

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

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Abstract

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

Contents

1	Introduction	3
2	User's guide	3
2.1	Installation	3
2.2	Invocation and options	5
2.3	Top matter	7
2.4	Top matter of ACM Engage materials	18
2.5	ACM cover page	18
2.6	Internationalization	19
2.7	Tagging	20
2.8	Algorithms	21
2.9	Figures and tables	21
2.10	Descriptions of images	22
2.11	Theorems	23
2.12	Online-only and offline-only material	24
2.13	Note about anonymous mode	24
2.14	Acknowledgments	24
2.15	Bibliography	25
2.15.1	Processing using BibT _E X	25
2.15.2	URL, DOI, eprint	26
2.15.3	Special entry types	27
2.15.4	Dates and sorting	29
2.15.5	Processing using BibL ^A T _E X	30
2.15.6	Manual bibliography	31
2.16	Colors	31
2.17	Other notable packages and typographic remarks	32

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2.18	Counting words	32
2.19	Disabled or forbidden commands	32
2.20	Notes for wizards	33
2.21	Currently supported publications	33
2.22	Samples	35
2.23	A note about sigchi-a format	36
3	Implementation	38
3.1	Identification	38
3.2	Preload hook	38
3.3	Tagging and old kernels	38
3.4	Options	39
3.5	Setting switches	42
3.6	Loading the base class and package	44
3.7	Citations	45
3.8	Internationalization	47
3.9	Sectioning	49
3.10	Hyperxmp and hyperref	50
3.11	Other packages	52
3.12	Paper size and paragraphing	52
3.13	Fonts	56
3.14	Image descriptions	57
3.15	Floats	58
3.16	Lists	61
3.17	Top-matter data	62
3.18	Concepts system	81
3.19	Copyright system	82
3.20	Maketitle hook	87
3.21	ACM Engage top matter	88
3.22	Typesetting top matter	88
3.23	Headers and Footers	104
3.24	Sectioning	110
3.25	TOC lists	113
3.26	Theorems	113
3.27	Balancing columns	116
3.28	Acknowledgments	117
3.29	Conditional typesetting	118
3.30	Additional bibliography commands	118
3.31	Index	119
3.32	End of Class	119

1 Introduction

The Association for Computing Machinery¹ is the world's largest educational and scientific computing society, which delivers resources that advance computing as a science and a profession. It was one of the early adopters of $\text{\TeX}$ 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 new consolidated template package replaces all previous independent class files and packages and provides a single up-to-date LaTeX package with optional calls. The package uses only free $\text{\TeX}$ packages and fonts included in $\text{\TeX}$ Live, Mik $\text{\TeX}$ and other popular $\text{\TeX}$ distributions. The new ACM templates use a new font set (libertine) which will need to be installed on your machine before using the templates. Please download and install the libertine font set before writing your paper. Fonts used in the template cannot be substituted; margin adjustments are not allowed.

I am grateful to Michael D. Adams, Leif Andersen, Lawrence Christopher Angrave, Dirk Beyer, Andrew Black, Joachim Breitner, Yegor Bugayenko, Benjamin Byholm, John Collins, Roberto Di Cosmo, Nils Anders Danielsson, Michael Ekstrand, Matthew Fluet, Paolo G. Giarrusso, Ben Greenman, Enrico Gregorio, Jamie Davis, Ulrike Fischer, Jason Hemann, Peter Kemp, David F. Kotz, Luis Leiva, Ben Liblit, Rholais 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., M Senthilkumar, 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://github.com/borisveytsman/acmart>. At this address you can file a bug report—or even contribute your own enhancement by making a pull request.

¹<http://www.acm.org/>

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

Most users should not attempt to install this package themselves but should rather rely on their $\text{\TeX}$ 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`, `acm-jdslogo.png`, 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:

- *amsart*, <https://ctan.org/pkg/amsart>,
- *babel*, <https://ctan.org/pkg/babel>,
- *balance*, <https://ctan.org/pkg/balance>,
- *booktabs*, <https://ctan.org/pkg/booktabs>,
- *caption*, <https://ctan.org/pkg/caption>,
- *cmap*, <https://ctan.org/pkg/cmap>,
- *comment*, <https://ctan.org/pkg/comment>,
- *doclicense*, <https://ctan.org/pkg/doclicense>,
- *draftwatermark*, <https://ctan.org/pkg/draftwatermark>,
- *environ*, <https://ctan.org/pkg/environ>,
- *etoolbox*, <https://ctan.org/pkg/etoolbox>,
- *fancyhdr*, <https://ctan.org/pkg/fancyhdr>,
- *float*, <https://ctan.org/pkg/float>,
- *fontenc*, <https://ctan.org/pkg/fontenc>,
- *framed*, <https://ctan.org/pkg/framed>,
- *geometry*, <https://ctan.org/pkg/geometry>,
- *graphicx*, <https://ctan.org/pkg/graphicx>,

- *hyperref*, <https://ctan.org/pkg/hyperref>,
- *hyperxmp*, <https://ctan.org/pkg/hyperxmp>,
- *iftex*, <https://ctan.org/pkg/iftex>,
- *libertine*, <https://ctan.org/pkg/libertine>,
- *manyfoot*, <https://ctan.org/pkg/manyfoot>,
- *microtype*, <https://ctan.org/pkg/microtype>,
- *natbib*, <https://ctan.org/pkg/natbib>,
- *newtxmath*, <https://ctan.org/pkg/newtxmath>,
- *pbalance*, <https://ctan.org/pkg/pbalance>,
- *pifont*, <https://ctan.org/pkg/pifont>,
- *refcount*, <https://ctan.org/pkg/refcount>,
- *setspace*, <https://ctan.org/pkg/setspace>,
- *totpages*, <https://ctan.org/pkg/totpages>,
- *unicode-math*, <https://ctan.org/pkg/unicode-math>,
- *xcolor*, <https://ctan.org/pkg/xcolor>,
- *xkeyval*, <https://ctan.org/pkg/xkeyval>,
- *xstring*, <https://ctan.org/pkg/xstring>,
- *zi4*, <https://ctan.org/pkg/zi4>,
- *zref-savepos*, <https://ctan.org/pkg/zref-savepos>,
- *zref-user*, <https://ctan.org/pkg/zref-user>.

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}
```

Table 1: The possible values for the format option

Value	Meaning
manuscript	A manuscript. This is the default.
acmsmall	Small single-column format. Used for ACMJCSS, ACMJDS, AILET, CIE, CSUR, FAC, GAMES, JACM, JATS, JDIQ, JDS, JEA, JERIC, JETC, JRC, PACMCGIT, PACMHCI, PACMMOD, PACMNET, PACMPL, PACMSE, POMACS, TAAS, TACCESS, TACO, TAIS, TAISAP, 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, TOPML, TOPS, TORS, TOS, TOSEM, TOSN, TQC, TRETS, TSAS, TSC, TSLP, and TWEB, including special issues.
acmlarge	Large single-column format. Used for DLT, DTRAP, HEALTH, IMWUT, JOCCH, and TAP, including special issues.
acmtog	Large double-column format. Used for TOG, including annual conference Technical Papers.
sigconf	Proceedings format for most ACM conferences (with the exception of SIGPLAN) and all ICPS volumes.
sigplan	Proceedings format for SIGPLAN conferences.
acmengage	ACM EngageCSEdu Course materials.
acmcp	ACM cover page.

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, transactions, and course materials, while formats starting with `sig` are intended for proceedings published as books.

Sometimes conference proceedings are published as a special issue (or issues) of an ACM journal. In this case, you should use the journal format. The templates `sample-acmsmall-conf.tex` and `sample-acmtog-conf.tex` show how to enter conference information. Note that you need to comment out `\acmJournal{...}` line for such papers to get the conference information in the footers and headers. The `acmtog` format then puts the conference name, date and venue into the footers instead of the journal name, volume, issue and article number. The `acmsmall` format uses the headers and footers of the proceedings formats: the conference name, date and venue in the headers, and no folios, since the page numbers of such a paper are assigned by the proceedings rather than by the article. If you do want the folios, say `\settopmatter{printfolios=true}` after `\acmConference`.

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 2.23). The format `acmcp` is used for ACM cover pages discussed in Section 2.5.

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 $\text{\LaTeX}$ style is based on `natbib`. In most cases you do not need to set it. See Section 2.15.

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 authors' 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. When there are many figures near the end of the document, the attempts to balance columns may lead to the loss of the figures. Set this option to `false` if you encounter problems. An alternative is the (experimental) option `pbalance`, which uses the new package `pbalance`. You may want to try `pbalance=true` to see if you get better results.

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.

The option `language` is used to define the languages for the multi-language papers. It is discussed in Section 2.6.

2.3 Top matter

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

Table 2: Boolean options

Option	Default	Meaning
review	false	A review version: lines are numbered and hyperlinks are colored
screen	see text	A screen version: hyperlinks are colored
natbib	true	Whether to use the natbib package (see Section 2.15)
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. Currently such documents allow only a Creative Commons license.
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 2.11
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

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.

An ACM Engage material should *not* use `\acmJournal` or `\acmConference` command. It may use `\acmBooktitle` to override the default *ACM EngageCSEdu*. It should use `\acmYear` to set the date of the material.

`\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 OR-

`\orcid` CID, <http://www.orcid.org/>), `\affiliation` and `\email`. In the simplest case, you

`\affiliation` enter them in this order:

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

Do *not* use the $\TeX$ `\and` macro or commas, or `\\` between the authors! Each author deserves their 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.

ACM strongly encourages that you include ORCIDs for all authors before compiling or submitting for review and/or production processing.

If you do not have an ORCID, you may get one for free by registering at <http://www.orcid.org/>.

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}
  \city{Hekla}
  \country{Iceland}}
\affiliation{%
  \institution{Institute for Clarity in Documentation}
  \city{Dublin}
  \state{Ohio}}

```

Here Trovato and Tobin share their affiliation with the Institute for Clarity in Documentation, but only Ben Trovato is affiliated with The Th{\o}rv{\a}ld Group.

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

Starting 2024, ACM no longer collects or print postal addresses of the authors. Thus the commands `\streetaddress` and `\postcode`, present in the previous versions of the class, now produce a warning.

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}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
\email{author@nsw.au.edu}
\author{A. N. Other}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
\author{C. O. Respondent}
\orcid{1234-4565-4564-1234}
\affiliation{%
  \institution{University of Pennsylvania}
  \city{Philadelphia}
  \state{PA}
  \country{USA}}
\affiliation{%
  \institution{University of New South Wales}
  \city{Sidney}
  \state{NSW}
  \country{Australia}}
```

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

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

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

and

```
\affiliation{%
  \department{Department of Lunar Studies} % Not in the John Doe Institute!
  \department{John Doe Institute}}
```

```
\institution{University of San Serriffe}
\country{San Serriffe}}
```

`\correspondingauthor` The command `\correspondingauthor` after an author's name marks the corresponding author. Note that there could be more than one corresponding author. Make sure that you have the email of the author entered.

`\thanks` Like `amsart` (and unlike standard $\text{\LaTeX}$), 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 2.14).

`\authorsaddresses` In some formats, addresses are printed as a footnote on the first page. By default $\text{\LaTeX}$ 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 the authors might need notes more tightly connected to the title, subtitle or author. The commands `\titlenote`, `\subtitlenote` and `\authornote` that follow the corresponding commands (`\title`, `\subtitle` and `\author`) generate such notes. For example,

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

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

```
\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*. 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
```

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

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

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

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

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

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

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

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

`\acmBadge` Some conference articles get special distinctions, for example, the artifact evaluation for PPOPP 2016 (see <http://ctuning.org/ae/ppopp2016.html>). These articles display special badges supplied by the conference organizers. This class provides command to add these badges: `\acmBadge[<url>]{<graphics>}`. The arguments have the following meaning: [`<url>`], if provided, sets the link to the badge authority in the screen version, while `{<graphics>}` sets the graphics file with the badge image. The file must be a cropped square, which is scaled to a standard size in the output. For example, if the badge image is `ae-logo.pdf`, the command is

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

The command can be repeated, if a paper has several badges.

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

`\keywords` The command `\keywords{<keyword, keyword,...>}` sets keywords for the publication. If present, keywords must be separated by commas, for example,

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

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

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

```
\begin{CCSXML}
<ccs2012>
  <concept>
    <concept_id>10010520.10010553.10010562</concept_id>
    <concept_desc>Computer systems organization~Embedded systems</concept_desc>
    <concept_significance>500</concept_significance>
  </concept>
  <concept>
    <concept_id>10010520.10010575.10010755</concept_id>
    <concept_desc>Computer systems organization~Redundancy</concept_desc>
    <concept_significance>300</concept_significance>
  </concept>
  <concept>
    <concept_id>10010520.10010553.10010554</concept_id>
    <concept_desc>Computer systems organization~Robotics</concept_desc>
    <concept_significance>100</concept_significance>
  </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 license the paper to the ACM, some or all authors might

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>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.
<code>cc</code>	Creative Commons license. If this key is set, <i>doclicense</i> images are used to typeset the license. See also <code>\setcctype</code> command.
<code>acmcopyright</code>	The authors transfer the copyright to the ACM. This choice is no longer available for the non-commissioned authors and will trigger a warning.

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}`.

`\setcctype` If Creative Commons license is used, the package by default chooses CC-BY 4.0 Attribution 4.0 International license. You can override this choice by the command `\setcctype[<version>]{<type>}`, where [*<version>*] can be either 3.0 or 4.0 (4.0 by default), and {*<type>*} can be one of zero, by, by-sa, by-nd, by-nc, by-nc-sa, by-nc-nd (see <https://creativecommons.org/licenses/> for the explanation). This command should be used in the preamble only.

Material published under Creative Commons license should include the corresponding icon. A modern $\text{\TeX}$ distribution includes these icons in the package *doclicense*. In case your distribution does not have them, ACM provides a file `ccicons.zip` with these icons. Just unzip it in the same directory where your document is.

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

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

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

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

`abstract (env.)` The environment `abstract` must *precede* the `\maketitle` command. Again, this is different from the standard L^AT_EX. Putting `abstract` after `\maketitle` will trigger an error.

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

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

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

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

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

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

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

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).

`\received` The command `\received[<stage>]{<date>}` sets the history of the publication.

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

The `[\stage]` argument is optional; the default is Received for the first date and revised for the subsequent ones. For example,

```
\received{20 February 2007}
\received[revised]{12 March 2009}
\received[accepted]{5 June 2009}
```

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

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

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

2.4 Top matter of ACM Engage materials

ACM Engage materials resemble conference proceedings, but have some special features. First, as a rule, they are released under a Creative Commons license. By default CC-BY is used. However, if you want to use another variant of CC license, use `\setcctype` command, for example, `\setcctype{by-nc}`. Second, abstract is called *synopsis*. Third, there are special top matter items used for the materials, such as *Course*, *Resource Type*, *Programming Language*, *CS Topics*.

`\setengagemetadata` These items are set with the command `\setengagemetadata{<name>}{<value>}`, for example,

```
\setengagemetadata{Course}{CS1}
\setengagemetadata{Programming Language}{Python}
\setengagemetadata{Knowledge Unit}{Programming Concepts}
\setengagemetadata{CS Topics}{Functions, Data Types, Expressions,
Mathematical Reasoning}
```

Note that the type of Creative Commons license, if such license is used, is automatically added to the metadata.

2.5 ACM cover page

ACM cover pages are forms of extended abstracts that are added to journals at the late stage. Authors prepare them as separate .tex files using acmcp format. At present only JDS uses them, but in the future this may change.

There are several top matter commands specific for this format.

`\acmArticleType` There are five article types accepted by JDS: *Research* (the default), *Review*, *Discussion*, *Invited*, and *Position*. The command `\acmArticleType{<type>}` sets the article type, for example

```
\acmArticleType{Review}
```

`\acmCodeLink` The commands `\acmCodeDataLink{<link>}` and `\acmDataLink{<link>}` set the links
`\acmDataLink` to the data and code accompanying the paper, for example,

```
\acmCodeLink{https://github.com/repository/code}
\acmDataLink{https://datadryad.org/stash/dataset/doi:DOI}
```

You may repeat these commands if you have several repositories.

`\acmContributions` The command `\acmContributions{<contributions>}` sets the contributions of the authors, for example,

```
\acmContributions{AW designed the study, CD performed it, all
authors contributed to the writing.}
```

ACM cover page should have the following obligatory sections:

- Problem statement,
- Methods,
- Results,
- Significance.

Sometimes the addresses extracted from the authors' data are too long to fit on the page. In this case the command `\authorsaddresses` can be use to override them, for example,

```
\authorsaddresses{Corresponding author: Ben Trovato,
\href{mailto:trovato@corporation.com}{trovato@corporation.com};
Institute for Clarity in Documentation, P.O. Box 1212, Dublin,
Ohio, USA, 43017-6221}
```

The design of the cover page may require additional runs of latex to make the elements of the page align.

2.6 Internationalization

ACM accepts publications in languages other than English, as well as papers in English with translations of titles, subtitles, keywords and abstracts into other languages. Papers in languages other than English usually have titles, subtitles (if applicable), keywords and abstracts in English. Note that CCS concepts are always typeset in English.

To submit these papers you need to set the option `language` in the `\documentclass` command. This option can be repeated, for example,

```
\documentclass[sigconf, language=french, language=english]{acmart}
```

The last language in the list is the main language of the paper, i.e. the one for the main title, abstract, body, etc. The other languages are *secondary*, and used for translated titles, keywords, abstracts. Thus the paper above is written in English, and has a secondary abstract and a secondary title in French. On the other hand, a paper in French with secondary titles and abstracts in English and German should use, for example

```
\documentclass[sigconf,
               language=german,
               language=english,
               language=french]{acmart}
```

This key can use any language defined in *babel* package [3] (currently the package is tested with English, French, German and Spanish languages. If `\keywords` are used, then other languages may require a translation of `\keywordsname` macro). Actually *acmart* loads *babel* internally, so you can use the facilities provided by this package.

If this key is set, you have access to several additional top matter commands.

`\translatedtitle` The commands `\translatedtitle`, `\translatedsubtitle`, and (if keywords are
`\translatedsubtitle` used) `\translatedkeywords` have two mandatory arguments each: `{<language>}` and
`\translatedkeywords` `{<keywords>}`. They are used to set title, subtitle and keywords in the secondary language. For example, a paper in English with French title and abstract may set

```
\title{A note on computational complexity}
\translatedtitle{french}{Remarque sur la complexit\'e de calcul}
```

while a paper in French should set

```
\title{Remarque sur la complexit\'e de calcul}
\translatedtitle{english}{A note on computational complexity}
```

`translatedabstract (env)` Similarly, `translatedabstract` environment has a mandatory language argument, for example,

```
\begin{translatedabstract}{english}
  This is the English version of the abstract
\end{translatedabstract}
```

You can repeat these commands if a paper has more than one secondary language.

Use the standard commands (`\title`, `\subtitle`, `\keywords`, `abstract`) for the main language of the paper.

2.7 Tagging

ACM is firmly committed to produce fully tagged PDFs compliant with the accessibility standards.

The $\LaTeX$ tagging project, <https://latex3.github.io/tagging-project/> is aimed to create accessible and standards compliant PDFs. To create a tagged PDF, start your document with the `\DocumentMetadata` command, for example,

```
\DocumentMetadata{
  lang          = en,
  pdfstandard   = ua-2,
```

```
pdfstandard = a-4f,
tagging=on,
tagging-setup={math/setup=mathml-SE}
}
```

You must use `lualatex` to make the document fully tagged. For some features you may need `lualatex-dev`.

At present this code is still experimental. If you use it, please *do not ask ACM for support*. On the other hand, bug reports at <https://github.com/borisveytsman/acmart/issues> will be appreciated.

2.8 Algorithms

There are now several good packages for typesetting algorithms [4, 5, 6], and the authors are free to choose their favorite one.

2.9 Figures and tables

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

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

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

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

teaserfigure: a special figure before `\maketitle`.

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` [7] 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`.

If tagging is enabled (see Section 2.7), it assumes that the first row of table contains headers. To change this assumption, use `tagpdfsetup`, for example, if you have two rows of headers,

```
\tagpdfsetup{table/header-rows={1,2}}
```

2.10 Descriptions of images

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.

There are two ways to include descriptions in the figures.

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

```
\begin{figure}
```

```

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

```

The new way, which is switched on by the `\DocumentMetada` command is based on the `alt` keyword for the `\includegraphics` command, for example,

```

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

```

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

2.11 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.

Sometimes authors want to define new theorem-like constructs that use theorem counters. These constructs must be defined either after `\begin{document}`, or delayed using `\AtEndPreamble` macro, for example,

```

\AtEndPreamble{%
\theoremstyle{acmdefinition}
\newtheorem{remark}[theorem]{Remark}}

```

If you use *cleveref* and share counters between the theorem-like constructs, you need to explicitly tell *cleveref* the kind of the construct you use, for example,

```

\newtheorem{theorem}{Theorem}[section]
\newtheorem{lemma}[theorem]{Lemma}
% Theorems and lemmas share counters
...
\begin{theorem}\label{thm:test} % This is a theorem
...
\begin{lemma}\label[lemma]{test-lemma} % This is a lemma

```

2.12 Online-only and offline-only material

`printonly` (*env.*) 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.

2.13 Note about anonymous mode

`anonsuppress` (*env.*) When the option `anonymous` is selected, $\text{\TeX}$ suppresses author information (including the number of authors) for an anonymous 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.

`\anon` To suppress short snippets of information, use the command `\anon[<substitute>]{<suppressed-text>}`. By default [*<substitute>*] is the word ANONYMOUS. Examples:

```
This work was performed at \anon{NSA}.
This work was performed at \anon[No Such Agency]{NSA}.
```

2.14 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` (*env.*) 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 or comments.

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

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

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

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

Example:

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

The authors would also like to thank the anonymous referees for
their valuable comments and helpful suggestions. This work is
supported by the \grantsponsor{my-grant-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}
```

2.15 Bibliography

The ACM lets you use either Bib $\text{\TeX}$ or Bib $\text{\LaTeX}$ to process your references: they require slightly different setup of your $\text{\LaTeX}$ file, as detailed in the following subsections.

2.15.1 Processing using Bib $\text{\TeX}$

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

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

```
\citestyle{acmauthoryear}
```

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

`\setcitestyle` You can further customize natbib using the `\setcitestyle` command, for example,
`\setcitestyle{numbers,sort&compress}`

One of the more common versions is

`\setcitestyle{nosort}`

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

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

Note that before version 1.48 the command `\citeyear` put the year in parentheses. In version 1.48 and later it produces just the year; the command `\citeyearpar` can be used to emulate its old behavior. You can use these commands to produce in-text citations, for example,

So we see that `\citeauthor{Burano2026}`
proved this conjecture in `\citeyear{Burano2026}`~`\cite{Burano2026}`.

There are several customized B_BT_EX entry types and fields in the ACM style file `ACM-Reference-Format.bst` that you may want to be aware of. You can find many examples on the Web page <https://www.acm.org/publications/authors/bibtex-formatting>.

2.15.2 URL, DOI, eprint

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

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

Normally the printing of URL is suppressed if DOI is present. However, there is a special field `distinctURL`. If it is present and has any value, URL is printed even if DOI is present, for example,

```
distinctURL = 'true',
```

The dynamic nature of Internet makes URLs not permanent: sometimes they disappear or change. The problem of “stale links” exists from the early days of WWW. That is why ACM prefers DOIs to URLs: unlike the latter, the former are supposed to work forever. However, if you really need to use URLs, there are two facilities that help to mitigate some problems with the URLs. The field `lastaccessed` gives the date when the given URL was visited and had the information you saw. Presumably, some service like Internet Wayback Machine (<https://web.archive.org/>) allows the reader to retrieve this link at the given date. Moreover, sometimes a page is explicitly archived by this or other service. In this case the field `archived` will give the reference of the archival version. Examples:

```
lastaccessed = {March 2, 2005},
archived = {https://web.archive.org/web/20240505055615}
```

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

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

2.15.3 Special entry types

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 and `archived` field to add the archival link.

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 supplemental material attached 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",
}

```

Sometimes a work is presented at meeting, but is not (yet) published in the proceedings. The entry type `presentation` is used for this purpose. The field `venue` is used for the place of the meeting:

```

@Presentation{Reiser2014,
  author = {Brian J. Reiser},
  year = 2014,
  title = {Designing coherent storylines aligned with NGSS for the
           K-12 classroom},
  venue = {National Science Education Leadership Association
           Meeting, Boston, MA, USA},
  url = {https://www.academia.edu/6884962/}
}

```

The URL, if present, may be accompanied by `lastaccessed` and `archived` links.

