{@ACM@affiliation@}[@ACM@affiliation@]{obeypunctuation}%
1336 [true]{}{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1337 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

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

```

1338 \def\@additionalaffiliation#1{\bgroup
1339   \def\position##1{\ignorespaces}%
1340   \def\institution##1{##1\ignorespaces}%
1341   \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1342   \def\@department[##1]##2{\unskip, ##2\ignorespaces}%
1343   \let\streetaddress\position
1344   \let\city\position
1345   \let\state\position
1346   \let\postcode\position
1347   \let\country\position
1348   Also with #1\unskip.\egroup}

```

`\email` The macro `\email` mimics `\email` from `amsart`. Again, it has an optional argument that we do not currently need but keep for possible future use.

```

1349 \renewcommand{\email}[2][{}]{%
1350   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1351     addresses in the same \string\email\space macro!}}{}%
1352   \if@ACM@anonymous\else
1353     \g@addto@macro\addresses{\email{#1}{#2}}%
1354   \fi}

```

`\orcid` We redefine the command to typeset the current author

```

1355 \def\orcid#1{\unskip\ignorespaces%
1356   \IfBeginWith{#1}{http}{%
1357     \expandafter\gdef\csname
1358       typeset@author\the\num@authors\endcsname##1{%
1359         \href{#1}{##1}}}%
1360   \expandafter\gdef\csname
1361     typeset@author\the\num@authors\endcsname##1{%
1362       \href{https://orcid.org/#1}{##1}}}
```

`\authorsaddresses` Setting up authors' addresses

```

1363 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1364 \authorsaddresses{\mkauthorsaddresses}
```

`\@titlenotes` The title notes

```

1365 \def\@titlenotes{}
```

`\titlenote` Adding a note to the title

```

1366 \def\titlenote#1{%
1367   \g@addto@macro\@title{\footnotemark}%
1368   \if@ACM@anonymous
1369     \g@addto@macro\@titlenotes{%
1370       \stepcounter{footnote}\footnotetext{Title note}}%
1371   \else
1372     \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1373   \fi}
```

`\@subtitlenotes` The subtitle notes

```

1374 \def\@subtitlenotes{}
```

`\subtitlenote` Adding a note to the subtitle

```

1375 \def\subtitlenote#1{%
1376   \g@addto@macro\@subtitle{\footnotemark}%
1377   \if@ACM@anonymous
1378     \g@addto@macro\@subtitlenotes{%
1379       \stepcounter{footnote}\footnotetext{Subtitle note}}%
1380   \else
1381     \g@addto@macro\@subtitlenotes{%
1382       \stepcounter{footnote}\footnotetext{#1}}%
1383   \fi}
```

`\@authornotes` The author notes

```

1384 \def\@authornotes{}
```

`\authornote` Adding a note to the author

```

1385 \def\authornote#1{%
1386   \if@ACM@anonymous\else
1387     \g@addto@macro\addresses{\@authornotemark}%

```

```

1388 \g@addto@macro\@authornotes{%
1389 \stepcounter{footnote}\footnotetext{#1}}%
1390 \fi}

\authornotemark Adding a footnote mark to the authors
1391 \newcommand\authornotemark[1][\relax]{%
1392 \ifx#1\relax\relax\relax
1393 \g@addto@macro\addresses{\@authornotemark}%
1394 \else
1395 \g@addto@macro\addresses{\@authornotemark{#1}}%
1396 \fi}

\acmVolume The current volume
1397 \def\acmVolume#1{\def\@acmVolume{#1}}
1398 \acmVolume{1}

\acmNumber The current number
1399 \def\acmNumber#1{\def\@acmNumber{#1}}
1400 \acmNumber{1}

\acmArticle The current article
1401 \def\acmArticle#1{\def\@acmArticle{#1}}
1402 \acmArticle{}

\acmArticleSeq The sequence number
1403 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
1404 \acmArticleSeq{\@acmArticle}

\acmYear The current year
1405 \def\acmYear#1{\def\@acmYear{#1}}
1406 \acmYear{\the\year}

\acmMonth The current month
1407 \def\acmMonth#1{\def\@acmMonth{#1}}
1408 \acmMonth{\the\month}

\@acmPubDate The publication date
1409 \def\@acmPubDate{\ifcase\@acmMonth\or
1410 January\or February\or March\or April\or May\or June\or
1411 July\or August\or September\or October\or November\or
1412 December\fi~\@acmYear}

\acmPrice The price
1413 \def\acmPrice#1{\def\@acmPrice{#1}}
1414 \acmPrice{15.00}

\acmSubmissionID The submission ID
1415 \def\acmSubmissionID#1{\def\@acmSubmissionID{#1}}
1416 \acmSubmissionID{}

```

`\acmISBN` The book ISBN

```

1417 \def\acmISBN#1{\def\@acmISBN{#1}}
1418 \acmISBN{978-x-xxxx-xxxx-x/YY/MM}

```

`\acmDOI` The paper DOI

```

1419 \def\acmDOI#1{\def\@acmDOI{#1}}
1420 \acmDOI{10.1145/nnnnnnn.nnnnnnn}

```

`\if@ACM@badge` Whether to print a badge. Note that either a left or right badge triggers it:

```

1421 \newif\if@ACM@badge
1422 \@ACM@badgefalse

```

`\@ACM@badge@width` The width of the badge

```

1423 \newlength\@ACM@badge@width
1424 \setlength\@ACM@badge@width{5pc}

```

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

```

1425 \newlength\@ACM@title@width

```

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

```

1426 \newlength\@ACM@badge@skip
1427 \setlength\@ACM@badge@skip{1pc}

```

`\acmBadgeR` Setting the right badge

```

1428 \newcommand\acmBadgeR[2][\@ACM@badgetrue
1429   \def\@acmBadgeR@url{#1}%
1430   \def\@acmBadgeR@image{#2}}
1431 \def\@acmBadgeR@url{}
1432 \def\@acmBadgeR@image{}

```

`\acmBadgeL` Setting the left badge

```

1433 \newcommand\acmBadgeL[2][\@ACM@badgetrue
1434   \def\@acmBadgeL@url{#1}%
1435   \def\@acmBadgeL@image{#2}}
1436 \def\@acmBadgeL@url{}
1437 \def\@acmBadgeL@image{}

```

`\startPage` The start page of the paper

```

1438 \def\startPage#1{\def\@startPage{#1}}
1439 \startPage{}

```

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

```

1440 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1441   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.

```

1442 \def\keywords#1{\def\@keywords{#1}}
1443 \let\@keywords\@empty

```

```

1444 \AtEndDocument{\if@ACM@nonacm\else\ifx\@keywords\@empty
1445   \ifnum\getrefnumber{TotPages}>2\relax
1446   \ClassWarningNoLine{\@classname}{ACM keywords are mandatory
1447     for papers over two pages}%
1448   \fi\fi\fi}

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
1449 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}}

\@saveabstract And saving the abstract
1450 \long\def\@saveabstract#1{\if@ACM@maketitle@typeset
1451   \ClassError{\@classname}{Abstract must be defined before maketitle
1452     command. Please move it!}\fi
1453   \long\gdef\@abstract{#1}}
1454 \@saveabstract{}}

\@empty The long version of \@empty (to compare with \@abstract)
1455 \long\def\@empty{}}

\if@ACM@printccs Whether to print CCS
1456 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printccs}[true]{%
1457   \if@ACM@printccs
1458     \ClassInfo{\@classname}{Printing CCS}%
1459   \else
1460     \ClassInfo{\@classname}{Suppressing CCS}%
1461   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}

\if@ACM@printacmref Whether to print the ACM bibstrip
1462 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printacmref}[true]{%
1463   \if@ACM@printacmref
1464     \ClassInfo{\@classname}{Printing bibformat}%
1465   \else
1466     \ClassInfo{\@classname}{Suppressing bibformat}%
1467   \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

1468 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@printacmref\else
1469   \ifnum\getrefnumber{TotPages}>1\relax
1470   \ClassWarningNoLine{\@classname}{%
1471     ACM reference format is mandatory \MessageBreak
1472     for papers over one page. \MessageBreak
1473     Please add printacmref=true to the \MessageBreak
1474     \string\settopmatter\space command.}%
1475   \fi\fi\fi}

\if@ACM@printfolios Whether to print folios
1476 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printfolios}[true]{%
1477   \if@ACM@printfolios
1478     \ClassInfo{\@classname}{Printing folios}%

```

```

1479 \else
1480 \ClassInfo{\@classname}{Suppressing folios}%
1481 \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.
1482 \define@cmdkey{\@ACM@topmatter@}{\@ACM@}{authorsperrow}[0]{%
1483 \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorsperrow to
1484 #1}}{\ClassWarning{\@classname}{The parameter authorsperrow must be
1485 numerical. Ignoring the input #1}\gdef\@ACM@authorsperrow{0}}}}

\settopmatter The usual syntactic sugar
1486 \def\settopmatter#1{\setkeys{\@ACM@topmatter@}{#1}}

Now the settings
1487 \settopmatter{printccs=true, printacmref=true}
1488 \if@ACM@manuscript
1489 \settopmatter{printfolios=true}
1490 \else
1491 \if@ACM@journal
1492 \settopmatter{printfolios=true}
1493 \else
1494 \settopmatter{printfolios=false}
1495 \fi
1496 \fi
1497 \settopmatter{authorsperrow=0}

\@received The container for the paper history
1498 \def\@received{}

\received The \received command
1499 \newcommand\received[2][\def\@tempa{#1}%
1500 \ifx\@tempa\@empty
1501 \ifx\@received\@empty
1502 \gdef\@received{Received #2}%
1503 \else
1504 \g@addto@macro{\@received}{; revised #2}%
1505 \fi
1506 \else
1507 \ifx\@received\@empty
1508 \gdef\@received{#1 #2}%
1509 \else
1510 \g@addto@macro{\@received}{; #1 #2}%
1511 \fi
1512 \fi}
1513 \AtEndDocument{%
1514 \ifx\@received\@empty\else
1515 \par\bigskip\noindent\small\normalfont\@received\par
1516 \fi}

```

### 3.13 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```
1517 \RequirePackage{comment}
1518 \excludecomment{CCSXML}
```

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

```
1519 \let\@concepts\empty
1520 \newcounter{@concepts}
```

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

```
1521 \newcommand\ccsdesc[2][100]{%
1522   \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!

```
1523 \def\textrightarrow{$\rightarrow$}
1524 \def\ccsdesc@parse#1~#2~#3~{%
1525   \stepcounter{@concepts}%
1526   \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1527     \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1528       \textbf{#2}}%
1529     \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{;}%
1530     \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1531     \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1532       \csname CCS@Punctuation@#2\endcsname
1533       \csname CCS@Specific@#2\endcsname}%
1534     \fi
1535     \ifx#3\relax\relax\else
1536       \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1537         \textrightarrow\ }%
1538       \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1539         \addtocounter{@concepts}{-1}%
1540         \ifnum#1>499\textbf{#3}\else
1541         \ifnum#1>299\textit{#3}\else
1542         #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1543       \fi
1544 \ccsdesc@parse@finish}

1545 \AtEndDocument{\if@ACM@nonacm\else\ifx\@concepts\empty\relax
1546   \ifnum\getrefnumber{TotPages}>2\relax
1547     \ClassWarningNoLine{\@classname}{CCS concepts are mandatory
1548       for papers over two pages}%
1549   \fi\fi\fi}
```

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

```
1550 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}
```

### 3.14 Copyright system

This is from acmcopyright.sty

```
\if@printcopyright Whether to print a copyright symbol
1551 \newif\if@printcopyright
1552 \@printcopyrighttrue

\if@printpermission Whether to print the permission block
1553 \newif\if@printpermission
1554 \@printpermissiontrue

\if@acmowned Whether the ACM owns the rights to the paper
1555 \newif\if@acmowned
1556 \@acmownedtrue

Keys:
1557 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1558   \acm@copyrightinput\acm@copyrightmode]{none,%
1559   acmcopyright,acmlicensed,rightsretained,%
1560   usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1561   licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1562   iw3c2w3,iw3c2w3g}{%
1563   \@printpermissiontrue
1564   \@printcopyrighttrue
1565   \@acmownedtrue
1566   \ifnum\acm@copyrightmode=0\relax % none
1567     \@printpermissionfalse
1568     \@printcopyrightfalse
1569     \@acmownedfalse
1570   \fi
1571   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1572     \@acmownedfalse
1573   \fi
1574   \ifnum\acm@copyrightmode=3\relax % rightsretained
1575     \@acmownedfalse
1576     \AtBeginDocument{\acmPrice{}}%
1577   \fi
1578   \ifnum\acm@copyrightmode=4\relax % usgov
1579     \@printpermissiontrue
1580     \@printcopyrightfalse
1581     \@acmownedfalse
1582     \AtBeginDocument{\acmPrice{}}%
1583   \fi
1584   \ifnum\acm@copyrightmode=6\relax % cagov
1585     \@acmownedfalse
1586   \fi
1587   \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1588     \@acmownedfalse
1589   \fi
```



```

1590 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1591 \@acmownedfalse
1592 \fi
1593 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1594 \@acmownedfalse
1595 \fi
1596 \ifnum\acm@copyrightmode=11\relax % othergov
1597 \@acmownedtrue
1598 \fi
1599 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1600 \@acmownedfalse
1601 \fi
1602 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1603 \@acmownedfalse
1604 \AtBeginDocument{\acmPrice{}}%
1605 \fi
1606 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1607 \@acmownedfalse
1608 \AtBeginDocument{\acmPrice{}}%
1609 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1610 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1611 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1612 \def\@copyrightowner{%
1613   \ifcase\acm@copyrightmode\relax % none
1614   \or % acmcopyright
1615     Association for Computing Machinery.
1616   \or % acmlicensed
1617     Copyright held by the owner/author(s). Publication rights licensed to
1618     ACM\@.
1619   \or % rightsretained
1620     Copyright held by the owner/author(s).
1621   \or % usgov
1622   \or % usgovmixed
1623     Association for Computing Machinery.
1624   \or % cagov
1625     Crown in Right of Canada.
1626   \or %cagovmixed
1627     Association for Computing Machinery.
1628   \or %licensedusgovmixed
1629     Copyright held by the owner/author(s). Publication rights licensed to
1630     ACM\@.
1631   \or % licensedcagov
1632     Crown in Right of Canada. Publication rights licensed to
1633     ACM\@.
1634   \or %licensedcagovmixed
1635     Copyright held by the owner/author(s). Publication rights licensed to

```

```

1636 ACM\@.
1637 \or % othergov
1638 Association for Computing Machinery.
1639 \or % licensedothergov
1640 Copyright held by the owner/author(s). Publication rights licensed to
1641 ACM\@.
1642 \or % ic2w3www
1643 IW3C2 (International World Wide Web Conference Committee), published
1644 under Creative Commons CC-BY~4.0 License.
1645 \or % ic2w3wwwgoogle
1646 IW3C2 (International World Wide Web Conference Committee), published
1647 under Creative Commons CC-BY-NC-ND~4.0 License.
1648 \fi}

```

\@formatdoi Print a clickable DOI

```

1649 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1650 \def\@copyrightpermission{%
1651   \ifcase\acm@copyrightmode\relax % none
1652   \or % acmcopyright
1653     Permission to make digital or hard copies of all or part of this
1654     work for personal or classroom use is granted without fee provided
1655     that copies are not made or distributed for profit or commercial
1656     advantage and that copies bear this notice and the full citation on
1657     the first page. Copyrights for components of this work owned by
1658     others than ACM must be honored. Abstracting with credit is
1659     permitted. To copy otherwise, or republish, to post on servers or to
1660     redistribute to lists, requires prior specific permission
1661     and\hspace*{.5pt}/or a fee. Request permissions from
1662     permissions@acm.org.
1663   \or % acmlicensed
1664     Permission to make digital or hard copies of all or part of this
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1666     that copies are not made or distributed for profit or commercial
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1669     others than the author(s) must be honored. Abstracting with credit
1670     is permitted. To copy otherwise, or republish, to post on servers
1671     or to redistribute to lists, requires prior specific permission
1672     and\hspace*{.5pt}/or a fee. Request permissions from
1673     permissions@acm.org.
1674   \or % rightsretained
1675     Permission to make digital or hard copies of part or all of this work
1676     for personal or classroom use is granted without fee provided that
1677     copies are not made or distributed for profit or commercial advantage
1678     and that copies bear this notice and the full citation on the first
1679     page. Copyrights for third-party components of this work must be
1680     honored. For all other uses, contact the
1681     owner\hspace*{.5pt}/author(s).

```

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1771 the appropriate attribution.  
1772 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:  
1773 \def\copyrightyear#1{\def\@copyrightyear{#1}}  
1774 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container  
1775 \def\@teaserfigures{}

teaserfigure The teaser figure

```

1776 \newenvironment{teaserfigure}{\Collect@Body@saveteaser}{}

\@saveteaser Saving the teaser
1777 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amsart \thanks so the anonymous key works
1778 \renewcommand{\thanks}[1]{%
1779   \ifnotempty{#1}{%
1780     \if@ACM@anonymous
1781       \g@addto@macro\thankses{\thanks{A note}}%
1782     \else
1783       \g@addto@macro\thankses{\thanks{#1}}%
1784     \fi}}

```

### 3.15 Maketitle hook

The current  $\text{\LaTeX}$  provides a nice `lthooks` mechanism. However, since it is relatively new, we will use oldfashioned approach—at least for now.

```

\@beginmaketitlehook The hook
1785 \ifx\@beginmaketitlehook\@undefined
1786   \let\@beginmaketitlehook\@empty
1787 \fi

\AtBeginMaketitle Adding to the hook
1788 \def\AtBeginMaketitle{\g@addto@macro\@beginmaketitlehook}

```

### 3.16 Typesetting top matter

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

```

1789 \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.

```

1790 \def\maketitle{\@beginmaketitlehook
1791   \@ACM@maketitle@typesettrue
1792   \if@ACM@anonymous
1793     % Anonymize omission of \author-s
1794     \ifnum\@authorgroups=0\author{}\fi
1795   \fi
1796   \begingroup
1797   \let\@vspace\@vspace@orig
1798   \let\@vspacer\@vspacer@orig

```

```

1799 \let\@footnotemark\@footnotemark@nolink
1800 \let\@footnotetext\@footnotetext@nolink
1801 \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1802 \hsize=\textwidth
1803 \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1804 \mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1805 \@printtopmatter
1806 \if@ACM@sigchiamode\mkauthors\fi
1807 \setcounter{footnote}{0}%
1808 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1809 \@titlenotes
1810 \@subtitlenotes
1811 \@authornotes
1812 \let\@makefnmark\relax
1813 \let\@thefnmark\relax
1814 \let\@makefntext\@noindent
1815 \ifx\@empty\thankses\else
1816   \footnotetextauthorsaddresses{%
1817     \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1818   \fi
1819 \ifx\@empty\@authorsaddresses\else
1820   \if@ACM@anonymous\else
1821     \if@ACM@journal@bibstrip
1822       \footnotetextauthorsaddresses{%
1823         \def\par{\let\par\@par}\parindent\z@\@setauthorsaddresses}%
1824       \fi
1825     \fi
1826   \fi
1827 \if@ACM@nonacm\else\footnotetextcopyrightpermission{%
1828   \if@ACM@authordraft
1829     \raisebox{-2ex}{\z@\z@}{\makebox[0pt][l]{\large\bfseries
1830       Unpublished working draft. Not for distribution.}}%
1831     \color[gray]{0.9}%
1832   \fi
1833   \parindent\z@\parskip0.1\baselineskip
1834   \if@ACM@authorversion\else
1835     \if@printpermission\@copyrightpermission\par\fi
1836   \fi
1837   \if@ACM@manuscript\else
1838     \if@ACM@journal@bibstrip\else % Print the conference information
1839     {\itshape \acmConference@shortname, \acmConference@date, \acmConference@venue}\par
1840     \fi
1841   \fi
1842   \if@printcopyright
1843     \copyright\ \@copyrightyear\ \@copyrightowner\
1844   \else
1845     \@copyrightyear.\
1846   \fi
1847   \if@ACM@manuscript
1848     Manuscript submitted to ACM\

```

```

1849 \else
1850 \if@ACM@authorversion
1851 This is the author's version of the work. It is posted here for
1852 your personal use. Not for redistribution. The definitive Version
1853 of Record was published in
1854 \if@ACM@journal@bibstrip
1855 \emph{\@journalName}%
1856 \else
1857 \emph{\@acmBooktitle}%
1858 \fi
1859 \ifx\@acmDOI\@empty
1860 .
1861 \else
1862 , \@formatdoi{\@acmDOI}.
1863 \fi\
1864 \else
1865 \if@ACM@nonacm\else
1866 \if@ACM@journal@bibstrip
1867 \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle
1868 \ifx\@acmPrice\@empty\else\ $\@acmPrice\fi\
1869 \@formatdoi{\@acmDOI}%
1870 \else % Conference
1871 \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN
1872 \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\fi
1873 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi%
1874 \fi
1875 \fi
1876 \fi
1877 \fi}
1878 \fi
1879 \endgroup
1880 \setcounter{footnote}{0}%
1881 \@mkabstract
1882 \if@ACM@printccs
1883 \ifx\@concepts\@empty\else\bgroup
1884 {\@specialsection{CCS Concepts}%
1885 \noindent\@concepts\par}\egroup
1886 \fi
1887 \fi
1888 \ifx\@keywords\@empty\else\bgroup
1889 {\if@ACM@journal
1890 \@specialsection{Additional Key Words and Phrases}%
1891 \else
1892 \@specialsection{Keywords}%
1893 \fi
1894 \noindent\@keywords\par}\egroup
1895 \fi
1896 \let\metadata@authors=\authors
1897 \xandlist{, }{, }{\, }\metadata@authors
1898 \def\@ACM@checkaffil{%

```

```

1899 \hypersetup{%
1900     pdfauthor={\metadata@authors},
1901     pdftitle={\@title},
1902     pdfsubject={\@concepts},
1903     pdfkeywords={\@keywords},
1904     pdfcreator={LaTeX with acmart
1905         \csname ver@acmart.cls\endcsname\space
1906         and hyperref
1907         \csname ver@hyperref.sty\endcsname}}%
1908 \andify\authors
1909 \andify\shortauthors
1910 \global\let\authors=\authors
1911 \global\let\shortauthors=\shortauthors
1912 \if@ACM@printacmref
1913     \mkbibcitation
1914 \fi
1915 \global\@topnum\z@ % this prevents floats from falling
1916                     % at the top of page 1
1917 \global\@botnum\z@ % we do not want them to be on the bottom either
1918 \@printendtopmatter
1919 \@afterindentfalse
1920 \@afterheading
1921 }

```

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

```

1922 \def\@specialsection#1{%
1923     \let\@vspace\@vspace@orig
1924     \let\@vspacer\@vspacer@orig
1925     \ifcase\ACM@format@nr
1926     \relax % manuscript
1927     \par\medskip\small\noindent#1: %
1928     \or % acmsmall
1929     \par\medskip\small\noindent#1: %
1930     \or % acmlarge
1931     \par\medskip\small\noindent#1: %
1932     \or % acmtog
1933     \par\medskip\small\noindent#1: %
1934     \or % sigconf
1935     \section*{#1}%
1936     \or % siggraph
1937     \section*{#1}%
1938     \or % sigplan
1939     \noindentparagraph*{#1:~}%
1940     \or % sigchi
1941     \section*{#1}%
1942     \or % sigchi-a
1943     \section*{#1}%
1944     \fi
1945     \let\@vspace\@vspace@acm
1946     \let\@vspacer\@vspacer@acm

```



1947 }

\@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.