A preprint can be cited using the entry `preprint`, for example,

```
@preprint{AnzarootPBM14,
  author    = {Sam Anzaroot and
               Alexandre Passos and
               David Belanger and
               Andrew McCallum},
  title     = {Learning Soft Linear Constraints with Application to
               Citation Field Extraction},
  year      = {2014},
  archivePrefix = {arXiv},
  eprint    = {1403.1349},
  doi       = {10.48550/arXiv.1403.1349}
}
```

Sometimes you need to cite an article under review. ACM prefers the authors to use preprints for this purpose, but sometimes it is not feasible. In this case you can use the entry `underreview`, for example,

```
@underreview{Baggett2025,
  author = {R. Baggett and M. Simecek and C. Chambellan
            and K. Tsui and M. Fraune},
  year = 2025,
  title = {Fluidity in the Phased Framework of Technology
            Acceptance: Case Study to Gain a Holistic Understanding
            of (Older Adult) Participant Advancement Through
            Acceptance Phases with Mobile Telepresence Robots},
  journal = {Robotics Aut. Systems}
}
```

2.15.4 Dates and sorting

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

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

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

A note about sorting. The current ACM bibliography styles always sort the entries according to authors names and publication year. There is a controversy about sorting names with “von” or “van” part: should Ludwig van Beethoven be sorted under “V” or under “B”? The American practice is to use “van” in sorting, i.e. to file van Beethoven under “V”. However, some authorities recommend to sort Dutch persons according to their last names (see e.g. <https://www.ifla.org/files/assets/cataloguing/pubs/names-of-persons.1996.pdf>). While I do not want to take a part in this dispute, I

would like to point to the old “noopsort” trick by Oren Patashnik. Add to the .bib file the line

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

and then encode the author as

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

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

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*.

2.15.5 Processing using Bib_{La}T_EX

You will find in this package two sets of style files for Bib_{La}T_EX, `acmnumeric` and `acmauthoryear`, that mimic the behavior of the `ACM-Reference-Format.bst` Bib_TE_X style. They provide you access to all the power of Bib_{La}T_EX and already include support for advanced citation of software artifacts from the `biblatex-software` package, also separately available on CTAN. Look at the `biblatex-software` documentation to learn more about what it offers. This support is highly experimental and currently is *not* supported by TAPS!

There are a few key differences in how the _{La}T_EX sources are set up when using Bib_{La}T_EX instead of Bib_TE_X, that we summarize briefly here (please refer to the official Bib_{La}T_EX documentation for more details).

First of all, you need to pass the `natbib=false` option to the document class, and remove the `\citetstyle{acmauthoryear}` command from the sources (if present).

Then, in the preamble of your document you need to load the Bib_{La}T_EX package and select the appropriate bibliography style, as follows

```
\RequirePackage[
  datamodel=acmdatamodel,
  style=acmnumeric, % use style=acmauthoryear for publications that require it
]{biblatex}
```

Also in the preamble, you need to declare the bibliography sources files using the `\addbibresource` command (one `\addbibresource` command per source file), e.g.:

```
\addbibresource{software.bib}
\addbibresource{sample-base.bib}
```

At the end of the document, where you want the bibliography to appear, you need to place the command `\printbibliography`.

Look at the `sample-*-biblatex.tex` files that can be found in the `samples` directory after running `make` for templates showcasing these Bib_{La}T_EX styles.

2.15.6 Manual bibliography

Some people create bibliographies manually, writing down `\bibitem` commands explicitly. This approach is *not* recommended for ACM styles. The reason is, ACM submissions, besides being typeset, are also processed by special programs that extract metadata and references. Bibliographies created automatically with ACM styles contain customized macros for these programs, for example,

```
\bibitem[Ablamowicz and Fauser(2007)]%
    {Ablamowicz07}
\bibfield{author}{\bibinfo{person}{Rafal Ablamowicz} {and}
    \bibinfo{person}{Bertfried Fauser}.} \bibinfo{year}{2007}\natexlab{}.
\newblock \bibinfo{booktitle}{\emph{CLIFFORD: a Maple 11 Package for Clifford
    Algebra Computations, version 11}}.
\newblock
\urldef\tempurl%
\url{http://math.tntech.edu/rafal/cliff11/index.html}
\showURL{%
Retrieved February 28, 2008 from \tempurl}
```

Manual bibliographies without these macros may slow down the publication process, and thus are not recommended for ACM submissions.

2.16 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 [8]: 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.

2.17 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

The package `subcaption` [9] is recommended for complex figures with several subplots or subfigures that require separate subcaptioning. The packages `nomencl` [10] and `glossaries` [11] 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 [12], so the command `\NoCaseChange` inside the title may help to prevent extraneous uppercasing.

2.18 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.

2.19 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.

2.20 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.

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

2.21 Currently supported publications

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

Abbreviation	Publication
ACMJCSS	ACM Journal on Computing and Sustainable Societies
ACMJDS	ACM Journal of Data Science
AILET	ACM AI Letters

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
DLT	Distributed Ledger Technologies: Research and Practice
DGOV	Digital Government: Research and Practice
DTRAP	Digital Threats: Research and Practice
FAC	Formal Aspects of Computing
GAMES	ACM Games: Research and Practice
HEALTH	ACM Transactions on Computing for Healthcare
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JATS	ACM Journal on Autonomous Transportation Systems
JDIQ	ACM Journal of Data and Information Quality
JDS	ACM Journal of Data Science
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
JRC	ACM Journal on Responsible Computing
PACMCGIT	Proceedings of the ACM on Computer Graphics and Interactive Techniques
PACMHCI	PACM on Human-Computer Interaction
PACMOD	PACM on Management of Data
PACMNET	PACM on Networking
PACMPL	PACM on Programming Languages
PACMSE	PACM on Software Engineering
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
TAIS	ACM Transactions on AI for Science
TAISAP	ACM Transactions on AI Security and Privacy
TALG	ACM Transactions on Algorithms
TALLIP	ACM Transactions on Asian and Low-Resource Language Information Processing
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TDS	ACM Transactions on Data Science
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
TELO	ACM Transactions on Evolutionary Learning and Optimization
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

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

Abbreviation	Publication
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
TOPML	ACM Transactions on Probabilistic Machine Learning
TOPS	ACM Transactions on Privacy and Security
TORS	ACM Transactions on Recommender Systems
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.

2.22 Samples

There are several samples of `acmart` documents, that can serve as templates for the authors. Among them `sample-sig...` are templates for conference papers, while `sample-acm...` are templates for journal articles and special materials.

Here is the list of the samples:

acmmanuscript: A proceedings paper in the manuscript format.

acmsmall: A journal paper in the `acmsmall` format.

acmsmall-biblatex: A journal paper using experimental *biblatex* bibliography processing.

acmlarge: A journal paper in the acmlarge format.

acmtog: A journal paper in the acmtog format.

sigconf: A proceedings paper in the standard sigconf format.

sigconf-biblatex: A proceedings paper in the sigconf format using experimental *biblatex* bibliography processing.

sigconf-authordraft: A proceedings paper in the sigconf format with the authordraft option selected.

sigconf-i13n: A proceedings paper in the sigconf format with multilanguage titles and abstract.

sigconf-lualatex: A proceedings paper in the sigconf format, Lua $\text{\LaTeX}$ version.

sigplan: A proceedings paper in the sigplan format.

acmsmall-conf: A proceedings paper in the acmsmall format for the publication in a journal using this option.

acmtog-conf: A proceedings paper in the acmtog format for the publication in a journal using this option.

acmcp: A sample of ACM Cover Page used by JDS.

acmengage: A sample of ACM Engage publication.

acmsmall-tagged: A journal paper in the acmsmall format with the tagging code, see Section 2.7.

sigconf-tagged: A proceedings paper in the standard sigconf format with the tagging code, see Section 2.7.

2.23 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 (*env.*) This format has large margin uses for special figures and tables. This package provides three environments for this with optional captions:
marginfigure (*env.*)
margintable (*env.*)

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&!tagged>\ProvidesClass{acmart}
6 <tagged>\ProvidesClass{acmart-tagged}
7 [2026/08/16 v2.20 Typesetting articles for the Association for Computing Machinery]
```

And the driver code:

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

3.2 Preload hook

We preload acmart-preload-hook:

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

3.3 Tagging and old kernels

We want to use \DocumentMetadata command, but what with the old kernels which some authors might use? Here we just switch off the tagging code if this is not defined

```
\IfDocumentMetadata
20 \providecommand{\IfDocumentMetadataTF}{\@secondoftwo}
31 \providecommand{\IfDocumentMetadataT}{\@gobble}
32 \providecommand{\IfDocumentMetadataF}{\@firstofone}
```

3.4 Options

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

```
33 \RequirePackage{xkeyval}
```

We use xstring to check whether user input is valid

```
34 \RequirePackage{xstring}
```

We need iftex to check the engine

```
35 \RequirePackage{iftex}
```

format The possible formats

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

\if@ACM@screen Whether we use screen mode

```
55 \define@boolkey+{\@classname.cls}[@ACM@]{screen}[true]{%
56 \if@ACM@screen
57 \PackageInfo{\@classname}{Using screen mode}%
58 \else
59 \PackageInfo{\@classname}{Not using screen mode}%
60 \fi}{\PackageError{\@classname}{The option screen can be either true or
61 false}}
62 \ExecuteOptionsX{screen=false}
```

\if@ACM@urlbreakonhyphens

```
63 \define@boolkey+{\@classname.cls}[@ACM@]{urlbreakonhyphens}[true]{%
64 \if@ACM@urlbreakonhyphens
65 \PackageInfo{\@classname}{Using breaking urls on hyphens}%
66 \else
67 \PackageInfo{\@classname}{Not breaking urls on hyphens}%
68 \fi}{\PackageError{\@classname}{The option urlbreakonhyphens can be either true or
69 false}}
70 \ExecuteOptionsX{urlbreakonhyphens=true}
```

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

```
71 \define@boolkey+{\@classname.cls}[@ACM@]{acmthm}[true]{%
```

```

72 \if@ACM@acmthm
73   \PackageInfo{\@classname}{Requiring acmthm}%
74 \else
75   \PackageInfo{\@classname}{Suppressing acmthm}%
76 \fi}{\PackageError{\@classname}{The option acmthm can be either true or
77   false}}
78 \ExecuteOptionsX{acmthm=true}

\if@ACM@review Whether we use review mode
79 \define@boolkey+{\@classname.cls}[@ACM@]{review}[true]{%
80   \if@ACM@review
81     \PackageInfo{\@classname}{Using review mode}%
82     \AtBeginDocument{\@ACM@printfoliostrue}%
83   \else
84     \PackageInfo{\@classname}{Not using review mode}%
85   \fi}{\PackageError{\@classname}{The option review can be either true or
86     false}}
87 \ExecuteOptionsX{review=false}

\if@ACM@authorversion Whether we use author's-version mode
88 \define@boolkey+{\@classname.cls}[@ACM@]{authorversion}[true]{%
89   \if@ACM@authorversion
90     \PackageInfo{\@classname}{Using authorversion mode}%
91   \else
92     \PackageInfo{\@classname}{Not using authorversion mode}%
93   \fi}{\PackageError{\@classname}{The option authorversion can be either true or
94     false}}
95 \ExecuteOptionsX{authorversion=false}

\if@ACM@nonacm Special option for non-ACM publications using the ACM typesetting options.
96 \define@boolkey+{\@classname.cls}[@ACM@]{nonacm}[true]{%
97   \if@ACM@nonacm
98     \PackageInfo{\@classname}{Using nonacm mode}%
99     \AtBeginDocument{\@ACM@printacmreffalse}%
100    % in 'nonacm' mode we disable the "ACM Reference Format"
101    % printing by default, but this can be re-enabled by the
102    % user using \settopmatter{printacmref=true}
103   \else
104     \PackageInfo{\@classname}{Not using nonacm mode}%
105   \fi}{\PackageError{\@classname}{The option nonacm can be either true or
106     false}}
107 \ExecuteOptionsX{nonacm=false}

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

\if@ACM@pbalance Whether to balance the last page
112 \define@boolkey+{\@classname.cls}[@ACM@]{pbalance}[true]{%
113   \PackageError{\@classname}{The option pbalance can be either true or
114     false}}
115 \ExecuteOptionsX{pbalance=false}

```

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

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

```
116 \define@boolkey+{\@classname.cls}[@ACM@]{natbib}[true]{%
117   \if@ACM@natbib
118     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%
119   \else
120     \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
121   \fi}{\PackageError{\@classname}{The option natbib can be either true or
122     false}}
123 \ExecuteOptionsX{natbib=true}
```

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

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

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

```
132 \define@boolkey+{\@classname.cls}[@ACM@]{timestamp}[true]{%
133   \if@ACM@timestamp
134     \PackageInfo{\@classname}{Using timestamp mode}%
135   \else
136     \PackageInfo{\@classname}{Not using timestamp mode}%
137   \fi}{\PackageError{\@classname}{The option timestamp can be either true or
138     false}}
139 \ExecuteOptionsX{timestamp=false}
```

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

```
140 \define@boolkey+{\@classname.cls}[@ACM@]{authordraft}[true]{%
141   \if@ACM@authordraft
142     \PackageInfo{\@classname}{Using authordraft mode}%
143     \@ACM@timestamptrue
144     \@ACM@reviewtrue
145   \else
146     \PackageInfo{\@classname}{Not using authordraft mode}%
147   \fi}{\PackageError{\@classname}{The option authordraft can be either true or
148     false}}
149 \ExecuteOptionsX{authordraft=false}
```

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

```
150 % \changes{v1.87}{2022/08/27}{Added fontsize 8pt}
151 \def\ACM@fontsize{}
152 \DeclareOptionX{8pt}{\edef\ACM@fontsize{\CurrentOption}}
153 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
154 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
155 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
156 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}
```

\ACM@languages The languages of the document

```
157 \def\ACM@languages{}
158 \DeclareOptionX{language}{%
159   \ifx\ACM@languages\@empty
160     \gdef\ACM@languages{english}\fi
161   \g@addto@macro\ACM@languages{, #1}}

162 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
163 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
164 \ProcessOptionsX
165 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}
```

3.5 Setting switches

\if@ACM@manuscript Whether we use manuscript mode

```
166 \newif\if@ACM@manuscript
```

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

```
167 \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.

```
168 \newif\if@ACM@journal@bibstrip
```

\if@ACM@journal@bibstrip@or@tog ACM TOG sometimes uses journal-like bibstrip even for conference proceedings, so we need to set it separately

```
169 \newif\if@ACM@journal@bibstrip@or@tog
```

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

```
170 \newif\if@ACM@sigchiamode
```

\if@ACM@engage ACM Engage course materials have special formatting

```
171 \newif\if@ACM@engage
172 \@ACM@engagefalse
```

\if@ACM@acmcp ACM cover page formatting

```
173 \newif\if@ACM@acmcp
174 \@ACM@acmcpfalse
```

Setting up switches

```
175 \ifnum\ACM@format@nr=5\relax % siggraph
176 \ClassWarning{\@classname}{%
177   The format siggraph is now obsolete.\MessageBreak
178   I am switching to sigconf.}
179 \setkeys{\@classname.cls}{format=sigconf}
180 \fi
181 \ifnum\ACM@format@nr=7\relax % sigchi
182 \ClassWarning{\@classname}{%
183   The format sigchi is now obsolete.\MessageBreak
184   I am switching to sigconf.}
185 \setkeys{\@classname.cls}{format=sigconf}
```

```

186 \fi
187 \ifnum\ACM@format@nr=8\relax % sigchi
188 \ClassWarning{\@classname}{%
189   ACM SIGCHI has retired the SIGCHI-A template\MessageBreak
190   effective immediately. ACM is keeping this template\MessageBreak
191   option available to authors who are working on legacy\MessageBreak
192   documents only. ACM will not, under any circumstances,\MessageBreak
193   accept documents in this format for publication and\MessageBreak
194   will not offer technical support to the authors who use\MessageBreak
195   this template.\MessageBreak
196   ACM SIGCHI is directing Conference leaders and\MessageBreak
197   authors to publish their articles using the SIGCONF\MessageBreak
198   template call.}
199 \fi
200 \ifnum\ACM@format@nr=0\relax
201   \@ACM@manuscripttrue
202 \else
203   \@ACM@manuscriptfalse
204 \fi
205 \@ACM@sigchiamodefalse
206 \ifcase\ACM@format@nr
207 \relax % manuscript
208   \@ACM@journaltrue
209 \or % acsmall
210   \@ACM@journaltrue
211 \or % acmlarge
212   \@ACM@journaltrue
213 \or % acmtog
214   \@ACM@journaltrue
215   \@ACM@journal@bibstrip@or@togtrue
216 \or % sigconf
217   \@ACM@journalfalse
218 \or % siggraph
219   \@ACM@journalfalse
220 \or % sigplan
221   \@ACM@journalfalse
222 \or % sigchi
223   \@ACM@journalfalse
224 \or % sigchi-a
225   \@ACM@journalfalse
226   \@ACM@sigchiamodetrue
227 \or % acmengage
228   \@ACM@journalfalse
229   \@ACM@engagetrue
230 \or % acmcp
231   \@ACM@journaltrue
232   \@ACM@acmcptrue
233   \AtBeginDocument{\@ACM@printacmreffalse}%
234 \fi
235 \if@ACM@journal
236   \@ACM@journal@bibstriptrue
237   \@ACM@journal@bibstrip@or@togtrue
238 \else
239   \@ACM@journal@bibstripfalse

```

```
240 \fi
```

3.6 Loading the base class and package

Before we load the base class we want to save the original definitions of sectioning commands since acmart redefines them, and we need the vanilla versions.

```
\@startsection@kernel
```

```
241 \let\@startsection@kernel\@startsection
```

```
\@xsect@kernel
```

```
242 \let\@xsect@kernel\@xsect
```

```
\@sect@kernel
```

```
243 \let\@sect@kernel\@sect
```

```
\@ssect@kernel
```

```
244 \let\@ssect@kernel\@ssect
```

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

```
245 \ifx\ACM@fontsize\empty
```

```
246 \ifcase\ACM@format@nr
```

```
247 \relax % manuscript
```

```
248 \def\ACM@fontsize{9pt}%
```

```
249 \or % acmsmall
```

```
250 \def\ACM@fontsize{10pt}%
```

```
251 \or % acmlarge
```

```
252 \def\ACM@fontsize{10pt}%
```

```
253 \or % acmtog
```

```
254 \def\ACM@fontsize{9pt}%
```

```
255 \or % sigconf
```

```
256 \def\ACM@fontsize{9pt}%
```

```
257 \or % siggraph
```

```
258 \def\ACM@fontsize{9pt}%
```

```
259 \or % sigplan
```

```
260 \def\ACM@fontsize{10pt}%
```

```
261 \or % sigchi
```

```
262 \def\ACM@fontsize{9pt}%
```

```
263 \or % sigchi-a
```

```
264 \def\ACM@fontsize{10pt}%
```

```
265 \or % acmengage
```

```
266 \def\ACM@fontsize{10pt}%
```

```
267 \or % acmcp
```

```
268 \def\ACM@fontsize{9pt}%
```

```
269 \fi
```

```
270 \fi
```

```
271 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
```

```
272 \LoadClass[\ACM@fontsize, reqno]{amsart}
```

```
273 \RequirePackage{microtype}
```

We need etoolbox for delayed code

```
274 \RequirePackage{etoolbox}
```

Booktabs is now the default

```
275 \RequirePackage{booktabs}
```

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

```
276 \RequirePackage{refcount}
277 \RequirePackage{totpages}
```

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

```
278 \RequirePackage{environ}
```

We use `setspace` for double spacing

```
279 \if@ACM@manuscript
280 \RequirePackage{setspace}
281 \onehalfspacing
282 \fi
```

We no longer need `textcase` for better upcasing.

```
283 % \RequirePackage{textcase}
```

```
284 \if@ACM@acmcp
285 \RequirePackage{framed}
286 \RequirePackage{zref-savepos, zref-user}
287 \fi
```

`\@ACM@acmcp@delta` We need to store the `dimen` to store the insert length of `amcp` box

```
288 \newdimen\@ACM@acmcp@delta
289 \@ACM@acmcp@delta=0pt\relax
```

3.7 Citations

We patch `\setcitestyle` to allow, for example, `\setcitestyle{sort}` and `\setcitestyle{nosort}`. We patch `\citestyle` to warn about undefined citation styles.

```
290 \if@ACM@natbib
291   \RequirePackage{natbib}
292   \renewcommand{\bibsection}{%
293     \section*{\refname}%
294     \phantomsection\addcontentsline{toc}{section}{\refname}%
295   }
296   \renewcommand{\bibfont}{\bibliofont}
297   \renewcommand{\setcitestyle}[1]{
298     \@for\@tempa:=#1\do
299     {\def\@tempb{round}\ifx\@tempa\@tempb
300       \renewcommand\NAT@open{(\}\renewcommand\NAT@close{)}\fi
301       \def\@tempb{square}\ifx\@tempa\@tempb
302         \renewcommand\NAT@open{[\}\renewcommand\NAT@close{]}\fi
303       \def\@tempb{angle}\ifx\@tempa\@tempb
304         \renewcommand\NAT@open{$<$}\renewcommand\NAT@close{$>$}\fi
305       \def\@tempb{curly}\ifx\@tempa\@tempb
306         \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi
307       \def\@tempb{semicolon}\ifx\@tempa\@tempb
308         \renewcommand\NAT@sep{;}\fi
309       \def\@tempb{colon}\ifx\@tempa\@tempb
310         \renewcommand\NAT@sep{;}\fi
311       \def\@tempb{comma}\ifx\@tempa\@tempb
312         \renewcommand\NAT@sep{,}\fi
```

```

313 \def\@tempb{authoryear}\ifx\@tempa\@tempb
314 \NAT@numbersfalse\fi
315 \def\@tempb{numbers}\ifx\@tempa\@tempb
316 \NAT@numberstrue\NAT@superfalse\fi
317 \def\@tempb{super}\ifx\@tempa\@tempb
318 \NAT@numberstrue\NAT@supertrue\fi
319 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
320 \let\bibstyle=\@gobble\fi
321 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
322 \let\bibstyle=\@citestyle\fi
323 \def\@tempb{sort}\ifx\@tempa\@tempb
324 \def\NAT@sort{\@ne}\fi
325 \def\@tempb{nosort}\ifx\@tempa\@tempb
326 \def\NAT@sort{\z@}\fi
327 \def\@tempb{compress}\ifx\@tempa\@tempb
328 \def\NAT@cmprs{\@ne}\fi
329 \def\@tempb{nocompress}\ifx\@tempa\@tempb
330 \def\NAT@cmprs{\z@}\fi
331 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
332 \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
333 \def\@tempb{mcite}\ifx\@tempa\@tempb
334 \let\NAT@merge\@ne\fi
335 \def\@tempb{merge}\ifx\@tempa\@tempb
336 \@ifnum{\NAT@merge<\tw@}{\let\NAT@merge\tw@}{\fi
337 \def\@tempb{elide}\ifx\@tempa\@tempb
338 \@ifnum{\NAT@merge<\thr@}{\let\NAT@merge\thr@}{\fi
339 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
340 \NAT@longnamestrue\fi
341 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
342 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
343 \expandafter\NAT@find@eq\@tempa=\relax\@nil
344 \if\@tempc\relax\else
345 \expandafter\NAT@rem@eq\@tempc
346 \def\@tempb{open}\ifx\@tempa\@tempb
347 \xdef\NAT@open{\@tempc}\fi
348 \def\@tempb{close}\ifx\@tempa\@tempb
349 \xdef\NAT@close{\@tempc}\fi
350 \def\@tempb{aysep}\ifx\@tempa\@tempb
351 \xdef\NAT@aysep{\@tempc}\fi
352 \def\@tempb{yysep}\ifx\@tempa\@tempb
353 \xdef\NAT@yrsep{\@tempc}\fi
354 \def\@tempb{notesep}\ifx\@tempa\@tempb
355 \xdef\NAT@cmt{\@tempc}\fi
356 \def\@tempb{citesep}\ifx\@tempa\@tempb
357 \xdef\NAT@sep{\@tempc}\fi
358 \fi
359 }%
360 \NAT@@setcites
361 }
362 \renewcommand\citestyle[1]{%
363 \ifcsname bibstyle@#1\endcsname%
364 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
365 \else%
366 \@latex@error{Undefined `#1' citestyle}%

```

```

367   \fi
368 }%
369 \fi

```

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

```

370 \newcommand{\bibstyle@acmauthoryear}{%
371   \setcitestyle{%
372     authoryear,%
373     open={},close={},citesep={;},%
374     aysep={},yysep={},,%
375     notesep={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```

376 \newcommand{\bibstyle@acmnumeric}{%
377   \setcitestyle{%
378     numbers,sort&compress,%
379     open={},close={},citesep={},,%
380     notesep={, }}

```

The default is numeric:

```

381 \if@ACM@natbib
382 \citestyle{acmnumeric}
383 \fi