Note that if there are too many authors, \mktitle@bx might overflow the page. Therefore we start with checking this and if this happens, we split the box and print it page by page.

```

1948 \def\@printtopmatter{%
1949   \ifx\@startPage\@empty
1950     \gdef\@startPage{1}%
1951   \else
1952     \setcounter{page}{\@startPage}%
1953   \fi
1954   \@tempdima=\ht\mktitle@bx
1955   \advance\@tempdima by \dp\mktitle@bx
1956   \ifdim\@tempdima>0.9\textheight
1957     \loop
1958       \setbox\@tempboxa=\vsplit \mktitle@bx to 0.9\textheight
1959       \thispagestyle{firstpagestyle}%
1960       \noindent\unvbox\@tempboxa
1961       \clearpage
1962       \@tempdima=\ht\mktitle@bx
1963       \advance\@tempdima by \dp\mktitle@bx
1964       \ifdim\@tempdima>0.9\textheight\repeat
1965   \fi
1966   \thispagestyle{firstpagestyle}%
1967   \noindent
1968   \ifcase\ACM@format@nr
1969   \relax % manuscript
1970     \box\mktitle@bx\par
1971   \or % acmsmall
1972     \box\mktitle@bx\par
1973   \or % acmlarge
1974     \box\mktitle@bx\par
1975   \or % acmtog
1976     \twocolumn[\box\mktitle@bx]%
1977   \or % sigconf
1978     \twocolumn[\box\mktitle@bx]%
1979   \or % siggraph
1980     \twocolumn[\box\mktitle@bx]%
1981   \or % sigplan
1982     \twocolumn[\box\mktitle@bx]%
1983   \or % sigchi
1984     \twocolumn[\box\mktitle@bx]%
1985   \or % sigchi-a
1986     \par\box\mktitle@bx\par\bigskip
1987     \if@ACM@badge
1988       \marginpar{\noindent

```

```

1989         \ifx\@acmBadgeL@image\empty\else
1990             \href{\@acmBadgeL@url}{%
1991                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1992             \hskip\@ACM@badge@skip
1993         \fi
1994         \ifx\@acmBadgeR@image\empty\else
1995             \href{\@acmBadgeR@url}{%
1996                 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1997             \fi}%
1998     \fi
1999 \fi
2000 }

\@mktitle The title of the article
2001 \def\@mktitle{%
2002     \ifcase\ACM@format@nr
2003     \relax % manuscript
2004     \@mktitle@i
2005     \or % acmsmall
2006     \@mktitle@i
2007     \or % acmlarge
2008     \@mktitle@i
2009     \or % acmtog
2010     \@mktitle@i
2011     \or % sigconf
2012     \@mktitle@iii
2013     \or % siggraph
2014     \@mktitle@iii
2015     \or % sigplan
2016     \@mktitle@iii
2017     \or % sigchi
2018     \@mktitle@iii
2019     \or % sigchi-a
2020     \@mktitle@iv
2021     \fi
2022 }

\@titlefont The font to typeset the title
2023 \def\@titlefont{%
2024     \ifcase\ACM@format@nr
2025     \relax % manuscript
2026     \LARGE\sffamily\bfseries
2027     \or % acmsmall
2028     \LARGE\sffamily\bfseries
2029     \or % acmlarge
2030     \LARGE\sffamily\bfseries
2031     \or % acmtog
2032     \Huge\sffamily
2033     \or % sigconf
2034     \Huge\sffamily\bfseries

```

```

2035 \or % siggraph
2036 \Huge\sffamily\bfseries
2037 \or % sigplan
2038 \Huge\bfseries
2039 \or % sigchi
2040 \Huge\sffamily\bfseries
2041 \or % sigchi-a
2042 \Huge\bfseries
2043 \fi}

\@subtitlefont The font to typeset the subtitle
2044 \def\@subtitlefont{\normalsize
2045 \ifcase\ACM@format@nr
2046 \relax % manuscript
2047 \mdseries
2048 \or % acmsmall
2049 \mdseries
2050 \or % acmlarge
2051 \mdseries
2052 \or % acmtog
2053 \LARGE
2054 \or % sigconf
2055 \LARGE\mdseries
2056 \or % siggraph
2057 \LARGE\mdseries
2058 \or % sigplan
2059 \LARGE\mdseries
2060 \or % sigchi
2061 \LARGE\mdseries
2062 \or % sigchi-a
2063 \mdseries
2064 \fi}

\@mktitle@i The version of \mktitle for most journals
2065 \def\@mktitle@i{\hsize=\textwidth
2066 \@ACM@title@width=\hsize
2067 \ifx\@acmBadgeL@image\@empty\else
2068 \advance\@ACM@title@width by -\@ACM@badge@width
2069 \advance\@ACM@title@width by -\@ACM@badge@skip
2070 \fi
2071 \ifx\@acmBadgeR@image\@empty\else
2072 \advance\@ACM@title@width by -\@ACM@badge@width
2073 \advance\@ACM@title@width by -\@ACM@badge@skip
2074 \fi
2075 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
2076 \ifx\@acmBadgeL@image\@empty\else
2077 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
2078 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2079 \hskip\@ACM@badge@skip
2080 \fi}

```

```

2081 \parbox[t]{\@ACM@title@width}{\raggedright
2082 \@titlefont\noindent
2083 \@title
2084 \ifx\@subtitle\@empty\else
2085 \par\noindent{\@subtitlefont\@subtitle}
2086 \fi}%
2087 \ifx\@acmBadgeR@image\@empty\else
2088 \hskip\@ACM@badge@skip
2089 \raisebox{-.5\baselineskip}{\z@}{\z@}{\href{\@acmBadgeR@url}{%
2090 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2091 \fi
2092 \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.
2093 \def\@mktitle@iii{\hsize=\textwidth
2094 \setbox\mktitle@bx=\vbox{\@titlefont\centering
2095 \@ACM@title@width=\hsize
2096 \if@ACM@badge
2097 \advance\@ACM@title@width by -2\@ACM@badge@width
2098 \advance\@ACM@title@width by -2\@ACM@badge@skip
2099 \parbox[b]{\@ACM@badge@width}{\strut
2100 \ifx\@acmBadgeL@image\@empty\else
2101 \raisebox{-.5\baselineskip}{\z@}{\z@}{\href{\@acmBadgeL@url}{%
2102 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
2103 \fi}%
2104 \hskip\@ACM@badge@skip
2105 \fi
2106 \parbox[t]{\@ACM@title@width}{\centering\@titlefont
2107 \@title
2108 \ifx\@subtitle\@empty\else
2109 \par\noindent{\@subtitlefont\@subtitle}
2110 \fi
2111 }%
2112 \if@ACM@badge
2113 \hskip\@ACM@badge@skip
2114 \parbox[b]{\@ACM@badge@width}{\strut
2115 \ifx\@acmBadgeR@image\@empty\else
2116 \raisebox{-.5\baselineskip}{\z@}{\z@}{\href{\@acmBadgeR@url}{%
2117 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
2118 \fi}%
2119 \fi
2120 \par\bigskip}}%

\@mktitle@iv The version of \mktitle for sigchi-a
2121 \def\@mktitle@iv{\hsize=\textwidth
2122 \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont

```

```

2123 \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
2124 \noindent\@title
2125 \ifx\@subtitle\@empty\else
2126 \par\noindent\@subtitlefont\@subtitle
2127 \fi
2128 \par\bigskip}}%

```

`\@ACM@addtoaddress` This macro adds an item to the address using the following rules:

1. If we start a paragraph, add the item
2. Otherwise, add a comma and the item
3. However, the comma is deleted if it is at the end of a line. We use the magic `\cleaders` trick for this.

```

2129 \newbox\@ACM@commabox
2130 \def\@ACM@addtoaddress#1{%
2131 \ifvmode\else
2132 \if@ACM@affiliation@obeypunctuation\else
2133 \setbox\@ACM@commabox=\hbox{, }%
2134 \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
2135 \fi\fi
2136 #1}

```

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

```

\streetaddress 2137 \def\streetaddress#1{\unskip\ignorespaces}
\city           2138 \def\postcode#1{\unskip\ignorespaces}
\state          2139 \if@ACM@journal
\postcode       2140 \def\position#1{\unskip\ignorespaces}
\country        2141 \def\institution#1{\global\@ACM@instpresenttrue
2142 \unskip~#1\ignorespaces}
2143 \def\city#1{\global\@ACM@citypresenttrue\unskip\ignorespaces}
2144 \def\state#1{\unskip\ignorespaces}
2145 \newcommand\department[2][0]{\unskip\ignorespaces}
2146 \def\country#1{\global\@ACM@countrypresenttrue
2147 \if@ACM@affiliation@obeypunctuation\else, \fi#1\ignorespaces}
2148 \else
2149 \def\position#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2150 \def\institution#1{\global\@ACM@instpresenttrue
2151 \if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2152 \newcommand\department[2][0]{\if@ACM@affiliation@obeypunctuation
2153 #2\else#2\par\fi}%
2154 % \def\streetaddress#1{\if@ACM@affiliation@obeypunctuation#1\else#1\par\fi}%
2155 \def\city#1{\global\@ACM@citypresenttrue\@ACM@addtoaddress{#1}}%
2156 \let\state\@ACM@addtoaddress
2157 % \def\postcode#1{\if@ACM@affiliation@obeypunctuation#1\else\unskip\space#1\fi}%
2158 \def\country#1{\global\@ACM@countrypresenttrue\@ACM@addtoaddress{#1}}%
2159 \fi

```

```

\mkauthors Typesetting the authors
2160 \def\mkauthors{\begingroup
2161   \hsize=\textwidth
2162   \ifcase\ACM@format@nr
2163   \relax % manuscript
2164     \mkauthors@i
2165   \or % acmsmall
2166     \mkauthors@i
2167   \or % acmlarge
2168     \mkauthors@i
2169   \or % acmtog
2170     \mkauthors@i
2171   \or % sigconf
2172     \mkauthors@iii
2173   \or % siggraph
2174     \mkauthors@iii
2175   \or % sigplan
2176     \mkauthors@iii
2177   \or % sigchi
2178     \mkauthors@iii
2179   \or % sigchi-a
2180     \mkauthors@iv
2181   \fi
2182 \endgroup
2183 }

@authorfont Somehow different conferences use different fonts for author names. Why?
2184 \def@authorfont{\Large\sffamily}

@affiliationfont Font for affiliations
2185 \def@affiliationfont{\normalsize\normalfont}

Adjusting fonts for different formats
2186 \ifcase\ACM@format@nr
2187 \relax % manuscript
2188 \or % acmsmall
2189   \def@authorfont{\large\sffamily}
2190   \def@affiliationfont{\small\normalfont}
2191 \or % acmlarge
2192 \or % acmtog
2193   \def@authorfont{\LARGE\sffamily}
2194   \def@affiliationfont{\large}
2195 \or % sigconf
2196   \def@authorfont{\LARGE}
2197   \def@affiliationfont{\large}
2198 \or % siggraph
2199   \def@authorfont{\normalsize\normalfont}
2200   \def@affiliationfont{\normalsize\normalfont}
2201 \or % sigplan

```

```

2202 \def\@authorfont{\Large\normalfont}
2203 \def\@affiliationfont{\normalsize\normalfont}
2204 \or % sigchi
2205 \def\@authorfont{\bfseries}
2206 \def\@affiliationfont{\mdseries}
2207 \or % sigchi-a
2208 \def\@authorfont{\bfseries}
2209 \def\@affiliationfont{\mdseries}
2210 \fi

\@typeset@author@line At this point we have \@currentauthors and \@currentaffiliations. We typeset
                        them in the journal style
2211 \def\@typeset@author@line{%
2212   \andify\@currentauthors\par\noindent
2213   \@currentauthors\def\@currentauthors{}%
2214   \ifx\@currentaffiliations\@empty\else
2215     \andify\@currentaffiliations
2216     \unskip, {\@currentaffiliations}\par
2217   \fi
2218   \def\@currentaffiliations{}}

\if@ACM@instpresent Whether the given affiliation has institution
2219 \newif\if@ACM@instpresent
2220 \@ACM@instpresenttrue

\if@ACM@citypresent Whether the given affiliation has city
2221 \newif\if@ACM@citypresent
2222 \@ACM@citypresenttrue

\if@ACM@countrypresent Whether the given affiliation has country
2223 \newif\if@ACM@countrypresent
2224 \@ACM@countrypresenttrue

\@ACM@resetaffil Reset affiliation flags
2225 \def\@ACM@resetaffil{%
2226   \global\@ACM@instpresentfalse
2227   \global\@ACM@citypresentfalse
2228   \global\@ACM@countrypresentfalse
2229 }

\@ACM@checkaffil Check affiliation flags
2230 \def\@ACM@checkaffil{%
2231   \if@ACM@instpresent\else
2232     \ClassWarningNoLine{\@classname}{No institution present for an affiliation}%
2233     \fi
2234   \if@ACM@citypresent\else
2235     \ClassWarningNoLine{\@classname}{No city present for an affiliation}%
2236     \fi
2237   \if@ACM@countrypresent\else

```

```

2238 \ClassError{\@classname}{No country present for an affiliation}{ACM
2239   requires each author to indicate their country using country macro.}%
2240 \fi
2241 }

```

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

```

2242 \def\mkauthors@i{%
2243   \def\currentauthors{}%
2244   \def\currentaffiliations{}%
2245   \global\let\and\@typeset@author@line
2246   \def\author##1{%
2247     \ifx\currentauthors\empty
2248       \gdef\currentauthors{\@authorfont\MakeTextUppercase{##1}}%
2249     \else
2250       \g@addto@macro{\currentauthors}{\and\MakeTextUppercase{##1}}%
2251     \fi
2252     \gdef\and{}%
2253   \def\email##1##2{%
2254     \def\tempa{##2}\ifx\tempa\empty\else
2255       \ifx\currentaffiliations\empty
2256         \gdef\currentaffiliations{%
2257           \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2258           \setkeys{@ACM@affiliation@}{##1}%
2259           \@ACM@resetaffil
2260           \@affiliationfont##2\@ACM@checkaffil}%
2261         \else
2262           \g@addto@macro{\currentaffiliations}{\and
2263             \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2264             \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2265             ##2\@ACM@checkaffil}%
2266         \fi
2267       \fi
2268     \global\let\and\@typeset@author@line}%
2269   \global\setbox\mktitle@bx=\vbox{\noindent\unvbox\mktitle@bx\par\medskip
2270     \noindent\addresses\@typeset@author@line
2271     \par\medskip}%
2272   \par\medskip}%
2273 }

```

`\mkauthors@ii` The `\mkauthors@ii` command was the version used in `acmtog`. It is no longer necessary.

`\author@bx` The box to put an individual author in

```
2274 \newbox\author@bx
```

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

```
2275 \newdimen\author@bx@wd
```



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

```
2276 \newskip\author@bx@sep
2277 \author@bx@sep=1pc\relax
```

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

```
2278 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd
2279 \def\and{\par}\normalbaselines
2280 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2281 \@authorfont\@currentauthors\par\@affiliationfont
2282 \@currentaffiliation}\egroup
2283 \box\author@bx\hspace{\author@bx@sep}%
2284 \gdef\@currentauthors{}}%
2285 \gdef\@currentaffiliation{}}
```

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

```
2286 \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  $(\texttt{\textbackslash textwidth} - \texttt{\textbackslash author@bx@sep})/N - \texttt{\textbackslash author@bx@sep}$ , where  $N$  is the number of boxes per row.

```
2287 \author@bx@wd=\textwidth\relax
2288 \advance\author@bx@wd by -\author@bx@sep\relax
2289 \ifnum\@ACM@authorsperrow>0\relax
2290 \divide\author@bx@wd by \@ACM@authorsperrow\relax
2291 \else
2292 \ifcase\@num@authorgroups
2293 \relax % 0?
2294 \or % 1=one author per row
2295 \or % 2=two authors per row
2296 \divide\author@bx@wd by \@num@authorgroups\relax
2297 \or % 3=three authors per row
2298 \divide\author@bx@wd by \@num@authorgroups\relax
2299 \or % 4=two authors per row (!)
2300 \divide\author@bx@wd by 2\relax
2301 \else % three authors per row
2302 \divide\author@bx@wd by 3\relax
2303 \fi
2304 \fi
2305 \advance\author@bx@wd by -\author@bx@sep\relax
```

Now, parsing of `\addresses`:

```
2306 \gdef\@currentauthors{}}%
2307 \gdef\@currentaffiliation{}}%
2308 \def\@author##1{\ifx\@currentauthors\empty
2309 \gdef\@currentauthors{\par##1}%
2310 \else
2311 \g@addto@macro\@currentauthors{\par##1}%
2312 \fi
2313 \gdef\and{}}%
```

```

2314 \def\email##1##2{\ifx\@currentaffiliation\@empty
2315 \gdef\@currentaffiliation{\bgroup
2316 \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2317 \else
2318 \g@addto@macro\@currentaffiliation{\par\bgroup
2319 \mathchardef\UrlBreakPenalty=10000\nolinkurl{##2}\egroup}%
2320 \fi}%
2321 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2322 \gdef\@currentaffiliation{%
2323 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2324 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2325 ##2\@ACM@checkaffil}%
2326 \else
2327 \g@addto@macro\@currentaffiliation{\par
2328 \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2329 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2330 ##2\@ACM@checkaffil}%
2331 \fi
2332 \global\let\and\@typeset@author@bx
2333 }%

```

Actual typesetting is done by the \and macro:

```

2334 \hsize=\textwidth
2335 \global\setbox\mktitle@bx=\vbox{\noindent
2336 \unvbox\mktitle@bx\par\medskip\leavevmode
2337 \lineskip=1pc\relax\centering\hspace*{-1em}%
2338 \addresses\let\and\@typeset@author@bx\and\par\bigskip}}

```

\@mkauthors@iv The sigchi-a version. We put authors in the main text with no more than 2 authors per line, unless overridden.

```

2339 \def\@mkauthors@iv{%

```

First, we need to determine the design of the author strip. The boxes are separated by \author@bx@sep plus two \author@bx@sep margins. This means that each box must be of width  $(\text{\textwidth} - \text{\author@bx@sep})/N - \text{\author@bx@sep}$ , where  $N$  is the number of boxes per row.