```

3.8 Internationalization

```

384 \if@ACM@journal
385   \renewcommand\keywordsname{Additional Key Words and Phrases}%
386 \else
387   \renewcommand\keywordsname{Keywords}%
388 \fi
389 \if@ACM@engage
390   \renewcommand\abstractname{Synopsis}%
391 \fi
392 \ifx\ACM@languages\@empty
393 \else
394   \RequirePackage[\ACM@languages]{babel}%
395   \addto\captionsenglish{%
396     \if@ACM@journal
397       \renewcommand\keywordsname{Additional Key Words and Phrases}%
398     \else
399       \renewcommand\keywordsname{Keywords}%
400     \fi
401     \renewcommand\acksname{Acknowledgements}%
402     \if@ACM@engage
403       \renewcommand\abstractname{Synopsis}%
404     \fi
405   }%
406   \addto\captionsfrench{%
407     \if@ACM@journal
408       \renewcommand\keywordsname{Mots Clés et Phrases Supplémentaires}%
409     \else
410       \renewcommand\keywordsname{Mots clés}%
411     \fi

```

```

412     \renewcommand\acksname{Remerciements}%
413 }%
414 \addto\captionsspanish{%
415     \if@ACM@journal
416         \renewcommand\keywordsname{Zusätzliche Schlagwörter und Phrasen}%
417     \else
418         \renewcommand\keywordsname{Schlagwörter}%
419     \fi
420     \renewcommand\acksname{Danksagungen}%
421 }%
422 \addto\captionsspanish{%
423     \if@ACM@journal
424         \renewcommand\keywordsname{Palabras y Frases Claves Adicionales}%
425     \else
426         \renewcommand\keywordsname{Palabras claves}%
427     \fi
428     \renewcommand\acksname{Expresiones de gratitud}%
429 }%
430 \fi

```

\ACM@lang@check Some commands should not be used if the document is monlingual

```

431 \newcommand\ACM@lang@check[1]{%
432     \ifx\ACM@languages\empty\relax
433     \ClassError{\@classname}{%
434         Command \string#1 \MessageBreak is used in monlingual document}{%
435         You used a command (\string#1) \MessageBreak
436         that does not have a meaning \MessageBreak
437         unless are languages are defined. \MessageBreak
438         Please choose the languages in \string\documentclass
439         \MessageBreak
440         (e.g. \string\documentclass[languages={french, english}]{acmart}),
441         \MessageBreak
442         or delete the command.}%
443     \fi}

```

\@translatedtitle

```
444 \def\@translatedtitle{}
```

\translatedtitle The title of the paper in a different language

```

445 \newcommand\translatedtitle[2]{\ACM@lang@check{\translatedtitle}%
446 \g@addto@macro\@translatedtitle{\par\foreignlanguage{#1}{#2}}}

```

\@translatedsubtitle

```
447 \def\@translatedsubtitle{}
```

\translatedsubtitle The subtitle of the paper in a different language

```

448 \newcommand\translatedsubtitle[2]{\ACM@lang@check{\translatedsubtitle}%
449 \g@addto@macro\@translatedsubtitle{\par\foreignlanguage{#1}{#2}}}

```

\@translatedkeywords

```
450 \def\@translatedkeywords{}
```

\translatedkeywords Add keywords to the paper in the language specified

```

451 \newcommand\translatedkeywords[2]{\ACM@lang@check{\translatedkeywords}%
452 \g@addto@macro\@translatedkeywords{\@mktranslatedkeywords{#1}{#2}}}

```

`\@translatedabstracts` The container for translated abstracts.

```
453 \def\@translatedabstracts{}
```

`translatedabstract` We save translated abstracts into `\@translatedabstracts`

```
454 \newenvironment{translatedabstract}[1]{\Collect@Body
455   \@savetranslatedabstract\mktranslatedabstract{#1}}{}
```

`\@savetranslatedabstract` And saving the abstract

```
456 \long\def\@savetranslatedabstract#1{\if@ACM@maketitle@typeset
457   \ClassError{\@classname}{Abstract must be defined before maketitle
458     command. Please move it!}\fi
459   \ACM@lang@check{translatedabstract}%
460   \g@addto@macro\@translatedabstracts{\bgroup#1\egroup}}
```

3.9 Sectioning

`\@startsection` Before we call `hyperref`, we redefine `\startsection` commands to their $\text{\LaTeX}$ 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:

```
461 \let\@startsection\@startsection@kernel
462 \def\@sect#1#2#3#4#5#6[#7]#8{%
463   \ifnum #2>\c@secnumdepth \else
464     \tochangmeasure{\csname the#1\endcsname}\fi
465   \@sect@kernel{#1}{#2}{#3}{#4}{#5}{#6}[#7]{#8}}
466 \let\@ssect\@ssect@kernel
467 \let\@xsect\@xsect@kernel
468 \def\@seccntformat#1{\csname the#1\endcsname\quad}
```

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

```
469 \def\@starttoc#1#2{\begingroup\makeatletter
470   \setTrue{#1}%
471   \par\removelastskip\vskip\z@skip
472   \@startsection{section}\@M\z@{\linespacing\@plus\linespacing}%
473     {.5\linespacing}{\centering\contentsnamefont}{#2}%
474   \@input{\jobname.#1}%
475   \if@filesw
476     \xp@newwrite\csname tf@#1\endcsname
477     \immediate\xp@openout\csname tf@#1\endcsname \jobname.#1\relax
478   \fi
479   \global\@nobreakfalse \endgroup
480   \addvspace{32\p@\@plus14\p@}%
481 }
```

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

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

`\l@subsection` The spacing in `amsart` is too large

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

`\l@subsubsection` The spacing in `amsart` is too large

```
484 \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

```
485 \def\@makefnmark{\noindent\@makefnmark}
```

`\@footnotetext` In sigchi-a mode our footnotes are in the margin!

```
486 \if@ACM@sigchiamode
487 \long\def\@footnotetext#1{\marginpar{%
488   \reset@font\small
489   \interlinepenalty\interfootnotelinepenalty
490   \protected@edef\@currentlabel{%
491     \csname p@footnote\endcsname\@thefnmark
492   }%
493   \color@begingroup
494     \@makefnmark#1%
495     \rule{z@footnotesep}{\ignorespaces#1\@finalstrut\strutbox}%
496   \color@endgroup}}%
497 \fi
```

`\@mpfootnotetext` We want the footnotes in minipages centered:

```
498 \long\def\@mpfootnotetext#1{%
499   \global\setbox\@mpfootins\vbox{%
500     \unvbox\@mpfootins
501     \reset@font\footnotesize
502     \hsize\columnwidth
503     \@parboxrestore
504     \protected@edef\@currentlabel
505       {\csname p@mpfootnote\endcsname\@thefnmark}%
506     \color@begingroup\centering
507       \@makefnmark#1%
508       \rule{z@footnotesep}{\ignorespaces#1\@finalstrut\strutbox}%
509     \color@endgroup}}
```

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

```
510 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}
```

3.10 Hyperxmp and hyperref

Adding hyperref

```
511 \let\@footnotemark@nolink\@footnotemark
512 \let\@footnotetext@nolink\@footnotetext
513 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
514 \RequirePackage{hyperxmp}
515 \pdfstringdefDisableCommands{%
516   \def\addtocounter#1#2{%
517     \def\unskip{}%
518     \def\textbullet{- }%
519     \def\texttrightarrow{-> }%
520     \def\footnotemark{}%
521   }
522 \urlstyle{rm}
523 \ifcase\ACM@format@nr
524 \relax % manuscript
```

```

525 \or % acmsmall
526 \or % acmlarge
527 \or % acmtog
528 \or % sigconf
529 \or % siggraph
530 \or % sigplan
531 \urlstyle{sf}
532 \or % sigchi
533 \or % sigchi-a
534 \urlstyle{sf}
535 \or % acmengage
536 \or % acmcp
537 \fi
538 \AtEndPreamble{%
539 \if@ACM@urlbreakonhyphens
540 \def\do@url@hyp{\do\~}%
541 \fi
542 \if@ACM@screen
543 \hypersetup{colorlinks,
544 linkcolor=ACMPurple,
545 citecolor=ACMPurple,
546 urlcolor=ACMDarkBlue,
547 filecolor=ACMDarkBlue}
548 \else
549 \hypersetup{hidelinks}
550 \fi
551 \hypersetup{pdflang={en},
552 pdfdisplaydoctitle}}
    Bibliography mangling.
553 \if@ACM@natbib
554 \let\cite\cite
555 \let\cite\citep
556 \let\citeANP\citeauthor
557 \let\citeNN\citeyearpar
558 \let\citeyearNP\citeyear
559 \let\citeNP\citealt
560 \DeclareRobustCommand\citeA
561 {\begingroup\NAT@swafalse
562 \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
563 \providecommand\newblock{}%
564 \else
565 \AtBeginDocument{%
566 \let\shortcite\cite%
567 \providecommand\citename[1]{#1}}
568 \fi
569 \newcommand\shortcite[2][{}]{%
570 \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 $\TeX$ definition:

```

571 \def\bibliographystyle#1{%
572 \ifx\@begindocumenthook\@undefined\else
573 \expandafter\AtBeginDocument

```

```

574 \fi
575 {\if@filesw
576 \immediate\write\auxout{\string\bibstyle{#1}}%
577 \fi}}

```

3.11 Other packages

Graphics and color.

```

578 \RequirePackage{graphicx}
579 \RequirePackage[prologue]{xcolor}

We define ACM colors according to [8]:
580 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
581 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
582 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
583 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
584 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
585 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
586 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
587 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

Author-draft mode or sigchi-a mode

```

588 \if@ACM@authordraft
589 \RequirePackage{draftwatermark}
590 \SetWatermarkFontSize{0.5in}
591 \SetWatermarkColor[gray]{.9}
592 \SetWatermarkText{\parbox{12em}{\centering
593 Unpublished working draft.\\
594 Not for distribution.}}
595 \else
596 \if@ACM@sigchiamode
597 \if@ACM@nonacm\else
598 \RequirePackage{draftwatermark}
599 \SetWatermarkFontSize{0.5in}
600 \SetWatermarkColor[gray]{.9}
601 \SetWatermarkText{\parbox{12em}{\centering
602 Legacy document. \\
603 Not for publication in an ACM venue}}
604 \fi
605 \fi
606 \fi

```

3.12 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>.

```

607 \RequirePackage{geometry}
608 \ifcase\ACM@format@nr
609 \relax % manuscript
610 \geometry{letterpaper,head=13pt,
611 marginparwidth=6pc,heightrounded}%
612 \or % acmsmall
613 \geometry{twoside=true,

```

```

614     includeheadfoot, head=13pt, foot=2pc,
615     paperwidth=6.75in, paperheight=10in,
616     top=58pt, bottom=44pt, inner=46pt, outer=46pt,
617     marginparwidth=2pc,heightrounded
618 }%
619 \or % acmlarge
620 \geometry{twoside=true, head=13pt, foot=2pc,
621     paperwidth=8.5in, paperheight=11in,
622     includeheadfoot,
623     top=78pt, bottom=114pt, inner=81pt, outer=81pt,
624     marginparwidth=4pc,heightrounded
625 }%
626 \or % acmtog
627 \geometry{twoside=true, head=13pt, foot=2pc,
628     paperwidth=8.5in, paperheight=11in,
629     includeheadfoot, columnsep=24pt,
630     top=52pt, bottom=75pt, inner=52pt, outer=52pt,
631     marginparwidth=2pc,heightrounded
632 }%
633 \or % sigconf
634 \geometry{twoside=true, head=13pt,
635     paperwidth=8.5in, paperheight=11in,
636     includeheadfoot, columnsep=2pc,
637     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
638     marginparwidth=2pc,heightrounded
639 }%
640 \or % siggraph
641 \geometry{twoside=true, head=13pt,
642     paperwidth=8.5in, paperheight=11in,
643     includeheadfoot, columnsep=2pc,
644     top=57pt, bottom=73pt, inner=54pt, outer=54pt,
645     marginparwidth=2pc,heightrounded
646 }%
647 \or % sigplan
648 \geometry{twoside=true, head=13pt,
649     paperwidth=8.5in, paperheight=11in,
650     includeheadfoot=false, columnsep=2pc,
651     top=1in, bottom=1in, inner=0.75in, outer=0.75in,
652     marginparwidth=2pc,heightrounded
653 }%
654 \or % sigchi
655 \geometry{twoside=true, head=13pt,
656     paperwidth=8.5in, paperheight=11in,
657     includeheadfoot, columnsep=2pc,
658     top=66pt, bottom=73pt, inner=54pt, outer=54pt,
659     marginparwidth=2pc,heightrounded
660 }%
661 \or % sigchi-a
662 \geometry{twoside=false, head=13pt,
663     paperwidth=11in, paperheight=8.5in,
664     includeheadfoot, marginparsep=72pt,
665     marginparwidth=170pt, columnsep=20pt,
666     top=72pt, bottom=72pt, left=314pt, right=72pt
667 }%

```

```

668 \mparswitchfalse
669 \reversemarginpar
670 \or % acmengage
671 \geometry{twoside=true, head=13pt,
672   paperwidth=8.5in, paperheight=11in,
673   includeheadfoot, columnsep=2pc,
674   top=57pt, bottom=73pt, inner=54pt, outer=54pt,
675   marginparwidth=2pc,heightrounded
676   }%
677 \or % acmcp
678 \geometry{twoside=true,
679   includeheadfoot, head=13pt, foot=2pc,
680   paperwidth=6.75in, paperheight=10in,
681   top=58pt, bottom=44pt, inner=46pt, outer=46pt,
682   marginparwidth=2pc,heightrounded
683   }%
684 \fi

```

\parindent Paragraphing

```

\parskip 685 \setlength\parindent{10\p@}
686 \setlength\parskip{\z@}
687 \ifcase\ACM@format@nr
688 \relax % manuscript
689 \or % acmsmall
690 \or % acmlarge
691 \or % acmtog
692 \setlength\parindent{9\p@}%
693 \or % sigconf
694 \or % siggraph
695 \or % sigplan
696 \or % sigchi
697 \or % sigchi-a
698 \or % acmengage
699 \or % acmcp
700 \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.

```
701 \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.

```

702 \def\copyrightpermissionfootnoterule{\kern-3\p@
703   \hrule \@width \columnwidth \kern 2.6\p@}

```

```

704 \RequirePackage{manyfoot}
705 \SelectFootnoteRule[2]{copyrightpermission}
706 \DeclareNewFootnote{authorsaddresses}
707 \SelectFootnoteRule[2]{copyrightpermission}
708 \DeclareNewFootnote{copyrightpermission}

```

\footnoterule Tschichold's rules:

```

709 \def\footnoterule{\kern-3\p@
710   \hrule \@width 4pc \kern 2.6\p@}

```

\endminipage We do not use footnote rules in minipages

```

711 \def\endminipage{%
712   \par
713   \unskip
714   \ifvoid\@mpfootins\else
715     \vskip\skip\@mpfootins
716     \normalcolor
717     \unvbox\@mpfootins
718   \fi
719   \@minipagefalse
720   \color@endgroup
721   \egroup
722   \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}

```

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

```

723 \def\@textbottom{\vskip \z@ \@plus 1pt}
724 \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.

```

725 \ifcase\ACM@format@nr
726 \relax % manuscript
727 \or % acmsmall
728 \or % acmlarge
729 \or % acmtog
730   \flushbottom
731 \or % sigconf
732   \flushbottom
733 \or % siggraph
734   \flushbottom
735 \or % sigplan
736   \flushbottom
737 \or % sigchi
738   \flushbottom
739 \or % sigchi-a
740 \or % acmengage
741   \flushbottom
742 \or % acmcp
743   \flushbottom
744 \fi

```

3.13 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.

```
745 \ifPDFTeX
746 \input{glyptounicode}
747 \pdfglyptounicode{f_f}{FB00}
748 \pdfglyptounicode{f_f_i}{FB03}
749 \pdfglyptounicode{f_f_l}{FB04}
750 \pdfglyptounicode{f_i}{FB01}
751 \pdfglyptounicode{t_t}{0074 0074}
752 \pdfglyptounicode{f_t}{0066 0074}
753 \pdfglyptounicode{T_h}{0054 0068}
754 \pdfgentounicode=1
755 \RequirePackage{cmap}
756 \fi
```

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

```
757 \newif\if@ACM@newfonts
758 \@ACM@newfontstrue
759 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
760   have the libertine package installed. Please upgrade your
761   TeX}\@ACM@newfontsfalse}
762 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
763   have the inconsolata (zi4.sty) package installed. Please upgrade your
764   TeX}\@ACM@newfontsfalse}
765 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
766   have the newtxmath package installed. Please upgrade your
767   TeX}\@ACM@newfontsfalse}
```

We use Libertine throughout. We use Libertine throughout.

```
768 \if@ACM@newfonts
769   \ifxetex
770     \RequirePackage{amssymb}
771     \RequirePackage{unicode-math}
772     \setmathfont[Scale=MatchUppercase]{LibertinusMath-Regular.otf}
773     \setmathfont{latinmodern-math.otf}[range={cal}]
774     \RequirePackage[tt=false]{libertine}
775     \setmonofont[StylisticSet=3]{inconsolata}
776   \else
777     \ifluatex
778       \RequirePackage{amssymb}
779       \RequirePackage{unicode-math}
780       \setmathfont[Scale=MatchUppercase]{LibertinusMath-Regular.otf}
781       \setmathfont{latinmodern-math.otf}[range={cal}]
782       \RequirePackage[tt=false]{libertine}
783       \setmonofont[StylisticSet=3]{inconsolata}
784     \else
785       \RequirePackage[T1]{fontenc}
786       \RequirePackage[tt=false, type1=true]{libertine}
787       \RequirePackage[varqu]{zi4}
788       \RequirePackage[libertine]{newtxmath}
789     \fi
```

```

790 \fi
791 \fi

```

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

```

792 \let\liningnums\@undefined
793 \AtEndPreamble{%
794   \DeclareTextFontCommand{\liningnums}{\libertinelF}}

```

The SIGCHI extended abstracts are sans serif:

```

795 \if@ACM@sigchiamode
796   \renewcommand{\familydefault}{\sfdefault}
797 \fi

798 \RequirePackage{pifont}

```

3.14 Image descriptions

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

```

799 \newif\if@Description@present
800 \@Description@presenttrue

```

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

```

801 \newif\if@undescrbed@images
802 \@undescrbed@imagesfalse

```

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

```

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

```

The global warning

```

804 \IfDocumentMetadataF{%
805 \AtEndDocument{\if@undescrbed@images
806   \ClassWarningNoLine{\@classname}{Some images may lack
807     descriptions.\MessageBreak
808   ACM is committed to complying with the upcoming US ADA
809   https://accessiblyapp.com/accessibility-compliance/ada/ and European
810   Accessibility Act
811   (EAA) https://accessiblyapp.com/accessibility-compliance/eea/
812   regulations by actively working to ensure our publications and
813   application services are accessible to individuals with
814   disabilities, adhering to the WCAG guidelines to provide a seamless
815   experience for all users, and regularly reviewing our accessibility
816   practices to maintain compliance with evolving standards. \MessageBreak
817   To this end, we strongly encourage our authors to provide
818   alternative text and captions for images and multimedia content. It
819   is also important to optimize color contrast for the visually
820   impaired. Taking these important steps when creating your papers
821   will ensure that the widest possible audience can ingest your
822   work.}\fi}
823 }

```

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

```

824 \AtBeginEnvironment{figure}{\@Description@presentfalse
825 \let\@vspace\@vspace@orig
826 \let\@vspacer\@vspacer@orig}
827 \AtBeginEnvironment{figure*}{\@Description@presentfalse
828 \let\@vspace\@vspace@orig
829 \let\@vspacer\@vspacer@orig}
830 \AtEndEnvironment{figure}{\if@Description@present\else
831 \global\@undescrbed@imagestrue
832 \ClassWarning{\@classname}{A possible image without description}\fi}
833 \AtEndEnvironment{figure*}{\if@Description@present\else
834 \global\@undescrbed@imagestrue
835 \ClassWarning{\@classname}{A possible image without description}\fi}
836 \AtBeginEnvironment{table}{\let\@vspace\@vspace@orig
837 \let\@vspacer\@vspacer@orig}
838 \AtBeginEnvironment{table*}{\let\@vspace\@vspace@orig
839 \let\@vspacer\@vspacer@orig}
840 \AtBeginEnvironment{algorithm}{\let\@vspace\@vspace@orig
841 \let\@vspacer\@vspacer@orig}
842 \AtBeginEnvironment{algorithm*}{\let\@vspace\@vspace@orig
843 \let\@vspacer\@vspacer@orig}
844 \AtBeginEnvironment{lstlisting}{\let\@vspace\@vspace@orig
845 \let\@vspacer\@vspacer@orig}
846 \AtBeginEnvironment{lstlisting*}{\let\@vspace\@vspace@orig
847 \let\@vspacer\@vspacer@orig}
848 \AtBeginEnvironment{minted}{\let\@vspace\@vspace@orig
849 \let\@vspacer\@vspacer@orig}
850 \AtBeginEnvironment{minted*}{\let\@vspace\@vspace@orig
851 \let\@vspacer\@vspacer@orig}
852 \AtBeginEnvironment{listing}{\let\@vspace\@vspace@orig
853 \let\@vspacer\@vspacer@orig}
854 \AtBeginEnvironment{listing*}{\let\@vspace\@vspace@orig
855 \let\@vspacer\@vspacer@orig}
856 \AtBeginEnvironment{lstinputlisting}{\let\@vspace\@vspace@orig
857 \let\@vspacer\@vspacer@orig}
858 \AtBeginEnvironment{lstinputlisting*}{\let\@vspace\@vspace@orig
859 \let\@vspacer\@vspacer@orig}
860

```

3.15 Floats

We use caption package

```

861 \RequirePackage{caption, float}
862 \captionsetup[table]{position=top}
863 \if@ACM@journal
864 \captionsetup{labelfont={sf, small},
865 textfont={sf, small}, margin=\z@}
866 \captionsetup[figure]{name={Fig.}}
867 \else
868 \captionsetup{labelfont={bf},
869 textfont={bf}, labelsep=colon, margin=\z@}
870 \ifcase\ACM@format@nr

```

```

871 \relax % manuscript
872 \or % acmsmall
873 \or % acmlarge
874 \or % acmtog
875 \or % sigconf
876 \or % siggraph
877 \captionsetup{textfont={it}}
878 \or % sigplan
879 \captionsetup{labelfont={bf},
880 textfont={normalfont}, labelsep=period, margin=\z@}
881 \or % sigchi
882 \captionsetup[figure]{labelfont={bf, small},
883 textfont={bf, small}}
884 \captionsetup[table]{labelfont={bf, small},
885 textfont={bf, small}}
886 \or % sigchi-a
887 \captionsetup[figure]{labelfont={bf, small},
888 textfont={bf, small}}
889 \captionsetup[table]{labelfont={bf, small},
890 textfont={bf, small}}
891 \or % acmengage
892 \or % acmcp
893 \fi
894 \fi

```

Unfortunately caption package so far is not tagging compatible. So we need to recreate it if tagging is enabled. This is from <https://github.com/latex3/tagging-project/issues/720>

```

895 \ExplSyntaxOn
896 \IfDocumentMetadataT{%
897 \RemoveFromHook{begindocument}[latex-lab-testphase-float]
898 \socket_new_plugin:nnn{tag-support/parbox/before}{caption}
899 {
900 \tagpdfparaOn %restart para tagging
901 \tl_if_empty:NTF\@current@float@struct
902 {
903 \tag_struct_begin:n{tag=Caption,firstkid}
904 }
905 {
906 \tag_struct_begin:n{tag=Caption,parent=\@current@float@struct,firstkid}
907 }
908 }
909 \socket_new_plugin:nnn{tag-support/parbox/after}{caption}
910 {
911 \tag_struct_end:
912 }
913 \l@addto@macro\caption@beginex@hook{%
914 \tagpdfparaOff %leavevmode in parbox should not start paragraph structure
915 \AssignSocketPlug{tag-support/parbox/before}{caption}
916 \AssignSocketPlug{tag-support/parbox/after}{caption}}
917 }
918 \ExplSyntaxOff

```

By default the first row of a table contains headers

```

919 \IfDocumentMetadataT{%

```

```

920 \tagpdfsetup{table/header-rows={1}}
921 }

sidebar The sidebar environment:
922 \newfloat{sidebar}{}{sbar}
923 \floatname{sidebar}{Sidebar}
924 \renewenvironment{sidebar}{\Collect@Body\@sidebar}{}

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

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

\@marginfigure The processing of the saved text
929 \long\def\@marginfigure#1{\bgroup
930 \let\@vspace\@vspace@orig
931 \let\@vspacer\@vspacer@orig
932 \captionsetup{type=figure}%
933 \marginpar{\@Description@presentfalse\centering
934 \small#1\if@Description@present\else
935 \global\@undescribed@imagestrue
936 \ClassWarning{\@classname}{A possible image without description}
937 \fi}%
938 \egroup}

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

\@margintable The processing of the saved text
940 \long\def\@margintable#1{\bgroup\let\@vspace\@vspace@orig
941 \let\@vspacer\@vspacer@orig\captionsetup{type=table}%
942 \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
943 \newdimen\fulltextwidth
944 \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)
945 \if@ACM@sigchiamode
946 \def\@dblfloat{\bgroup\let\@vspace\@vspace@orig
947 \let\@vspacer\@vspacer@orig\columnwidth=\fulltextwidth
948 \let\@endfloatbox\@endwdefloatbox
949 \def\@fpsadddefault{\def\@fps{tp}}}%
950 \@float}
951 \fi

```

`\enddblfloat` And the end. Just adding a `\bgroup`.

```
952 \if@ACM@sigchiamode
953 \def\enddblfloat{%
954     \end@float\egroup}
955 \fi
```

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

```
956 \def\@endwidefloatbox{%
957     \par\vskip\z@skip
958     \@minipagefalse
959     \outer@nobreak
960     \egroup
961     \color@endbox
962     \global\setbox\@currbox=\vbox{\moveleft
963         \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
964     \wd\@currbox=\textwidth
965 }
```

3.16 Lists

```
966 \ifcase\ACM@format@nr
967 \relax % manuscript
968 \or % acmsmall
969 \or % acmlarge
970 \or % acmtog
971 \or % sigconf
972 \or % siggraph
973 \or % sigplan
974 \def\labelenumi{\theenumi.}
975 \def\labelenumii{\theenumii.}
976 \def\labelenumiii{\theenumiii.}
977 \def\labelenumiv{\theenumiv.}
978 \or % sigchi
979 \or % sigchi-a
980 \or % acmengage
981 \or % acmcp
982 \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`.

```
983 \newdimen\@ACM@labelwidth
984 \AtBeginDocument{%
985     \setlength\labelsep{4pt}
986     \setlength{\@ACM@labelwidth}{6.5pt}
987
988     %% First-level list: when beginning after the first line of an
989     %% indented paragraph or ending before an indented paragraph, labels
990     %% should not hang to the left of the preceding/following text.
991     \setlength\leftmargini{\z@}
992     \addtolength\leftmargini{\parindent}
```

```

993 \addtolength\leftmargini{2\labelsep}
994 \addtolength\leftmargini{\@ACM@labelwidth}
995
996 %% Second-level and higher lists.
997 \setlength\leftmarginii{\z@}
998 \addtolength\leftmarginii{0.5\labelsep}
999 \addtolength\leftmarginii{\@ACM@labelwidth}
1000 \setlength\leftmarginiii{\leftmarginii}
1001 \setlength\leftmarginiv{\leftmarginiii}
1002 \setlength\leftmarginv{\leftmarginiv}
1003 \setlength\leftmarginvi{\leftmarginv}
1004 \@listi}
1005 \newskip\listisep
1006 \listisep\smallskipamount
1007 \def\@listI{\leftmargin\leftmargini
1008 \labelwidth\leftmargini \advance\labelwidth-\labelsep
1009 \listparindent\z@
1010 \topsep\listisep}
1011 \let\@listi\@listI
1012 \def\@listii{\leftmargin\leftmarginii
1013 \labelwidth\leftmarginii \advance\labelwidth-\labelsep
1014 \topsep\z@skip}
1015 \def\@listiii{\leftmargin\leftmarginiii
1016 \labelwidth\leftmarginiii \advance\labelwidth-\labelsep}
1017 \def\@listiv{\leftmargin\leftmarginiv
1018 \labelwidth\leftmarginiv \advance\labelwidth-\labelsep}
1019 \def\@listv{\leftmargin\leftmarginv
1020 \labelwidth\leftmarginv \advance\labelwidth-\labelsep}
1021 \def\@listvi{\leftmargin\leftmarginvi
1022 \labelwidth\leftmarginvi \advance\labelwidth-\labelsep}

\descriptionlabel We do not use a colon by default like amsart does:
1023 \renewcommand{\descriptionlabel}[1]{\upshape\bfseries #1}

\description Make the description environment indentation consistent with that of the itemize
and enumerate environments.
1024 \renewenvironment{description}{\list{}}{%
1025 \labelwidth\@ACM@labelwidth
1026 \let\makelabel\descriptionlabel}%
1027 }{
1028 \endlist
1029 }
1030 \let\enddescription=\endlist % for efficiency

```

3.17 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.

```

1031 \newif\if@ACM@maketitle@typeset
1032 \@ACM@maketitle@typesetfalse

```

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

```

1033 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
1034 ACMJCSS,%

```

1035 ACMJDS,%
1036 AILET,%
1037 CIE,%
1038 CSUR,%
1039 DGOV,%
1040 DLT,%
1041 DTRAP,%
1042 FAC,%
1043 GAMES,%
1044 HEALTH,%
1045 IMWUT,%
1046 JACM,%
1047 JATS,%
1048 JDIQ,%
1049 JDS,%
1050 JEA,%
1051 JERIC,%
1052 JETC,%
1053 JOCCH,%
1054 JRC,%
1055 PACMCGIT,%
1056 PACMHCI,%
1057 PACMMOD,%
1058 PACMNET,%
1059 PACMPL,%
1060 PACMSE,%
1061 POMACS,%
1062 TAAS,%
1063 TACCESS,%
1064 TACO,%
1065 TAIS,%
1066 TAISAP,%
1067 TALG,%
1068 TALLIP,%
1069 TAP,%
1070 TCPS,%
1071 TDS,%
1072 TEAC,%
1073 TECS,%
1074 TELO,%
1075 THRI,%
1076 TIIS,%
1077 TIOT,%
1078 TISSEC,%
1079 TIST,%
1080 TKDD,%
1081 TMIS,%
1082 TOCE,%
1083 TOCHI,%
1084 TOCL,%
1085 TOCS,%
1086 TOCT,%
1087 TODAES,%
1088 TODS,%

```

1089 TOG,%
1090 TOIS,%
1091 TOIT,%
1092 TOMACS,%
1093 TOMM,%
1094 TOMPECS,%
1095 TOMS,%
1096 TOPC,%
1097 TOPLAS,%
1098 TOPML,%
1099 TOPS,%
1100 TORS,%
1101 TOS,%
1102 TOSEM,%
1103 TOSN,%
1104 TQC,%
1105 TRETS,%
1106 TSAS,%
1107 TSC,%
1108 TSLP,%
1109 TWEB,%
1110 FACMP%
1111 }{%
1112 \ifcase\@journalCode@nr
1113 \relax % ACMJCSS
1114 \def\@journalName{ACM Journal on Computing and Sustainable Societies}%
1115 \def\@journalNameShort{ACM J. Comput. Sustain. Soc.}%
1116 \def\@permissionCodeOne{2834-5533}%
1117 \def\@permissionCodeTwo{2834-5533}%
1118 \or % ACMJDS
1119 \def\@journalName{ACM Journal of Data Science}%
1120 \def\@journalNameShort{ACM J. Data Sci.}%
1121 \def\@permissionCodeOne{3069-3497}%
1122 \def\@permissionCodeTwo{3069-3497}%
1123 \or % AILET
1124 \def\@journalName{ACM AI Letters}%
1125 \def\@journalNameShort{ACM AI Lett.}%
1126 \def\@permissionCodeOne{3068-8590}%
1127 \def\@permissionCodeTwo{3068-8590}%
1128 \or % CIE
1129 \def\@journalName{ACM Computers in Entertainment}%
1130 \def\@journalNameShort{ACM Comput. Entertain.}%
1131 \def\@permissionCodeOne{1544-3574}%
1132 \or % CSUR
1133 \def\@journalName{ACM Computing Surveys}%
1134 \def\@journalNameShort{ACM Comput. Surv.}%
1135 \def\@permissionCodeOne{0360-0300}%
1136 \def\@permissionCodeTwo{1557-7341}%
1137 \or % DGOV
1138 \def\@journalName{Digital Government: Research and Practice}%
1139 \def\@journalNameShort{Digit. Gov. Res. Pract.}%
1140 \def\@permissionCodeOne{2639-0175}%
1141 \def\@permissionCodeTwo{2639-0175}%
1142 \or % DLT

```

```

1143 \def\@journalName{Distributed Ledger Technologies: Research and Practice}%
1144 \def\@journalNameShort{Distrib. Ledger Technol.}%
1145 \def\@permissionCodeOne{2769-6472}%
1146 \def\@permissionCodeTwo{2769-6480}%
1147 \or % DTRAP
1148 \def\@journalName{Digital Threats: Research and Practice}%
1149 \def\@journalNameShort{Digit. Threat. Res. Pract.}%
1150 \def\@permissionCodeOne{2576-5337}%
1151 \def\@permissionCodeTwo{2576-5337}%
1152 \or % FAC
1153 \def\@journalName{Formal Aspects of Computing}%
1154 \def\@journalNameShort{Form. Asp. Comput.}%
1155 \def\@permissionCodeOne{0934-5043}%
1156 \def\@permissionCodeTwo{1433-299X}%
1157 \or % GAMES
1158 \def\@journalName{ACM Games: Research and Practice}%
1159 \def\@journalNameShort{ACM Games}%
1160 \def\@permissionCodeOne{2832-5516}%
1161 \def\@permissionCodeTwo{2832-5516}%
1162 \or % HEALTH
1163 \def\@journalName{ACM Transactions on Computing for Healthcare}%
1164 \def\@journalNameShort{ACM Trans. Comput. Healthcare}%
1165 \def\@permissionCodeOne{2637-8051}%
1166 \def\@permissionCodeTwo{2637-8051}%
1167 \or % IMWUT
1168 \def\@journalName{Proceedings of the ACM on Interactive, Mobile,
1169     Wearable and Ubiquitous Technologies}%
1170 \def\@journalNameShort{Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.}%
1171 \def\@permissionCodeOne{2474-9567}%
1172 \def\@permissionCodeTwo{2474-9567}%
1173 \@ACM@screentruer
1174 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1175 \or % JACM
1176 \def\@journalName{Journal of the ACM}%
1177 \def\@journalNameShort{J. ACM}%
1178 \def\@permissionCodeOne{0004-5411}%
1179 \def\@permissionCodeTwo{1557-735X}%
1180 \or % JATS
1181 \def\@journalName{Journal on Autonomous Transportation Systems}%
1182 \def\@journalNameShort{ACM J. Auton. Transport. Syst.}%
1183 \def\@permissionCodeOne{2833-0528}%
1184 \def\@permissionCodeTwo{2833-0528}%
1185 \or % JDIQ
1186 \def\@journalName{ACM Journal of Data and Information Quality}%
1187 \def\@journalNameShort{ACM J. Data Inform. Quality}%
1188 \def\@permissionCodeOne{1936-1955}%
1189 \def\@permissionCodeTwo{1936-1963}%
1190 \or % JDS
1191 \def\@journalName{ACM Journal of Data Science}%
1192 \def\@journalNameShort{ACM J. Data Sci.}%
1193 \def\@permissionCodeOne{2831-3194}%
1194 \def\@permissionCodeTwo{2831-3194}%
1195 \or % JEA
1196 \def\@journalName{ACM Journal of Experimental Algorithmics}%

```

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1197 \def\@journalNameShort{ACM J. Exp. Algor.}%
1198 \def\@permissionCodeOne{1084-6654}%
1199 \def\@permissionCodeTwo{1084-6654}%
1200 \or % JERIC
1201 \def\@journalName{ACM Journal of Educational Resources in Computing}%
1202 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
1203 \def\@permissionCodeOne{1073-0516}%
1204 \or % JETC
1205 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
1206 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
1207 \def\@permissionCodeOne{1550-4832}%
1208 \def\@permissionCodeTwo{1550-4840}%
1209 \or % JOCC
1210 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
1211 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
1212 \def\@permissionCodeOne{1556-4673}%
1213 \def\@permissionCodeTwo{1556-4711}%
1214 \or % JRC
1215 \def\@journalName{ACM Journal on Responsible Computing}%
1216 \def\@journalNameShort{ACM J. Responsib. Comput.}%
1217 \def\@permissionCodeOne{2832-0565}%
1218 \def\@permissionCodeTwo{2832-0565}%
1219 \or % PACMCGIT
1220 \def\@journalName{Proceedings of the ACM on Computer Graphics and Interactive Techniques}%
1221 \def\@journalNameShort{Proc. ACM Comput. Graph. Interact. Tech.}%
1222 \def\@permissionCodeOne{2577-6193}%
1223 \def\@permissionCodeTwo{2577-6193}%
1224 \@ACM@screentru
1225 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1226 \or % PACMHCI
1227 \def\@journalName{Proceedings of the ACM on Human-Computer Interaction}%
1228 \def\@journalNameShort{Proc. ACM Hum.-Comput. Interact.}%
1229 \def\@permissionCodeOne{2573-0142}%
1230 \def\@permissionCodeTwo{2573-0142}%
1231 \@ACM@screentru
1232 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1233 \or % PACMMOD
1234 \def\@journalName{Proceedings of the ACM on Management of Data}%
1235 \def\@journalNameShort{Proc. ACM Manag. Data}%
1236 \def\@permissionCodeOne{2836-6573}%
1237 \def\@permissionCodeTwo{2836-6573}%
1238 \or % PACMNET
1239 \def\@journalName{Proceedings of the ACM on Networkng}%
1240 \def\@journalNameShort{Proc. ACM Netw.}%
1241 \def\@permissionCodeOne{2834-5509}%
1242 \def\@permissionCodeTwo{2834-5509}%
1243 \or % PACMPL
1244 \def\@journalName{Proceedings of the ACM on Programming Languages}%
1245 \def\@journalNameShort{Proc. ACM Program. Lang.}%
1246 \def\@permissionCodeOne{2475-1421}%
1247 \def\@permissionCodeTwo{2475-1421}%
1248 \@ACM@screentru
1249 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1250 \or % PACMSE

```

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1251 \def\@journalName{Proceedings of the ACM on Software Engineering}%
1252 \def\@journalNameShort{Proc. ACM Softw. Eng.}%
1253 \def\@permissionCodeOne{2994-970X}%
1254 \def\@permissionCodeTwo{2994-970X}%
1255 \@ACM@screentruer
1256 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1257 \or % POMACS
1258 \def\@journalName{Proceedings of the ACM on Measurement and Analysis of Computing Systems}%
1259 \def\@journalNameShort{Proc. ACM Meas. Anal. Comput. Syst.}%
1260 \def\@permissionCodeOne{2476-1249}%
1261 \def\@permissionCodeTwo{2476-1249}%
1262 \@ACM@screentruer
1263 \PackageInfo{\@classname}{Using screen mode due to \@journalCode}%
1264 \or % TAAS
1265 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
1266 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
1267 \def\@permissionCodeOne{1556-4665}%
1268 \def\@permissionCodeTwo{1556-4703}%
1269 \or % TACCESS
1270 \def\@journalName{ACM Transactions on Accessible Computing}%
1271 \def\@journalNameShort{ACM Trans. Access. Comput.}%
1272 \def\@permissionCodeOne{1936-7228}%
1273 \def\@permissionCodeTwo{1936-7236}%
1274 \or % TACO
1275 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
1276 \def\@journalNameShort{ACM Trans. Arch. Code Optim.}%
1277 \def\@permissionCodeOne{1544-3566}%
1278 \def\@permissionCodeTwo{1544-3973}%
1279 \or % TAIS
1280 \def\@journalName{ACM Transactions on AI for Science}%
1281 \def\@journalNameShort{ACM Trans. AI Sci.}%
1282 \def\@permissionCodeOne{3066-4438}%
1283 \def\@permissionCodeTwo{3066-4438}%
1284 \or % TAISAP
1285 \def\@journalName{ACM Transactions on AI Security and Privacy}%
1286 \def\@journalNameShort{ACM Trans. AI Secur. Priv.}%
1287 \def\@permissionCodeOne{3068-3564}%
1288 \def\@permissionCodeTwo{3068-3564}%
1289 \or % TALG
1290 \def\@journalName{ACM Transactions on Algorithms}%
1291 \def\@journalNameShort{ACM Trans. Algor.}%
1292 \def\@permissionCodeOne{1549-6325}%
1293 \def\@permissionCodeTwo{1549-6333}%
1294 \or % TALLIP
1295 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
1296 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
1297 \def\@permissionCodeOne{2375-4699}%
1298 \def\@permissionCodeTwo{2375-4702}%
1299 \or % TAP
1300 \def\@journalName{ACM Transactions on Applied Perception}%
1301 \def\@journalNameShort{ACM Trans. Appl. Percept.}%
1302 \def\@permissionCodeOne{1544-3558}%
1303 \def\@permissionCodeTwo{1544-3965}%
1304 \or % TCPS

```

```

1305 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
1306 \def\@journalNameShort{ACM Trans. Cyber-Phys. Syst.}%
1307 \def\@permissionCodeOne{2378-962X}%
1308 \def\@permissionCodeTwo{2378-9638}%
1309 \or % TDS
1310 \def\@journalName{ACM Transactions on Data Science}%
1311 \def\@journalNameShort{ACM Trans. Data Sci.}%
1312 \def\@permissionCodeOne{2577-3224}%
1313 \or % TEAC
1314 \def\@journalName{ACM Transactions on Economics and Computation}%
1315 \def\@journalNameShort{ACM Trans. Econ. Comput.}%
1316 \def\@permissionCodeOne{2167-8375}%
1317 \def\@permissionCodeTwo{2167-8383}%
1318 \or % TECS
1319 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
1320 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
1321 \def\@permissionCodeOne{1539-9087}%
1322 \def\@permissionCodeTwo{1558-3465}%
1323 \or % TELO
1324 \def\@journalName{ACM Transactions on Evolutionary Learning and Optimization}%
1325 \def\@journalNameShort{ACM Trans. Evol. Learn. Optim.}%
1326 \def\@permissionCodeOne{2688-299X}%
1327 \def\@permissionCodeTwo{2688-3007}%
1328 \or % THRI
1329 \def\@journalName{ACM Transactions on Human-Robot Interaction}%
1330 \def\@journalNameShort{ACM Trans. Hum.-Robot Interact.}%
1331 \def\@permissionCodeOne{2573-9522}%
1332 \def\@permissionCodeTwo{2573-9522}%
1333 \or % TIIS
1334 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
1335 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
1336 \def\@permissionCodeOne{2160-6455}%
1337 \def\@permissionCodeTwo{2160-6463}%
1338 \or % TIOT
1339 \def\@journalName{ACM Transactions on Internet of Things}%
1340 \def\@journalNameShort{ACM Trans. Internet Things}%
1341 \def\@permissionCodeOne{2577-6207}%
1342 \def\@permissionCodeTwo{2577-6207}%
1343 \or % TISSEC
1344 \def\@journalName{ACM Transactions on Information and System Security}%
1345 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
1346 \def\@permissionCodeOne{1094-9224}%
1347 \or % TIIST
1348 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
1349 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
1350 \def\@permissionCodeOne{2157-6904}%
1351 \def\@permissionCodeTwo{2157-6912}%
1352 \or % TKDD
1353 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
1354 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
1355 \def\@permissionCodeOne{1556-4681}%
1356 \def\@permissionCodeTwo{1556-472X}%
1357 \or % TMIS
1358 \def\@journalName{ACM Transactions on Management Information Systems}%

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1359 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
1360 \def\@permissionCodeOne{2158-656X}%
1361 \def\@permissionCodeTwo{2158-6578}%
1362 \or % TOCE
1363 \def\@journalName{ACM Transactions on Computing Education}%
1364 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
1365 \def\@permissionCodeOne{1946-6226}%
1366 \def\@permissionCodeTwo{1946-6226}%
1367 \or % TOCHI
1368 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
1369 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
1370 \def\@permissionCodeOne{1073-0516}%
1371 \def\@permissionCodeTwo{1557-7325}%
1372 \or % TOCL
1373 \def\@journalName{ACM Transactions on Computational Logic}%
1374 \def\@journalNameShort{ACM Trans. Comput. Logic}%
1375 \def\@permissionCodeOne{1529-3785}%
1376 \def\@permissionCodeTwo{1557-945X}%
1377 \or % TOCS
1378 \def\@journalName{ACM Transactions on Computer Systems}%
1379 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
1380 \def\@permissionCodeOne{0734-2071}%
1381 \def\@permissionCodeTwo{1557-7333}%
1382 \or % TOCT
1383 \def\@journalName{ACM Transactions on Computation Theory}%
1384 \def\@journalNameShort{ACM Trans. Comput. Theory}%
1385 \def\@permissionCodeOne{1942-3454}%
1386 \def\@permissionCodeTwo{1942-3462}%
1387 \or % TODAES
1388 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
1389 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
1390 \def\@permissionCodeOne{1084-4309}%
1391 \def\@permissionCodeTwo{1557-7309}%
1392 \or % TODS
1393 \def\@journalName{ACM Transactions on Database Systems}%
1394 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
1395 \def\@permissionCodeOne{0362-5915}%
1396 \def\@permissionCodeTwo{1557-4644}%
1397 \or % TOG
1398 \def\@journalName{ACM Transactions on Graphics}%
1399 \def\@journalNameShort{ACM Trans. Graph.}%
1400 \def\@permissionCodeOne{0730-0301}%
1401 \def\@permissionCodeTwo{1557-7368}%
1402 \or % TOIS
1403 \def\@journalName{ACM Transactions on Information Systems}%
1404 \def\@journalNameShort{ACM Trans. Inf. Syst.}%
1405 \def\@permissionCodeOne{1046-8188}%
1406 \def\@permissionCodeTwo{1558-2868}%
1407 \or % TOIT
1408 \def\@journalName{ACM Transactions on Internet Technology}%
1409 \def\@journalNameShort{ACM Trans. Internet Technol.}%
1410 \def\@permissionCodeOne{1533-5399}%
1411 \def\@permissionCodeTwo{1557-6051}%
1412 \or % TOMACS

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```

1413 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
1414 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
1415 \def\@permissionCodeOne{1049-3301}%
1416 \def\@permissionCodeTwo{1558-1195}%
1417 \or % TOMM
1418 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
1419 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
1420 \def\@permissionCodeOne{1551-6857}%
1421 \def\@permissionCodeTwo{1551-6865}%
1422 \or % TOMPECS
1423 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
1424 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
1425 \def\@permissionCodeOne{2376-3639}%
1426 \def\@permissionCodeTwo{2376-3647}%
1427 \or % TOMS
1428 \def\@journalName{ACM Transactions on Mathematical Software}%
1429 \def\@journalNameShort{ACM Trans. Math. Softw.}%
1430 \def\@permissionCodeOne{0098-3500}%
1431 \def\@permissionCodeTwo{1557-7295}%
1432 \or % TOPC
1433 \def\@journalName{ACM Transactions on Parallel Computing}%
1434 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
1435 \def\@permissionCodeOne{2329-4949}%
1436 \def\@permissionCodeTwo{2329-4957}%
1437 \or % TOPLAS
1438 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
1439 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
1440 \def\@permissionCodeOne{0164-0925}%
1441 \def\@permissionCodeTwo{1558-4593}%
1442 \or % TOPML
1443 \def\@journalName{ACM Transactions on Probabilistic Machine Learning}%
1444 \def\@journalNameShort{ACM Trans. Probab. Mach. Learn.}%
1445 \def\@permissionCodeOne{2836-8924}%
1446 \def\@permissionCodeTwo{2836-8924}%
1447 \or % TOPS
1448 \def\@journalName{ACM Transactions on Privacy and Security}%
1449 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
1450 \def\@permissionCodeOne{2471-2566}%
1451 \def\@permissionCodeTwo{2471-2574}%
1452 \or % TORS
1453 \def\@journalName{ACM Transactions on Recommender Systems}%
1454 \def\@journalNameShort{ACM Trans. Recomm. Syst.}%
1455 \def\@permissionCodeOne{2770-6699}%
1456 \def\@permissionCodeTwo{2770-6699}%
1457 \or % TOS
1458 \def\@journalName{ACM Transactions on Storage}%
1459 \def\@journalNameShort{ACM Trans. Storage}%
1460 \def\@permissionCodeOne{1553-3077}%
1461 \def\@permissionCodeTwo{1553-3093}%
1462 \or % TOSEM
1463 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
1464 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
1465 \def\@permissionCodeOne{1049-331X}%
1466 \def\@permissionCodeTwo{1557-7392}%

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1467 \or % TOSN
1468 \def\@journalName{ACM Transactions on Sensor Networks}%
1469 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
1470 \def\@permissionCodeOne{1550-4859}%
1471 \def\@permissionCodeTwo{1550-4867}%
1472 \or % TQC
1473 \def\@journalName{ACM Transactions on Quantum Computing}%
1474 \def\@journalNameShort{ACM Trans. Quantum Comput.}%
1475 \def\@permissionCodeOne{2643-6817}%
1476 \def\@permissionCodeTwo{2643-6817}%
1477 \or % TRETs
1478 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
1479 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
1480 \def\@permissionCodeOne{1936-7406}%
1481 \def\@permissionCodeTwo{1936-7414}%
1482 \or % TSAS
1483 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
1484 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
1485 \def\@permissionCodeOne{2374-0353}%
1486 \def\@permissionCodeTwo{2374-0361}%
1487 \or % TSC
1488 \def\@journalName{ACM Transactions on Social Computing}%
1489 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
1490 \def\@permissionCodeOne{2469-7818}%
1491 \def\@permissionCodeTwo{2469-7826}%
1492 \or % TSLP
1493 \def\@journalName{ACM Transactions on Speech and Language Processing}%
1494 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
1495 \def\@permissionCodeOne{1550-4875}%
1496 \def\@permissionCodeTwo{2329-9304}%
1497 \or % TWEB
1498 \def\@journalName{ACM Transactions on the Web}%
1499 \def\@journalNameShort{ACM Trans. Web}%
1500 \def\@permissionCodeOne{1559-1131}%
1501 \def\@permissionCodeTwo{1559-114X}%
1502 \else % FACMP, a dummy journal
1503 \def\@journalName{ACM Just Accepted}%
1504 \def\@journalNameShort{ACM Accepted}%
1505 \def\@permissionCodeOne{XXXX-XXXX}%
1506 \fi
1507 \ClassInfo{\@classname}{Using journal code \@journalCode}%
1508 }{%
1509 \ClassError{\@classname}{Incorrect journal #1}%
1510 }%

```

\acmJournal And the syntactic sugar around it

```

1511 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}%
1512 \global\@ACM@journal@bibstriptrue
1513 \global\@ACM@journal@bibstrip@or@togtrue}

```

The defaults:

```

1514 \def\@journalCode@nr{0}
1515 \def\@journalName{}%
1516 \def\@journalNameShort{\@journalName}%

```

```

1517 \def\@permissionCodeOne{XXXX-XXXX}%
1518 \def\@permissionCodeTwo{\@permissionCodeOne}%

\acmConference This is the conference command. The acmsmall format is used both for journals and for
conference proceedings published as books. In the latter case the paper has no journal
name, volume, issue or article number, so we switch it to the headers and footers of the
proceedings formats, and suppress the folios like these formats do: the page numbers of
such a paper are assigned by the proceedings rather than by the article. An author who
wants the folios can say \settopmatter{printfolios=true} after \acmConference.
The acmtog format keeps its own conference headers and footers: there a conference
paper is published as a journal issue and does have an article number.