```

2340 \author@bx@wd=\columnwidth\relax
2341 \advance\author@bx@wd by -\author@bx@sep\relax
2342 \ifnum\@ACM@authorsperrrow>0\relax
2343 \divide\author@bx@wd by \@ACM@authorsperrrow\relax
2344 \else
2345 \ifcase\@num@authorgroups
2346 \relax % 0?
2347 \or % 1=one author per row
2348 \else % 2=two authors per row
2349 \divide\author@bx@wd by 2\relax
2350 \fi
2351 \fi
2352 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2353 \gdef\@currentauthors{}%
2354 \gdef\@currentaffiliation{}%
2355 \def\@author##1{\ifx\@currentauthors\@empty
2356   \gdef\@currentauthors{\par##1}%
2357 \else
2358   \g@addto@macro\@currentauthors{\par##1}%
2359 \fi
2360 \gdef\and{}}%
2361 \def\email##1##2{\ifx\@currentaffiliation\@empty
2362   \gdef\@currentaffiliation{\nolinkurl{##2}}%
2363 \else
2364   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
2365 \fi}%
2366 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2367   \gdef\@currentaffiliation{%
2368     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2369     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2370     ##2\@ACM@checkaffil}%
2371 \else
2372   \g@addto@macro\@currentaffiliation{\par
2373     \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2374     \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2375     ##2\@ACM@checkaffil}%
2376 \fi
2377 \global\let\and\@typeset@author@bx}%
2378 %

```

Actual typesetting is done by the \and macro

```

2379 \bgroup\hsize=\columnwidth
2380 \par\raggedright\leftskip=\z@
2381 \lineskip=1pc\noindent
2382 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@mkauthorsaddresses Typesetting authors' addresses in the footnote style

```

2383 \def\@mkauthorsaddresses{%
2384   \ifnum\num@authors>1\relax
2385   Authors' \else Author's \fi
2386   \ifnum\num@authorgroups>1\relax
2387   addresses: \else address: \fi
2388   \bgroup
2389   \def\streetaddress##1{\unskip, ##1}%
2390   \def\postcode##1{\unskip, ##1}%
2391   \def\position##1{\unskip\ignorespaces}%
2392   \gdef\@ACM@institution@separator{,}%
2393   \def\institution##1{\unskip\@ACM@institution@separator ##1\gdef\@ACM@institution@separator{ and }}%
2394   \def\city##1{\unskip, ##1}%
2395   \def\state##1{\unskip, ##1}%
2396   \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2397   \def\country##1{\unskip, ##1}%
2398   \def\and{\unskip; \gdef\@ACM@institution@separator{, }}%

```

```

2399 \def\@author##1{##1}%
2400 \def\email##1##2{\unskip, \nolinkurl{##2}}%
2401 \addresses
2402 \egroup}

2403 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@journal
2404 \ifx\@authorsaddresses\@empty
2405 \ClassWarningNoLine{\@classname}{Authors'
2406 addresses are mandatory for ACM journals}%
2407 \fi\fi\fi}

\@setaddresses This is an amsart macro that we do not need.
2408 \def\@setaddresses{}

\@authornotemark Adding a footnote mark to authors. This version adds a “normal” footnote mark.
2409 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark\relax}}

\@@authornotemark Adding a footnote mark to authors with a given number
2410 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{\footnotemark[#1]}}

\@mkteasers Typesetting the teasers
2411 \def\@mkteasers{%
2412 \ifx\@teaserfigures\@empty\else
2413 \def\@teaser##1{\par\bigskip\bgroup
2414 \captionsetup{type=figure}##1\egroup\par}
2415 \global\setbox\mktitle@bx=\vbox{\noindent\unvbox\mktitle@bx\par
2416 \noindent\@Description@presentfalse
2417 \@teaserfigures\par\if@Description@present\else
2418 \global\@undescribed@imagestrue
2419 \ClassWarning{\@classname}{A possible image without
2420 description}\fi
2421 \medskip}%
2422 \fi}

\@mkabstract Typesetting the abstract
2423 \def\@mkabstract{\bgroup
2424 \ifx\@abstract\@empty\else
2425 {\phantomsection\addcontentsline{toc}{section}{Abstract}%
2426 \if@ACM@journal
2427 \everypar{\setbox\z@\lastbox\everypar{}}\small
2428 \else
2429 \section*{\abstractname}%
2430 \fi
2431 \ignorespaces\@abstract\par}%
2432 \fi\egroup}

\@mkbibcitation Print the bibcitation format
2433 \def\@mkbibcitation{\bgroup
2434 \let\@vspace\@vspace@orig

```

```

2435 \let\@vspacer\@vspacer@orig
2436 \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2437 \def\footnotemark{}%
2438 \def\{\unskip{} \ignorespaces}%
2439 \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2440     inside a \string\title{} or \string\author{} command! Use
2441     \string\titlenote{} or \string\authornote{} instead!}}%
2442 \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2443     Article~\@acmArticle\ } \fi}%
2444 \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2445 \noindent\bgroup
2446 \def\{\unskip{}, \ignorespaces}\authors\egroup. \@acmYear. \@title
2447 \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2448 \if@ACM@nonacm\else
2449     % The 'nonacm' option disables 'printacmref' by default,
2450     % and the present \mkbibcitation definition is never used
2451     % in this case. The conditional remains useful if the user
2452     % explicitly sets \settopmatter{printacmref=true}.
2453     \if@ACM@journal@bibstrip
2454         \textit{\@journalNameShort}
2455         \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2456         \ref{TotPages}~\@pages@word.
2457     \else
2458         In \textit{\@acmBooktitle}%
2459         \ifx\@acmEditors\@empty\textit{.}\else
2460             \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2461         \fi\
2462         ACM, New York, NY, USA%
2463         \@article@string\unskip, \ref{TotPages}~\@pages@word.
2464     \fi
2465 \fi
2466 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2467 \par\egroup}

```

\@printendtopmatter End the top matter

```

2468 \def\@printendtopmatter{%
2469     \let\@vspace\@vspace@orig
2470     \let\@vspacer\@vspacer@orig
2471     \par\bigskip
2472     \let\@vspace\@vspace@acm
2473     \let\@vspacer\@vspacer@acm
2474 }

```

\@setthanks We redefine \setthanks using \long

```

2475 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

\@setauthorsaddresses

```

2476 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

### 3.17 Headers and Footers

We use fancyhdr for our headers and footers:

```
2477 \RequirePackage{fancyhdr}
```

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

```
2478 \let\ACM@ps@plain\ps@plain
2479 \let\ACM@ps@myheadings\ps@myheadings
2480 \let\ACM@ps@headings\ps@headings
2481 \def\ACM@restore@pagestyle{%
2482   \let\ps@plain\ACM@ps@plain
2483   \let\ps@myheadings\ACM@ps@myheadings
2484   \let\ps@headings\ACM@ps@headings}
2485 \AtBeginDocument{\ACM@restore@pagestyle}
```

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

```
2486 \if@ACM@review
2487   \newsavebox{\ACM@linecount@bx}
2488   \newlength\ACM@linecount@bxht
2489   \newcount\ACM@linecount
2490   \ACM@linecount\@ne\relax
2491   \def\ACM@mk@linecount{%
2492     \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{\normalfont
2493       \normalsize
2494       \setlength{\ACM@linecount@bxht}{0pt}%
2495       \loop{\color{red}\scriptsize\the\ACM@linecount}\
2496       \global\advance\ACM@linecount by \@ne
2497       \addtolength{\ACM@linecount@bxht}{\baselineskip}%
2498       \ifdim\ACM@linecount@bxht<\textheight\repeat
2499       {\color{red}\scriptsize\the\ACM@linecount}\hfill
2500       \global\advance\ACM@linecount by \@ne}}
2501 \fi
```

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

```
2502 \def\ACM@linecountL{%
2503   \if@ACM@review
2504     \ACM@mk@linecount
2505     \begin{picture}(0,0)%
2506       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2507     \end{picture}%
2508   \fi}
```

\ACM@linecountR How to display the box on the right. In one column formats we do not step the numbers.

```
2509 \def\ACM@linecountR{%
2510   \if@ACM@review
2511     \ifcase\ACM@format@nr
2512       \relax % manuscript
2513       \relax
2514       \or % acmsmall
```

```

2515         \relax
2516     \or % acmlarge
2517         \relax
2518     \or % acmtog
2519         \ACM@mk@linecount
2520     \or % sigconf
2521         \ACM@mk@linecount
2522     \or % siggraph
2523         \ACM@mk@linecount
2524     \or % sigplan
2525         \ACM@mk@linecount
2526     \or % sigchi
2527         \ACM@mk@linecount
2528     \or % sigchi-a
2529         \ACM@mk@linecount
2530 \fi
2531 \begin{picture}(0,0)%
2532     \put(20,-22){\usebox{\ACM@linecount@bx}}%
2533 \end{picture}%
2534 \fi}

```

\ACM@timestamp The timestamp system

```

2535 \if@ACM@timestamp
2536 % Subtracting 30 from \time gives us the effect of rounding down despite
2537 % \numexpr rounding to nearest
2538 \newcounter{ACM@time@hours}
2539 \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2540 \newcounter{ACM@time@minutes}
2541 \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2542 \newcommand\ACM@timestamp{%
2543     \footnotesize%
2544     \ifx\@acmSubmissionID\@empty\relax\else
2545     Submission ID: \@acmSubmissionID.{ }%
2546     \fi
2547     \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2548     \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2549     Page \thepage\ of \@startPage--\pageref*{TotPages}.%
2550 }
2551 \fi

```

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

```

2552 \def\@shortauthors{%
2553     \if@ACM@anonymous
2554     Anon.
2555     \ifx\@acmSubmissionID\@empty\else Submission Id: \@acmSubmissionID\fi
2556     \else\shortauthors\fi}

```

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

```

2557 \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

```

2558 \AtBeginDocument{%
2559 \fancypagestyle{standardpagestyle}{%
2560   \fancyhf{}%
2561   \renewcommand{\headrulewidth}{\z@}%
2562   \renewcommand{\footrulewidth}{\z@}%
2563   \def\@acmArticlePage{%
2564     \ifx\@acmArticle\empty%
2565       \if@ACM@printfolios\thepage\fi%
2566     \else%
2567       \@acmArticle\if@ACM@printfolios:\thepage\fi%
2568     \fi%
2569   }%
2570   \if@ACM@journal@bibstrip
2571     \ifcase\ACM@format@nr
2572     \relax % manuscript
2573     \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
2574     \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
2575     \fancyhead[RE]{\@shortauthors}%
2576     \fancyhead[LO]{\ACM@linecountL\shorttitle}%
2577     \if@ACM@nonacm\else%
2578       \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
2579     \fi%
2580   \or % acmsmall
2581     \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
2582     \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
2583     \fancyhead[RE]{\@headfootfont\@shortauthors}%
2584     \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2585     \if@ACM@nonacm\else%
2586       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2587         \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2588     \fi
2589   \or % acmlarge
2590     \fancyhead[LE]{\ACM@linecountL\@headfootfont
2591       \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2592     \fancyhead[LO]{\ACM@linecountL}%
2593     \fancyhead[RO]{\@headfootfont
2594       \shorttitle\quad\textbullet\quad\@acmArticlePage}%
2595     \if@ACM@nonacm\else%
2596       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2597         \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2598     \fi
2599   \or % acmtog
2600     \fancyhead[LE]{\ACM@linecountL\@headfootfont
2601       \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
2602     \fancyhead[LO]{\ACM@linecountL}%
2603     \fancyhead[RE]{\ACM@linecountR}%
2604     \fancyhead[RO]{\@headfootfont

```



```

2605     \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
2606     \if@ACM@nonacm\else%
2607     \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2608     \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
2609     \fi
2610 \else % Proceedings
2611     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2612     \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2613     \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2614     \if@ACM@nonacm
2615         \fancyhead[LE]{\ACM@linecountL}%
2616         \fancyhead[RO]{\ACM@linecountR}%
2617     \else%
2618         \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
2619         \acmConference@shortname,
2620         \acmConference@date, \acmConference@venue}%
2621         \fancyhead[RO]{\@headfootfont
2622         \acmConference@shortname,
2623         \acmConference@date, \acmConference@venue\ACM@linecountR}%
2624     \fi
2625     \fi
2626 \else % Proceedings
2627     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2628     \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
2629     \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
2630     \if@ACM@nonacm
2631         \fancyhead[LE]{\ACM@linecountL}%
2632         \fancyhead[RO]{\ACM@linecountR}%
2633     \else%
2634         \fancyhead[LE]{\ACM@linecountL\@headfootfont
2635         \acmConference@shortname,
2636         \acmConference@date, \acmConference@venue}%
2637         \fancyhead[RO]{\@headfootfont
2638         \acmConference@shortname,
2639         \acmConference@date, \acmConference@venue\ACM@linecountR}%
2640     \fi
2641     \fi
2642     \if@ACM@sigchiamode
2643         \fancyheadoffset[L]{\dimexpr\marginparsep+\marginparwidth}%
2644     \fi
2645     \if@ACM@timestamp
2646         \fancyfoot[LO,RE]{\ACM@timestamp}
2647     \fi
2648 }%
2649 \pagestyle{standardpagestyle}
2650 }

```

```

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht 2651 \newdimen\@folio@wd
\@folio@voffset 2652 \@folio@wd=\z@
\@folio@max

```

```

2653 \newdimen\@folio@ht
2654 \@folio@ht=\z@
2655 \newdimen\@folio@voffset
2656 \@folio@voffset=\z@
2657 \def\@folio@max{1}
2658 \ifcase\ACM@format@nr
2659 \relax % manuscript
2660 \or % acmsmall
2661   \@folio@wd=45.75pt\relax
2662   \@folio@ht=1.25in\relax
2663   \@folio@voffset=.2in\relax
2664   \def\@folio@max{8}
2665 \or % acmlarge
2666   \@folio@wd=43.25pt\relax
2667   \@folio@ht=79pt\relax
2668   \@folio@voffset=.55in\relax
2669   \def\@folio@max{10}
2670 \fi

```

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

```

2671 \def\@folioblob{\@tempcnta=0\@acmArticleSeq\relax
2672   \ifnum\@tempcnta=0\relax\else
First, we calculate \@acmArticleSeq modulo \@folio@max
2673   \loop
2674     \ifnum\@tempcnta>\@folio@max\relax
2675     \advance\@tempcnta by - \@folio@max
2676   \repeat
2677   \advance\@tempcnta by -1\relax
2678   \@tempdima=\@folio@ht\relax
2679   \multiply\@tempdima by \the\@tempcnta\relax
2680   \advance\@tempdima by -\@folio@voffset\relax
2681   \begin{picture}(0,0)
2682     \makebox[\z@]{\raisebox{-\@tempdima}{%
2683       \rlap{%
2684         \raisebox{-0.45\@folio@ht}{\z@}{\z@}{%
2685           \rule{\@folio@wd}{\@folio@ht}}}%
2686       \parbox{\@folio@wd}{%
2687         \centering
2688         \textcolor{white}{\LARGE\sffamily\bfseries\@acmArticle}}}}
2689   \end{picture}\fi}
2690

```

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

```

2691 \AtBeginDocument{%
2692 \fancypagestyle{firstpagestyle}{%
2693   \fancyhf{}%
2694   \renewcommand{\headrulewidth}{\z@}%
2695   \renewcommand{\footrulewidth}{\z@}%
2696   \if@ACM@journal@bibstrip

```

```

2697 \ifcase\ACM@format@nr
2698 \relax % manuscript
2699 \fancyhead[L]{\ACM@linecountL}%
2700 \fancyfoot[R0,LE]{\if@ACM@printfolios\small\thepage\fi}%
2701 \if@ACM@nonacm\else%
2702 \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
2703 \fi%
2704 \or % acmsmall
2705 \if@ACM@nonacm\else%
2706 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2707 \@acmNumber, Article \@acmArticle. Publication date:
2708 \@acmPubDate.}%
2709 \fi%
2710 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2711 \fancyhead[LO]{\ACM@linecountL}%
2712 \fancyhead[RO]{\@folioblob}%
2713 \fancyheadoffset[R0,LE]{0.6\@folio@wd}%
2714 \or % acmlarge
2715 \if@ACM@nonacm\else%
2716 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2717 \@acmNumber, Article \@acmArticle. Publication date:
2718 \@acmPubDate.}%
2719 \fi%
2720 \fancyhead[RO]{\@folioblob}%
2721 \fancyhead[LE]{\ACM@linecountL\@folioblob}%
2722 \fancyhead[LO]{\ACM@linecountL}%
2723 \fancyheadoffset[R0,LE]{1.4\@folio@wd}%
2724 \or % acmtog
2725 \if@ACM@nonacm\else%
2726 \fancyfoot[R0,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
2727 \@acmNumber, Article \@acmArticle. Publication date:
2728 \@acmPubDate.}%
2729 \fi%
2730 \fancyhead[L]{\ACM@linecountL}%
2731 \fancyhead[R]{\ACM@linecountR}%
2732 \else % Conference proceedings
2733 \fancyhead[L]{\ACM@linecountL}%
2734 \fancyhead[R]{\ACM@linecountR}%
2735 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2736 \fi
2737 \else
2738 \fancyhead[L]{\ACM@linecountL}%
2739 \fancyhead[R]{\ACM@linecountR}%
2740 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
2741 \fi
2742 \if@ACM@timestamp
2743 \ifnum\ACM@format@nr=0\relax % Manuscript
2744 \fancyfoot[LO,RE]{\ACM@timestamp\quad
2745 \if@ACM@nonacm\else
2746 \footnotesize Manuscript submitted to ACM

```

```

2747     \fi}
2748   \else
2749     \fancyfoot[LO,RE]{\ACM@timestamp}
2750   \fi
2751 \fi
2752 }}

```

### 3.18 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.

```

2753 \def\ACM@NRadjust#1{%
2754   \begingroup
2755   \expandafter\ifx\csname Sectionformat\endcsname\relax
2756     % do nothing when \Sectionformat is unknown
2757   \def\next{\endgroup #1}%
2758   \else
2759     \def\next{\endgroup
2760       \let\realSectionformat\Sectionformat
2761       \def\ACM@sect@format@{#1}%
2762       \let\Sectionformat\ACM@NR@adjustedSectionformat
2763     %% next lines added 2018-06-17 to ensure section number is styled
2764     \let\real@adddotafter\@adddotafter
2765     \let\@adddotafter\ACM@adddotafter
2766     #1{}% imposes the styles, but nullifies \MakeUppercase
2767     \let\@adddotafter\real@adddotafter
2768   }%
2769   \fi \next
2770 }

```

\ACM@NR@adjustedSectionformat

```
2771 \def\ACM@NR@adjustedSectionformat#1#2{%
2772   \realSectionformat{\ACM@sect@format{#1}}{#2}%
2773   \let\Sectionformat\realSectionformat}
2774 \DeclareRobustCommand{\ACM@sect@format}{\ACM@sect@format@}
2775 \def\ACM@sect@format@null#1{#1}
2776 \let\ACM@sect@format@\ACM@sect@format@null
2777 \AtBeginDocument{%
2778   \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
2779     \let\LTX@adddotafter\@adddotafter
2780   \fi
2781 }
```

\ACM@adddotafter

```
2782 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}
```

Sectioning is different for different levels

```
2783 \renewcommand\section{\@startsection{section}{1}{\z@}%
2784   {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2785   {0.25\baselineskip}%
2786   {\ACM@NRadjust\@secfont}}
2787 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
2788   {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2789   {0.25\baselineskip}%
2790   {\ACM@NRadjust\@subsecfont}}
2791 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2792   {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2793   {-3.5\p@}%
2794   {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}
2795 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
2796   {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2797   {-3.5\p@}%
2798   {\ACM@NRadjust{\@parfont\@adddotafter}}}
2799 \newcommand\noindentparagraph{\@startsection{paragraph}{4}{\z@}%
2800   {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2801   {-3.5\p@}%
2802   {\ACM@NRadjust{\@parfont}}}
2803
2804 \renewcommand\part{\@startsection{part}{9}{\z@}%
2805   {-10\p@ \@plus -4\p@ \@minus -2\p@}%
2806   {4\p@}%
2807   {\ACM@NRadjust\@parfont}}
```

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

```
2808 \def\section@raggedright{\@rightskip\@flushglue
2809   \rightskip\@rightskip
2810   \leftskip\z@skip
2811   \parindent\z@}
```

```

\@secfont  Fonts for sections etc. are different for different formats.
\@subsecfont 2812 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
\@subsubsecfont 2813 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 2814 \def\@subsubsecfont{\sffamily\itshape}
2815 \def\@parfont{\itshape}
2816 \setcounter{secnumdepth}{3}
2817 \ifcase\ACM@format@nr
2818 \relax % manuscript
2819 \or % acmsmall
2820 \or % acmlarge
2821 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2822 \def\@subsecfont{\sffamily\large\section@raggedright}
2823 \or % acmtog
2824 \def\@secfont{\sffamily\large\section@raggedright\MakeTextUppercase}
2825 \def\@subsecfont{\sffamily\large\section@raggedright}
2826 \or % sigconf
2827 \def\@secfont{\bfseries\Large\section@raggedright\MakeTextUppercase}
2828 \def\@subsecfont{\bfseries\Large\section@raggedright}
2829 \or % siggraph
2830 \def\@secfont{\sffamily\bfseries\Large\section@raggedright\MakeTextUppercase}
2831 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
2832 \or % sigplan
2833 \def\@secfont{\bfseries\Large\section@raggedright}
2834 \def\@subsecfont{\bfseries\section@raggedright}
2835 \def\@subsubsecfont{\bfseries\section@raggedright}
2836 \def\@parfont{\bfseries\itshape}
2837 \def\@subparfont{\itshape}
2838 \or % sigchi
2839 \setcounter{secnumdepth}{1}
2840 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2841 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2842 \or % sigchi-a
2843 \setcounter{secnumdepth}{0}
2844 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeTextUppercase}
2845 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
2846 \fi

\@adddotafter Add punctuation after a sectioning command
2847 \def\@adddotafter#1{#1\@addpunct{.}}

\@addspaceafter Add space after a sectioning command
2848 \def\@addspaceafter#1{#1\@addpunct{\enspace}}

```

### 3.19 TOC lists

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

2849 \providecommand\*\@dotsep{4.5}

### 3.20 Theorems

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

2850 \def\@acmplainbodyfont{\itshape}

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

2851 \def\@acmplainindent{\parindent}

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

2852 \def\@acmplainheadfont{\scshape}

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

2853 \def\@acmplainnotefont{\@empty}

Customization of the acmplain theorem style:

2854 \ifcase\ACM@format@nr

2855 \relax % manuscript

2856 \or % acmsmall

2857 \or % acmlarge

2858 \or % acmtog

2859 \or % sigconf

2860 \or % siggraph

2861 \or % sigplan

2862 \def\@acmplainbodyfont{\itshape}

2863 \def\@acmplainindent{\z@}

2864 \def\@acmplainheadfont{\bfseries}

2865 \def\@acmplainnotefont{\normalfont}

2866 \or % sigchi

2867 \or % sigchi-a

2868 \fi

acmplain The acmplain theorem style

2869 \newtheoremstyle{acmplain}%

2870 {.5\baselineskip\@plus.2\baselineskip

2871 \@minus.2\baselineskip}% space above

2872 {.5\baselineskip\@plus.2\baselineskip

2873 \@minus.2\baselineskip}% space below

2874 {\@acmplainbodyfont}% body font

2875 {\@acmplainindent}% indent amount

2876 {\@acmplainheadfont}% head font

2877 {.}% punctuation after head

2878 {.5em}% spacing after head

2879 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont(#3)}}}% head spec

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

2880 \def\@acmdefinitionbodyfont{\normalfont}

`\acmdefinitionindent` The amount to indent the acmdefinition theorem style.  
2881 `\def\acmdefinitionindent{\parindent}`

`\acmdefinitionheadfont` The font to typeset the head of the acmdefinition theorem style.  
2882 `\def\acmdefinitionheadfont{\itshape}`

`\acmdefinitionnotefont` The font to typeset the note of the acmdefinition theorem style.  
2883 `\def\acmdefinitionnotefont{\@empty}`

Customization of the acmdefinition theorem style:

```
2884 \ifcase\ACM@format@nr
2885 \relax % manuscript
2886 \or % acmsmall
2887 \or % acmlarge
2888 \or % acmtog
2889 \or % sigconf
2890 \or % siggraph
2891 \or % sigplan
2892 \def\acmdefinitionbodyfont{\normalfont}
2893 \def\acmdefinitionindent{\z@}
2894 \def\acmdefinitionheadfont{\bfseries}
2895 \def\acmdefinitionnotefont{\normalfont}
2896 \or % sigchi
2897 \or % sigchi-a
2898 \fi
```

`acmdefinition` The acmdefinition theorem style

```
2899 \newtheoremstyle{acmdefinition}%
2900 { .5\baselineskip\@plus.2\baselineskip
2901   \@minus.2\baselineskip}% space above
2902 { .5\baselineskip\@plus.2\baselineskip
2903   \@minus.2\baselineskip}% space below
2904 {\acmdefinitionbodyfont}% body font
2905 {\acmdefinitionindent}% indent amount
2906 {\acmdefinitionheadfont}% head font
2907 { .}% punctuation after head
2908 { .5em}% spacing after head
2909 {\thmname{#1}\thmnumber{ #2}\thmnote{ \acmdefinitionnotefont{#3}}}% head spec
```

Make acmplain the default theorem style.