1519 \newcommand\acmConference[4][{}%
1520   \gdef\acmConference@shortname{#1}%
1521   \gdef\acmConference@name{#2}%
1522   \gdef\acmConference@date{#3}%
1523   \gdef\acmConference@venue{#4}%
1524   \ifx\acmConference@shortname\@empty
1525     \gdef\acmConference@shortname{#2}%
1526   \fi
1527   \global\@ACM@journal@bibstripfalse
1528   \ifnum\ACM@format@nr=1\relax % acmsmall
1529     \global\@ACM@journal@bibstrip@or@togfalse
1530     \settopmatter{printfolios=false}%
1531   \fi
1532   \ifx\@acmBooktitle\@empty\relax
1533     \acmBooktitle{Proceedings of \acmConference@name
1534       \ifx\acmConference@name\acmConference@shortname\else
1535         \ (\acmConference@shortname)\fi}%
1536   \fi
1537 }
1538 \if@ACM@journal\else
1539 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
1540 DC, USA}%
1541 \fi

\acmBooktitle The book title of the conference:
\@acmBooktitle 1542 \def\acmBooktitle#1{\gdef\@acmBooktitle{#1}}
1543 \acmBooktitle{}

\@editorsAbbrev How to abbreviate editors
1544 \def\@editorsAbbrev{(Ed.)}

\@acmEditors The list of editors
1545 \def\@acmEditors{}

\editor Add a new editor to the list
1546 \def\editor#1{\ifx\@acmEditors\@empty
1547   \gdef\@acmEditors{#1}%
1548   \else
1549     \gdef\@editorsAbbrev{(Eds.)}%
1550     \g@addto@macro\@acmEditors{\and#1}%
1551 \fi}

```

`\subtitle` The subtitle macro

```
1552 \def\subtitle#1{\def\@subtitle{#1}}
1553 \subtitle{}
```

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

```
1554 \newcount\num@authorgroups
1555 \num@authorgroups=0\relax
```

`\num@authors` The total number of authors

```
1556 \newcount\num@authors
1557 \num@authors=0\relax
```

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

```
1558 \newif\if@insideauthorgroup
1559 \@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.

```
1560 \renewcommand\author[2][{}%
1561 \IfSubStr{\detokenize{#2}}{,}{\ClassWarning{\@classname}{Do not put several
1562 authors in the same \string\author\space macro!}}{}%
1563 \global\advance\num@authors by 1\relax
1564 \if@insideauthorgroup\else
1565 \global\advance\num@authorgroups by 1\relax
1566 \global\@insideauthorgrouptrue
1567 \fi
1568 \ifx\addresses\@empty
1569 \if@ACM@anonymous
1570 \gdef\addresses{\@author{Anonymous Author(s)}%
1571 \ifx\@acmSubmissionID\@empty\else\Submission Id:
1572 \@acmSubmissionID\fi}}%
1573 \gdef\authors{Anonymous Author(s)}%
1574 \else
1575 \expandafter\gdef\expandafter\addresses\expandafter{%
1576 \expandafter\@author\expandafter{%
1577 \csname typeset@author\the\num@authors\endcsname{#2}}}%
1578 \gdef\authors{#2}%
1579 \fi
1580 \else
1581 \if@ACM@anonymous\else
1582 \expandafter\g@addto@macro\expandafter\addresses\expandafter{%
1583 \expandafter\and\expandafter\@author\expandafter{%
1584 \csname typeset@author\the\num@authors\endcsname{#2}}}%
1585 \g@addto@macro\authors{\and#2}%
1586 \fi
1587 \fi
1588 \if@ACM@anonymous
1589 \ifx\shortauthors\@empty
1590 \gdef\shortauthors{Anon.
```

```

1591     \ifx\@acmSubmissionID\@empty\else Submission Id:
1592     \@acmSubmissionID\fi}%
1593   \fi
1594 \else
1595   \def\@tempa{#1}%
1596   \ifx\@tempa\@empty
1597     \ifx\shortauthors\@empty
1598       \gdef\shortauthors{#2}%
1599     \else
1600       \g@addto@macro\shortauthors{\and#2}%
1601     \fi
1602   \else
1603     \ifx\shortauthors\@empty
1604       \gdef\shortauthors{#1}%
1605     \else
1606       \g@addto@macro\shortauthors{\and#1}%
1607     \fi
1608   \fi
1609 \fi}

```

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

```

1610 \newcommand{\affiliation}[2][{}]{%
1611   \global\@insideauthorgroupfalse
1612   \if@ACM@anonymous\else
1613     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
1614   \fi}

```

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

```

1615 \define@boolkey+{@ACM@affiliation@}{@ACM@affiliation@}{obeypunctuation}%
1616 [true]{\ClassError{\@classname}{The option obeypunctuation can be either true or false}}

```

`\additionalaffiliation` Additional affiliations go to footnotes

```

1617 \def\additionalaffiliation#1{\authornote{\@additionalaffiliation{#1}}}

```

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

```

1618 \def\@additionalaffiliation#1{\bgroup
1619   \def\position##1{\ignorespaces}%
1620   \def\institution##1{##1\ignorespaces}%
1621   \def\department{\@ifnextchar[{\@department}{\@department[]}}%
1622   \def\@department[##1]##2{, ##2 \ignorespaces}%
1623   \let\city\position
1624   \let\state\position
1625   \let\country\position
1626   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.

```

1627 \renewcommand{\email}[2][{}]{%
1628   \IfSubStr{#2}{,}{\ClassWarning{\@classname}{Do not put several
1629     addresses in the same \string\email\space macro!}}{}%
1630   \if@ACM@anonymous\else

```

```

1631 \g@addto@macro\addresses{\email{#1}{#2}}%
1632 \fi}

```

\orcid We redefine the command to typeset the current author

```

1633 \def\orcid#1{\unskip\ignorespaces%
1634 \protected\def\orcidsite{https://orcid.org/}%
1635 \IfBeginWith{#1}{http}{%
1636 \expandafter\gdef\csname
1637 typeset@author\the\num@authors\endcsname##1{%
1638 \href{#1}{##1}}}%
1639 \expandafter\gdef\csname
1640 typeset@author\the\num@authors\endcsname##1{%
1641 \href{\orcidsite#1}{##1}}}

```

\authorsaddresses Setting up authors' addresses

```

1642 \def\authorsaddresses#1{\def\@authorsaddresses{#1}}
1643 \authorsaddresses{\@mkauthorsaddresses}

```

\mktranslatedkeywords We have two argument: the language to typeset keywords and the keywords.

```

1644 \newcommand\mktranslatedkeywords[2]{\bgroup
1645 \selectlanguage{#1}%
1646 {\@specialsection{keywordsname}%
1647 \noindent#2\par}\egroup}

```

\@titlenotes The title notes

```

1648 \def\@titlenotes{}

```

\titlenote Adding a note to the title

```

1649 \def\titlenote#1{%
1650 \g@addto@macro\@title{\footnotemark}%
1651 \if@ACM@anonymous
1652 \g@addto@macro\@titlenotes{%
1653 \stepcounter{footnote}\footnotetext{Title note}}%
1654 \else
1655 \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
1656 \fi}

```

\@subtitlenotes The subtitle notes

```

1657 \def\@subtitlenotes{}

```

\subtitlenote Adding a note to the subtitle

```

1658 \def\subtitlenote#1{%
1659 \g@addto@macro\@subtitle{\footnotemark}%
1660 \if@ACM@anonymous
1661 \g@addto@macro\@subtitlenotes{%
1662 \stepcounter{footnote}\footnotetext{Subtitle note}}%
1663 \else
1664 \g@addto@macro\@subtitlenotes{%
1665 \stepcounter{footnote}\footnotetext{#1}}%
1666 \fi}

```

\@authornotes The author notes

```

1667 \def\@authornotes{}

```

`\authornote` Adding a note to the author

```
1668 \def\authornote#1{%
1669   \if@ACM@anonymous\else
1670     \g@addto@macro\addresses{\@authornotemark}%
1671     \g@addto@macro\authornotes{%
1672       \stepcounter{footnote}\footnotetext{#1}}%
1673   \fi}
```

`\correspondingauthor` Mark the author as corresponding author

```
1674 \newcommand\correspondingauthor{%
1675   \if@ACM@anonymous\else
1676     \g@addto@macro\addresses{\@correspondingauthormark}%
1677   \fi}
```

`\@correspondingauthormark` Print the envelope

```
1678 \def\@correspondingauthormark{\g@addto@macro\currentauthors{%
1679   \advance\hfuzz by 5pt\relax\textsuperscript{\ding{41}}\relax}}
```

`\authornotemark` Adding a footnote mark to the authors

```
1680 \newcommand\authornotemark[1][\relax]{%
1681   \if@ACM@anonymous\else
1682     \ifx#1\relax\relax\relax
1683       \g@addto@macro\addresses{\@authornotemark}%
1684     \else
1685       \g@addto@macro\addresses{\@authornotemark{#1}}%
1686     \fi
1687   \fi}
```

`\acmVolume` The current volume

```
1688 \def\acmVolume#1{\def\@acmVolume{#1}}
1689 \acmVolume{1}
```

`\acmNumber` The current number

```
1690 \def\acmNumber#1{\def\@acmNumber{#1}}
1691 \acmNumber{1}
```

`\acmArticle` The current article

```
1692 \def\acmArticle#1{\def\@acmArticle{#1}}
1693 \acmArticle{}
```

`\acmArticleSeq` The sequence number

```
1694 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
1695 \acmArticleSeq{\@acmArticle}
```

`\acmYear` The current year

```
1696 \def\acmYear#1{\def\@acmYear{#1}}
1697 \acmYear{\the\year}
```

`\acmMonth` The current month

```
1698 \def\acmMonth#1{\def\@acmMonth{#1}}
1699 \acmMonth{\the\month}
```

`\acmPubDate` The publication date

```

1700 \def\acmPubDate{\ifcase\acmMonth\or
1701   January\or February\or March\or April\or May\or June\or
1702   July\or August\or September\or October\or November\or
1703   December\fi~\acmYear}

```

`\acmPrice` The price—obsolete

```

1704 \def\acmPrice#1{\ClassWarning{\@classname}{The macro \string\acmPrice
1705   is obsolete. ACM no longer prints the price in bibstrip.}}

```

`\acmSubmissionID` The submission ID

```

1706 \def\acmSubmissionID#1{\def\acmSubmissionID{#1}}
1707 \acmSubmissionID{}

```

`\acmISBN` The book ISBN

```

1708 \def\acmISBN#1{\def\acmISBN{#1}}
1709 \acmISBN{978-x-xxxx-xxxx-x/YYYY/MM}

```

`\acmDOI` The paper DOI

```

1710 \def\acmDOI#1{\def\acmDOI{#1}}
1711 \acmDOI{10.1145/nnnnnnn.nnnnnnn}

```

`\if@ACM@badge`

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

```

1712 \newlength\@ACM@badge@width
1713 \setlength\@ACM@badge@width{3pc}

```

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

```

1714 \newlength\@ACM@title@width

```

`\@ACM@badge@skip` The spacing between badges

```

1715 \newlength\@ACM@badge@skip
1716 \setlength\@ACM@badge@skip{1pt}

```

`\@acmBadgeR`

```

1717 \def\@acmBadgeR{}

```

`\@acmBadgeL`

```

1718 \def\@acmBadgeL{}

```

`\acmBadgeR` Setting the right badge

```

1719 \newcommand\acmBadgeR[2][\%
1720   \ifx\@acmBadgeR\@empty
1721     \gdef\@acmBadgeR{%
1722       \smash{%
1723         \raisebox{0.5\height}{%
1724           \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}%
1725   \else
1726     \g@addto@macro{\@acmBadgeR}{%
1727       \hspace{\@ACM@badge@skip}%
1728       \smash{%
1729         \raisebox{0.5\height}{%
1730           \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}}}%
1731   \fi}

```

`\acmBadgeL` Setting the left badge

```
1732 \newcommand\acmBadgeL[2][\{%
1733   \ifx\@acmBadgeL\@empty
1734     \gdef\@acmBadgeL{%
1735       \smash{%
1736         \raisebox{0.5\height}{%
1737           \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}%
1738     \else
1739       \g@addto@macro{\@acmBadgeL}{%
1740         \hspace{\@ACM@badge@skip}%
1741         \smash{%
1742           \raisebox{0.5\height}{%
1743             \href{#1}{\includegraphics[width=\@ACM@badge@width]{#2}}}%
1744       \fi}
```

`\acmBadge` Just a syntax sugar for `\acmBadgeR`

```
1745 \let\acmBadge=\acmBadgeR
```

`\startPage` The start page of the paper

```
1746 \def\startPage#1{\def\@startPage{#1}}
1747 \startPage{}
```

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

```
1748 \def\terms#1{\ClassWarning{\@classname}{The command \string\terms{} is
1749   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.

```
1750 \def\keywords#1{\def\@keywords{#1}}
1751 \let\@keywords\@empty

1752 \AtEndDocument{\if@ACM@nonacm\else\ifx\@keywords\@empty
1753   \ifnum\getrefnumber{TotPages}>2\relax
1754   \ClassWarningNoLine{\@classname}{ACM keywords are mandatory
1755     for papers over two pages}%
1756   \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

```
1757 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
```

`\@saveabstract` And saving the abstract

```
1758 \long\def\@saveabstract#1{\if@ACM@maketitle@typeset
1759   \ClassError{\@classname}{Abstract must be defined before maketitle
1760     command. Please move it!}\fi
1761   \long\gdef\@abstract{#1}}
1762 \@saveabstract{}
```

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

```
1763 \long\def\@empty{}
```

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

```
1764 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1765   \if@ACM@printccs
1766     \ClassInfo{\@classname}{Printing CCS}%
1767   \else
1768     \ClassInfo{\@classname}{Suppressing CCS}%
1769   \fi}{\ClassError{\@classname}{The option printccs can be either true or false}}
```

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

```
1770 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1771   \if@ACM@printacmref
1772     \ClassInfo{\@classname}{Printing bibformat}%
1773   \else
1774     \ClassInfo{\@classname}{Suppressing bibformat}%
1775   \fi}{\ClassError{\@classname}{The option printacmref can be either true or false}}

1776 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@printacmref\else
1777   \ifnum\getrefnumber{TotPages}>1\relax
1778   \ClassWarningNoLine{\@classname}{%
1779     ACM reference format is mandatory \MessageBreak
1780     for papers over one page. \MessageBreak
1781     Please add printacmref=true to the \MessageBreak
1782     \string\settopmatter\space command.}%
1783   \fi\fi\fi}
```

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

```
1784 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1785   \if@ACM@printfolios
1786     \ClassInfo{\@classname}{Printing folios}%
1787   \else
1788     \ClassInfo{\@classname}{Suppressing folios}%
1789   \fi}{\ClassError{\@classname}{The option printfolios can be either true or false}}
```

`\@ACM@authorsperrrow` The number of authors per row. 0 means use the default algorithm.

```
1790 \define@cmdkey{@ACM@topmatter@}[@ACM@]{authorsperrrow}[0]{%
1791   \IfInteger{#1}{\ClassInfo{\@classname}{Setting authorsperrrow to
1792     #1}}{\ClassWarning{\@classname}{The parameter authorsperrrow must be
1793     numerical. Ignoring the input #1}}\gdef\@ACM@authorsperrrow{0}}
```

`\settopmatter` The usual syntactic sugar

```
1794 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}
```

Now the settings

```
1795 \settopmatter{printccs=true, printacmref=true}
1796 \if@ACM@manuscript
1797   \settopmatter{printfolios=true}
1798 \else
1799   \if@ACM@journal
1800     \settopmatter{printfolios=true}
1801   \else
1802     \settopmatter{printfolios=false}
1803   \fi
1804 \fi
1805 \settopmatter{authorsperrrow=0}
```

\received The container for the paper history

```
1806 \def\@received{}
```

\received The \received command

```
1807 \newcommand\received[2][\def\@tempa{#1}%
1808   \ifx\@tempa\@empty
1809     \ifx\@received\@empty
1810       \gdef\@received{Received #2}%
1811     \else
1812       \g@addto@macro{\@received}{; revised #2}%
1813     \fi
1814   \else
1815     \ifx\@received\@empty
1816       \gdef\@received{#1 #2}%
1817     \else
1818       \g@addto@macro{\@received}{; #1 #2}%
1819     \fi
1820 \fi}
1821 \AtEndDocument{%
1822   \ifx\@received\@empty\else
1823     \par\bigskip\noindent{\small\normalfont\@received\par}%
1824   \fi}
```

\acmArticleType Article type. We set up the color.

```
1825 \define@choicekey+{ACM}{articletype}[\ACM@ArticleType\ACM@ArticleType@nr]{%
1826   Research,Review,Discussion,Invited,Position}[Review]{%
1827   \ifcase\ACM@ArticleType@nr
1828     \relax % Research
1829     \colorlet{@ACM@Article@color}{ACMBlue}%
1830   \or % Review
1831     \colorlet{@ACM@Article@color}{ACMOrange}%
1832   \or % Discussion
1833     \colorlet{@ACM@Article@color}{ACMGreen}%
1834   \or % Invited
1835     \colorlet{@ACM@Article@color}{ACMPurple}%
1836   \or % Position
1837     \colorlet{@ACM@Article@color}{ACMRed}%
1838   \fi
1839 }{%
1840   \ClassError{\@classname}{Article Type must be Research, Review,\MessageBreak
1841     Discussion, Invited, or Position}}
1842 \def\acmArticleType#1{\setkeys{ACM}{articletype=#1}}
1843 \if@ACM@acmcp
1844   \acmArticleType{Research}%
1845 \fi
1846
```

\@ACM@color@frame The colored frame for the acmcp

```
1847 \newenvironment{@ACM@color@frame}{%
1848   \def\FrameCommand{\hspace*{-6.5pc}%
1849     \colorbox{@ACM@Article@color!10!white}}%
1850   \MakeFramed {\advance\hsize
1851     -6.5pc\relax\FrameRestore}}{\zsavesposy{@ACM@acmcpframe@y}%
1852   \endMakeFramed}
```

`\acmCodeDataLink` The code link

```
1853 \def\acmCodeLink#1{%
1854   \ifx\@acmCodeDataLink\@empty
1855     \gdef\@acmCodeDataLink{\url{#1}}%
1856   \else
1857     \g@addto@macro{\@acmCodeDataLink}{\ \url{#1}}%
1858   \fi}
1859 \def\@acmCodeDataLink{}
```

`\acmContributions` The authors' contrubution statement

```
1860 \def\acmContributions#1{\gdef\@acmContributions{#1}}
1861 \acmContributions{}
```

`\acmDataLink` The code link

```
1862 \let\acmDataLink\acmCodeLink
```

3.18 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```
1863 \RequirePackage{comment}
1864 \excludecomment{CCSXML}
```

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

```
1865 \let\@concepts\@empty
1866 \newcounter{@concepts}
```

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

```
1867 \newcommand\ccsdesc[2][100]{%
1868   \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!

```
1869 \def\textrightarrow{\rightarrow}
1870 \def\ccsdesc@parse#1~#2~#3~{%
1871   \stepcounter{@concepts}%
1872   \expandafter\ifx\csname CCS@General@#2\endcsname\relax
1873     \expandafter\gdef\csname CCS@General@#2\endcsname{\textbullet\
1874       \textbf{#2}}%
1875   \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{;}%
1876   \expandafter\gdef\csname CCS@Specific@#2\endcsname{}%
1877   \g@addto@macro{\@concepts}{\csname CCS@General@#2\endcsname
1878     \csname CCS@Punctuation@#2\endcsname
1879     \csname CCS@Specific@#2\endcsname}%
1880   \fi
1881   \ifx#3\relax\relax\else
1882     \expandafter\gdef\csname CCS@Punctuation@#2\endcsname{
1883       \textrightarrow\ }%
1884     \expandafter\g@addto@macro\expandafter{\csname CCS@Specific@#2\endcsname}{%
1885       \addtocounter{@concepts}{-1}%
1886       \ifnum#1>499\textbf{#3}\else
1887         \ifnum#1>299\textit{#3}\else
1888           #3\fi\fi\ifnum\value{@concepts}=0.\else; \fi}%
1889     \fi
1890 \ccsdesc@parse@finish}
```

```

1891 \AtEndDocument{\if@ACM@nonacm\else\ifx\@concepts\@empty\relax
1892 \ifnum\getrefnumber{TotPages}>2\relax
1893 \ClassWarningNoLine{\@classname}{CCS concepts are mandatory
1894   for papers over two pages}%
1895 \fi\fi\fi}

```

```

\ccdesc@parse@finish Gobble everything to \ccsdesc@parse@end
1896 \def\ccsdesc@parse@finish#1\ccsdesc@parse@end{}

```

3.19 Copyright system

This is from acmcopyright.sty

```

\if@printcopyright Whether to print a copyright symbol
1897 \newif\if@printcopyright
1898 \@printcopyrighttrue

```

```

\if@printpermission Whether to print the permission block
1899 \newif\if@printpermission
1900 \@printpermissiontrue

```

```

\if@acmowned Whether the ACM owns the rights to the paper
1901 \newif\if@acmowned
1902 \@acmownedtrue

```

Keys:

```

1903 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1904 \acm@copyrightinput\acm@copyrightmode]{none,%
1905   acmcopyright,acmlicensed,rightsretained,%
1906   usgov,usgovmixed,cagov,cagovmixed,licensedusgovmixed,%
1907   licensedcagov,licensedcagovmixed,othergov,licensedothergov,%
1908   iw3c2w3,iw3c2w3g,cc}{%
1909 \@printpermissiontrue
1910 \@printcopyrighttrue
1911 \@acmownedtrue
1912 \ifnum\acm@copyrightmode=0\relax % none
1913 \@printpermissionfalse
1914 \@printcopyrightfalse
1915 \@acmownedfalse
1916 \fi
1917 \ifnum\acm@copyrightmode=2\relax % acmlicensed
1918 \@acmownedfalse
1919 \fi
1920 \ifnum\acm@copyrightmode=3\relax % rightsretained
1921 \@acmownedfalse
1922 \fi
1923 \ifnum\acm@copyrightmode=4\relax % usgov
1924 \@printpermissiontrue
1925 \@printcopyrightfalse
1926 \@acmownedfalse
1927 \fi
1928 \ifnum\acm@copyrightmode=6\relax % cagov
1929 \@acmownedfalse

```

```

1930 \fi
1931 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1932 \@acmownedfalse
1933 \fi
1934 \ifnum\acm@copyrightmode=9\relax % licensedcagov
1935 \@acmownedfalse
1936 \fi
1937 \ifnum\acm@copyrightmode=10\relax % licensedcagovmixed
1938 \@acmownedfalse
1939 \fi
1940 \ifnum\acm@copyrightmode=11\relax % othergov
1941 \@acmownedtrue
1942 \fi
1943 \ifnum\acm@copyrightmode=12\relax % licensedothergov
1944 \@acmownedfalse
1945 \fi
1946 \ifnum\acm@copyrightmode=13\relax % iw3c2w3
1947 \@acmownedfalse
1948 \fi
1949 \ifnum\acm@copyrightmode=14\relax % iw3c2w3g
1950 \@acmownedfalse
1951 \fi
1952 \ifnum\acm@copyrightmode=15\relax % cc
1953 \@acmownedfalse
1954 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1955 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1956 \setcopyright{acmlicensed}

```

\setcctype The type of Creative Commons license used

```

1957 \newcommand\setcctype[2][4.0]{%
1958 \def\ACM@cc@version{#1}%
1959 \def\ACM@cc@type{#2}}
1960 \setcctype{by}

```

\@copyrightowner Here is the owner of the copyright

```

1961 \def\@copyrightowner{%
1962 \ifcase\acm@copyrightmode\relax % none
1963 \or % acmcopyright
1964 ACM\@.
1965 \or % acmlicensed
1966 Copyright held by the owner/author(s). Publication rights licensed to
1967 ACM\@.
1968 \or % rightsretained
1969 Copyright held by the owner/author(s).
1970 \or % usgov
1971 \or % usgovmixed
1972 Copyright held by the owner/author(s).
1973 \or % cagov
1974 Copyright Crown in Right of Canada.
1975 \or %cagovmixed
1976 Copyright held by the owner/author(s).
1977 \or %licensedusgovmixed

```

```

1978 Copyright held by the owner/author(s). Publication rights licensed to
1979 ACM\@.
1980 \or % licensedcagov
1981 Copyright held by the owner/author(s).
1982 \or %licensedcagovmixed
1983 Copyright held by the owner/author(s). Publication rights licensed to
1984 ACM\@.
1985 \or % othergov
1986 Copyright held by the owner/author(s).
1987 \or % licensedothergov
1988 Copyright held by the owner/author(s). Publication rights licensed to
1989 ACM\@.
1990 \or % ic2w3www
1991 IW3C2 (International World Wide Web Conference Committee), published
1992 under Creative Commons CC-BY~4.0 License.
1993 \or % ic2w3wwwgoogle
1994 IW3C2 (International World Wide Web Conference Committee), published
1995 under Creative Commons CC-BY-NC-ND~4.0 License.
1996 \or % cc
1997 Copyright held by the owner/author(s).
1998 \fi}

```

\@formatdoi Print a clickable DOI

```

1999 \def\@formatdoi#1{\url{https://doi.org/#1}}

```

\@ACM@copyright@check@cc This macro is no longer needed due to the change in ACM policy.

\@copyrightpermission The canned permission block.