```
2910 \theoremstyle{acmplain}
```

Delay defining the theorem environments until after other packages have been loaded. In particular, the `cleveref` package must be loaded before the theorem environments are defined in order to show the correct environment name (see <https://github.com/borisveytsman/acmart/issues/138>). The `acmthm` option is used to suppress the definition of any theorem environments. Also, to avoid obscure errors arising from these environment definitions conflicting with environments defined by



the user or by user-loaded packages, we only define environments that have not yet been defined.

```

2911 \AtEndPreamble{%
2912   \if@ACM@acmthm
2913   \theoremstyle{acmplain}
2914   \@ifundefined{theorem}{%
2915     \newtheorem{theorem}{Theorem}[section]
2916   }{}
2917   \@ifundefined{conjecture}{%
2918     \newtheorem{conjecture}[theorem]{Conjecture}
2919   }{}
2920   \@ifundefined{proposition}{%
2921     \newtheorem{proposition}[theorem]{Proposition}
2922   }{}
2923   \@ifundefined{lemma}{%
2924     \newtheorem{lemma}[theorem]{Lemma}
2925   }{}
2926   \@ifundefined{corollary}{%
2927     \newtheorem{corollary}[theorem]{Corollary}
2928   }{}
2929   \theoremstyle{acmdefinition}
2930   \@ifundefined{example}{%
2931     \newtheorem{example}[theorem]{Example}
2932   }{}
2933   \@ifundefined{definition}{%
2934     \newtheorem{definition}[theorem]{Definition}
2935   }{}
2936   \fi
2937   \theoremstyle{acmplain}
2938 }
```

\@proofnamefont The font to typeset the proof name.

```
2939 \def\@proofnamefont{\scshape}
```

\@proofindent Whether or not to indent proofs.

```
2940 \def\@proofindent{\indent}
```

Customization of the proof environment.

```

2941 \ifcase\ACM@format@nr
2942 \relax % manuscript
2943 \or % acmsmall
2944 \or % acmlarge
2945 \or % acmtog
2946 \or % sigconf
2947 \or % siggraph
2948 \or % sigplan
2949   \def\@proofnamefont{\itshape}
2950   \def\@proofindent{\noindent}
2951 \or % sigchi
```

```

2952 \or % sigchi-a
2953 \fi

```

proof We want some customization of the proof environment.

```

2954 \renewenvironment{proof}[1][\proofname]{\par
2955   \pushQED{\qed}%
2956   \normalfont \topsep6\p@\@plus6\p@\relax
2957   \trivlist
2958   \item[\@proofindent\hskip\labelsep
2959     {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2960 }{%
2961   \popQED\endtrivlist\endpfalse
2962 }

```

### 3.21 Balancing columns

We need balancing only if the user did not disable it, and we use a two column format. Note that pbalance uses a different mechanism.

```

2963 \AtEndPreamble{%
2964   \if@ACM@pbalance
2965     \global\@ACM@balancefalse
2966     \ifcase\ACM@format@nr
2967       \relax % manuscript
2968       \or % acmsmall
2969       \or % acmlarge
2970       \or % acmtog
2971       \RequirePackage{pbalance}%
2972       \or % sigconf
2973       \RequirePackage{pbalance}%
2974       \or % siggraph
2975       \RequirePackage{pbalance}%
2976       \or % sigplan
2977       \RequirePackage{pbalance}%
2978       \or % sigchi
2979       \RequirePackage{pbalance}%
2980       \or % sigchi-a
2981     \fi
2982   \fi
2983   \if@ACM@balance
2984     \ifcase\ACM@format@nr
2985       \relax % manuscript
2986       \global\@ACM@balancefalse
2987       \or % acmsmall
2988       \global\@ACM@balancefalse
2989       \or % acmlarge
2990       \global\@ACM@balancefalse
2991       \or % acmtog
2992       \RequirePackage{balance}%
2993       \or % sigconf

```

```

2994         \RequirePackage{balance}%
2995     \or % siggraph
2996         \RequirePackage{balance}%
2997     \or % sigplan
2998         \RequirePackage{balance}%
2999     \or % sigchi
3000         \RequirePackage{balance}%
3001     \or % sigchi-a
3002         \global\@ACM@balancefalse
3003     \fi
3004 \fi
3005 }
3006 \AtEndDocument{%
3007     \if@ACM@balance
3008         \if@twocolumn
3009             \balance
3010         \fi\fi}

```

### 3.22 Acknowledgments

```

\ackname
3011 \newcommand\ackname{Acknowledgments}

\acks This is a comment-like structure
3012 \specialcomment{acks}{%
3013     \begingroup
3014     \section*{\ackname}
3015     \phantomsection\addcontentsline{toc}{section}{\ackname}
3016 }{%
3017     \endgroup
3018 }

\grantsponsor We just typeset the name of the sponsor
3019 \def\grantsponsor#1#2#3{#2}

\grantnum
3020 \newcommand\grantnum[3][{}]{#3%
3021     \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}

```

### 3.23 Conditional typesetting

We use the comment package for conditional typesetting:

```

3022 \AtEndPreamble{%
3023     \if@ACM@screen
3024         \includecomment{screenonly}
3025         \excludecomment{printonly}
3026     \else
3027         \excludecomment{screenonly}

```

```

3028 \includecomment{printonly}
3029 \fi
3030 \if@ACM@anonymous
3031 \excludecomment{anonsuppress}
3032 \excludecomment{acks}
3033 \else
3034 \includecomment{anonsuppress}
3035 \fi}

```

### 3.24 Additional bibliography commands

`\showeprint` The command `\showeprint` has two arguments: the (optional) prefix and the eprint number. Right now the only prefix we understand is the (lowercase) word ‘arxiv’.

```

3036 \newcommand\showeprint[2][arxiv]{%
3037 \def\@tempa{#1}%
3038 \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
3039 \def\@tempb{arxiv}%
3040 \ifx\@tempa\@tempb\relax
3041 arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3042 \else
3043 \def\@tempb{arXiv}%
3044 \ifx\@tempa\@tempb\relax
3045 arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3046 \else
3047 arXiv:#2%
3048 \fi
3049 \fi}

```

### 3.25 End of Class

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

```

3050 \let\@vspace@orig=\vspace
3051 \let\@vspacer@orig=\vspacer
3052 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
3053 only be used to provide space above/below surrounding
3054 objects}}{}{}
3055 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should
3056 only be used to provide space above/below surrounding
3057 objects}}{}{}
3058 \let\@vspace@acm=\@vspace
3059 \let\@vspacer@acm=\@vspacer

```

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

```

3060 \let\ACM@origbaselinestretch\baselinestretch
3061 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
3062 \ClassError{\@classname}{An attempt to redefine
3063 \string\baselinestretch\space detected. Please do not do this for
3064 ACM submissions!}\fi}

```

```
3065 \normalsize\normalfont\frenchspacing
3066 \end{class}
```

## References

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## Change History

1.48	General: Added prologue option to xcolor . . . . .	46	\if@ACM@printacmref: Added warning for longer papers . . . . .	69
	Bib code cleanup (Zack Weinberg)	33	\keywords: Added warning for missing keywords . . . . .	69
	Documentation update (siggraph) .	33	General: ACM reference format is now mandatory for papers over one page; CCS concepts and keywords are now mandatory for papers over two pages . . . . .	33
1.49	General: New journal: DTRAP . . . . .	33	Authors' addresses are mandatory for journal articles . . . . .	33
1.53	General: New journals: PACMCGIT, TIOT, TDSCI . . . . .	33		
	Rearranged docs . . . . .	33	1.69	
1.54	General: Moved footnote stuff before hyperref call (Ross Moore) . . . . .	33	\vspace: Added the changed command to avoid grouping . . .	108
1.56	General: Documented \Description	33	1.70	
1.57	General: Booktabs package is now the default . . . . .	33	General: Name change for TDS . . . . .	56
1.58	General: Changes in samples (Enrico Gregorio) . . . . .	33	1.71	
	New journal: HEALTH. TDS is renamed to TDSCI . . . . .	33	General: Bibliography change: volume for @inproceedings is now in brackets together with series . . .	33
1.60	\if@ACM@urlbreakonhyphens: introduced macro . . . . .	34	LuaTeX now uses the OTF versions of fonts . . . . .	33
	General: New option: urlbreakonhyphens . . . . .	33	Retired sigchi and sigchi-a . . . . .	33
1.62	General: New journal: TELO . . . . .	33	1.75	
1.63	General: New journal: FACMP . . . . .	33	General: Documentation update . . .	33
	New journal: TQUANT . . . . .	33	1.78	
1.63a	General: Move: TQUANT to TQC . .	33	General: Documentation update: Word count . . . . .	33
1.64	General: Putting abstract after \maketitle now causes an error .	33	v1.00	
1.65	General: New journal: DGOV . . . . .	33	General: First released version . . . . .	33
1.66	\mkauthorsaddresses: Added warning for missing addresses . .	92	v1.01	
	\ccsdesc@parse: Added warning for missing concepts . . . . .	71	General: Changed hyperref colors in screen mode (closes <a href="https://github.com/borisveytsman/acmart/issues/1">https://github.com/borisveytsman/acmart/issues/1</a> ) . . . . .	33
			Defined ACM colors . . . . .	33
			Explicitly put draft option (closes <a href="https://github.com/borisveytsman/acmart/issues/4">https://github.com/borisveytsman/acmart/issues/4</a> ) . . . . .	37
			Set headheight to 1pc for all formats (closes <a href="https://github.com/borisveytsman/acmart/issues/5">https://github.com/borisveytsman/acmart/issues/5</a> ) . . . . .	33

v1.02	General: Added TOPS and TSC (closes <a href="https://github.com/borisveytsman/acmart/issues/12">https://github.com/borisveytsman/ acmart/issues/12</a> ) . . . . . 33	\@mktitle@iv: Made more generic . . . 84
	Documentation changes (closes <a href="https://github.com/borisveytsman/acmart/issues/13">https://github.com/borisveytsman/ acmart/issues/13</a> ) . . . . . 33	\@printtopmatter: Added processing badges . . . . . 81
v1.03	\@formatdoi: Added macro . . . . . 74	\@subtitlefont: Added macro . . . . . 83
	\if@ACM@authorversion: Added macro . . . . . 35	\@titlefont: Added macro . . . . . 82
	\maketitle: Added special case of authorversion . . . . . 77	\acmBadgeL: Added macro . . . . . 68
	General: Added anon suppress environment . . . . . 33	\acmBadgeR: Added macro . . . . . 68
	Added authorversion option (closes <a href="https://github.com/borisveytsman/acmart/issues/9">https://github.com/borisveytsman/ acmart/issues/9</a> ) . . . . . 33	\if@ACM@badge: Added macro . . . . . 68
		v1.07
		\maketitle: Corrected a bug with abstract footnotes . . . . . 77
		Corrected a bug with permission and footnotes order . . . . . 77
		v1.08
		General: SIGPLAN reformatting by Matthew Fluet . . . . . 33
		Typos corrected (Tobias Pape) . . . 33
		v1.09
		General: Revert SIGPLAN caption rules . . . . . 33
		v1.10
v1.04	\acmArticleSeq: Name change by Matthew Fluet . . . . . 67	\maketitle: Corrected a bug with doi in manuscript and author version, <a href="https://github.com/borisveytsman/acmart/issues/36">https://github.com/borisveytsman/ acmart/issues/36</a> . . . . . 77
	\acmDOI: Name change by Matthew Fluet . . . . . 68	General: Changes of 'licensed to other gov' wording . . . . 72
	\acmISBN: Name change by Matthew Fluet . . . . . 68	standardpagestyle: Reversed folios location . . . . . 96
	General: Updated bibliography for siggraph . . . . . 33	
		v1.11
v1.05	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib . . . . . 33	General: Customization of ACM theorem styles and proof environment by Matthew Fluet . . . 33
	Patched \setcitestyle command; closes <a href="https://github.com/borisveytsman/acmart/issues/19">https://github.com/borisveytsman/ acmart/issues/19</a> . . . . . 33	v1.12
		\@marginfigure: Now centering by default . . . . . 53
v1.06	\@ACM@badge@skip: Added macro . . . 68	\@marginfigure: Now centering by default . . . . . 53
	\@ACM@badge@width: Added macro . . . 68	\@parfont: Moved to \section@raggedright . . . . . 102
	\@ACM@title@width: Added macro . . . 68	\copyrightpermissionfootnoterule: Added macro . . . . . 49
	\@mktitle@i: Added processing badges . . . . . 83	\descriptionlabel: Redefined . . . . 56
	Made generic . . . . . 83	\footnoterule: Made shorter . . . . . 49
	\@mktitle@ii: Now this macro is obsolete . . . . . 84	\if@ACM@natbib@override: Added macro . . . . . 36
	\@mktitle@iii: Added processing badges . . . . . 84	\if@ACM@newfonts: Added macro . . . 50
	Made more generic . . . . . 84	\maketitle: Moved thanks to copyrightpermission box . . . . . 77



\section@raggedright: Introduced macro . . . . .	101	\if@insideauthorgroup: Introduced macro . . . . .	64
General: Added graceful behavior when libertine fonts are absent . .	50	\institution: Added macro . . . . .	85
Documentation updates . . . . .	33	\num@authorgroups: Renamed . . . . .	63
v1.13		\orcid: Introduced macro . . . . .	66
\empfootnotetext: Made minipage footnotes centered . . . . .	44	\position: Added macro . . . . .	85
\bibliographystyle: Redefined macro . . . . .	46	\postcode: Added macro . . . . .	85
\bibstyle@acmauthoryear: Added macro . . . . .	41	\state: Added macro . . . . .	85
\bibstyle@acmnumeric: Added macro . . . . .	41	\streetaddress: Added macro . . . . .	85
\if@ACM@printfolios: Added macro	69	standardpagestyle: Better handling of anonymous mode . . . . .	96
General: Font adjustments for acmsmall . . . . .	86	v1.16	
Increased font size for ACM Large	38	\@headfootfont: Added macro . . . . .	95
Print bibliographic information by default for the proceedings . . . . .	70	General: Formatting header/footer (Matthew Fluet) . . . . .	33
standardpagestyle: Added headers for sigs . . . . .	96	standardpagestyle: Customize header/footer text font . . . . .	96
Expanded headers for sigchi-a . . .	96	v1.17	
Suppressed folios if sig . . . . .	96	\@makefnmark: Redefined . . . . .	44
v1.14		\@mkauthors: TOG now uses the same authors block as other journals . .	86
\bibstyle@acmauthoryear: Moved def of \bibstyle@acmauthoryear before use . . . . .	41	\@mkauthors@ii: Deleted . . . . .	88
\bibstyle@acmnumeric: Moved def of \bibstyle@numeric before use . .	41	\@mkbibcitation: Added \nobreak	92
General: \citestyle updates (Matthew Fluet) . . . . .	33	Changed format for sigs . . . . .	92
Patched \citestyle . . . . .	39	\acmArticle: The default is now numerical . . . . .	67
v1.15		\acmMonth: The default must be numerical. Closes #50. . . . .	67
\@ACM@addtoaddress: Added macro	85	\acmNumber: The default is now numerical . . . . .	67
\@mkauthors@iii: New authors system . . . . .	89	\acmVolume: The default is now numerical . . . . .	67
\@shortauthors: Introduced macro .	95	\acmYear: The default is now numerical . . . . .	67
\@typeset@author@bx: Moved to separate macro . . . . .	89	\description: Decreased indent . . .	56
\acks: Added macro . . . . .	107	\grantnum: Added url . . . . .	107
\affiliation: Added code for author groups . . . . .	65	\grantsponsor: Renamed . . . . .	107
\author: Added code for author groups . . . . .	64	\if@ACM@printacmref: Renamed from \if@ACM@printbib . . . . .	69
\city: Added macro . . . . .	85	General: Slightly decreased margins for sigs . . . . .	47
\country: Added macro . . . . .	85	standardpagestyle: Added paper title to sigs . . . . .	96
\department: Added macro . . . . .	85	v1.18	
\grantnum: Added macro . . . . .	107	\@mkauthors@i: Now we andify affiliations . . . . .	88
\grantsponsor: Added macro . . . . .	107	\@typeset@author@line: Added macro . . . . .	87
		General: Natbib is now the default for all formats . . . . .	33

v1.19	\mkabstract: Include 'Abstract' in PDF bookmarks (Matthew Fluet) . 92	v1.30	\department: Added optional parameter . . . . . 85
	\acks: Include 'Acknowledgements' in PDF bookmarks (Matthew Fluet) 107		General: Added \frenchspacing . . . 109
	General: Include 'Abstract', 'Acknowledgements', and 'References' in PDF bookmarks (Matthew Fluet) . . . . . 33		Bibtex style now recognizes https:// in doi . . . . . 33
	Include 'References' in PDF bookmarks (Matthew Fluet) . . . . 39		Switched to T1: looks like libertine has problems with \l in OT1 . . . 50
v1.20			Updated IMWUT and PACMPL . . 56
	\mkabstract: Deleted spurious space 92	v1.31	
	General: Bug fixes for bst . . . . . 33		\@additionalaffiliation: Added macro . . . . . 65
v1.21			\@mkbibcitation: Disabled linebreak 92
	\showeprint: Added macro . . . . . 108		\@startsection: Added \tochangmeasure . . . . . 41
v1.22			Redefined macro . . . . . 43
	General: More bibliography changes for Aptara . . . . . 33		\@textbottom: Redefined . . . . . 49
v1.23			\acmMonth: The default now is the current month (Matteo Riondato) 67
	General: Add PACMPL journal option 33		\acmYear: The default now is the current year (Matteo Riondato) . . 67
v1.24			\additionalaffiliation: Added macro . . . . . 65
	General: Add IMWUT journal option 56		\l@section: Redefined macro . . 44
v1.25			\l@subsection: Redefined macro 44
	General: Updated PACMPL . . . . . 56		General: Documentation changes . . . 33
v1.26		v1.32	
	General: Corrected \shortcite bug . 33		\@formatdoi: New doi format . . . . 74
	Documentation typos fixed (thanks to Stephen Spencer) . . . . . 33		General: Added POMACS journal option . . . . . 33
v1.27			Format siggraph is now obsolete . 33
	\if@ACM@printccs: Typo corrected . 69	v1.33	
v1.28			\@ACM@addtoaddress: Added obexpunctuation code . . . . . 85
	\ccsdesc@parse: Change from \to to \textrightarrow (Matteo Riondato) . . . . . 71		\@mkauthors@i: Added obexpunctuation code . . . . . 88
	General: Corrected option natbib behavior . . . . . 41		\@mkauthors@iii: Added obexpunctuation code . . . . . 89
	Got rid of warnings in pdf keywords 45		\@mkauthors@iv: Added obexpunctuation code . . . . . 90
v1.29			\@subtitlefont: Added \normalsize . . . . . 83
	\mkabstract: Removed spurious indentation (John Wickerson) . . . 92		\ACM@linecountL: Renamed macro . 94
	\ccsdesc@parse: Add spacing after bullet and around rightarrow; semicolon separators no longer in bold/italic (John Wickerson) . . . . 71		\ACM@linecountR: Added macro . . . 94
	General: Increased head to 13pt . . . . 47		\ACM@timestamp: Added current page number . . . . . 95
	standardpagestyle: Corrected printfolios (Matthew Fluet) . . . . 96		Added macro (Michael D. Adams) . 95
			Added submission id . . . . . 95
			\acmSubmissionID: Added macro . . 67
			\city: Added obexpunctuation code 85

\country: Added obeypunctuation code . . . . .	85	\ACM@linecountL: Rulers now are continuous . . . . .	94
\department: Added obeypunctuation code . . . . .	85	\ACM@linecountR: Rulers now are continuous . . . . .	94
\if@ACM@affiliation@obeypunctuation: Added macro . . . . .	65	\maketitle: Added date to the bibstrip in conf proceedings . . . .	77
\if@ACM@authordraft: Added macro . . . . .	36	Deleted 'DOI' from doi numbers . . . .	77
\if@ACM@natbib@override: Deleted macro . . . . .	36	Rearranged bibstrip . . . . .	77
\if@ACM@timestamp: Added macro (Michael D. Adams) . . . . .	36	The \terms command is now obsolete . . . . .	77
\institution: Added obeypunctuation code . . . . .	85	\terms: The \terms command now just produces a warning . . . . .	68
\maketitle: Fixed the bug with figures on top and bottom of the title page, thanks to David Epstein . . . . .	77	v1.35	
\position: Added obeypunctuation code . . . . .	85	\bibstyle@acmauthoryear: Square brackets for author-year style . . . .	41
\postcode: Added obeypunctuation code . . . . .	85	General: BibTeX bug fixed: et al. . . .	33
\state: Added obeypunctuation code . . . . .	85	If the copyright is set to usgov or rigtsretained, the price is suppressed . . . . .	72
\streetaddress: Added obeypunctuation code . . . . .	85	v1.36	
General: Added acmart-preload-hook . . . . .	33	\@ACM@authorsperrrow: Added macro . . . . .	70
Added cmap and glyphtounicode . . . . .	50	\@mkauthors@iii: Added authorsperrrow override . . . . .	89
BibTeX comma before articleno bug corrected . . . . .	33	\@mkauthors@iv: Added authorsperrrow override . . . . .	90
BibTeX crossref bug corrected . . . . .	33	\if@ACM@authordraft: Corrected typo, thanks to bargteil . . . . .	36
BibTeX numpages bug corrected . . . . .	33	General: Added PACMHCI journal options . . . . .	56
Documentation updates . . . . .	33	Added the possibility to adjust number of author boxes per row in conference formats . . . . .	33
Moved \citename definition for non-natbib bibliography, so a package may redefine it . . . . .	45	v1.37	
Switched to Type 1 fonts for libertine even if OTF-capable engine is used (Kai Mindermann) . . . . .	50	\description: Reduce list indentation (Matthew Fluet) . . . .	56
firstpagestyle: Added right linecount for two-column formats . . . . .	98	\descriptionlabel: Reduce list indentation (Matthew Fluet) . . . .	56
Added timestamp (Michael D. Adams) . . . . .	98	\normalparindent: Set \normalparindent (Matthew Fluet) . . . . .	48
standardpagestyle: Added right linecount for two-column formats . . . . .	96	General: Reduce list indentation (Matthew Fluet) . . . . .	55
Added timestamp (Michael D. Adams) . . . . .	96	Set \normalparindent; Reduce list indentation (Matthew Fluet) . . . .	33
v1.34		v1.38	
\@mkbibcitation: Deleted DOI from doi numbers . . . . .	92	General: Increase default font size for SIGPLAN . . . . .	33, 38
\ACM@linecount@bx: Rulers now are continuous . . . . .	94	v1.39	
		\@authornotemark: Added macro . . . .	92
		\authornotemark: Added macro . . . .	67

v1.40		\@mkbibcitation: If the paper has just one page, use 'page' instead of 'pages' . . . . .	92
	\@copyrightowner: Added new copyright version: licensedcagov .		73
	\@copyrightpermission: Added new copyright version: licensedcagov .		74
	\@mkauthors@i: Switched to MakeTextUppercase . . . . .		88
	\@parfont: Switched to MakeTextUppercase . . . . .		102
	\ACM@linecount@bx: Work around a bug in xcolor: looks like cmyk colors in boxes do not work . . . .		94
	\ccdesc@parse@finish: Added macro . . . . .		71
	\city: We now do not print this even in SIG . . . . .		85
	\country: Fixed bugs with extra spaces . . . . .		85
	\l@section: Redefined macro . .		44
	\postcode: We now do not print this even in SIG . . . . .		85
	\state: We now do not print this even in SIG . . . . .		85
	\streetaddress: We now do not print this even in SIG . . . . .		85
	General: Added 'textcase' package . .		39
	Added heightrounded to geometry		47
	Added new copyright version: licensedcagov . . . . .		33
	Added package cleveref . . . . .		33
	Added Ross Moore code for glyptounicode . . . . .		50
	Bibliography changes . . . . .		33
v1.41	General: Added new badges . . . . .		33
v1.42	General: Deleted ACM badges . . . . .		33
v1.43	\@startsection: Added \makeatletter . . . . .		43
	\country: Added comma before country for journals . . . . .		85
v1.44	\acmBooktitle: Added macro . . . .		63
	\acmEditors: Added macro . . . . .		63
	\@editorsAbbrev: Added macro . . .		63
	\@folioblob: Suppress the blob if acmArticleSeq is empty . . . . .		98
	\acmArticle: The default is now empty . . . . .		67
	\acmArticleSeq: Now acmArticle might be empty . . . . .		67
	\acmBooktitle: Added macro . . . . .		63
	\editor: Added macro . . . . .		63
	\if@ACM@acmthm: Added macro . . . .		34
	\maketitle: Empty DOI or ISBN are not printed (by Michael Ekstrand)		77
	General: Added package refcount . . .		33
	Deleted package cleveref . . . . .		33
	Put theorem defs in a separate style		33
v1.45	\@folioblob: Switched \bfseries\sffamily to \sffamily\bfseries . . . . .		98
	\@parfont: Switched \bfseries\sffamily to \sffamily\bfseries . . . . .		102
	\@titlefont: Switched \bfseries\sffamily to \sffamily\bfseries . . . . .		82
v1.46	\@mkauthorsaddresses: Introduced macro . . . . .		91
	\@mkbibcitation: Added subtitle . .		92
	\@printendtopmatter: Made it \par\bigskip uniformly . . . . .		93
	\@printtopmatter: Deleted rule . . .		81
	\@setauthorsaddresses: Introduced macro . . . . .		93
	\ACM@linecount@bx: Rearranged the code to get rid of spurious underfull messages (Benjamin Byholm) . . . . .		94
	\author: Started counting authors . .		64
	\authorsaddresses: Introduced macro . . . . .		66
	\country: Corrected spacing for institution . . . . .		85
	\if@ACM@acmthm: Modified description . . . . .		34
	\liningnums: Workaround for compatibility with fontspec . . . . .		51
	\maketitle: Added authors' addresses		77

Thankses go before authors' addresses . . . . .	77	firstpagestyle: We now use journal abbreviation for footers . . . . .	98
\num@author: Introduced macro . .	63	standardpagestyle: We now use journal abbreviation for footers . .	96
General: Added etoolbox . . . . .	33		
Bst file bug fixes: label width is calculated correctly . . . . .	33	v1.52	
Delayed hypersetup since journal options may change screen mode . . . .	45	\@copyrightowner: Rewording of licenses . . . . .	73
PACM now set screen to true . . . .	56	\@copyrightpermission: Another rewording of copyright statements for iw3c2w3[g] . . . . .	74
Restore theorem defs to class file .	33		
v1.47		v1.53	
General: New journal: THRI . . . . .	33	General: Added PACMCGIT, TIOT, TDSCI . . . . .	56
v1.48		v1.54	
\@headfootfont: Deleted unnecessary switch (Michael D. Adams) . . . . .	95	\@mkbibcitation: Bug corrected (Ross Moore) . . . . .	92
\@mkabstract: Removed spurious indentation if abstract is followed by an empty line . . . . .	92	\@shortauthors: Added submission id in anonymous mode . . . . .	95
\ACM@timestamp: Fromatting change (Michael D. Adams) . . . . .	95	\ACM@NR@adjustedSectionformat: Added macro . . . . .	101
\if@ACM@review: Review mode now switches on folios . . . . .	35	\ACM@NRadjust: Added macro . . . . .	100
\maketitle: Added acmart and version info to pdfcreator tag . . . .	77	\ACM@adddotafter: Added macro . .	101
Added language and doctitle attributes to PDF (Andreas Reichinger) . . . . .	77	\author: Added submission id in anonymous mode . . . . .	64
Suppressed empty DOI (Serguei Mokhov) . . . . .	77	\if@ACM@nonacm: Added macro . . . .	35
General: \citeyear no longer behaves like \citeyearpar . . . . .	45	General: Added Ross's patch for sectioning . . . . .	101
Code prettying (Michael D. Adams)	33	Deleted indent for subsection .	101
Initial support for Biblatex (Daniel Thomas) . . . . .	33	XeTeX now uses T1 encoding . . .	50