```

2000 \def\@copyrightpermission{%
2001   \ifcase\acm@copyrightmode\relax % none
2002   \or % acmcopyright
2003     Permission to make digital or hard copies of all or part of this
2004     work for personal or classroom use is granted without fee provided
2005     that copies are not made or distributed for profit or commercial
2006     advantage and that copies bear this notice and the full citation on
2007     the first page. Copyrights for components of this work owned by
2008     others than ACM must be honored. Abstracting with credit is
2009     permitted. To copy otherwise, or republish, to post on servers or
2010     to redistribute to lists, requires prior specific permission
2011     and\hspace*{.5pt}/or
2012     a fee. Request permissions from permissions@acm.org.
2013   \or % acmlicensed
2014     Permission to make digital or hard copies of all or part of this
2015     work for personal or classroom use is granted without fee provided
2016     that copies are not made or distributed for profit or commercial
2017     advantage and that copies bear this notice and the full citation on
2018     the first page. Copyrights for components of this work owned by
2019     others than the author(s) must be honored. Abstracting with credit
2020     is permitted. To copy otherwise, or republish, to post on servers
2021     or to redistribute to lists, requires prior specific permission
2022     and\hspace*{.5pt}/or a fee. Request permissions from
2023     permissions@acm.org.
2024   \or % rightsretained
2025     Permission to make digital or hard copies of all or part of this

```

2026 work for personal or classroom use is granted without fee provided
2027 that copies are not made or distributed for profit or commercial
2028 advantage and that copies bear this notice and the full citation on
2029 the first page. Copyrights for third-party components of this work
2030 must be honored. For all other uses, contact the
2031 owner\hspace*{.5pt}/author(s).

2032 \or % usgov
2033 This paper is authored by an employee(s) of the United States
2034 Government and is in the public domain. Non-exclusive copying or
2035 redistribution is allowed, provided that the article citation is
2036 given and the authors and agency are clearly identified as its
2037 source. Request permissions from
2038 owner\hspace*{.5pt}/author(s).

2039 \or % usgovmixed
2040 ACM acknowledges that this contribution was authored or co-authored
2041 by an employee, contractor, or affiliate of the United States
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2043 nonexclusive, royalty-free right to publish or reproduce this
2044 article, or to allow others to do so, for government purposes
2045 only. Request permissions from owner\hspace*{.5pt}/author(s).

2046 \or % cagov
2047 This article was authored by employees of the Government of
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2049 the copyright to this work and grants to ACM a nonexclusive,
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2053 them. Permission to make digital or hard copies for personal or
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2055 citation on the first page. Copyrights for components of this work
2056 owned by others than the Canadian Government must be honored. To
2057 copy otherwise, distribute, republish, or post, requires prior
2058 specific permission and/or a fee. Request permissions from
2059 owner\hspace*{.5pt}/author(s).

2060 \or % cagovmixed
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2088 classroom use is granted. Copies must bear this notice and the full
2089 citation on the first page. Copyrights for components of this work
2090 owned by others than the Canadian Government must be honored. To
2091 copy otherwise, distribute, republish, or post, requires prior
2092 specific permission and/or a fee. Request permissions from
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2113 retains a nonexclusive, royalty-free right to publish or reproduce
2114 this article, or to allow others to do so, for Government purposes
2115 only. Request permissions from owner\hspace*{.5pt}/author(s).
2116 \or % iw3c2w3
2117 This paper is published under the Creative Commons Attribution~4.0
2118 International (CC-BY~4.0) license. Authors reserve their rights to
2119 disseminate the work on their personal and corporate Web sites with
2120 the appropriate attribution.
2121 \or % iw3c2w3g
2122 This paper is published under the Creative Commons
2123 Attribution-NonCommercial-NoDerivs~4.0 International
2124 (CC-BY-NC-ND~4.0) license. Authors reserve their rights to
2125 disseminate the work on their personal and corporate Web sites with
2126 the appropriate attribution.
2127 \or % CC
2128 \IfEq{\ACM@cc@type}{zero}{%
2129 \def\ACM@CC@Url{https://creativecommons.org/publicdomain/zero/1.0}}{%
2130 \edef\ACM@CC@Url{https://creativecommons.org/licenses/\ACM@cc@type/\ACM@cc@version}}%
2131 \href{\ACM@CC@Url}{\includegraphics[height=5ex]{doclicense-CC-\ACM@cc@type-88x31}}\\
2132 \href{\ACM@CC@Url}{%
2133 This work is licensed under a Creative Commons

```

2134 \IfEq{\ACM@cc@type}{zero}{CC0 1.0 Universal}{%
2135 \IfEq{\ACM@cc@type}{by}{Attribution}{}%
2136 \IfEq{\ACM@cc@type}{by-sa}{Attribution-ShareAlike}{}%
2137 \IfEq{\ACM@cc@type}{by-nd}{Attribution-NoDerivatives}{}%
2138 \IfEq{\ACM@cc@type}{by-nc}{Attribution-NonCommercial}{}%
2139 \IfEq{\ACM@cc@type}{by-nc-sa}{Attribution-NonCommercial-ShareAlike}{}%
2140 \IfEq{\ACM@cc@type}{by-nc-nd}{Attribution-NonCommercial-NoDerivatives}{}%
2141 ~\IfEq{\ACM@cc@version}{4.0}{4.0 International}{3.0 Unported}%
2142 }
2143 License.}%
2144 \fi}

```

`\copyrightyear` By default, the copyright year is the same as `\acmYear`, but one can override this:

```

2145 \def\copyrightyear#1{\def\@copyrightyear{#1}}
2146 \copyrightyear{\@acmYear}

```

`\@teaserfigures` The teaser figures container

```
2147 \def\@teaserfigures{}
```

`teaserfigure` The teaser figure

```
2148 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}
```

`\@saveteaser` Saving the teaser

```
2149 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}
```

`\thanks` We redefine `amsart \thanks` so the anonymous key works

```

2150 \renewcommand{\thanks}[1]{%
2151 \ifnotempty{#1}{%
2152 \if@ACM@anonymous
2153 \g@addto@macro\thankses{\thanks{A note}}%
2154 \else
2155 \g@addto@macro\thankses{\thanks{#1}}%
2156 \fi}}

```

`\anon` We provide `\anon` command, which obscures parts of the text if the package option `anonymous` is set

```

2157 \newcommand{\anon}[2][ANONYMIZED]{%
2158 \if@ACM@anonymous%
2159 {\color{ACMOrange}#1}%
2160 \else%
2161 #2%
2162 \fi}

```

3.20 Maketitle hook

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

`\@beginmaketitlehook` The hook

```

2163 \ifx\@beginmaketitlehook\@undefined
2164 \let\@beginmaketitlehook\@empty
2165 \fi

```

`\AtBeginMaketitle` Adding to the hook

```
2166 \def\AtBeginMaketitle{\g@addto@macro\@beginmaketitlehook}
```

3.21 ACM Engage top matter

`\@acmengagemetadata` The special metadata for ACM engage course materials

```
2167 \def\@acmengagemetadata{}
```

`\setengagemetadata` Adding topic to engage metadata

```
2168 \def\setengagemetadata#1#2{%
2169   \g@addto@macro{\@acmengagemetadata}{%
2170     \@setengagemetadata{#1}{#2}}}
```

3.22 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>]`.

```
2171 \newbox\mktitle@bx
```

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

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

```
2172 \def\maketitle{\@beginmaketitlehook
2173   \@ACM@maketitle@typesettrue
2174   \if@ACM@anonymous
2175     % Anonymize omission of \author-s
2176     \ifnum\num@authorgroups=0\author{}\fi
2177   \fi
2178   \begingroup
2179   \let\@vspace\@vspace@orig
2180   \let\@vspacer\@vspacer@orig
2181   \let\@footnotemark\@footnotemark@nolink
2182   \let\@footnotetext\@footnotetext@nolink
2183   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
2184   \hsize=\textwidth
2185   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
2186   \@mktitle\if@ACM@sigchiamode\else\@mkauthors\fi\@mkteasers
2187   \@printtopmatter
2188   \if@ACM@sigchiamode\@mkauthors\fi
2189   \setcounter{footnote}{0}%
2190   \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
2191   \@titlenotes
2192   \@subtitlenotes
2193   \@authornotes
2194   \let\@makefnmark\relax
2195   \let\@thefnmark\relax
2196   \let\@makefntext\noindent
2197   \ifx\@empty\thankses\else
2198     \footnotetextauthorsaddresses{%
2199       \def\par{\let\par\@par}\parindent\z@\@setthanks}%
2200   \fi
2201   \if@ACM@acmcp\else
2202     \ifx\@empty\authorsaddresses\else
```

```

2203     \if@ACM@anonymous\else
2204         \if@ACM@journal@bibstrip@or@tog
2205             \footnotetextauthorsaddresses{%
2206                 \def\par{\let\par\@par}\parindent\z@\setauthorsaddresses}%
2207         \fi
2208     \fi
2209 \fi
2210 \fi
2211 \if@ACM@nonacm
2212     \ifnum\acm@copyrightmode=15\relax % cc
2213         \footnotetextcopyrightpermission{\@copyrightpermission}%
2214     \fi
2215 \else
2216     \if@ACM@acmcp\else
2217         \footnotetextcopyrightpermission{%
2218             \if@ACM@authordraft
2219                 \raisebox{-2ex}{\z@\z@{\makebox[0pt][l]{\large\bfseries
2220                     Unpublished working draft. Not for distribution.}}}%
2221                 \color[gray]{0.9}%
2222             \fi
2223             \parindent\z@\parskip0.1\baselineskip
2224             \if@ACM@authorversion\else
2225                 \if@printpermission\@copyrightpermission\par\fi
2226             \fi
2227             \if@ACM@manuscript\else
2228                 \if@ACM@journal@bibstrip\else % Print the conference information
2229                     \if@ACM@engage
2230                         {\itshape \@acmBooktitle, \@acmYear.}\par
2231                     \else
2232                         {\itshape \acmConference@shortname, \acmConference@venue}\par
2233                     \fi
2234                 \fi
2235             \fi
2236             \if@printcopyright
2237                 \copyright\ \@copyrightyear\ \@copyrightowner\
2238             \else
2239                 \ifx\@copyrightyear\@empty\else
2240                     \@copyrightyear.\
2241                 \fi
2242             \fi
2243             \if@ACM@manuscript
2244                 Manuscript submitted to ACM\
2245             \else
2246                 \if@ACM@authorversion
2247                     This is the author's version of the work. It is posted here for
2248                     your personal use. Not for redistribution. The definitive Version
2249                     of Record was published in
2250                     \if@ACM@journal@bibstrip
2251                         \emph{\@journalName}%
2252                     \else
2253                         \emph{\@acmBooktitle}%
2254                     \fi
2255                     \ifx\@acmDOI\@empty
2256                         .

```

```

2257         \else
2258         , \formatdoi{\@acmDOI}.
2259         \fi\
2260     \else
2261         \if@ACM@nonacm\else
2262         \if@ACM@journal@bibstrip
2263         ACM~\@permissionCodeTwo/\@acmYear/\@acmMonth-ART\@acmArticle\
2264         \formatdoi{\@acmDOI}%
2265         \else % Conference
2266         \ifx\@acmISBN\@empty\else ACM~ISBN~\@acmISBN\\fi
2267         \ifx\@acmDOI\@empty\else\formatdoi{\@acmDOI}\fi%
2268         \fi
2269     \fi
2270 \fi
2271 \fi}%
2272 \fi
2273 \fi
2274 \endgroup
2275 \if@ACM@engage\@typesetengagemetadata\fi
2276 \setcounter{footnote}{0}%
2277 \@mkabstract
2278 \ifx\@translatedabstracts\@empty\else
2279 \@translatedabstracts\fi
2280 \if@ACM@printccs
2281 \ifx\@concepts\@empty\else\bgroup
2282     {\@specialsection{CCS Concepts}%
2283     \noindent\@concepts\par}\egroup
2284 \fi
2285 \fi
2286 \if@ACM@acmcp\else
2287     \ifx\@keywords\@empty\else\bgroup
2288         {\@specialsection{\keywordsname}%
2289         \noindent\@keywords\par}\egroup
2290     \fi
2291     \ifx\@translatedkeywords\@empty\else
2292     \@translatedkeywords
2293     \fi
2294 \fi
2295 \let\metadata@authors=\authors
2296 \nxandlist{, }, {, } \metadata@authors
2297 \def\@ACM@checkaffil{}%
2298 \hypersetup{%
2299     pdfauthor={\metadata@authors},
2300     pdftitle={\@title},
2301     pdfsubject={\@concepts},
2302     pdfkeywords={\@keywords},
2303     pdfcreator={LaTeX with acmart
2304         \csname ver@\@classname.cls\endcsname\space
2305         and hyperref
2306         \csname ver@hyperref.sty\endcsname}}%
2307 \andify\authors
2308 \andify\shortauthors
2309 \global\let\authors=\authors
2310 \global\let\shortauthors=\shortauthors

```

```

2311 \if@ACM@printacmref
2312     \mkbibcitation
2313 \fi
2314 \global\@topnum\z@ % this prevents floats from falling
2315                     % at the top of page 1
2316 \global\@botnum\z@ % we do not want them to be on the bottom either
2317 \@printendtopmatter
2318 \@afterindentfalse
2319 \@afterheading
2320 \if@ACM@acmcp
2321     \set@ACM@acmcpbox
2322     \AtEndDocument{\end@ACM@color@frame}%
2323     \@ACM@color@frame
2324 \fi
2325 }

```

\set@ACM@acmcpbox Setting infobox for acmcp

```

2326 \newbox\@ACM@acmcpbox
2327 \def\set@ACM@acmcpbox{%
2328     \bgroup
2329     \hsize=5pc
2330     \global\setbox\@ACM@acmcpbox=\vbox{%
2331         \setlength{\parindent}{\z@}%
2332         {\includegraphics[width=\hsize]{acm-jdslogo}\par}%
2333         \scriptsize
2334         \ifnum\getrefnumber{TotPages}>1\else
2335             \zrefused{\@ACM@acmcpbox@y}%
2336             \zrefused{\@ACM@acmcpframe@y}%
2337             \@tempdima=\dimexpr\zposy{\@ACM@acmcpbox@y}sp -
2338             \zposy{\@ACM@acmcpframe@y}sp+0.3\FrameSep+
2339             \@ACM@acmcp@delta\relax
2340             \ifdim\@tempdima>0pt\relax
2341                 \vspace*{\@tempdima}%
2342                 \protected@write\@auxout{%
2343                     {\string\global\@ACM@acmcp@delta=\the\@tempdima\relax}%
2344                 \fi
2345             \fi
2346             \ifx\@acmCodeDataLink\@empty\else\bigskip
2347                 Code and data links:\\ \@acmCodeDataLink\par\bigskip
2348             \fi
2349             \ifx\@keywords\@empty\else\bigskip
2350                 Keywords: \@keywords\par
2351             \fi
2352             \ifx\@acmContributions\@empty\else\bigskip
2353                 \@acmContributions\par
2354             \fi
2355             \ifx\@empty\@authorsaddresses\else\bigskip\@setauthorsaddresses\fi
2356             \zsaveposy{\@ACM@acmcpbox@y}%
2357             \par
2358         }
2359     \egroup}

```

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

```

2360 \def\@specialsection#1{%

```

```

2361 \let\@vspace\@vspace@orig
2362 \let\@vspacer\@vspacer@orig
2363 \ifcase\ACM@format@nr
2364 \relax % manuscript
2365 \par\medskip\small\noindent#1: %
2366 \or % acmsmall
2367 \par\medskip\small\noindent#1: %
2368 \or % acmlarge
2369 \par\medskip\small\noindent#1: %
2370 \or % acmtog
2371 \par\medskip\small\noindent#1: %
2372 \or % sigconf
2373 \section*{#1}%
2374 \or % siggraph
2375 \section*{#1}%
2376 \or % sigplan
2377 \noindentparagraph*{#1:~}%
2378 \or % sigchi
2379 \section*{#1}%
2380 \or % sigchi-a
2381 \section*{#1}%
2382 \or % acmengage
2383 \section*{#1}%
2384 \or % acmcp
2385 \section*{#1}%
2386 \fi
2387 \let\@vspace\@vspace@acm
2388 \let\@vspacer\@vspacer@acm
2389 }

```

\@printtopmatter The printing of top matter starts a new page and uses the given title box.

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.

```

2390 \def\@printtopmatter{%
2391 \ifx\@startPage\@empty
2392 \gdef\@startPage{1}%
2393 \else
2394 \setcounter{page}{\@startPage}%
2395 \fi
2396 \@tempdima=\ht\mktitle@bx
2397 \advance\@tempdima by \dp\mktitle@bx
2398 \ifdim\@tempdima>0.9\textheight
2399 \loop
2400 \setbox\@tempboxa=\vsplit \mktitle@bx to 0.9\textheight
2401 \thispagestyle{firstpagestyle}%
2402 \noindent\unvbox\@tempboxa
2403 \clearpage
2404 \@tempdima=\ht\mktitle@bx
2405 \advance\@tempdima by \dp\mktitle@bx
2406 \ifdim\@tempdima>0.9\textheight\repeat
2407 \fi
2408 \thispagestyle{firstpagestyle}%
2409 \noindent

```

```

2410 \ifcase\ACM@format@nr
2411 \relax % manuscript
2412 \box\mktitle@bx\par
2413 \or % acmsmall
2414 \box\mktitle@bx\par
2415 \or % acmlarge
2416 \box\mktitle@bx\par
2417 \or % acmtog
2418 \twocolumn[\box\mktitle@bx]%
2419 \or % sigconf
2420 \twocolumn[\box\mktitle@bx]%
2421 \or % siggraph
2422 \twocolumn[\box\mktitle@bx]%
2423 \or % sigplan
2424 \twocolumn[\box\mktitle@bx]%
2425 \or % sigchi
2426 \twocolumn[\box\mktitle@bx]%
2427 \or % sigchi-a
2428 \par\box\mktitle@bx\par\bigskip
2429 \or % acmengage
2430 \twocolumn[\box\mktitle@bx]%
2431 \or % acmcp
2432 \box\mktitle@bx\par
2433 \fi
2434 }

```

\@mktitle The title of the article

```

2435 \def\@mktitle{%
2436 \ifcase\ACM@format@nr
2437 \relax % manuscript
2438 \@mktitle@i
2439 \or % acmsmall
2440 \@mktitle@i
2441 \or % acmlarge
2442 \@mktitle@i
2443 \or % acmtog
2444 \@mktitle@i
2445 \or % sigconf
2446 \@mktitle@iii
2447 \or % siggraph
2448 \@mktitle@iii
2449 \or % sigplan
2450 \@mktitle@iii
2451 \or % sigchi
2452 \@mktitle@iii
2453 \or % sigchi-a
2454 \@mktitle@iv
2455 \or % acmengage
2456 \@mktitle@iii
2457 \or % acmcp
2458 \@mktitle@i
2459 \fi
2460 }

```

\@titlefont The font to typeset the title

```
2461 \def\@titlefont{%
2462   \ifcase\ACM@format@nr
2463   \relax % manuscript
2464   \LARGE\sffamily\bfseries
2465   \or % acmsmall
2466   \LARGE\sffamily\bfseries
2467   \or % acmlarge
2468   \LARGE\sffamily\bfseries
2469   \or % acmtog
2470   \Huge\sffamily
2471   \or % sigconf
2472   \Huge\sffamily\bfseries
2473   \or % siggraph
2474   \Huge\sffamily\bfseries
2475   \or % sigplan
2476   \Huge\bfseries
2477   \or % sigchi
2478   \Huge\sffamily\bfseries
2479   \or % sigchi-a
2480   \Huge\bfseries
2481   \or % acmengage
2482   \Huge\sffamily\bfseries
2483   \or % acmcp
2484   \LARGE\sffamily\bfseries
2485   \fi}
```

\@subtitlefont The font to typeset the subtitle

```
2486 \def\@subtitlefont{\normalsize
2487   \ifcase\ACM@format@nr
2488   \relax % manuscript
2489   \mdseries
2490   \or % acmsmall
2491   \mdseries
2492   \or % acmlarge
2493   \mdseries
2494   \or % acmtog
2495   \LARGE
2496   \or % sigconf
2497   \LARGE\mdseries
2498   \or % siggraph
2499   \LARGE\mdseries
2500   \or % sigplan
2501   \LARGE\mdseries
2502   \or % sigchi
2503   \LARGE\mdseries
2504   \or % sigchi-a
2505   \mdseries
2506   \or % acmengage
2507   \LARGE\mdseries
2508   \or % acmcp
2509   \mdseries
2510   \fi}
```

`\mktitle@i` The version of `\mktitle` for most journals

```
2511 \def\mktitle@i{\hsize=\textwidth
2512   \if@ACM@acmcp
2513     \advance\hsize by -6pc%
2514   \fi
2515   \@ACM@title@width=\hsize
2516   \setbox\mktitle@bx=\vbox{\noindent\@titlefont
2517     \parbox[t]{\@ACM@title@width}{\raggedright
2518       \@titlefont\noindent
2519       \@title\@translatedtitle%
2520   \ifx\@subtitle\@empty\else
2521     \par\noindent{\@subtitlefont\@subtitle\@translatedsubtitle}%
2522   \fi}%
2523   \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.

```
2524 \def\mktitle@iii{\hsize=\textwidth
2525   \setbox\mktitle@bx=\vbox{\@titlefont\centering
2526     \@ACM@title@width=\hsize
2527     \parbox[t]{\@ACM@title@width}{\centering\@titlefont
2528       \@title\@translatedtitle%
2529     \ifx\@subtitle\@empty\else
2530       \par\noindent{\@subtitlefont\@subtitle\@translatedsubtitle}
2531     \fi
2532   }%
2533   \par\bigskip}}%
```

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

```
2534 \def\mktitle@iv{\hsize=\textwidth
2535   \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
2536     \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
2537     \noindent\@title\@translatedtitle%
2538   \ifx\@subtitle\@empty\else
2539     \par\noindent\@subtitlefont\@subtitle\@translatedsubtitle%
2540   \fi
2541   \par\bigskip}}%
```

`\@ACM@addtoaddress`

```
2542 \newbox\@ACM@commabox
2543 \def\@ACM@addtoaddress#1{%
2544   \ifvmode\else
2545     \if@ACM@affiliation@obeypunctuation\else
2546       \unskip,~%
2547     \fi\fi
2548   #1}
```