Misc entries in the bibliography no longer produce a separate date . .	33		
Typos fixed (Jamie Davis) . . . . .	33	v1.55	
v1.50		\@mkbibcitation: Bug corrected . . .	92
\@copyrightpermission: New copyright statements for iw3c2w3[g] . . . . .	74	\maketitle: Fixes topnum . . . . .	77
v1.51		General: Now we use purple color for links . . . . .	45
General: Corrected the bug with price suppression . . . . .	72	Table captions for SIGCHI now use the same font size as figure captions (Luis Leiva) . . . . .	52
Suppress price if the copyright is set to iw3c2w3 or iw3c2w3g . . . . .	72	Typo corrected (Zack Weinberg) .	39
XeTeX now uses OTF fonts (Joachim Breitner) . . . . .	50	v1.56	
		\@marginfigure: Added checking for description . . . . .	53
		\@mkteasers: Added check for description . . . . .	92
		\Description: Added macro . . . . .	51
		\acksname: Added macro (Philip Quinn) . . . . .	107
		\ccsdesc@parse: End the concepts list with a period (Philip Quinn) .	71
		\if@Description@present: Added macro . . . . .	51

\if@undescrbed@images: Added macro . . . . .	51	standardpagestyle: Added logic for conference papers using journal format . . . . .	96
General: Looks like XeTeX requires explicit monotype font declaration	50	Moved page styles to \AtBeginDocument . . . . .	96
Make two-column layouts flush (Philip Quinn) . . . . .	47		
v1.57		v1.60	
\ACM@origbaselinestretch: Added check whether the user changed \baselinestretch . . . . .	108	\@headfootfont: Moved to footnotesize . . . . .	95
\author: Added warning if \author has comma . . . . .	64	v1.61	
\email: Added warning if \author has comma . . . . .	65	\@typeset@author@bx: Added \normalbaselines . . . . .	89
\if@ACM@balance: Added macro . . .	35	v1.64	
\vspace: Added warning . . . . .	108	\ACM@linecount@bx: Bug fix: made the spacing on the left and the right size equal . . . . .	94
v1.58		\if@ACM@maketitle@typeset: Introduced macro . . . . .	56
\@dblfloat: Deleted spurious \vspace warning . . . . .	54	\maketitle: Added a switch setting to show that \maketitle is typeset .	77
\@marginfigure: Deleted spurious \vspace warning . . . . .	53	v1.65	
\@margintable: Deleted spurious \vspace warning . . . . .	53	\@mkauthorsaddresses: Deleted cs@addpunct . . . . .	91
\@mkbibcitation: Deleted spurious \vspace warning . . . . .	92	v1.66	
\@printendtopmatter: Deleted spurious \vspace warning . . . . .	93	\@specialsection: Suppress warnings about \vspace . . . . .	80
\@sidebar: Deleted spurious \vspace warning . . . . .	53	General: Patching algorithm and algorithm* to prevent spurious space warnings . . . . .	51
\maketitle: Original \vspace inside \maketitle . . . . .	77	v1.67	
\vspace: Preserved old versions as \@vspace@orig and \@vspace@orig . . . . .	108	\@parfont: Deleted redefinitions of sections . . . . .	102
General: Added HEALTH. TDSCI is renamed to TDS . . . . .	56	\@specialsection: Paragraph inside group does not print its argument. Added a bugfix . . . . .	80
Suppressed \addtocounter in pdf subject . . . . .	45	General: Patching lstlisting and lstlisting* to prevent spurious space warnings . . . . .	51
v1.59		v1.68	
\acmConference: Setting \@ACM@journal@bibstrip . . . . .	62	\@specialsection: Deleted grouping altogether . . . . .	80
\acmJournal: Setting \@ACM@journal@bibstrip . . . . .	62	General: New command for unindent paras . . . . .	101
\if@ACM@journal@bibstrip: Introduced macro . . . . .	37	v1.69	
firstpagestyle: Added logic for conference papers using journal format . . . . .	98	\@printendtopmatter: Deleted grouping . . . . .	93
Moved page styles to \AtBeginDocument . . . . .	98	\@specialsection: Changed dot to colon for sigplan . . . . .	80
		\ACM@linecountR: Do not increase numbers in one column format . .	94

\ccsdesc@parse: Use math right arrow in text . . . . .	71	warnings . . . . .	51
General: No dots for unindented paragraphs . . . . .	101	v1.74 General: Changed the order of font loading . . . . .	50
v1.71		v1.75	
\l@subsubsection: Bug fixed (thanks to Andrew Black) . . . . .	44	\@ACM@checkaffil: Changed warning to error for country . . . . .	87
v1.72		\@beginmaketitlehook: Introduced macro . . . . .	77
\author: Added \detokenize (Kuldeep S. Meel) . . . . .	64	\AtBeginMaketitle: Introduced macro . . . . .	77
\maketitle: Do not andify authors for pdf metadata (Scott Pakin) . . .	77	\maketitle: Added \@beginmaketitlehook . . . . .	77
General: Added hyperxmp . . . . .	44	v1.76	
v1.73		\author: Added code for orcid links . .	64
\@ACM@checkaffil: Added macro . .	87	\if@ACM@pbalance: Added macro . .	35
\@ACM@resetaffil: Added macro . .	87	\maketitle: Put \par inside group for keywords . . . . .	77
\@mkauthors@i: Check the presence of required elements for affiliations . . . . .	88	\orcid: Added code for orcid links . .	66
\@mkauthors@iii: Check the presence of required elements for affiliations . . . . .	89	General: Moved before hyperref, see <a href="https://github.com/borisveytsman/acmart/issues/425">https://github.com/borisveytsman/acmart/issues/425</a> . . . . .	44
\@mkauthors@iv: Check the presence of required elements for affiliations . . . . .	90	standardpagestyle: Fixed bug with no line numbers for nonacm . . . .	96
\city: Check the presence in affil . .	85	v1.77	
\country: Check the presence in affil	85	\@mkauthorsaddresses: New separator of institutions . . . . .	91
\if@ACM@citypresent: Added macro	87	v1.78	
\if@ACM@countrypresent: Added macro . . . . .	87	\@mkauthors@i: Unboxing \mktitle@bx . . . . .	88
\if@ACM@instpresent: Added macro	87	\@mkauthors@iii: Unboxing \mktitle@bx . . . . .	89
\institution: Check the presence in affil . . . . .	85	\@mkteasers: Unboxing \mktitle@bx	92
\maketitle: Do not check again the presense of address fields . . . . .	77	\@printtopmatter: Added processing the overflowing title box . . . . .	81
General: Patching minted and minted* to prevent spurious space		\@specialsection: Again suppressed \vspace warning . . . . .	80



# Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

<b>Symbols</b>		
\\$	1868, 1872	\@ACM@instpresentfalse 42, 43, 44, 45, 46, 47
\-	504	\@Description@presentfalse 226
\@	1618, 1630, 1633, 1636, 1641, 1721, 1742, 1755	\@ACM@instpresenttrue 747, 750, 823, 2416
\@authornotemark	1395, 2410	\@ACM@journal@bibstripfalse 2141, 2150, 2220
\@par	372, 429	\@Description@presenttrue 741, 744
\@ACM@addtoaddress	2129, 2155, 2156, 2158	\@M 372, 411, 429, 438
\@ACM@authorsperrrow	1482, 2289, 2290, 2342, 2343	\@ACM@journal@bibstriptrue 1453, 2424, 2431
\@ACM@badge@skip	1426, 1992, 2069, 2073, 2079, 2088, 2098, 2104, 2113	\@acmArticle 1401, 1404, 1867, 2442, 2443, 2564, 2567, 2587, 2597, 2608, 2688, 2707, 2717, 2727
\@ACM@badge@width	1423, 1991, 1996, 2068, 2072, 2078, 2090, 2097, 2099, 2102, 2114, 2117	\@acmArticlePage 2563, 2581, 2582, 2591, 2594, 2601, 2605
\@ACM@badgefalse	1422	\@acmArticleSeq 1403, 2671
\@ACM@badgetrue	1428, 1433	\@ACM@maketitle@typesetfalse 1791
\@ACM@balancefalse	2965, 2986, 2988, 2990, 3002	\@ACM@maketitle@typesettrue 1435, 1437, 1899, 1991, 2067, 2076, 2078, 2100, 2102
\@ACM@checkaffil	1898, 2230, 2261, 2266, 2325, 2330, 2370, 2375	\@ACM@manuscriptfalse 185
\@ACM@citypresentfalse	2227	\@ACM@manuscripttrue 183
\@ACM@citypresenttrue	2143, 2155, 2222	\@ACM@newfontsfalse 705, 708, 711
\@ACM@commabox	2129, 2133, 2134	\@ACM@newfontstrue 702
\@ACM@countrypresentfalse	2228	\@ACM@printacmreffalse 93
\@ACM@countrypresenttrue	2146, 2158, 2224	\@ACM@printfoliosttrue 76
\@ACM@institution@separator	2392, 2393, 2398	\@ACM@resetaffil 2225, 2260, 2265, 2324, 2329, 2369, 2374
		\@ACM@reviewtrue 138
		\@ACM@screentrue 1010, 1039, 1045, 1051, 1057
		\@ACM@sigchiamodeffalse 187
		\@ACM@sigchiamodetrue 207
		\@ACM@timestamptrue 137
		\@ACM@title@width 1425, 2066, 2068, 2069, 2072, 2073, 2081, 2095, 2097, 2098, 2106
		\@DeclareACMFormat 38, 39, 40, 41, 2455, 2587, 2597, 2608, 2707, 2717, 2727
		\@acmPrice 1413, 1868, 1872
		\@acmPubDate 1409, 2455, 2587, 2597, 2608, 2708, 2718, 2728



\@acmSubmissionID ..	\@author .....	\@copyrightyear ....
..... 1291,	1290, 1296, 1303,	... 1773, 1843, 1845
1292, 1311, 1312,	2246, 2308, 2355, 2399	\@currbox ... 852, 853, 854
1415, 2544, 2545, 2555	\@authorfont .....	\@currentaffiliation
\@acmVolume .... 1397,	2184, 2189, 2193,	2282, 2285, 2307,
2455, 2586, 2596,	2196, 2199, 2202,	2314, 2315, 2318,
2607, 2706, 2716, 2726	2205, 2208, 2248, 2281	2321, 2322, 2327,
\@acmYear ..... 1405,	\@authornotemark ...	2354, 2361, 2362,
1412, 1774, 1867, 2446	... 1387, 1393, 2409	2364, 2366, 2367, 2372
\@acmdefinitionbodyfont	\@authornotes .....	\@currentaffiliations
... 2880, 2892, 2904	... 1384, 1388, 1811	..... 2214,
\@acmdefinitionheadfont	\@authorsaddresses .	2215, 2216, 2218,
... 2882, 2894, 2906	1363, 1819, 2404, 2476	2244, 2256, 2257, 2263
\@acmdefinitionindent	\@auxout ..... 540	\@currentauthors ...
... 2881, 2893, 2905	\@begindocumenthook 536	..... 2212, 2213,
\@acmdefinitionnotefont	\@beginmaketitlehook	2243, 2247, 2248,
... 2883, 2895, 2909	... 1785, 1788, 1790	2250, 2281, 2284,
\@acmownedfalse . 1569,	\@botnum ..... 1917	2306, 2308, 2309,
1572, 1575, 1581,	\@citestyle ..... 281	2311, 2353, 2355,
1585, 1588, 1591,	\@classname ..... 24,	2356, 2358, 2409, 2410
1594, 1600, 1603, 1607	26, 35, 51, 53, 54,	\@currentlabel . 456, 470
\@acmownedtrue ....	59, 61, 62, 67, 69,	\@dblarg ..... 358
... 1556, 1565, 1597	70, 75, 78, 79, 84,	\@dblfloat ..... 835
\@acmplainbodyfont .	86, 87, 92, 98, 99,	\@department .. 1341, 1342
... 2850, 2862, 2874	103, 107, 112, 114,	\@dotsep ..... 2849
\@acmplainheadfont .	115, 120, 122, 123,	\@editorsAbbrev ....
... 2852, 2864, 2876	128, 130, 131, 136,	... 1264, 1269, 2460
\@acmplainindent ...	140, 141, 152, 158,	\@empty .... 214, 362,
... 2851, 2863, 2875	164, 170, 236, 703,	1248, 1266, 1288,
\@acmplainnotefont .	706, 709, 746, 755,	1291, 1309, 1311,
... 2853, 2865, 2879	758, 826, 1011,	1316, 1317, 1323,
\@adddotafter .....	1040, 1046, 1052,	1443, 1444, 1500,
2764, 2765, 2767,	1058, 1232, 1234,	1501, 1507, 1514,
2779, 2794, 2798, 2847	1281, 1336, 1350,	1519, 1545, 1786,
\@additionalaffiliation	1440, 1446, 1451,	1815, 1819, 1859,
..... 1337, 1338	1458, 1460, 1461,	1868, 1871, 1872,
\@addpunct . 2396, 2475,	1464, 1466, 1467,	1873, 1883, 1888,
2476, 2847, 2848, 2959	1470, 1478, 1480,	1949, 1989, 1994,
\@addspaceafter .... 2848	1481, 1483, 1484,	2067, 2071, 2076,
\@affiliationfont ..	1547, 2232, 2235,	2084, 2087, 2100,
2185, 2190, 2194,	2238, 2405, 2419,	2108, 2115, 2125,
2197, 2200, 2203,	2439, 3052, 3055, 3062	2214, 2247, 2255,
2206, 2209, 2261, 2281	\@clubpenalty ..... 417	2256, 2308, 2314,
\@afterheading . 403, 1920	\@concepts . 1519, 1531,	2321, 2355, 2361,
\@afterindentfalse .	1545, 1883, 1885, 1902	2366, 2404, 2412,
..... 349, 1919	\@copyrightowner ...	2442, 2447, 2459,
\@afterindenttrue .. 347	..... 1612, 1843	2466, 2544, 2555,
\@article@string ...	\@copyrightpermission	2853, 2883, 3021, 3038
... 2442, 2455, 2463	..... 1650, 1835	\@endfloatbox ..... 838
		\@endpefalse ..... 2961

<code>\@endwdefloatbox</code>	838, <a href="#">846</a>	<code>\@journalCode@nr</code>	...	<code>\@listI</code>	..... 895, 899
<code>\@finalstrut</code>	... 461, 474	.....	921, 984, 1238	<code>\@listi</code>	..... 892, 899
<code>\@float</code>	..... 840	<code>\@journalName</code>	.....	<code>\@listii</code>	..... 900
<code>\@flushglue</code>	..... 2808	... 986, 990, 994,		<code>\@listiii</code>	..... 903
<code>\@fnsymbol</code>	..... 1801	998, 1002, 1006,		<code>\@listiv</code>	..... 905
<code>\@folio@ht</code>	.....	1013, 1017, 1021,		<code>\@listv</code>	..... 907
	2651, 2678, 2684, 2685	1025, 1029, 1033,		<code>\@listvi</code>	..... 909
<code>\@folio@max</code>	2651, 2674, 2675	1036, 1042, 1048,		<code>\@m</code>	..... 360
<code>\@folio@voffset</code>	2651, 2680	1054, 1060, 1064,		<code>\@makefnmark</code>	... 451,
<code>\@folio@wd</code>	..... 2651,	1068, 1071, 1075,			476, 1803, 1808, 1812
	2685, 2686, 2713, 2723	1079, 1081, 1083,		<code>\@makefntext</code>	.....
<code>\@folioblob</code>	... 2671,	1087, 1089, 1093,			... 451, 460, 473, 1814
	2710, 2712, 2720, 2721	1097, 1101, 1105,		<code>\@marginfigure</code>	.. 818, <a href="#">819</a>
<code>\@footnotemark</code>	.. 478, 1799	1109, 1113, 1117,		<code>\@margintable</code>	.. 829, <a href="#">830</a>
<code>\@footnotemark@nolink</code>	..... 478, 1799	1121, 1125, 1129,		<code>\@minipagefalse</code>	.. 667, 848
<code>\@footnotetext</code>	....	1133, 1137, 1141,		<code>\@minus</code>	2784, 2788, 2792,
	.... 452, 479, 1800	1145, 1149, 1153,			2796, 2800, 2805,
<code>\@footnotetext@nolink</code>	..... 479, 1800	1157, 1160, 1164,			2871, 2873, 2901, 2903
<code>\@for</code>	..... 257	1167, 1172, 1176,		<code>\@mkabstract</code>	.. 1881, <a href="#">2423</a>
<code>\@formatdoi</code>	.... 1649,	1180, 1184, 1188,		<code>\@mkauthors</code>	1804, 1806, <a href="#">2160</a>
	1862, 1869, 1873, 2466	1192, 1196, 1200,		<code>\@mkauthors@i</code>	.. 2164,
<code>\@fps</code>	..... 839	1204, 1208, 1212,			2166, 2168, 2170, <a href="#">2242</a>
<code>\@fpsadddefault</code>	.... 839	1216, 1220, 1224,		<code>\@mkauthors@ii</code>	.... <a href="#">2274</a>
<code>\@gobble</code>	..... 279, 323	1228, 1239, 1240, 1855		<code>\@mkauthors@iii</code>	.. 2172,
<code>\@hangfrom</code>	..... 371, 428	<code>\@journalNameShort</code>	..		2174, 2176, 2178, <a href="#">2286</a>
<code>\@headfootfont</code>	.. 2557,	987, 991, 995, 999,		<code>\@mkauthors@iv</code>	2180, <a href="#">2339</a>
	2581, 2582, 2583,	1003, 1008, 1014,		<code>\@mkauthorsaddresses</code>	.....
	2584, 2590, 2593,	1018, 1022, 1026,			1364, <a href="#">2383</a>
	2600, 2604, 2612,	1030, 1034, 1037,		<code>\@mkbibcitation</code>	1913, <a href="#">2433</a>
	2613, 2618, 2621,	1043, 1049, 1055,		<code>\@mkteasers</code>	... 1804, <a href="#">2411</a>
	2628, 2629, 2634, 2637	1061, 1065, 1069,		<code>\@mkttitle</code>	..... 1804, <a href="#">2001</a>
<code>\@ifnextchar</code>	..... 1341	1072, 1076, 1084,		<code>\@mkttitle@i</code>	.... 2004,
<code>\@ifnotempty</code>	..... 1779	1090, 1094, 1098,			2006, 2008, 2010, <a href="#">2065</a>
<code>\@ifnum</code>	..... 295, 297	1102, 1106, 1110,		<code>\@mkttitle@ii</code>	..... <a href="#">2093</a>
<code>\@ifstar</code>	..... 356	1114, 1118, 1122,		<code>\@mkttitle@iii</code>	.. 2012,
<code>\@ifundefined</code>	.....	1126, 1130, 1134,			2014, 2016, 2018, <a href="#">2093</a>
	2914, 2917, 2920,	1138, 1142, 1146,		<code>\@mkttitle@iv</code>	.. 2020, <a href="#">2121</a>
	2923, 2926, 2930, 2933	1150, 1154, 1161,		<code>\@mpargs</code>	..... 670
<code>\@iiiparbox</code>	..... 670	1165, 1168, 1173,		<code>\@mparswitchfalse</code>	.. 632
<code>\@input</code>	..... 440	1177, 1181, 1185,		<code>\@mpfootins</code>	.....
<code>\@insideauthorgroupfalse</code>	..... 1279, 1331	1189, 1193, 1197,			465, 466, 662, 663, 665
<code>\@insideauthorgrouptrue</code>	..... 1286	1201, 1205, 1209,		<code>\@mpfootnotetext</code>	... <a href="#">464</a>
<code>\@journalCode</code>	.....	1213, 1217, 1221,		<code>\@ene</code>	.. 283, 287, 291, 293,
	.. 921, 1011, 1040,	1225, 1229, 1240,			526, 2490, 2496, 2500
	1046, 1052, 1058, 1232	2454, 2586, 2596,		<code>\@enil</code>	..... 302
		2607, 2706, 2716, 2726		<code>\@nobreakfalse</code>	.. 405, 445
		<code>\@keywords</code>	.. 1442, 1443,	<code>\@noskipsecfalse</code>	... 409
			1444, 1888, 1894, 1903	<code>\@noskipsectrue</code>	.... 406
		<code>\@latex@error</code>	..... 325	<code>\@pages@word</code>	.....
		<code>\@empty</code>	..... <a href="#">1455</a> , 2424		... 2436, 2456, 2463

\@par . . . . .	1817, 1823	\@rightskip . . .	2808, 2809	\@tempb . . . . .	
\@parboxrestore . . . .	469	\@saveabstract . . .	1449, 1450		258, 260, 262, 264,
\@parfont . . . . .		\@saveteaser . . .	1776, 1777		266, 268, 270, 272,
	2798, 2802, 2807, 2812	\@secntformat . . .	365, 422		274, 276, 278, 280,
\@permissionCodeOne		\@secfont . . . . .	2786, 2812		282, 284, 286, 288,
. . . . .	988, 992,	\@secpenalty . . . . .	354		290, 292, 294, 296,
	996, 1000, 1004,	\@sect . . . . .	358, 359		298, 300, 305, 307,
	1009, 1015, 1019,	\@setaddresses . . . .	2408		309, 311, 313, 315,
	1023, 1027, 1031,	\@setauthorsaddresses			3039, 3040, 3043, 3044
	1038, 1044, 1050,	. . . . .	1823, 2476	\@tempboxa . .	670, 1958, 1960
	1056, 1062, 1066,	\@setthanks . . .	1817, 2475	\@tempc . .	303, 304, 306,
	1073, 1077, 1085,	\@shortauthors . . . .			308, 310, 312, 314, 316
	1091, 1095, 1099,		2552, 2575, 2583,	\@tempcnta . .	2671, 2672,
	1103, 1107, 1111,		2591, 2601, 2613, 2629		2674, 2675, 2677, 2679
	1115, 1119, 1123,	\@sidebar . . . . .	814, 815	\@tempdima . . . . .	
	1127, 1131, 1135,	\@specialsection . . .			1954, 1955, 1956,
	1139, 1143, 1147,		1884, 1890, 1892, 1922		1962, 1963, 1964,
	1151, 1155, 1158,	\@ssect . . . . .	357, 423		2678, 2679, 2680, 2682
	1162, 1169, 1174,	\@startPage . . . .	1438,	\@tempskipa . . . . .	
	1178, 1182, 1186,		1949, 1950, 1952, 2549		346, 348, 349, 354,
	1190, 1194, 1198,	\@startsection . .	343,		367, 368, 399, 400,
	1202, 1206, 1210,		435, 2783, 2787,		402, 414, 415, 424, 425
	1214, 1218, 1222,		2791, 2795, 2799, 2804	\@textbottom . . . . .	671
	1226, 1230, 1241, 1867	\@starttoc . . . . .	435	\@textsuperscript . .	
\@permissionCodeTwo		\@subparfont . . . . .	2837		476, 1803, 1808
. . . . .	1170, 1242	\@subsecfont . . .	2790, 2812	\@texttop . . . . .	672
\@plus . . . . .	438,	\@subsubsecfont . .	2794, 2812	\@thefnmark . .	457, 471,
	446, 671, 2784,	\@subtitle . . . . .	1272, 1376,		476, 1803, 1808, 1813
	2788, 2792, 2796,		2084, 2085, 2108,	\@title . . .	1367, 1901,
	2800, 2805, 2870,		2109, 2125, 2126, 2447		2083, 2107, 2124, 2446
	2872, 2900, 2902, 2956	\@subtitlefont . . . .		\@titlefont . .	2023, 2075,
\@printcopyrightfalse			2044, 2085, 2109, 2126		2082, 2094, 2106, 2122
. . . . .	1568, 1580	\@subtitlenotes . . . .		\@titlenotes . . . . .	
\@printcopyrighttrue			1374, 1378, 1381, 1810		1365, 1369, 1372, 1809
. . . . .	1552, 1564	\@svsec . . . . .	362, 365, 371, 386	\@tochangmeasure	376, 389
\@printendtopmatter		\@svsechd . . . .	384, 412, 432	\@toclevel . . . . .	360
. . . . .	1918, 2468	\@teaser . . . . .	1777, 2413	\@tocline . . .	448, 449, 450
\@printpermissionfalse		\@teaserfigures . . . .		\@topnum . . . . .	1915
. . . . .	1567		1775, 1777, 2412, 2417	\@typeset@author@bx	
\@printpermissiontrue		\@tempa . . . . .	257, 258,		2278,
. . .	1554, 1563, 1579		260, 262, 264, 266,		2332, 2338, 2377, 2382
\@printtopmatter . . .			268, 270, 272, 274,	\@typeset@author@line	
. . . . .	1805, 1948		276, 278, 280, 282,		2211, 2245, 2269, 2271
\@proofindent . . . . .			284, 286, 288, 290,	\@undefined . . . . .	
. . .	2940, 2950, 2958		292, 294, 296, 298,		536, 734, 1259, 1785
\@proofnamefont . . . .			300, 302, 305, 307,	\@undescribed@imagesfalse	
. . .	2939, 2949, 2959		309, 311, 313, 315,		743
\@received . .	1498, 1501,		1315, 1316, 1499,	\@undescribed@imagestrue	
	1502, 1504, 1507,		1500, 2255, 3021,		754, 757, 825, 2418
	1508, 1510, 1514, 1515		3037, 3038, 3040, 3044		

\@vspace	748, 751, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 815, 820, 830, 836, 1797, 1923, 1945, 2434, 2469, 2472, 3050, 3052, 3058	acks (environment) . . . .	23	\ACM@NR@adjustedSectionformat	2762, 2771
\@vspace@acm	1945, 2472, 3058	\acksname .	3011, 3014, 3015	\ACM@NRadjust	2753, 2786, 2790, 2794, 2798, 2802, 2807
\@vspace@orig	748, 751, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 815, 820, 830, 836, 1797, 1923, 2434, 2469, 3050	\ACM@adddotafter	2765, 2782	\ACM@origbaselinestretch	3060
\@vspacer	749, 752, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 816, 821, 831, 837, 1798, 1924, 1946, 2435, 2470, 2473, 3051, 3055, 3059	\acm@copyrightinput	1558	\ACM@ps@headings	2480, 2484
\@vspacer@acm	1946, 2473, 3059	\acm@copyrightmode	1558, 1566, 1571, 1574, 1578, 1584, 1587, 1590, 1593, 1596, 1599, 1602, 1606, 1613, 1651	\ACM@ps@myheadings	2479, 2483
\@vspacer@orig	749, 752, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 816, 821, 831, 837, 1798, 1924, 2435, 2470, 3051	\ACM@fontsize	144, 214, 217, 219, 221, 223, 225, 227, 229, 231, 233, 236, 237	\ACM@ps@plain	2478, 2482
\@width	651, 658	\ACM@format	32, 152	\ACM@restore@pagestyle	2478
\@xp	442, 443	\ACM@format@nr	32, 152, 157, 163, 169, 182, 188, 215, 489, 572, 637, 673, 789, 856, 1925, 1968, 2002, 2024, 2045, 2162, 2186, 2511, 2571, 2658, 2697, 2743, 2817, 2854, 2884, 2941, 2966, 2984	\ACM@sect@format	2772, 2774
\@xsect	397, 398, 434	\ACM@format@nr	32, 152, 157, 163, 169, 182, 188, 215, 489, 572, 637, 673, 789, 856, 1925, 1968, 2002, 2024, 2045, 2162, 2186, 2511, 2571, 2658, 2697, 2743, 2817, 2854, 2884, 2941, 2966, 2984	\ACM@sect@format@	2761, 2774, 2776
\\	557, 566, 1291, 1843, 1848, 1863, 1868, 1872, 2438, 2446, 2495	\ACM@linecount	2489, 2490, 2495, 2496, 2499, 2500	\ACM@sect@format@null	2775, 2776
\{	265	\ACM@linecount@bx	2486, 2506, 2532	\ACM@timestamp	2535, 2646, 2744, 2749
\}	265	\ACM@linecount@bxht	2488, 2494, 2497, 2498	\acmArticle	15, 1401
\_	1262, 1527, 1537, 1843, 1845, 1868, 2442, 2443, 2461, 2549	\ACM@linecountL	2502, 2573, 2576, 2581, 2584, 2590, 2592, 2600, 2602, 2612, 2615, 2618, 2628, 2631, 2634, 2699, 2710, 2711, 2721, 2722, 2730, 2733, 2738	\acmArticleSeq	15, 1403
A		\ACM@linecountR	2509, 2603, 2605, 2613, 2616, 2623, 2629, 2632, 2639, 2731, 2734, 2739	\acmBadgeL	16, 1433
\abstract	1449	\ACM@mk@linecount	2491, 2504, 2519, 2521, 2523, 2525, 2527, 2529	\acmBadgeR	16, 1428
abstract (environment)	19			\acmBooktitle	9, 1257
\abstractname	2429			\acmConference	9, 1243
\acks	3012			\acmConference@date	1246, 1839, 2620, 2623, 2636, 2639
				\acmConference@name	1245, 1259, 1260, 1261
				\acmConference@shortname	1244, 1248, 1249, 1261, 1262, 1839, 2619, 2622, 2635, 2638
				\acmConference@venue	1247, 1839, 2620, 2623, 2636, 2639
				\acmdefinition	2899
				\acmDOI	16, 1419
				\acmISBN	16, 1417
				\acmJournal	9, 1236
				\acmMonth	15, 1407
				\acmNumber	15, 1399
				\acmplain	2869
				\acmPrice	15, 1413, 1576, 1582, 1604, 1608
				\acmSubmissionID	15, 1415

<code>\acmVolume</code> . . . . .	15, 1397	<code>\AtEndEnvironment</code>	753, 756	<code>\bgroup</code> .	815, 819, 830,
<code>\acmYear</code> . . . . .	15, 1405	<code>\AtEndPreamble</code> .	502,		836, 1338, 1883,
<code>\addcontentsline</code>	253,		735, 2911, 2963, 3022		1888, 2278, 2315,
	378, 391, 2425, 3015	<code>\author</code> . . . . .	10,		2318, 2379, 2388,
<code>\additionalaffiliation</code>			1280, 1793, 1794, 2440		2413, 2423, 2433, 2445
	11, 1337	<code>\author@bx</code>	2274, 2280, 2283	<code>\bibfont</code> . . . . .	255
<code>\addpenalty</code> . . . . .	354	<code>\author@bx@sep</code> . . . .		<code>\bibliofont</code> . . . . .	255
<code>\addresses</code> . . . . .			2276, 2283,	<code>\bibliographystyle</code> .	535
	1288, 1290, 1295,		2288, 2305, 2341, 2352	<code>\bibsection</code> . . . . .	251
	1302, 1333, 1353,	<code>\author@bx@wd</code> . . . . .		<code>\bibstyle</code> 279, 281, 323, 540	
	1387, 1393, 1395,		2275, 2278,	<code>\bibstyle@acmauthoryear</code>	
	2271, 2338, 2382, 2401		2287, 2288, 2290,		329
<code>\addtocounter</code> . .	482, 1539		2296, 2298, 2300,	<code>\bibstyle@acmnumeric</code>	335
<code>\addtolength</code> . . .	880,		2302, 2305, 2340,	<code>\bigskip</code> . .	1515, 1986,
	881, 882, 886, 887, 2497		2341, 2343, 2349, 2352		2092, 2120, 2128,
<code>\addvspace</code> . . . . .	354, 446	<code>\authornote</code> . . . . .			2338, 2382, 2413, 2471
<code>\advance</code> . . .	896, 901,		14, 1337, 1385, 2441	<code>\box</code>	853, 1970, 1972, 1974,
	904, 906, 908, 910,	<code>\authornotemark</code> .	15, 1391		1976, 1978, 1980,
	1283, 1285, 1955,	<code>\authors</code> . . . . .			1982, 1984, 1986, 2283
	1963, 2068, 2069,		1293, 1298, 1305,	<b>C</b>	
	2072, 2073, 2097,		1896, 1908, 1910, 2446		
	2098, 2288, 2305,	<code>\authorsaddresses</code>	14, 1363	<code>\c@footnote</code> . . . . .	1801
	2341, 2352, 2496,			<code>\c@secnumdepth</code> . . . .	
	2500, 2675, 2677, 2680				361, 375, 379, 388, 392
<code>\affiliation</code> . . . . .	10,	<b>B</b>		<code>\captionsetup</code> . .	781,
	1330, 2254, 2321, 2366				783, 785, 787, 796,
<code>\and</code> . . . . .	1270, 1303,	<code>\balance</code> . . . . .	3009		798, 801, 803, 806,
	1305, 1320, 1326,	<code>\baselineskip</code> . . . . .			808, 816, 822, 831, 2414
	2245, 2250, 2252,		1833, 2077,	<code>\ccdesc@parse@finish</code>	1550
	2263, 2269, 2279,		2089, 2101, 2116,	<code>\ccsdesc</code> . . . . .	16, 1521
	2313, 2332, 2338,		2497, 2784, 2785,	<code>\ccsdesc@parse</code>	1522, 1523
	2360, 2377, 2382, 2398		2788, 2789, 2792,	<code>\ccsdesc@parse@end</code> .	
<code>\andify</code> . . . . .	1908,		2796, 2800, 2870,		1522, 1550
	1909, 2212, 2215, 2460		2871, 2872, 2873,	<code>\ccsdesc@parse@finish</code>	
<code>anonsuppress</code> (environ-		<code>\baselinestretch</code> . . .	2900, 2901, 2902, 2903		1544, 1550
<code>ment</code> ) . . . . .	23		3060, 3061, 3063	<code>CCSXML</code> (environment) . .	16
<code>\apptocmd</code> . . . . .	3052, 3055	<code>\begin</code> .	19, 2505, 2531, 2681	<code>\centering</code> . . . . .	439,
<code>\AtBeginDocument</code> . . .		<code>\begingroup</code> . . . . .	369,		472, 556, 565,
	76, 93, 529,		412, 426, 435, 525,		823, 832, 2094,
	537, 872, 1576,		1796, 2160, 2754, 3013		2106, 2280, 2337, 2687
	1582, 1604, 1608,	<code>\bfseries</code> . .	911, 1829,	<code>\cite</code> . . .	518, 519, 530, 534
	2485, 2558, 2691, 2777		2026, 2028, 2030,	<code>\citeA</code> . . . . .	524
<code>\AtBeginEnvironment</code>			2034, 2036, 2038,	<code>\citealt</code> . . . . .	523
	747, 750, 759,		2040, 2042, 2205,	<code>\citeANP</code> . . . . .	520
	761, 763, 765, 767,		2208, 2444, 2688,	<code>\citeauthor</code> . . . . .	520
	769, 771, 773, 775, 777		2812, 2813, 2827,	<code>\citeN</code> . . . . .	518
<code>\AtBeginMaketitle</code>	30, 1788		2828, 2830, 2831,	<code>\citename</code> . . . . .	531
<code>\AtEndDocument</code> .	745,		2833, 2834, 2835,	<code>\citeNN</code> . . . . .	521
	1444, 1468, 1513,		2836, 2840, 2841,	<code>\citeNP</code> . . . . .	523
	1545, 2403, 3006, 3061		2844, 2845, 2864, 2894	<code>\citep</code> . . . . .	519

<code>\citestyle</code> . . .	24, 321, 341	<code>\CurrentOption</code> .	145,	1049, 1050, 1054,
<code>\citeyear</code> . . . . .	522		146, 147, 148, 149, 150	1055, 1056, 1060,
<code>\citeyearNP</code> . . . . .	522			1061, 1062, 1064,
<code>\citeyearpar</code> . . .	521, 534			1065, 1066, 1068,
<code>\city</code> . .	12, 1344, 2137, 2394	<b>D</b>		1069, 1071, 1072,
<code>\ClassError</code> . . . . .		<code>\day</code> . . . . .	2547	1073, 1075, 1076,
. .	35, 1234, 1336,	<code>\DeclareNewFootnote</code>		1077, 1079, 1081,
	1451, 1461, 1467,	. . . . .	654, 656	1083, 1084, 1085,
	1481, 2238, 2439, 3062	<code>\DeclareOptionX</code> . . . .		1087, 1089, 1090,
<code>\ClassInfo</code> . . . . .		. . . . .	38, 145,	1091, 1093, 1094,
. .	152, 236, 1232,		146, 147, 148, 149, 150	1095, 1097, 1098,
	1458, 1460, 1464,	<code>\DeclareRobustCommand</code>		1099, 1101, 1102,
	1466, 1478, 1480, 1483	. . . . .	524, 2774	1103, 1105, 1106,
<code>\ClassWarning</code> 26, 158,		<code>\DeclareTextFontCommand</code>		1107, 1109, 1110,
	164, 170, 703, 706,	. . . . .	736	1111, 1113, 1114,
	709, 755, 758, 826,	<code>\def</code> . . . . .	24, 38,	1115, 1117, 1118,
	1281, 1350, 1440,		144, 217, 219, 221,	1119, 1121, 1122,
	1484, 2419, 3052, 3055		223, 225, 227, 229,	1123, 1125, 1126,
<code>\ClassWarningNoLine</code>			231, 233, 258, 260,	1127, 1129, 1130,
.	746, 1446, 1470,		262, 264, 266, 268,	1131, 1133, 1134,
	1547, 2232, 2235, 2405		270, 272, 274, 276,	1135, 1137, 1138,
<code>\cleaders</code> . . . . .	2134		278, 280, 282, 283,	1139, 1141, 1142,
<code>\clearpage</code> . . . . .	1961		284, 285, 286, 287,	1143, 1145, 1146,
<code>\clubpenalty</code> . . .	411, 417		288, 289, 290, 291,	1147, 1149, 1150,
<code>\CodelineIndex</code> . . . . .	16		292, 294, 296, 298,	1151, 1153, 1154,
<code>\Collect@Body</code> . .	814,		300, 301, 305, 307,	1155, 1157, 1158,
	818, 829, 1449, 1776		309, 311, 313, 315,	1160, 1161, 1162,
<code>\color</code> . . .	1831, 2495, 2499		343, 359, 384, 398,	1164, 1165, 1167,
<code>\color@begingroup</code> 459, 472			422, 423, 432, 435,	1168, 1169, 1170,
<code>\color@endbox</code> . . . . .	851		448, 449, 450, 451,	1172, 1173, 1174,
<code>\color@endgroup</code> . . . .			453, 464, 476, 482,	1176, 1177, 1178,
. . . . .	462, 475, 668		483, 484, 485, 486,	1180, 1181, 1182,
<code>\columnwidth</code> . . .	468,		504, 535, 650, 657,	1184, 1185, 1186,
	651, 837, 2340, 2379		659, 671, 815, 819,	1188, 1189, 1190,
<code>\contentsnamefont</code> . .	439		830, 836, 839, 843,	1192, 1193, 1194,
<code>\copy</code> . . . . .	2134		846, 864, 865, 866,	1196, 1197, 1198,
<code>\copyright</code> . . . . .	1843		867, 895, 900, 903,	1200, 1201, 1202,
<code>\copyrightpermissionfootnoterule</code>			905, 907, 909, 986,	1204, 1205, 1206,
. . . . .	650		987, 988, 990, 991,	1208, 1209, 1210,
<code>\copyrightyear</code> .	17, 1773		992, 994, 995, 996,	1212, 1213, 1214,
<code>\country</code> 12, 1347, 2137, 2397			998, 999, 1000,	1216, 1217, 1218,
<code>\csname</code> . . . .	323, 374,		1002, 1003, 1004,	1220, 1221, 1222,
	376, 380, 387, 389,		1006, 1008, 1009,	1224, 1225, 1226,
	393, 422, 442, 443,		1013, 1014, 1015,	1228, 1229, 1230,
	457, 471, 1297,		1017, 1018, 1019,	1236, 1238, 1239,
	1304, 1357, 1360,		1021, 1022, 1023,	1240, 1241, 1242,
	1526, 1527, 1529,		1025, 1026, 1027,	1257, 1264, 1265,
	1530, 1531, 1532,		1029, 1030, 1031,	1266, 1272, 1315,
	1533, 1536, 1538,		1033, 1034, 1036,	1337, 1338, 1339,
	1905, 1907, 2755, 2778		1037, 1038, 1042,	1340, 1341, 1342,
			1043, 1044, 1048,	

1355, 1363, 1365,	2671, 2753, 2757,	\egroup . . . . . 669,
1366, 1374, 1375,	2759, 2761, 2771,	817, 828, 832, 844,
1384, 1385, 1397,	2775, 2782, 2808,	850, 1348, 1885,
1399, 1401, 1403,	2812, 2813, 2814,	1894, 2282, 2316,
1405, 1407, 1409,	2815, 2821, 2822,	2319, 2382, 2402,
1413, 1415, 1417,	2824, 2825, 2827,	2414, 2432, 2446, 2467
1419, 1429, 1430,	2828, 2830, 2831,	\else 52, 60, 68, 77, 85, 97,
1431, 1432, 1434,	2833, 2834, 2835,	113, 121, 129, 139,
1435, 1436, 1437,	2836, 2837, 2840,	184, 211, 303, 324,
1438, 1440, 1442,	2841, 2844, 2845,	353, 360, 363, 375,
1450, 1455, 1486,	2847, 2848, 2850,	379, 383, 388, 392,
1498, 1499, 1523,	2851, 2852, 2853,	404, 416, 431, 512,
1524, 1550, 1610,	2862, 2863, 2864,	528, 534, 536, 559,
1612, 1649, 1650,	2865, 2880, 2881,	561, 662, 722, 727,
1773, 1775, 1777,	2882, 2883, 2892,	753, 756, 786, 824,
1788, 1790, 1803,	2893, 2894, 2895,	1227, 1253, 1259,
1808, 1817, 1823,	2939, 2940, 2949,	1261, 1268, 1284,
1898, 1922, 1948,	2950, 3019, 3021,	1291, 1294, 1300,
2001, 2023, 2044,	3037, 3038, 3039, 3043	1301, 1311, 1314,
2065, 2093, 2121,	\define@boolkey . . . .	1319, 1322, 1325,
2130, 2137, 2138,	. . . 49, 57, 65, 73,	1332, 1352, 1371,
2140, 2141, 2143,	82, 90, 102, 106,	1380, 1386, 1394,
2144, 2146, 2149,	110, 118, 126, 134,	1444, 1459, 1465,
2150, 2154, 2155,	1335, 1456, 1462, 1476	1468, 1479, 1490,
2157, 2158, 2160,	\define@choicekey . .	1493, 1503, 1506,
2184, 2185, 2189,	. . . . . 32, 921, 1557	1509, 1514, 1535,
2190, 2193, 2194,	\define@cmdkey . . . . 1482	1540, 1541, 1542,
2196, 2197, 2199,	\define@color . . . . .	1545, 1782, 1804,
2200, 2202, 2203,	. . . 544, 545, 546,	1815, 1819, 1820,
2205, 2206, 2208,	547, 548, 549, 550, 551	1827, 1834, 1837,
2209, 2211, 2213,	\department . . . . .	1838, 1844, 1849,
2218, 2225, 2230,	. 12, 1341, 2137, 2396	1856, 1861, 1864,
2242, 2243, 2244,	\Description . . . . 22, 744	1865, 1868, 1870,
2246, 2253, 2254,	\description . . . . . 912	1871, 1872, 1873,
2255, 2278, 2279,	\descriptionlabel 911, 914	1883, 1888, 1891,
2286, 2308, 2314,	\detokenize . . . . . 1281	1951, 1989, 1994,
2321, 2339, 2355,	\dimexpr . . 834, 853, 2643	2067, 2071, 2076,
2361, 2366, 2383,	\divide 2290, 2296, 2298,	2084, 2087, 2100,
2389, 2390, 2391,	2300, 2302, 2343, 2349	2108, 2115, 2125,
2393, 2394, 2395,	\do . . . . . 257, 504	2131, 2132, 2147,
2397, 2398, 2399,	\do@url@hyp . . . . . 504	2148, 2149, 2151,
2400, 2408, 2409,	\DocInput . . . . . 20	2153, 2154, 2157,
2410, 2411, 2413,	\documentclass . . . . . 8	2214, 2231, 2234,
2423, 2433, 2436,	\dots . . . . . 1872	2237, 2249, 2255,
2437, 2438, 2439,	\dp . . . . . 1955, 1963	2262, 2280, 2291,
2442, 2446, 2468,		2301, 2310, 2317,
2475, 2476, 2481,		2326, 2344, 2348,
2491, 2502, 2509,	E	2357, 2363, 2371,
2552, 2557, 2563,	\edef 145, 146, 147, 148, 360	2385, 2387, 2403,
2657, 2664, 2669,	\editor . . . . . 9, 1266	2412, 2417, 2424,

2428, 2436, 2442,	\excludacomment . 1518,	314, 316, 317, 326,
2447, 2448, 2457,	3025, 3027, 3031, 3032	328, 342, 344, 350,
2459, 2466, 2544,	\ExecuteOptionsX . . .	355, 360, 366, 377,
2555, 2556, 2566,	. . . 48, 56, 64, 72,	381, 390, 394, 396,
2577, 2585, 2595,	81, 89, 101, 105,	419, 420, 433, 444,
2606, 2610, 2617,	109, 117, 125, 133, 143	463, 501, 505, 514,
2626, 2633, 2672,	\expandafter 302, 304,	532, 534, 538, 541,
2701, 2705, 2715,	537, 670, 1295,	568, 569, 570, 634,
2725, 2732, 2737,	1296, 1302, 1303,	648, 666, 688, 700,
2745, 2748, 2758,	1357, 1360, 1526,	731, 732, 733, 739,
2782, 3021, 3026,	1527, 1529, 1530,	746, 755, 758, 810,
3033, 3042, 3046, 3061	1536, 1538, 2755, 2778	811, 827, 841, 845,
\email . . . . . 10, 1349,		870, 1231, 1250,
2253, 2314, 2361, 2400	<b>F</b>	1256, 1262, 1263,
\emph . . . . . 1855, 1857	\familydefault . . . . 738	1271, 1287, 1292,
\empty . . . . . 2564	\fancyfoot . . . . .	1299, 1306, 1307,
\EnableCrossrefs . . . . 18	2578, 2586, 2596,	1312, 1313, 1321,
\end . . . 21, 2507, 2533, 2689	2607, 2611, 2627,	1327, 1328, 1329,
\end@dblfloat . . . . . 842	2646, 2700, 2702,	1334, 1354, 1373,
\end@float . . . . . 844	2706, 2716, 2726,	1383, 1390, 1396,
\endcsname 322, 323, 374,	2735, 2740, 2744, 2749	1412, 1448, 1452,
376, 380, 387, 389,	\fancyhead . . . . .	1461, 1467, 1475,
393, 422, 442, 443,	2573, 2574, 2575,	1481, 1495, 1496,
457, 471, 1297,	2576, 2581, 2582,	1505, 1511, 1512,
1304, 1358, 1361,	2583, 2584, 2590,	1516, 1534, 1542,
1526, 1527, 1529,	2592, 2593, 2600,	1543, 1549, 1570,
1530, 1531, 1532,	2602, 2603, 2604,	1573, 1577, 1583,
1533, 1536, 1538,	2612, 2613, 2615,	1586, 1589, 1592,
1905, 1907, 2755, 2778	2616, 2618, 2621,	1595, 1598, 1601,
\enddescription . . . . 918	2628, 2629, 2631,	1605, 1609, 1648,
\endgroup . . . 373, 412,	2632, 2634, 2637,	1772, 1784, 1787,
430, 445, 1879,	2699, 2710, 2711,	1794, 1795, 1804,
2182, 2757, 2759, 3017	2712, 2720, 2721,	1806, 1818, 1824,
\endlist . . . . . 916, 918	2722, 2730, 2731,	1825, 1826, 1832,
\endminipage . . . . . 659	2733, 2734, 2738, 2739	1835, 1836, 1840,
\endtrivlist . . . . . 2961	\fancyheadoffset . . .	1841, 1846, 1858,
\enspace . . . . . 2848	. . . 2643, 2713, 2723	1863, 1868, 1872,
environments:	\fancyhf . . . . . 2560, 2693	1873, 1874, 1875,
abstract . . . . . 19	\fancypagestyle 2559, 2692	1876, 1877, 1878,
acks . . . . . 23	\fi . . . 54, 62, 70, 79, 87,	1886, 1887, 1893,
anonsuppress . . . . 23	99, 115, 123, 131,	1895, 1914, 1944,
CCSXML . . . . . 16	141, 162, 168, 181,	1953, 1965, 1993,
marginfigure . . . . 32	186, 208, 213, 234,	1997, 1998, 1999,
marginable . . . . . 32	235, 247, 259, 261,	2021, 2043, 2064,
printonly . . . . . 22	263, 265, 267, 269,	2070, 2074, 2080,
screenonly . . . . . 22	271, 273, 275, 277,	2086, 2091, 2103,
sidebar . . . . . 32	279, 281, 283, 285,	2105, 2110, 2118,
teaserfigure . . . . 19	287, 289, 291, 293,	2119, 2127, 2135,
\everypar 352, 407, 418, 2427	295, 297, 299, 301,	2147, 2149, 2151,
	306, 308, 310, 312,	2153, 2154, 2157,



2159, 2181, 2210, 2217, 2233, 2236, 2240, 2251, 2267, 2268, 2280, 2303, 2304, 2312, 2320, 2331, 2350, 2351, 2359, 2365, 2376, 2385, 2387, 2407, 2420, 2422, 2430, 2432, 2436, 2443, 2447, 2461, 2464, 2465, 2466, 2501, 2508, 2530, 2534, 2546, 2551, 2555, 2556, 2565, 2567, 2568, 2573, 2574, 2579, 2588, 2598, 2609, 2611, 2624, 2625, 2627, 2640, 2641, 2644, 2647, 2670, 2689, 2700, 2703, 2709, 2719, 2729, 2735, 2736, 2740, 2741, 2747, 2750, 2751, 2769, 2780, 2782, 2846, 2868, 2898, 2936, 2953, 2981, 2982, 3003, 3004, 3010, 3021, 3029, 3035, 3038, 3048, 3049, 3064		\footnotetextcopyrightpermission 2245, 2269, 2270, ..... 1827 2280, 2332, 2335, 2377, 2415, 2418, 2496, 2500, 2965, 2986, 2988, 2990, 3002
\firstpagestyle .... 2691		
\floatname ..... 813		
\flushbottom ..... 678, 680, 682, 684, 686		
\footnote ..... 2439		
\footnotemark 486, 1367, 1376, 2409, 2410, 2437		
\footnoterule ..... 657		
\footnotesep ... 461, 474		
\footnotesize .. 467, 2543, 2557, 2578, 2586, 2596, 2607, 2611, 2618, 2627, 2702, 2706, 2716, 2726, 2735, 2740, 2746		
\footnotetext .. 1370, 1372, 1379, 1382, 1389		
\footnotetextauthorsaddresses ..... 1816, 1822		
	\footnotetextcopyrightpermission 2245, 2269, 2270, ..... 1827 2280, 2332, 2335, 2377, 2415, 2418, 2496, 2500, 2965, 2986, 2988, 2990, 3002	
	\fulltextwidth .... ..... 833, 837, 853	\grantnum ..... 23, 3020 \grantsponsor .. 23, 3019
	<b>G</b>	<b>H</b>
\g@addto@macro . 1270, 1302, 1305, 1320, 1326, 1333, 1353, 1367, 1369, 1372, 1376, 1378, 1381, 1387, 1388, 1393, 1395, 1504, 1510, 1531, 1538, 1777, 1781, 1783, 1788, 2250, 2263, 2311, 2318, 2327, 2358, 2364, 2372, 2409, 2410		\hbox . 476, 1803, 1808, 2133 \headrulewidth 2561, 2694 \hfill ..... 2123, 2499 \href . 1359, 1362, 1990, 1995, 2077, 2089, 2101, 2116, 3041, 3045 \hrule .... 651, 658, 2123 \hsize ..... 468, 1802, 2065, 2066, 2093, 2095, 2121, 2161, 2278, 2334, 2379
\gdef . 1244, 1245, 1246, 1247, 1249, 1257, 1267, 1269, 1290, 1293, 1295, 1298, 1310, 1318, 1324, 1357, 1360, 1453, 1485, 1502, 1508, 1527, 1529, 1530, 1536, 1950, 2248, 2252, 2257, 2284, 2285, 2306, 2307, 2309, 2313, 2315, 2322, 2353, 2354, 2356, 2360, 2362, 2367, 2392, 2393, 2398		\hskip ..... 371, 385, 415, 428, 432, 1992, 2079, 2088, 2104, 2113, 2134, 2958 \hspace ..... 1661, 1672, 1681, 1706, 1718, 1739, 2283, 2337 \ht ..... 1954, 1962 \Huge ..... 2032, 2034, 2036, 2038, 2040, 2042 \hypersetup ..... .. 507, 513, 515, 1899
	<b>I</b>	
\geometry ..... 574, 577, 584, 591, 598, 605, 612, 619, 626		\if ..... 303 \if@ACM@acmthm . 65, 2912 \if@ACM@affiliation@obeypunctuation ..... 1335, 2132, 2147, 2149, 2151, 2152, 2154, 2157 \if@ACM@anonymous 118, 1289, 1301, 1308, 1332, 1352, 1368, 1377, 1386, 1780, 1792, 1820, 2553, 3030 \if@ACM@authordraft ..... 134, 552, 1828 \if@ACM@authorversion ..... 82, 1834, 1850
\global . 406, 409, 445, 465, 744, 754, 757, 825, 852, 1237, 1251, 1283, 1285, 1286, 1331, 1910, 1911, 1915, 1917, 2141, 2143, 2146, 2150, 2155, 2158, 2226, 2227, 2228,		

\if@ACM@badge . . . . .	560, 737, 835, 842,	2342, 2384, 2386,
1421, 1987, 2096, 2112	1804, 1806, 2280, 2642	2436, 2672, 2674, 2743
\if@ACM@balance . . . . .	\if@ACM@timestamp . . . . .	\ifPDFTeX . . . . . 689
102, 2983, 3007	126, 2535, 2645, 2742	\IfSubStr . . . . . 1281, 1350
\if@ACM@citypresent . . . . .	\if@ACM@urlbreakonhyphens . . . . .	\ifvmode . . . . . 2131