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

```
\streetaddress 2549 \def\streetaddress#1{\ClassWarning{\@classname}{ACM no longer collects
  \city
  \state
  \postcode
  \country}
```

```

2550 authors' postal addresses. I am ignoring your street
2551 address}\unskip\ignorespaces}
2552 \def\postcode#1{\ClassWarning{\@classname}{ACM no longer collects
2553 authors' postal addresses. I am ignoring your postal
2554 code}\unskip\ignorespaces}
2555 \if@ACM@journal
2556 \def\position#1{\unskip\ignorespaces}
2557 \def\institution#1{\global\@ACM@instpresenttrue
2558 \unskip~#1\ignorespaces}
2559 \def\city#1{\global\@ACM@citypresenttrue\unskip\ignorespaces}
2560 \def\state#1{\unskip\ignorespaces}
2561 \newcommand\department[2][0]{\unskip\ignorespaces}
2562 \def\country#1{\StrDel{#1}{ }[\@tempa]}%
2563 \ifx\@tempa@empty\else
2564 \global\@ACM@countrypresenttrue\fi
2565 \if@ACM@affiliation@obexpunctuation\else, \fi#1\ignorespaces}
2566 \else
2567 \def\position#1{\if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
2568 \def\institution#1{\global\@ACM@instpresenttrue
2569 \if@ACM@affiliation@obexpunctuation#1\else#1\par\fi}%
2570 \newcommand\department[2][0]{\if@ACM@affiliation@obexpunctuation
2571 #2\else#2\par\fi}%
2572 \def\city#1{\global\@ACM@citypresenttrue\@ACM@addtoaddress{#1}}%
2573 \let\state\@ACM@addtoaddress
2574 \def\country#1{\global\@ACM@countrypresenttrue\@ACM@addtoaddress{#1}}%
2575 \fi

```

\@mkauthors Typesetting the authors

```

2576 \def\@mkauthors{\begingroup
2577 \hsize=\textwidth
2578 \ifcase\@ACM@format@nr
2579 \relax % manuscript
2580 \@mkauthors@i
2581 \or % acmsmall
2582 \@mkauthors@i
2583 \or % acmlarge
2584 \@mkauthors@i
2585 \or % acmtog
2586 \@mkauthors@i
2587 \or % sigconf
2588 \@mkauthors@iii
2589 \or % siggraph
2590 \@mkauthors@iii
2591 \or % sigplan
2592 \@mkauthors@iii
2593 \or % sigchi
2594 \@mkauthors@iii
2595 \or % sigchi-a
2596 \@mkauthors@iv
2597 \or % acmengage
2598 \@mkauthors@iii
2599 \or % acmcp
2600 \@mkauthors@i
2601 \fi

```

```

2602 \endgroup
2603 }

```

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

```

2604 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont Font for affiliations

```

2605 \def\@affiliationfont{\normalsize\normalfont}

```

Adjusting fonts for different formats

```

2606 \ifcase\ACM@format@nr
2607 \relax % manuscript
2608 \or % acmsmall
2609 \def\@authorfont{\large\sffamily}
2610 \def\@affiliationfont{\small\normalfont}
2611 \or % acmlarge
2612 \or % acmtog
2613 \def\@authorfont{\LARGE\sffamily}
2614 \def\@affiliationfont{\large}
2615 \or % sigconf
2616 \def\@authorfont{\LARGE}
2617 \def\@affiliationfont{\large}
2618 \or % siggraph
2619 \def\@authorfont{\normalsize\normalfont}
2620 \def\@affiliationfont{\normalsize\normalfont}
2621 \or % sigplan
2622 \def\@authorfont{\Large\normalfont}
2623 \def\@affiliationfont{\normalsize\normalfont}
2624 \or % sigchi
2625 \def\@authorfont{\bfseries}
2626 \def\@affiliationfont{\mdseries}
2627 \or % sigchi-a
2628 \def\@authorfont{\bfseries}
2629 \def\@affiliationfont{\mdseries}
2630 \or % acmengage
2631 \def\@authorfont{\LARGE}
2632 \def\@affiliationfont{\large}
2633 \or % acmcp
2634 \def\@authorfont{\large\sffamily}
2635 \def\@affiliationfont{\small\normalfont}
2636 \fi

```

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

```

2637 \def\@typeset@author@line{%
2638 \andify\@currentauthors\par\noindent
2639 \@currentauthors\def\@currentauthors{}%
2640 \ifx\@currentaffiliations\@empty\else
2641 \andify\@currentaffiliations
2642 \unskip, {\@currentaffiliations}\par
2643 \fi
2644 \def\@currentaffiliations{}}

```

```

\if@ACM@instpresent Whether the given affiliation has institution
2645 \newif\if@ACM@instpresent
2646 \@ACM@instpresenttrue

\if@ACM@citypresent Whether the given affiliation has city
2647 \newif\if@ACM@citypresent
2648 \@ACM@citypresenttrue

\if@ACM@countrypresent Whether the given affiliation has country
2649 \newif\if@ACM@countrypresent
2650 \@ACM@countrypresenttrue

\@ACM@resetaffil Reset affiliation flags
2651 \def\@ACM@resetaffil{%
2652   \global\@ACM@instpresentfalse
2653   \global\@ACM@citypresentfalse
2654   \global\@ACM@countrypresentfalse
2655 }

\@ACM@checkaffil Check affiliation flags
2656 \def\@ACM@checkaffil{%
2657   \if@ACM@instpresent\else
2658     \ClassWarningNoLine{\@classname}{No institution present for an affiliation}%
2659   \fi
2660   \if@ACM@citypresent\else
2661     \ClassWarningNoLine{\@classname}{No city present for an affiliation}%
2662   \fi
2663   \if@ACM@countrypresent\else
2664     \ClassError{\@classname}{No country present for an affiliation}{ACM
2665       requires each author to indicate their country using country macro.}%
2666   \fi
2667 }

\@mkauthors@i This version is used in most journal formats. Note that \and between authors with the
same affiliation becomes _and_:
2668 \def\@mkauthors@i{%
2669   \def\@currentauthors{}%
2670   \def\@currentaffiliations{}%
2671   \global\let\and\@typeset@author@line
2672   \def\@author##1{%
2673     \ifx\@currentauthors\@empty
2674       \gdef\@currentauthors{\@authorfont\MakeUppercase{##1}}%
2675     \else
2676       \g@addto@macro{\@currentauthors}{\and\MakeUppercase{##1}}%
2677     \fi
2678     \gdef\and{}}%
2679   \def\email##1##2{}%
2680   \def\affiliation##1##2{%
2681     \def\@tempa{##2}\ifx\@tempa\@empty\else
2682       \ifx\@currentaffiliations\@empty
2683         \gdef\@currentaffiliations{%
2684           \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2685           \setkeys{@ACM@affiliation@}{##1}%

```

```

2686         \@ACM@resetaffil
2687         \@affiliationfont##2\@ACM@checkaffil}%
2688     \else
2689         \g@addto@macro{\@currentaffiliations}{\and
2690             \setkeys{@ACM@affiliation@}{obeypunctuation=false}%
2691             \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2692             ##2\@ACM@checkaffil}%
2693     \fi
2694 \fi
2695 \global\let\and\@typeset@author@line}%
2696 \if@ACM@acmcp
2697     \advance\hsize by -6pc%
2698 \fi
2699 \global\setbox\mktitle@bx=\vbox{\noindent\unvbox\mktitle@bx\par\medskip
2700     \noindent\addresses\@typeset@author@line
2701     \par\medskip}%
2702 }

```

\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

```
2703 \newbox\author@bx
```

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

```
2704 \newdimen\author@bx@wd
```

\author@bx@sep The separation between author boxes

```
2705 \newskip\author@bx@sep
```

```
2706 \author@bx@sep=1pc\relax
```

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

```

2707 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd
2708     \def\and{\par}\normalbaselines
2709     \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
2710         \@authorfont\@currentauthors\par\@affiliationfont
2711         \@currentaffiliation\par}\egroup
2712     \box\author@bx\hspace{\author@bx@sep}%
2713     \gdef\@currentauthors{}}%
2714     \gdef\@currentaffiliation{}}

```

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

```
2715 \def\mkauthors@iii{%
```

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

```

2716 \author@bx@wd=\textwidth\relax
2717 \advance\author@bx@wd by -\author@bx@sep\relax
2718 \ifnum\@ACM@authorsperrrow>0\relax
2719     \divide\author@bx@wd by \@ACM@authorsperrrow\relax
2720 \else
2721     \ifcase\@num@authorgroups

```

```

2722 \relax % 0?
2723 \or % 1=one author per row
2724 \or % 2=two authors per row
2725 \divide\author@bx@wd by \num@authorgroups\relax
2726 \or % 3=three authors per row
2727 \divide\author@bx@wd by \num@authorgroups\relax
2728 \or % 4=two authors per row (!)
2729 \divide\author@bx@wd by 2\relax
2730 \else % three authors per row
2731 \divide\author@bx@wd by 3\relax
2732 \fi
2733 \fi
2734 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

2735 \gdef\@currentauthors{}%
2736 \gdef\@currentaffiliation{}%
2737 \def\@author##1{\ifx\@currentauthors\@empty
2738 \gdef\@currentauthors{\par##1}%
2739 \else
2740 \g@addto@macro\@currentauthors{\par##1}%
2741 \fi
2742 \gdef\and{}}%
2743 \def\email##1##2{\ifx\@currentaffiliation\@empty
2744 \gdef\@currentaffiliation{\bgroup
2745 \mathchardef\UrlBreakPenalty=10000\href{mailto:##2}{##2}\egroup}%
2746 \else
2747 \g@addto@macro\@currentaffiliation{\par\bgroup
2748 \mathchardef\UrlBreakPenalty=10000\href{mailto:##2}{##2}\egroup}%
2749 \fi}%
2750 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2751 \gdef\@currentaffiliation{%
2752 \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2753 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2754 ##2\@ACM@checkaffil}%
2755 \else
2756 \g@addto@macro\@currentaffiliation{\par
2757 \setkeys{@ACM@affiliation@}{obexpunctuation=false}%
2758 \setkeys{@ACM@affiliation@}{##1}\@ACM@resetaffil
2759 ##2\@ACM@checkaffil}%
2760 \fi
2761 \global\let\and\@typeset@author@bx
2762 }%

```

Actual typesetting is done by the \and macro:

```

2763 \hsize=\textwidth
2764 \global\setbox\mktitle@bx=\vbox{\noindent
2765 \unvbox\mktitle@bx\par\medskip\leavevmode
2766 \lineskip=1pc\relax\centering\hspace*{-1em}%
2767 \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.

```

2768 \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.

```

2769 \author@bx@wd=\columnwidth\relax
2770 \advance\author@bx@wd by -\author@bx@sep\relax
2771 \ifnum\@ACM@authorsperrrow>0\relax
2772   \divide\author@bx@wd by \@ACM@authorsperrrow\relax
2773 \else
2774   \ifcase\num@authorgroups
2775     \relax % 0?
2776     \or % 1=one author per row
2777     \else % 2=two authors per row
2778       \divide\author@bx@wd by 2\relax
2779   \fi
2780 \fi
2781 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of `\addresses`:

```

2782 \gdef\@currentauthors{}%
2783 \gdef\@currentaffiliation{}%
2784 \def\author##1{\ifx\@currentauthors\@empty
2785   \gdef\@currentauthors{\par##1}%
2786 \else
2787   \g@addto@macro\@currentauthors{\par##1}%
2788 \fi
2789 \gdef\and{}}%
2790 \def\email##1##2{\ifx\@currentaffiliation\@empty
2791   \gdef\@currentaffiliation{\href{mailto:##2}{##2}}%
2792 \else
2793   \g@addto@macro\@currentaffiliation{\par\href{mailto:##2}{##2}}%
2794 \fi}%
2795 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
2796   \gdef\@currentaffiliation{%
2797     \setkeys{@ACM@affiliation}{obeypunctuation=false}%
2798     \setkeys{@ACM@affiliation}{##1}\@ACM@resetaffil
2799     ##2\@ACM@checkaffil}%
2800 \else
2801   \g@addto@macro\@currentaffiliation{\par
2802     \setkeys{@ACM@affiliation}{obeypunctuation=false}%
2803     \setkeys{@ACM@affiliation}{##1}\@ACM@resetaffil
2804     ##2\@ACM@checkaffil}%
2805 \fi
2806 \global\let\and\@typeset@author@bx}%
2807 %

```

Actual typesetting is done by the `\and` macro

```

2808 \bgroup\hsize=\columnwidth
2809 \par\raggedright\leftskip=\z@
2810 \lineskip=1pc\noindent
2811 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

`\@mkauthorsaddresses` Typesetting authors' addresses in the footnote style

```

2812 \def\@mkauthorsaddresses{%

```

```

2813 \ifnum\num@authors>1\relax
2814 Authors' \else Author's \fi
2815 Contact Information:
2816 \bgroup
2817 \def\streetaddress##1{\ClassWarning{\@classname}{ACM no longer collects
2818 authors' postal addresses. I am ignoring your street
2819 address}\unskip\ignorespaces}%
2820 \def\postcode##1{\ClassWarning{\@classname}{ACM no longer collects
2821 authors' postal addresses. I am ignoring your postal
2822 code}\unskip\ignorespaces}%
2823 \def\position##1{\unskip\ignorespaces}%
2824 \gdef\ACM@institution@separator{,}%
2825 \def\institution##1{\unskip\ACM@institution@separator##1\gdef\ACM@institution@separator{ and }}
2826 \def\city##1{\unskip, ##1}%
2827 \def\state##1{\unskip, ##1}%
2828 \renewcommand\department[2][0]{\unskip\@addpunct, ##2}%
2829 \def\country##1{\unskip, ##1}%
2830 \def\and{\unskip; \gdef\ACM@institution@separator{, }}%
2831 \def\@author##1{##1}%
2832 \def\email##1##2{\unskip, \href{mailto:##2}{##2}}%
2833 \addresses
2834 \egroup

2835 \AtEndDocument{\if@ACM@nonacm\else\if@ACM@journal
2836 \ifx\@authorsaddresses\empty
2837 \ClassWarningNoLine{\@classname}{Authors'
2838 addresses are mandatory for ACM journals}%
2839 \fi\fi\fi}

```

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

```
2840 \def\@setaddresses{}
```

\@authornotemark Adding a footnote mark to authors. This version adds a “normal” footnote mark. Note that since we typeset the author in a box, we get superfluous box overfull; to protect against it we increase \hfuzz

```

2841 \def\@authornotemark{\g@addto@macro\@currentauthors{%
2842 \advance\hfuzz by 5pt\relax\footnotemark\relax}}

```

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

```

2843 \def\@@authornotemark#1{\g@addto@macro\@currentauthors{%
2844 \advance\hfuzz by 5pt\relax\footnotemark[#1]}}

```

\@mkteasers Typesetting the teasers

```

2845 \def\@mkteasers{%
2846 \ifx\@teaserfigures\empty\else
2847 \def\@teaser##1{\par\bigskip\bgroup
2848 \captionsetup{type=figure}##1\egroup\par}
2849 \global\setbox\mktitle@bx=\vbox{\noindent\unvbox\mktitle@bx\par
2850 \noindent\@Description@presentfalse
2851 \@teaserfigures\par\if@Description@present\else
2852 \global\@undescrbed@imagestrue
2853 \ClassWarning{\@classname}{A possible image without
2854 description}\fi
2855 \medskip}%
2856 \fi}

```

\mkabstract Typesetting the abstract

```
2857 \def\mkabstract{\bgroup
2858   \ifx\@abstract\@empty\else
2859     {\phantomsection\addcontentsline{toc}{section}{\abstractname}%
2860      \if@ACM@journal
2861        \everypar{\setbox\z@\lastbox\everypar{}}\small
2862      \else
2863        \section*{\abstractname}%
2864      \fi
2865      \ignorespaces\@abstract\par}%
2866 \fi\egroup}
```

\mktranslatedabstract Typesetting a translated abstract

```
2867 \def\mktranslatedabstract#1{\selectlanguage{#1}%
2868   \if@ACM@journal
2869     \everypar{\setbox\z@\lastbox\everypar{}}\small
2870   \else
2871     \section*{\abstractname}%
2872   \fi
2873   \ignorespaces}
```

\mkbibcitation Print the bibcitation format

```
2874 \def\mkbibcitation{\bgroup
2875   \let\@vspace\@vspace@orig
2876   \let\@vspacer\@vspacer@orig
2877   \def\@pages@word{\ifnum\getrefnumber{TotPages}=1\relax page\else pages\fi}%
2878   \def\footnotemark{}%
2879   \def\@{\unskip{} \ignorespaces}%
2880   \def\footnote{\ClassError{\@classname}{Please do not use footnotes
2881     inside a \string\title{} or \string\author{} command! Use
2882     \string\titlenote{} or \string\authornote{} instead!}}%
2883   \def\@article@string{\ifx\@acmArticle\@empty{\ } \else,
2884     Article~\@acmArticle\ } \fi}%
2885   \par\medskip\small\noindent{\bfseries ACM Reference Format:}\par\nobreak
2886   \noindent\bgroup
2887     \def\@{\unskip{}, \ignorespaces}\authors\egroup. \@acmYear. \@title
2888     \ifx\@subtitle\@empty. \else: \@subtitle. \fi
2889     \if@ACM@nonacm\else
2890       % The 'nonacm' option disables 'printacmref' by default,
2891       % and the present \mkbibcitation definition is never used
2892       % in this case. The conditional remains useful if the user
2893       % explicitly sets \settopmatter{printacmref=true}.
2894       \if@ACM@journal@bibstrip
2895         \textit{\@journalNameShort}
2896         \@acmVolume, \@acmNumber \@article@string (\@acmPubDate),
2897         \ref{TotPages}~\@pages@word.
2898       \else
2899         In \textit{\@acmBooktitle}%
2900         \ifx\@acmEditors\@empty\textit{.}\else
2901           \andify\@acmEditors\textit{, }\@acmEditors~\@editorsAbbrev.%
2902         \fi\
2903         ACM, New York, NY, USA%
2904         \@article@string\unskip, \ref{TotPages}~\@pages@word.
2905       \fi
2906     \endgroup}
```

```

2906 \fi
2907 \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
2908 \par\egroup}

```

\@printendtopmatter End the top matter

```

2909 \def\@printendtopmatter{%
2910 \let\@vspace\@vspace@orig
2911 \let\@vspacer\@vspacer@orig
2912 \par\bigskip
2913 \let\@vspace\@vspace@acm
2914 \let\@vspacer\@vspacer@acm
2915 }

```

\@setthanks We redefine \setthanks using \long

```

2916 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

\@setauthorsaddresses

```

2917 \def\@setauthorsaddresses{\@authorsaddresses\unskip\@addpunct.}

```

\@typesetengagemetadata Typesetting special metadata for ACM Engage

```

2918 \def\@typesetengagemetadata{%
2919 \def\@setengagemetadata##1##2{\par\noindent\textbf{##1} ##2\par}%
2920 \@acmengagemetadata}

```

3.23 Headers and Footers

We use fancyhdr for our headers and footers:

```

2921 \RequirePackage{fancyhdr}

```

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

```

2922 \let\ACM@ps@plain\ps@plain
2923 \let\ACM@ps@myheadings\ps@myheadings
2924 \let\ACM@ps@headings\ps@headings
2925 \def\ACM@restore@pagestyle{%
2926 \let\ps@plain\ACM@ps@plain
2927 \let\ps@myheadings\ACM@ps@myheadings
2928 \let\ps@headings\ACM@ps@headings}
2929 \AtBeginDocument{\ACM@restore@pagestyle}

```

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

```

2930 \if@ACM@review
2931 \newsavebox{\ACM@linecount@bx}
2932 \newlength\ACM@linecount@bxht
2933 \newcount\ACM@linecount
2934 \ACM@linecount\@ne\relax
2935 \def\ACM@mk@linecount{%
2936 \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{\normalfont
2937 \normalsize
2938 \setlength{\ACM@linecount@bxht}{0pt}%
2939 \loop{\color{red}\scriptsize\the\ACM@linecount}\@ne
2940 \global\advance\ACM@linecount by \@ne
2941 \addtolength{\ACM@linecount@bxht}{\baselineskip}}%
2942 \ifdim\ACM@linecount@bxht<\textheight\repeat

```

```

2943         {\color{red}\scriptsize\the\ACM@linecount}\hfill
2944         \global\advance\ACM@linecount by \@ne}}}
2945 \fi

```

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

```

2946 \def\ACM@linecountL{%
2947   \if@ACM@review
2948     \ACM@mk@linecount
2949     \begin{picture}(0,0)%
2950       \put(-26,-22){\usebox{\ACM@linecount@bx}}%
2951     \end{picture}%
2952 \fi}

```

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

```

2953 \def\ACM@linecountR{%
2954   \if@ACM@review
2955     \ifcase\ACM@format@nr
2956       \relax % manuscript
2957       \relax
2958       \or % acmsmall
2959       \relax
2960       \or % acmlarge
2961       \relax
2962       \or % acmtog
2963       \ACM@mk@linecount
2964       \or % sigconf
2965       \ACM@mk@linecount
2966       \or % siggraph
2967       \ACM@mk@linecount
2968       \or % sigplan
2969       \ACM@mk@linecount
2970       \or % sigchi
2971       \ACM@mk@linecount
2972       \or % sigchi-a
2973       \ACM@mk@linecount
2974       \or % acmengage
2975       \ACM@mk@linecount
2976       \or % acmcp
2977       \relax
2978     \fi
2979     \begin{picture}(0,0)%
2980       \put(20,-22){\usebox{\ACM@linecount@bx}}%
2981     \end{picture}%
2982 \fi}

```

\ACM@timestamp The timestamp system

```

2983 \if@ACM@timestamp
2984   % Subtracting 30 from \time gives us the effect of rounding down despite
2985   % \numexpr rounding to nearest
2986   \newcounter{ACM@time@hours}
2987   \setcounter{ACM@time@hours}{\numexpr (\time - 30) / 60 \relax}
2988   \newcounter{ACM@time@minutes}
2989   \setcounter{ACM@time@minutes}{\numexpr \time - \theACM@time@hours * 60 \relax}
2990   \newcommand\ACM@timestamp{%

```

```

2991 \footnotesize%
2992 \ifx\@acmSubmissionID\empty\relax\else
2993 Submission ID: \@acmSubmissionID.{ }%
2994 \fi
2995 \the\year-\two@digits{\the\month}-\two@digits{\the\day}{ }%
2996 \two@digits{\theACM@time@hours}:\two@digits{\theACM@time@minutes}{. }%
2997 Page \thepage of \@startPage--\pageref*{TotPages}.%
2998 }
2999 \fi

```

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

```

3000 \def\@shortauthors{%
3001 \if@ACM@anonymous
3002 Anon.
3003 \ifx\@acmSubmissionID\empty\else Submission Id: \@acmSubmissionID\fi
3004 \else\@shortauthors\fi}

```

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

```

3005 \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

```

3006 \AtBeginDocument{%
3007 \fancypagestyle{standardpagestyle}{%
3008 \fancyhf{}%
3009 \renewcommand{\headrulewidth}{\z@}%
3010 \renewcommand{\footrulewidth}{\z@}%
3011 \def\@acmArticlePage{%
3012 \ifx\@acmArticle\empty%
3013 \if@ACM@printfolios\thepage\fi%
3014 \else%
3015 \@acmArticle\if@ACM@printfolios:\thepage\fi%
3016 \fi%
3017 }%
3018 \if@ACM@journal@bibstrip@or@tog
3019 \ifcase\ACM@format@nr
3020 \relax % manuscript
3021 \fancyhead[LE]{\ACM@linecountL\if@ACM@printfolios\thepage\fi}%
3022 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
3023 \fancyhead[RE]{\@shortauthors}%
3024 \fancyhead[LO]{\ACM@linecountL\shorttitle}%
3025 \if@ACM@nonacm\else%
3026 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}
3027 \fi%
3028 \or % acmsmall
3029 \fancyhead[LE]{\ACM@linecountL\@headfootfont\@acmArticlePage}%
3030 \fancyhead[RO]{\@headfootfont\@acmArticlePage}%
3031 \fancyhead[RE]{\@headfootfont\@shortauthors}%
3032 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3033 \if@ACM@nonacm\else%
3034 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3035 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
3036 \fi
3037 \or % acmlarge

```

```

3038 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3039 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
3040 \fancyhead[LO]{\ACM@linecountL}%
3041 \fancyhead[RO]{\@headfootfont
3042 \shorttitle\quad\textbullet\quad\@acmArticlePage}%
3043 \if@ACM@nonacm\else%
3044 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3045 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
3046 \fi
3047 \or % acmtog
3048 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3049 \@acmArticlePage\quad\textbullet\quad\@shortauthors}%
3050 \fancyhead[LO]{\ACM@linecountL}%
3051 \fancyhead[RE]{\ACM@linecountR}%
3052 \fancyhead[RO]{\@headfootfont
3053 \shorttitle\quad\textbullet\quad\@acmArticlePage\ACM@linecountR}%
3054 \if@ACM@nonacm\else
3055 \if@ACM@journal@bibstrip
3056 \fancyfoot[RO,LE]{\footnotesize \@journalNameShort,
3057 Vol. \@acmVolume, No.\@acmNumber, Article \@acmArticle.
3058 Publication date: \@acmPubDate.}%
3059 \else
3060 \fancyfoot[RO,LE]{\footnotesize \acmConference@shortname,
3061 \acmConference@date, \acmConference@venue.}%
3062 \fi
3063 \fi
3064 \else % Proceedings
3065 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3066 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3067 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%
3068 \if@ACM@nonacm
3069 \fancyhead[LE]{\ACM@linecountL}%
3070 \fancyhead[RO]{\ACM@linecountR}%
3071 \else%
3072 \if@ACM@engage
3073 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
3074 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi}%
3075 \fancyhead[RO]{\@headfootfont
3076 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
3077 \ACM@linecountR}%
3078 \else
3079 \fancyhead[LE]{\ACM@linecountL\@headfootfont\footnotesize
3080 \acmConference@shortname,
3081 \acmConference@date, \acmConference@venue}%
3082 \fancyhead[RO]{\@headfootfont
3083 \acmConference@shortname,
3084 \acmConference@date, \acmConference@venue\ACM@linecountR}%
3085 \fi
3086 \fi
3087 \fi
3088 \else % Proceedings
3089 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3090 \fancyhead[LO]{\ACM@linecountL\@headfootfont\shorttitle}%
3091 \fancyhead[RE]{\@headfootfont\@shortauthors\ACM@linecountR}%

```

```

3092 \if@ACM@nonacm
3093 \fancyhead[LE]{\ACM@linecountL}%
3094 \fancyhead[RO]{\ACM@linecountR}%
3095 \else%
3096 \if@ACM@engage
3097 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3098 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi}%
3099 \fancyhead[RO]{\@headfootfont
3100 EngageCSEdu. \ifx\@acmDOI\@empty\else\@formatdoi{\@acmDOI}\fi
3101 \ACM@linecountR}%
3102 \else
3103 \fancyhead[LE]{\ACM@linecountL\@headfootfont
3104 \acmConference@shortname,
3105 \acmConference@date, \acmConference@venue}%
3106 \fancyhead[RO]{\@headfootfont
3107 \acmConference@shortname,
3108 \acmConference@date, \acmConference@venue\ACM@linecountR}%
3109 \fi
3110 \fi
3111 \fi
3112 \if@ACM@sigchiamode
3113 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
3114 \fi
3115 \if@ACM@timestamp
3116 \fancyfoot[LO,RE]{\ACM@timestamp}
3117 \fi
3118 \if@ACM@acmcp
3119 \renewcommand{\footrulewidth}{0.1\p@}%
3120 \fancyheadoffset[L]{46pt}%
3121 \fancyhead[L]{\makebox[\z@][l]{%
3122 \raisebox{-\dimexpr(0.2\textheight*(\ACM@ArticleType@nr-2))}{%
3123 \rotatebox{90}{\colorbox{@ACM@Article@color}{\color{white}%
3124 \strut\ACM@ArticleType~Article}}}%
3125 \ACM@linecountL}%
3126 \fancyhead[R]{\makebox[\z@][r]{\box\@ACM@acmcpbox}}%
3127 \fancyfoot[L,C]{}%
3128 \fancyfoot[R]{\footnotesize
3129 \@journalName, Volume~\@acmVolume, Issue~\@acmNumber,
3130 \ifx\@acmArticle\@empty\else Article~\@acmArticle\fi\space
3131 (\@acmPubDate)\ifx\@acmDOI\@empty\else\\@formatdoi{\@acmDOI}\fi}
3132 \fi
3133 }%
3134 \pagestyle{standardpagestyle}
3135 }

```

\@folio@wd Folio blob width, height, offsets and max number

\@folio@ht

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

\@folio@voffset

\@folio@max

firstpagestyle The page style for the first page only.