2221, 2234	57, 503	\ifvoid . . . . . 662
\if@ACM@countrypresent . . . . .	\if@acmowned . . . . . 1555	\ifx . . . . . 214, 258,
2223, 2237	\if@Description@present . . . . .	260, 262, 264, 266,
\if@ACM@instpresent . . . . .	740,	268, 270, 272, 274,
2219, 2231	753, 756, 824, 2417	276, 278, 280, 282,
\if@ACM@journal . . . . .	\if@filesw . . . . . 441, 539	284, 286, 288, 290,
154, 209,	\if@insideauthorgroup . . . . .	292, 294, 296, 298,
782, 1253, 1491,	1278, 1284	300, 305, 307, 309,
1889, 2139, 2403, 2426	\if@nobreak . . . . . 351	311, 313, 315, 536,
\if@ACM@journal@bibstrip . . . . .	\if@noskipsec . . . . . 344, 408	1248, 1259, 1261,
155,	\if@printcopyright . . . . .	1266, 1288, 1291,
1821, 1838, 1854,	1551, 1842	1309, 1311, 1316,
1866, 2453, 2570, 2696	\if@printpermission . . . . .	1317, 1323, 1392,
\if@ACM@maketitle@typeset . . . . .	1553, 1835	1444, 1500, 1501,
919, 1450	\if@twocolumn . . . . . 3008	1507, 1514, 1526,
\if@ACM@manuscript . . . . .	\if@undescribed@images . . . . .	1535, 1545, 1785,
153,	742, 745	1815, 1819, 1859,
244, 1488, 1837, 1847	\IfBeginWith . . . . . 1356	1868, 1871, 1872,
\if@ACM@natbib . . . . .	\ifcase . . . . . 188,	1873, 1883, 1888,
110, 249, 340, 517	215, 489, 572, 637,	1949, 1989, 1994,
\if@ACM@natbib@override . . . . .	673, 789, 856, 984,	2067, 2071, 2076,
110	1409, 1613, 1651,	2084, 2087, 2100,
\if@ACM@newfonts 701, 712	1925, 1968, 2002,	2108, 2115, 2125,
\if@ACM@nonacm . . . . . 90,	2024, 2045, 2162,	2214, 2247, 2255,
561, 1444, 1468,	2186, 2292, 2345,	2256, 2308, 2314,
1545, 1827, 1865,	2511, 2571, 2658,	2321, 2355, 2361,
2403, 2448, 2577,	2697, 2817, 2854,	2366, 2404, 2412,
2585, 2595, 2606,	2884, 2941, 2966, 2984	2424, 2442, 2447,
2614, 2630, 2701,	\ifcsname . . . . . 322	2459, 2466, 2544,
2705, 2715, 2725, 2745	\ifdim . . . . . 348, 368, 400,	2555, 2564, 2755,
\if@ACM@pbalance 106, 2964	425, 1956, 1964, 2498	2778, 2782, 3021,
\if@ACM@printacmref . . . . .	\IfFileExists 703, 706, 709	3038, 3040, 3044, 3061
1462, 1912	\IfInteger . . . . . 1483	\ifxetex . . . . . 718
\if@ACM@printccs . . . . .	\ifluatex . . . . . 723	\ignorespaces 421, 461,
1456, 1882	\ifNAT@numbers . . . . . 534	474, 744, 1339,
\if@ACM@printfolios . . . . .	\ifnum . . . . . 157,	1340, 1342, 1355,
1476, 2565, 2567,	163, 169, 182, 360,	2137, 2138, 2140,
2573, 2574, 2611,	361, 375, 379, 388,	2142, 2143, 2144,
2627, 2700, 2735, 2740	392, 1445, 1469,	2145, 2147, 2391,
\if@ACM@review . . . . .	1540, 1541, 1542,	2431, 2438, 2446, 2959
73, 2486, 2503, 2510	1546, 1566, 1571,	\immediate . . . . . 443, 540
\if@ACM@screen 49, 506, 3023	1574, 1578, 1584,	\includecomment . . . . .
\if@ACM@sigchiamode . . . . .	1587, 1590, 1593,	3024, 3028, 3034
156, 452,	1596, 1599, 1602,	\includegraphics . . . . .
	1606, 1794, 2289,	1991, 1996,

2078, 2090, 2102, 2117	\leftmargini . . . 879,	\listisep . . . 893, 894, 898
\indent . . . . . 2940	880, 881, 882, 895, 896	\listparindent . . . . 897
\input . . . . . 690	\leftmarginii . . 885,	\LoadClass . . . . . 237
\InputIfFileExists . . 25	886, 887, 888, 900, 901	\long . . . 453, 464, 815,
\institution . . . . .	\leftmarginiii . . . .	819, 830, 1450,
. 12, 1340, 2137, 2393	. . . 888, 889, 903, 904	1453, 1455, 1777, 2475
\interfootnotelinepenalty	\leftmarginiv . . . . .	\loop . . . . 1957, 2495, 2673
. . . . . 455	. . . 889, 890, 905, 906	\LTX@adddotafter . . .
\interlinepenalty . .	\leftmarginv . . . . .	. . . . . 2779, 2782
. . . . . 372, 429, 455	. . . 890, 891, 907, 908	
\item . . . . . 2958	\leftmarginvi 891, 909, 910	<b>M</b>
\itshape . . 1839, 2814,	\leftskip . 2122, 2380, 2810	\makeatletter . . . . . 435
2815, 2836, 2837,	\let . . . . . 279,	\makebox . . . . . 1829, 2682
2850, 2862, 2882, 2949	281, 293, 295, 297,	\makelabel . . . . . 914
	323, 362, 478, 479,	\MakeTextUppercase .
	518, 519, 520, 521,	. . . . 2248, 2250,
<b>J</b>	522, 523, 526, 530,	2812, 2821, 2824,
\jobname . . . . . 440, 443	672, 734, 748, 749,	2827, 2830, 2840, 2844
	751, 752, 759, 760,	\maketitle . . . . . 20, 1790
<b>K</b>	761, 762, 763, 764,	\MakeUppercase . . . . 2766
\kern 650, 651, 657, 658, 2123	765, 766, 767, 768,	\marginfigure . . . . . 818
\keywords . . . . . 16, 1442	769, 770, 771, 772,	marginfigure (environ-
	773, 774, 775, 776,	ment) . . . . . 32
<b>L</b>	777, 778, 815, 816,	\marginpar . . . . . 453,
\l@section . . . . . 448	820, 821, 830, 831,	817, 823, 832, 1988
\l@subsection . . 448, 449	836, 837, 838, 899,	\marginparsep . . 834, 2643
\l@subsubsection . . . 450	914, 918, 1343,	\marginparwidth . 834, 2643
\labelenumi . . . . . 864	1344, 1345, 1346,	\margintable . . . . . 829
\labelenumii . . . . . 865	1347, 1443, 1519,	margintable (environ-
\labelenumiii . . . . . 866	1786, 1797, 1798,	ment) . . . . . 32
\labelenumiv . . . . . 867	1799, 1800, 1812,	\mathchardef . . 2316, 2319
\labelsep . . . . . 873,	1813, 1814, 1817,	\mbox . . . . . 301
881, 886, 896, 901,	1823, 1896, 1910,	\mdseries . . . . .
904, 906, 908, 910, 2958	1911, 1923, 1924,	2047, 2049, 2051,
\labelwidth . 896, 901,	1945, 1946, 2156,	2055, 2057, 2059,
904, 906, 908, 910, 913	2245, 2269, 2332,	2061, 2063, 2206, 2209
\LARGE . . . . . 2026,	2338, 2377, 2382,	\medskip . . 1927, 1929,
2028, 2030, 2053,	2434, 2435, 2469,	1931, 1933, 2270,
2055, 2057, 2059,	2470, 2472, 2473,	2272, 2336, 2421, 2444
2061, 2193, 2196, 2688	2478, 2479, 2480,	\MessageBreak 159, 165,
\Large 2184, 2202, 2827,	2482, 2483, 2484,	171, 172, 173, 174,
2828, 2830, 2831, 2833	2760, 2762, 2764,	175, 176, 177, 178,
\large . . . . . 1829,	2765, 2767, 2773,	179, 1471, 1472, 1473
2189, 2194, 2197,	2776, 2779, 3050,	\metadata@authors . .
2821, 2822, 2824, 2825	3051, 3058, 3059, 3060	. . . 1896, 1897, 1900
\lastbox . . . . . 410, 2427	\libertineLF . . . . . 736	\mktitle@bx . . . . .
\leaders . . . . . 2123	\lineskip . . . . . 2337, 2381	1789, 1954, 1955,
\leavevmode 344, 2123, 2336	\linespacing . . . 438, 439	1958, 1962, 1963,
\leftmargin . . . . . 895,	\liningnums . . . . . 734	1970, 1972, 1974,
900, 903, 905, 907, 909	\list . . . . . 912	1976, 1978, 1980,

1982, 1984, 1986, 2075, 2094, 2122, 2270, 2335, 2336, 2415	\month . . . . . 1408, 2547	\newif . . . . . 153, 154, 155, 156, 701, 740, 742, 919, 1278, 1421, 1551, 1553, 1555, 2219, 2221, 2223	\number . . . . . 360
\moveleft . . . . . 852	\multiply . . . . . 2679	\newlength . . . . . 1423, 1425, 1426, 2488	\numberline . . . . 380, 393
N	\NAT@setcites . . . . 319	\newsavebox . . . . . 2487	\numexpr . 2537, 2539, 2541
\NAT@aysep . . . . . 310	\NAT@citetp . . . . . 526	\newskip . . . . . 893, 2276	\nxandlist . . . . . 1897
\NAT@close . . . . . 259, 261, 263, 265, 308	\NAT@cmprs . . . . . 287, 289, 291	\newtheorem . . . . . 2915, 2918, 2921, 2924, 2927, 2931, 2934	O
\NAT@cmt . . . . . 314	\NAT@ctype . . . . . 526	\newtheoremstyle . . . . . . . . . 2869, 2899	\onehalfspacing . . . . 246
\NAT@find@eq . . . . . 302	\NAT@fullfalse . . . . 526	\newwrite . . . . . 442	\openout . . . . . 443
\NAT@fullfalse . . . . 526	\NAT@longnamestrue . 299	\next . . . . . 2757, 2759, 2769	\or . . . . . 191, 193, 195, 197, 199, 201, 203, 205, 218, 220, 222, 224, 226, 228, 230, 232, 491, 492, 493, 494, 495, 496, 498, 499, 576, 583, 590, 597, 604, 611, 618, 625, 639, 640, 641, 643, 644, 645, 646, 647, 675, 676, 677, 679, 681, 683, 685, 687, 791, 792, 793, 794, 795, 797, 800, 805, 858, 859, 860, 861, 862, 863, 868, 869, 989, 993, 997, 1001, 1005, 1012, 1016, 1020, 1024, 1028, 1032, 1035, 1041, 1047, 1053, 1059, 1063, 1067, 1070, 1074, 1078, 1080, 1082, 1086, 1088, 1092, 1096, 1100, 1104, 1108, 1112, 1116, 1120, 1124, 1128, 1132, 1136, 1140, 1144, 1148, 1152, 1156, 1159, 1163, 1166, 1171, 1175, 1179, 1183, 1187, 1191, 1195, 1199, 1203, 1207, 1211, 1215, 1219, 1223, 1409, 1410, 1411, 1614, 1616, 1619, 1621, 1622, 1624, 1626, 1628, 1631, 1634, 1637, 1639, 1642, 1645,
\NAT@merge . . . . . 293, 295, 297	\NAT@nmfmt . . . . . 301	\nobreak . . . . . 401, 2444	
\NAT@numbersfalse . . 273	\NAT@numberstrue . 275, 277	\noindent . . . . . 451, 1515, 1814, 1885, 1894, 1927, 1929, 1931, 1933, 1960, 1967, 1988, 2075, 2082, 2085, 2109, 2123, 2124, 2126, 2212, 2270, 2271, 2335, 2381, 2415, 2416, 2444, 2445, 2950	
\NAT@open . . . . . 259, 261, 263, 265, 306, 526	\NAT@partrue . . . . . 526	\noindentparagraph . . . . . . . 1939, 2799	
\NAT@rem@eq . . . . . 304	\NAT@sep . 267, 269, 271, 316	\nolinkurl . . . . . 2316, 2319, 2362, 2364, 2400	
\NAT@sort . . . . . 283, 285, 291	\NAT@superfalse . . . . 275	\normalbaselines . . . 2279	
\NAT@supertrue . . . . 277	\NAT@swafalse . . . . 525	\normalcolor . . . . . 664	
\NAT@up . . . . . 301	\NAT@yrsep . . . . . 312	\normalfont . . . . . . 476, 1515, 1808, 2185, 2190, 2199, 2200, 2202, 2203, 2492, 2865, 2880, 2892, 2895, 2956, 3065	
\NeedsTeXFormat . . . . . 1	\newblock . . . . . 527	\normalparindent . . . 649	
\newbox . . . . . 1789, 2129, 2274	\newcommand . 329, 335, 533, 744, 1243, 1330, 1391, 1428, 1433, 1499, 1521, 2145, 2152, 2542, 2799, 3011, 3020, 3036	\normalsize . . . . . 2044, 2185, 2199, 2200, 2203, 2493, 3065	
\newcount . 1274, 1276, 2489	\newcounter 1520, 2538, 2540	\num@authorgroups . . . . . . . 1274, 1285, 1794, 2292, 2296, 2298, 2345, 2386	
\newdimen . . . . . 833, 871, 2275, 2651, 2653, 2655	\newenvironment . . . . . . . . . 818, 829, 1776	\num@authors . . . . . 1276, 1283, 1297, 1304, 1358, 1361, 2384	
\newfloat . . . . . 812			

1652, 1663, 1674, 1682, 1688, 1694, 1708, 1720, 1727, 1741, 1748, 1754, 1761, 1766, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1971, 1973, 1975, 1977, 1979, 1981, 1983, 1985, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2165, 2167, 2169, 2171, 2173, 2175, 2177, 2179, 2188, 2191, 2192, 2195, 2198, 2201, 2204, 2207, 2294, 2295, 2297, 2299, 2347, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2580, 2589, 2599, 2660, 2665, 2704, 2714, 2724, 2819, 2820, 2823, 2826, 2829, 2832, 2838, 2842, 2856, 2857, 2858, 2859, 2860, 2861, 2866, 2867, 2886, 2887, 2888, 2889, 2890, 2891, 2896, 2897, 2943, 2944, 2945, 2946, 2947, 2948, 2951, 2952, 2968, 2969, 2970, 2972, 2974, 2976, 2978, 2980, 2987, 2989, 2991, 2993, 2995, 2997, 2999, 3001	<b>P</b>  <code>\p@</code> . . . . . 446, 635, 642, 650, 651, 657, 658, 2784, 2788, 2792, 2793, 2796, 2797, 2800, 2801, 2805, 2806, 2956 <code>\PackageError</code> . 54, 62, 70, 79, 87, 99, 103, 107, 115, 123, 131, 141 <code>\PackageInfo</code> . . . . 51, 53, 59, 61, 67, 69, 75, 78, 84, 86, 92, 98, 112, 114, 120, 122, 128, 130, 136, 140, 1011, 1040, 1046, 1052, 1058 <code>\PageIndex</code> . . . . . 15 <code>\pageref</code> . . . . . 2549 <code>\pagestyle</code> . . . . . 2649 <code>\par</code> . 345, 401, 437, 660, 847, 1515, 1817, 1823, 1835, 1839, 1885, 1894, 1927, 1929, 1931, 1933, 1970, 1972, 1974, 1986, 2085, 2092, 2109, 2120, 2123, 2126, 2128, 2149, 2151, 2153, 2154, 2212, 2216, 2270, 2272, 2279, 2281, 2309, 2311, 2318, 2327, 2336, 2338, 2356, 2358, 2364, 2372, 2380, 2382, 2413, 2414, 2415, 2417, 2431, 2444, 2467, 2471, 2475, 2954 <code>\paragraph</code> . . . . . 2795 <code>\parbox</code> . . . . . 556, 565, 2081, 2099, 2106, 2114, 2492, 2686 <code>\parindent</code> 635, 649, 880, 1817, 1823, 1833, 2795, 2811, 2851, 2881 <code>\parskip</code> . . . . . 635, 1833 <code>\part</code> . . . . . 2804 <code>\PassOptionsToClass</code> . . . . . 149, 150	<code>\pdfgentounicode</code> . . . 698 <code>\pdfglyphtounicode</code> . . . . . . 691, 692, 693, 694, 695, 696, 697 <code>\pdfstringdefDisableCommands</code> . . . . . 481 <code>\phantomsection</code> . . . . . . . . 253, 2425, 3015 <code>\popQED</code> . . . . . 2961 <code>\position</code> . . . 12, 1339, 1343, 1344, 1345, 1346, 1347, 2137, 2391 <code>\postcode</code> . . . . . . 12, 1346, 2137, 2390 <code>printonly (environment)</code> 22 <code>\ProcessOptionsX</code> . . . 151 <code>\proof</code> . . . . . 2954 <code>\proofname</code> . . . . . 2954 <code>\protect</code> . . . . . 380, 393 <code>\protected@edef</code> . . . . . . . . . 365, 456, 470 <code>\providecommand</code> . . . . . . . . . 527, 531, 2849 <code>\ProvidesClass</code> . . . . . 5 <code>\ProvidesFile</code> . . . . . 3 <code>\ps@headings</code> . . 2480, 2484 <code>\ps@myheadings</code> 2479, 2483 <code>\ps@plain</code> . . . . . 2478, 2482 <code>\pushQED</code> . . . . . 2955 <code>\put</code> . . . . . 2506, 2532  <b>Q</b>  <code>\qed</code> . . . . . 2955 <code>\quad</code> . . . . . 422, 2591, 2594, 2601, 2605, 2744  <b>R</b>  <code>\raggedright</code> . . . . . . . . 2081, 2122, 2380 <code>\raisebox</code> . . . . . 1829, 2077, 2089, 2101, 2116, 2682, 2684 <code>\real@adddotafter</code> . . . . . . . 2764, 2767 <code>\realSectionformat</code> . . . . 2760, 2772, 2773 <code>\received</code> . . . . . 19, 1499 <code>\RecordChanges</code> . . . . 17 <code>\ref</code> . . . . . 2456, 2463 <code>\refname</code> . . . . . 252, 253
<code>\orcid</code> . . . . . 10, 1355		
<code>\outer@nobreak</code> . . . . 849		

\refstepcounter . . . . .	364	814, 912, 1449, 2954	\setcounter . . . . .	1807
\relax 157, 163, 169, 182,			1880, 1952, 2539,	
189, 216, 302, 303,			2541, 2816, 2839, 2843	
346, 365, 367, 371,			\setkeys . . . . .	38, 161,
385, 399, 414, 424,			167, 1236, 1486,	
432, 443, 490, 573,			1610, 2258, 2259,	
638, 672, 674, 790,			2264, 2265, 2323,	
857, 985, 1275,			2324, 2328, 2329,	
1277, 1283, 1285,			2368, 2369, 2373, 2374	
1391, 1392, 1445,			\setlength 635, 636, 642,	
1469, 1526, 1535,			649, 873, 874, 879,	
1545, 1546, 1566,			885, 888, 889, 890,	
1571, 1574, 1578,			891, 1424, 1427, 2494	
1584, 1587, 1590,			\setmonofont . . . . .	721, 726
1593, 1596, 1599,			\settopmatter . . . . .	
1602, 1606, 1613,			. . . . .	19, 96, 1474,
1651, 1812, 1813,			1486, 1487, 1489,	
1926, 1969, 2003,			1492, 1494, 1497, 2452	
2025, 2046, 2163,			\setTrue . . . . .	436
2187, 2277, 2287,			\SetWatermarkColor .	
2288, 2289, 2290,			. . . . .	555, 564
2293, 2296, 2298,			\SetWatermarkFontSize	
2300, 2302, 2305,			. . . . .	554, 563
2337, 2340, 2341,			\SetWatermarkText 556, 565	
2342, 2343, 2346,			\sfdefault . . . . .	738
2349, 2352, 2384,			\sffamily . . . . .	
2386, 2409, 2436,			2026, 2028, 2030,	
2490, 2512, 2513,			2032, 2034, 2036,	
2515, 2517, 2539,			2040, 2184, 2189,	
2541, 2544, 2572,			2193, 2557, 2688,	
2659, 2661, 2662,			2812, 2813, 2814,	
2663, 2666, 2667,			2821, 2822, 2824,	
2668, 2671, 2672,			2825, 2830, 2831,	
2674, 2677, 2678,			2840, 2841, 2844, 2845	
2679, 2680, 2698,			\shortauthors 20, 1309,	
2743, 2755, 2778,			1310, 1317, 1318,	
2782, 2818, 2855,			1320, 1323, 1324,	
2885, 2942, 2956,			1326, 1909, 1911, 2556	
2967, 2985, 3040, 3044			\shortcite . . . . .	530, 533
\removelastskip . . . . .	437		\shorttitle 2576, 2584,	
\renewcommand . . . . .	251,		2594, 2605, 2612, 2628	
255, 256, 259, 261,			\showeprint . . . . .	3036
263, 265, 267,			\sidebar . . . . .	812
269, 271, 321,			sidebar (environment) .	32
738, 911, 1280,			\skip . . . . .	663
1349, 1778, 1801,			\small . . . . .	454, 817, 824,
2396, 2561, 2562,			832, 1515, 1927,	
2694, 2695, 2783,			1929, 1931, 1933,	
2787, 2791, 2795, 2804			2190, 2427, 2444, 2700	
\renewenvironment . . . . .			\smallskipamount . . . . .	894
\repeat . . . . .	1964, 2498, 2676			
\RequirePackage . . . . .	29,			
30, 31, 238, 239,				
240, 241, 242, 243,				
245, 248, 250, 477,				
480, 542, 543, 553,				
562, 571, 652, 699,				
713, 719, 720, 724,				
725, 728, 729, 730,				
780, 1517, 2477,				
2971, 2973, 2975,				
2977, 2979, 2992,				
2994, 2996, 2998, 3000				
\reset@font . . . . .	454, 467			
\reversemarginpar . . . . .	633			
\rightarrow . . . . .	1523			
\rightskip . . . . .	2809			
\rlap . . . . .	2683			
\rule . . . . .	461, 474, 2685			
<b>S</b>				
\savebox . . . . .	2492			
screenonly (environ- ment) . . . . .	22			
\scriptsize . . . . .	2495, 2499			
\scshape . . . . .	2852, 2939			
\section . . . . .	252,			</

<code>\space</code> . 389, 1282, 1351, 1474, 1905, 2157, 3021, 3052, 3055, 3063	<code>\theACM@time@hours</code> . ..... 2541, 2548	<code>\UrlBreakPenalty</code> ... ..... 2316, 2319
<code>\specialcomment</code> .... 3012	<code>\theACM@time@minutes</code> 2548	<code>\urlstyle</code> ... 488, 497, 500
<code>\standardpagestyle</code> . 2558	<code>\theenumi</code> ..... 864	<code>\usebox</code> ..... 2506, 2532
<code>\startPage</code> ..... 16, 1438	<code>\theenumii</code> ..... 865	<code>\usepackage</code> ..... .. 9, 10, 11, 12, 13, 14
<code>\state</code> . 12, 1345, 2137, 2395	<code>\theenumiii</code> ..... 866	
<code>\stepcounter</code> 1370, 1372, 1379, 1382, 1389, 1525	<code>\theenumiv</code> ..... 867	
<code>\streetaddress</code> .... .. 12, 1343, 2137, 2389	<code>\thefootnote</code> ..... 1801	<b>V</b>
<code>\string</code> 540, 1282, 1351, 1440, 1474, 2440, 2441, 3052, 3055, 3063	<code>\theoremstyle</code> ..... 2910, 2913, 2929, 2937	<code>\value</code> ..... 1542
<code>\strut</code> ..... 2099, 2114	<code>\thepage</code> ..... 2549, 2565, 2567, 2573, 2574, 2611, 2627, 2700, 2735, 2740	<code>\vbox</code> ..... 465, 852, 2075, 2094, 2122, 2270, 2335, 2415
<code>\strutbox</code> ..... 461, 474	<code>\thispagestyle</code> 1959, 1966	<code>\vskip</code> 402, 437, 663, 671, 847
<code>\subsection</code> ..... 2787	<code>\thmname</code> ..... 2879, 2909	<code>\vspace</code> ..... 3050
<code>\subsubsection</code> .... 2791	<code>\thmnote</code> ..... 2879, 2909	<code>\vsplit</code> ..... 1958
<code>\subtitle</code> ..... 10, 1272	<code>\thmnumber</code> .... 2879, 2909	<code>\vtop</code> ..... 2280
<code>\subtitlenote</code> .. 14, 1375	<code>\thr@@</code> ..... 297	<b>W</b>
<b>T</b>	<code>\time</code> .... 2536, 2539, 2541	<code>\wd</code> ..... 854, 2134
<code>\teaserfigure</code> ..... 1776	<code>\title</code> ..... 10, 2440	<code>\write</code> ..... 540
<code>teaserfigure (environ-</code> <code>ment)</code> ..... 19	<code>\titlenote</code> .. 14, 1366, 2441	<b>X</b>
<code>\terms</code> ..... 16, 1440	<code>\topsep</code> ... 898, 902, 2956	<code>\xdef</code> ..... 306, 308, 310, 312, 314, 316
<code>\textbf</code> ..... 1528, 1540	<code>\trivlist</code> ..... 2957	<b>Y</b>
<code>\textbullet</code> 484, 1527, 2591, 2594, 2601, 2605	<code>\tw@</code> ..... 295	<code>\year</code> ..... 1406, 2547
<code>\textcolor</code> ..... 2688	<code>\two@digits</code> ... 2547, 2548	<b>Z</b>
<code>\textheight</code> ..... 1956, 1958, 1964, 2498	<code>\twocolumn</code> ..... 1976, 1978, 1980, 1982, 1984	<code>\z@</code> .. 285, 289, 348, 368, 400, 410, 425, 438, 461, 474, 636, 671, 784, 788, 799, 879, 885, 897, 1817, 1823, 1829, 1833, 1915, 1917, 2077, 2089, 2101, 2116, 2380, 2427, 2561, 2562, 2652, 2654, 2656, 2682, 2684, 2694, 2695, 2783, 2787, 2791, 2799, 2804, 2811, 2863, 2893
<code>\textit</code> ..... 1541, 2454, 2458, 2459, 2460	<b>U</b>	<code>\z@skip</code> 437, 847, 902, 2810
<code>\textrightarrow</code> .... .... 485, 1523, 1537	<code>\unskip</code> .... 413, 483, 661, 1342, 1348, 1355, 2134, 2137, 2138, 2140, 2142, 2143, 2144, 2145, 2157, 2216, 2389, 2390, 2391, 2393, 2394, 2395, 2396, 2397, 2398, 2400, 2438, 2446, 2463, 2476	
<code>\textwidth</code> 834, 853, 854, 1802, 2065, 2093, 2121, 2161, 2287, 2334	<code>\unvbox</code> . 466, 665, 670, 1960, 2270, 2336, 2415	
<code>\thanks</code> .... 14, 1778, 2475	<code>\upshape</code> ..... 911	
<code>\thankses</code> ..... 1781, 1783, 1815, 2475	<code>\url</code> ..... 1649, 3021	
<code>\the</code> .. 1297, 1304, 1358, 1361, 1406, 1408, 2495, 2499, 2547, 2679		