```

3136 \AtBeginDocument{%
3137 \fancypagestyle{firstpagestyle}{%
3138 \fancyhf{}%
3139 \renewcommand{\headrulewidth}{\z@}%

```

```

3140 \renewcommand{\footrulewidth}{\z@}%
3141 \if@ACM@journal@bibstrip@or@tog
3142   \ifcase\ACM@format@nr
3143     \relax % manuscript
3144     \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3145     \fancyhead[R]{\@acmBadgeR}%
3146     \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
3147     \if@ACM@nonacm\else%
3148       \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
3149     \fi%
3150   \or % acmsmall
3151     \if@ACM@nonacm\else%
3152       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3153         \@acmNumber, Article \@acmArticle. Publication date:
3154         \@acmPubDate.}%
3155     \fi%
3156     \fancyhead[LE]{\ACM@linecountL\@acmBadgeL}%
3157     \fancyhead[LO]{\ACM@linecountL\@acmBadgeL}%
3158     \fancyhead[RO]{\@acmBadgeR}%
3159     \fancyhead[RE]{\@acmBadgeR}%
3160   \or % acmlarge
3161     \if@ACM@nonacm\else%
3162       \fancyfoot[RO,LE]{\footnotesize \@journalNameShort, Vol. \@acmVolume, No.
3163         \@acmNumber, Article \@acmArticle. Publication date:
3164         \@acmPubDate.}%
3165     \fi%
3166     \fancyhead[RO]{\@acmBadgeR}%
3167     \fancyhead[RE]{\@acmBadgeR}%
3168     \fancyhead[LE]{\ACM@linecountL\@acmBadgeL}%
3169     \fancyhead[LO]{\ACM@linecountL\@acmBadgeL}%
3170   \or % acmtog
3171     \if@ACM@nonacm\else%
3172       \if@ACM@journal@bibstrip
3173         \fancyfoot[RO,LE]{\footnotesize \@journalNameShort,
3174           Vol. \@acmVolume, No.~\@acmNumber, Article \@acmArticle.
3175           Publication date: \@acmPubDate.}%
3176       \else
3177         \fancyfoot[RO,LE]{\footnotesize \acmConference@shortname,
3178           \acmConference@date, \acmConference@venue.}%
3179       \fi
3180     \fi%
3181     \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3182     \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3183   \else % Conference proceedings
3184     \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3185     \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3186     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3187   \fi
3188 \else
3189   \fancyhead[L]{\ACM@linecountL\@acmBadgeL}%
3190   \fancyhead[R]{\@acmBadgeR\ACM@linecountR}%
3191   \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
3192 \fi
3193 \if@ACM@timestamp

```

```

3194 \ifnum\ACM@format@nr=0\relax % Manuscript
3195 \fancyfoot[LO,RE]{\ACM@timestamp\quad
3196 \if@ACM@nonacm\else
3197 \footnotesize Manuscript submitted to ACM
3198 \fi}
3199 \else
3200 \fancyfoot[LO,RE]{\ACM@timestamp}
3201 \fi
3202 \fi
3203 \if@ACM@acmcp
3204 \renewcommand{\footrulewidth}{0.1\p@}%
3205 \fancyheadoffset[L]{46pt}%
3206 \fancyhead[L]{\makebox[\z@][l]{%
3207 \raisebox{-\dimexpr(0.2\textheight*(\ACM@ArticleType@nr-2))}{%
3208 \rotatebox{90}{\colorbox{\ACM@Article@color}{\color{white}%
3209 \strut\ACM@ArticleType~Article}}}%
3210 \ACM@linecountL\@acmBadgeL}%
3211 \fancyhead[R]{\@acmBadgeR\makebox[\z@][r]{\box\@ACM@acmcpbox}}%
3212 \fancyfoot[L,C]{}%
3213 \fancyfoot[R]{\footnotesize
3214 \@journalName, Volume~\@acmVolume, Issue~\@acmNumber,
3215 \ifx\@acmArticle\@empty\else Article~\@acmArticle\fi\space
3216 (\@acmPubDate)\ifx\@acmDOI\@empty\else\\@formatdoi{\@acmDOI}\fi}
3217 \fi
3218 }}

```

3.24 Sectioning

\ACM@Nadjust 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@Nadjust 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@Nadjust. 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.

```

3219 \def\ACM@Nadjust#1{%
3220 \begingroup
3221 \expandafter\ifx\csname Sectionformat\endcsname\relax
3222 % do nothing when \Sectionformat is unknown

```

```

3223 \def\next{\endgroup #1}%
3224 \else
3225 \def\next{\endgroup
3226 \let\realSectionformat\Sectionformat
3227 \def\ACM@sect@format@{#1}%
3228 \let\Sectionformat\ACM@NR@adjustedSectionformat
3229 %% next lines added 2018-06-17 to ensure section number is styled
3230 \let\real@adddotafter\@adddotafter
3231 \let\@adddotafter\ACM@adddotafter
3232 #1}% imposes the styles, but nullifies \MakeUppercase
3233 \let\@adddotafter\real@adddotafter
3234 }%
3235 \fi \next
3236 }

```

\ACM@NR@adjustedSectionformat

```

3237 \def\ACM@NR@adjustedSectionformat#1#2{%
3238 \realSectionformat{\ACM@sect@format{#1}}{#2}%
3239 \let\Sectionformat\realSectionformat}
3240 \DeclareRobustCommand{\ACM@sect@format@}{\ACM@sect@format@}
3241 \def\ACM@sect@format@null#1{#1}
3242 \let\ACM@sect@format@\ACM@sect@format@null
3243 \AtBeginDocument{%
3244 \expandafter\ifx\csname LTX@adddotafter\endcsname\relax
3245 \let\LTX@adddotafter\@adddotafter
3246 \fi
3247 }

```

\ACM@adddotafter

```

3248 \def\ACM@adddotafter#1{\ifx\relax#1\relax\else\LTX@adddotafter{#1}\fi}

```

Sectioning is different for different levels

```

3249 \renewcommand\section{\def\@toclevel{1}%
3250 \@startsection{section}{1}{\z@}%
3251 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3252 {.25\baselineskip}%
3253 {\ACM@NRadjust\@secfont}}
3254 \renewcommand\subsection{\def\@toclevel{2}%
3255 \@startsection{subsection}{2}{\z@}%
3256 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3257 {.25\baselineskip}%
3258 {\ACM@NRadjust\@subsecfont}}
3259 \renewcommand\subsubsection{\def\@toclevel{3}%
3260 \@startsection{subsubsection}{3}{\z@}%
3261 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3262 {-3.5\p@}%
3263 {\ACM@NRadjust{\@subsubsecfont\@adddotafter}}}}
3264 \renewcommand\paragraph{\def\@toclevel{4}%
3265 \@startsection{paragraph}{4}{\parindent}%
3266 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3267 {-3.5\p@}%
3268 {\ACM@NRadjust{\@parfont\@adddotafter}}}}
3269 \newcommand\noindentparagraph{\def\@toclevel{4}%
3270 \@startsection{paragraph}{4}{\z@}%

```

```

3271 {-1.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
3272 {-3.5\p@}%
3273 {\ACM@NRadjust{\@parfont}}
3274 \renewcommand\part{\def\@toclevel{9}%
3275 \@startsection{part}{9}{\z@}%
3276 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
3277 {4\p@}%
3278 {\ACM@NRadjust\@parfont}}

```

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

```

3279 \def\section@raggedright{\@rightskip\@flushglue
3280 \rightskip\@rightskip
3281 \leftskip\z@skip
3282 \parindent\z@}

```

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

```

\@subsecfont 3283 \def\@secfont{\sffamily\bfseries\section@raggedright}
\@subsubsecfont 3284 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 3285 \def\@subsubsecfont{\sffamily\itshape}
3286 \def\@parfont{\itshape}
3287 \setcounter{secnumdepth}{3}
3288 \ifcase\ACM@format@nr
3289 \relax % manuscript
3290 \or % acmsmall
3291 \or % acmlarge
3292 \def\@secfont{\sffamily\large\section@raggedright}
3293 \def\@subsecfont{\sffamily\large\section@raggedright}
3294 \or % acmtog
3295 \def\@secfont{\sffamily\large\section@raggedright}
3296 \def\@subsecfont{\sffamily\large\section@raggedright}
3297 \or % sigconf
3298 \def\@secfont{\bfseries\Large\section@raggedright}
3299 \def\@subsecfont{\bfseries\Large\section@raggedright}
3300 \or % siggraph
3301 \def\@secfont{\sffamily\bfseries\Large\section@raggedright}
3302 \def\@subsecfont{\sffamily\bfseries\Large\section@raggedright}
3303 \or % sigplan
3304 \def\@secfont{\bfseries\Large\section@raggedright}
3305 \def\@subsecfont{\bfseries\section@raggedright}
3306 \def\@subsubsecfont{\bfseries\section@raggedright}
3307 \def\@parfont{\bfseries\itshape}
3308 \def\@subparfont{\itshape}
3309 \or % sigchi
3310 \setcounter{secnumdepth}{1}
3311 \def\@secfont{\sffamily\bfseries\section@raggedright}
3312 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
3313 \or % sigchi-a
3314 \setcounter{secnumdepth}{0}
3315 \def\@secfont{\sffamily\bfseries\section@raggedright}
3316 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
3317 \or % acmengage
3318 \def\@secfont{\bfseries\Large\section@raggedright}
3319 \def\@subsecfont{\bfseries\Large\section@raggedright}
3320 \or % acmcp

```

```
3321 \fi
```

Amasat does not define tocindent for paragraphs and subparagraphs. Here we add them

```
3322 \AtBeginDocument{%
3323   \for\@tempa:=-1,0,1,2,3,4,5\do{%
3324     \ifundefined{r@tocindent\@tempa}{%
3325       \exp\gdef\csname r@tocindent\@tempa\endcsname{0pt}}{}%
3326     }%
3327 }
3328 \def\@writetocindents{%
3329   \begingroup
3330   \for\@tempa:=-1,0,1,2,3,4,5\do{%
3331     \immediate\write\@auxout{%
3332       \string\newlabel{tocindent\@tempa}{%
3333         \csname r@tocindent\@tempa\endcsname}}%
3334     }%
3335   \endgroup}
```

\@adddotafter Add punctuation after a sectioning command

```
3336 \def\@adddotafter#1{#1\@addpunct{.}}
```

\@addspaceafter Add space after a sectioning command

```
3337 \def\@addspaceafter#1{#1\@addpunct{\enspace}}
```

```
3338 \if@ACM@acmcp
3339   \setcounter{secnumdepth}{-1}%
3340 \fi
```

3.25 TOC lists

\@dotsep Related to the \tableofcontents are all the horizontal fillers. Base $\LaTeX$ 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.

```
3341 \providecommand*\@dotsep{4.5}
```

3.26 Theorems

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

```
3342 \def\@acmplainbodyfont{\itshape}
```

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

```
3343 \def\@acmplainindent{\parindent}
```

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

```
3344 \def\@acmplainheadfont{\scshape}
```

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

```
3345 \def\@acmplainnotefont{\@empty}
```

Customization of the acmplain theorem style:

```

3346 \ifcase\ACM@format@nr
3347 \relax % manuscript
3348 \or % acmsmall
3349 \or % acmlarge
3350 \or % acmtog
3351 \or % sigconf
3352 \or % siggraph
3353 \or % sigplan
3354 \def\@acmplainbodyfont{\itshape}
3355 \def\@acmplainindent{\z@}
3356 \def\@acmplainheadfont{\bfseries}
3357 \def\@acmplainnotefont{\normalfont}
3358 \or % sigchi
3359 \or % sigchi-a
3360 \or % acmengage
3361 \or % acmcp
3362 \fi

```

acmplain The acmplain theorem style

```

3363 \newtheoremstyle{acmplain}%
3364 { .5\baselineskip \@plus.2\baselineskip
3365 \@minus.2\baselineskip}% space above
3366 { .5\baselineskip \@plus.2\baselineskip
3367 \@minus.2\baselineskip}% space below
3368 {\@acmplainbodyfont}% body font
3369 {\@acmplainindent}% indent amount
3370 {\@acmplainheadfont}% head font
3371 { .}% punctuation after head
3372 { .5em}% spacing after head
3373 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont(#3)}}}% head spec

```

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

```
3374 \def\@acmdefinitionbodyfont{\normalfont}
```

\acmdefinitionindent The amount to indent the acmdefinition theorem style.

```
3375 \def\@acmdefinitionindent{\parindent}
```

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

```
3376 \def\@acmdefinitionheadfont{\itshape}
```

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

```
3377 \def\@acmdefinitionnotefont{\@empty}
```

Customization of the acmdefinition theorem style:

```

3378 \ifcase\ACM@format@nr
3379 \relax % manuscript
3380 \or % acmsmall
3381 \or % acmlarge
3382 \or % acmtog
3383 \or % sigconf
3384 \or % siggraph
3385 \or % sigplan

```

```

3386 \def\acmdefinitionbodyfont{\normalfont}
3387 \def\acmdefinitionindent{\z@}
3388 \def\acmdefinitionheadfont{\bfseries}
3389 \def\acmdefinitionnotefont{\normalfont}
3390 \or % sigchi
3391 \or % sigchi-a
3392 \or % acmengage
3393 \or % acmcp
3394 \fi

```

acmdefinition The acmdefinition theorem style

```

3395 \newtheoremstyle{acmdefinition}%
3396   {.5\baselineskip\@plus.2\baselineskip
3397     \@minus.2\baselineskip}% space above
3398   {.5\baselineskip\@plus.2\baselineskip
3399     \@minus.2\baselineskip}% space below
3400   {\acmdefinitionbodyfont}% body font
3401   {\acmdefinitionindent}% indent amount
3402   {\acmdefinitionheadfont}% head font
3403   {.%} punctuation after head
3404   {.5em}% spacing after head
3405   {\thmname{#1}\thmnumber{#2}\thmnote{ {\acmdefinitionnotefont{#3}}}}% head spec

```

Make acmplain the default theorem style.

```

3406 \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.

```

3407 \AtEndPreamble{%
3408   \if@ACM@acmthm
3409     \theoremstyle{acmplain}
3410     \ifundefined{theorem}{%
3411       \newtheorem{theorem}{Theorem}[section]
3412     }{}
3413     \ifundefined{conjecture}{%
3414       \newtheorem{conjecture}[theorem]{Conjecture}
3415     }{}
3416     \ifundefined{proposition}{%
3417       \newtheorem{proposition}[theorem]{Proposition}
3418     }{}
3419     \ifundefined{lemma}{%
3420       \newtheorem{lemma}[theorem]{Lemma}
3421     }{}
3422     \ifundefined{corollary}{%
3423       \newtheorem{corollary}[theorem]{Corollary}
3424     }{}
3425     \theoremstyle{acmdefinition}
3426     \ifundefined{example}{%

```

```

3427 \newtheorem{example}[theorem]{Example}
3428 }{}
3429 \@ifundefined{definition}{%
3430 \newtheorem{definition}[theorem]{Definition}
3431 }{}
3432 \fi
3433 \theoremstyle{acmplain}
3434 }

\@proofnamefont The font to typeset the proof name.
3435 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
3436 \def\@proofindent{\indent}

Customization of the proof environment.
3437 \ifcase\ACM@format@nr
3438 \relax % manuscript
3439 \or % acmsmall
3440 \or % acmlarge
3441 \or % acmtog
3442 \or % sigconf
3443 \or % siggraph
3444 \or % sigplan
3445 \def\@proofnamefont{\itshape}
3446 \def\@proofindent{\noindent}
3447 \or % sigchi
3448 \or % sigchi-a
3449 \or % acmengage
3450 \or % acmcp
3451 \fi

proof We want some customization of the proof environment.
3452 \renewenvironment{proof}[1][\proofname]{\par
3453 \pushQED{\qed}%
3454 \normalfont \topsep6\p@\plus6\p@\relax
3455 \trivlist
3456 \item[\@proofindent\hskip\labelsep
3457 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
3458 }{%
3459 \popQED\endtrivlist\endpfalse
3460 }

```

3.27 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.

```

3461 \AtEndPreamble{%
3462 \if@ACM@pbalance
3463 \global\@ACM@balancefalse
3464 \ifcase\ACM@format@nr
3465 \relax % manuscript
3466 \or % acmsmall

```

```

3467 \or % acmlarge
3468 \or % acmtog
3469 \RequirePackage{pbalance}%
3470 \or % sigconf
3471 \RequirePackage{pbalance}%
3472 \or % siggraph
3473 \RequirePackage{pbalance}%
3474 \or % sigplan
3475 \RequirePackage{pbalance}%
3476 \or % sigchi
3477 \RequirePackage{pbalance}%
3478 \or % sigchi-a
3479 \or % acmengage
3480 \RequirePackage{pbalance}%
3481 \or % acmcp
3482 \fi
3483 \fi
3484 \if@ACM@balance
3485 \ifcase\ACM@format@nr
3486 \relax % manuscript
3487 \global\@ACM@balancefalse
3488 \or % acmsmall
3489 \global\@ACM@balancefalse
3490 \or % acmlarge
3491 \global\@ACM@balancefalse
3492 \or % acmtog
3493 \RequirePackage{balance}%
3494 \or % sigconf
3495 \RequirePackage{balance}%
3496 \or % siggraph
3497 \RequirePackage{balance}%
3498 \or % sigplan
3499 \RequirePackage{balance}%
3500 \or % sigchi
3501 \RequirePackage{balance}%
3502 \or % sigchi-a
3503 \global\@ACM@balancefalse
3504 \or % acmengage
3505 \RequirePackage{balance}%
3506 \or % acmcp
3507 \global\@ACM@balancefalse
3508 \fi
3509 \fi
3510 }
3511 \AtEndDocument{%
3512 \if@ACM@balance
3513 \if@twocolumn
3514 \balance
3515 \fi\fi}

```

3.28 Acknowledgments

\acksname

```
3516 \newcommand\acksname{Acknowledgments}
```

`\acks` This is a comment-like structure

```
3517 \specialcomment{acks}{%
3518   \begingroup
3519   \section*{\acksname}
3520   \phantomsection\addcontentsline{toc}{section}{\acksname}
3521 }{%
3522   \endgroup
3523 }
```

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

```
3524 \def\grantsponsor#1#2#3{#2}
```

`\grantnum`

```
3525 \newcommand\grantnum[3][{}]{#3%
3526   \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

3.29 Conditional typesetting

We use the `comment` package for conditional typesetting:

```
3527 \AtEndPreamble{%
3528   \if@ACM@screen
3529     \includecomment{screenonly}
3530     \excludecomment{printonly}
3531   \else
3532     \excludecomment{screenonly}
3533     \includecomment{printonly}
3534   \fi
3535   \if@ACM@anonymous
3536     \excludecomment{anonsuppress}
3537     \excludecomment{acks}
3538   \else
3539     \includecomment{anonsuppress}
3540   \fi}
```

3.30 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’.

```
3541 \newcommand\showeprint[2][arxiv]{%
3542   \def\@tempa{#1}%
3543   \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
3544   \def\@tempb{arxiv}%
3545   \ifx\@tempa\@tempb\relax
3546     arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3547   \else
3548     \def\@tempb{arXiv}%
3549     \ifx\@tempa\@tempb\relax
3550       arXiv:\href{https://arxiv.org/abs/#2}{#2}%
3551     \else
3552       #1:#2%
3553     \fi
3554   \fi}
```

3.31 Index

`\theindex` Standard amsart uses plain page style in index pages. This clashes with line numbering for review option, so we redefine it.

```
3555 \def\theindex{\@restonecoltrue\if@twocolumn\@restonecolfalse\fi
3556 \columnseprule\z@ \columnsep 35\p@
3557 \@indextitlestyle
3558 \let\item\idxitem
3559 \parindent\z@ \parskip\z@\@plus.3\p@\relax
3560 \raggedright
3561 \hyphenpenalty\@M
3562 \footnotesize}
```

3.32 End of Class

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

```
3563 \let\@vspace@orig=\@vspace
3564 \let\@vspacer@orig=\@vspacer
3565 \apptocmd{\@vspace}{\ClassWarning{\@classname}{\string\vspace\space should
3566 only be used to provide space above/below surrounding
3567 objects}}{}{}
3568 \apptocmd{\@vspacer}{\ClassWarning{\@classname}{\string\vspace\space should
3569 only be used to provide space above/below surrounding
3570 objects}}{}{}
3571 \let\@vspace@acm=\@vspace
3572 \let\@vspacer@acm=\@vspacer
```

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

```
3573 \let\ACM@origbaselinestretch\baselinestretch
3574 \AtEndDocument{\ifx\baselinestretch\ACM@origbaselinestretch\else
3575 \ClassError{\@classname}{An attempt to redefine
3576 \string\baselinestretch\space detected. Please do not do this for
3577 ACM submissions!}\fi}
```

`\ACM@origsection` We produce an error if the user tries to change `\section`

```
3578 \let\ACM@origsection\section
3579 \AtEndDocument{\ifx\section\ACM@origsection\else
3580 \ClassError{\@classname}{An attempt to redefine
3581 \string\section\space detected. Please do not do this for
3582 ACM submissions!}\fi}
```

`\ACM@origsubsection` We produce an error if the user tries to change `\subsection`

```
3583 \let\ACM@origsubsection\subsection
3584 \AtEndDocument{\ifx\subsection\ACM@origsubsection\else
3585 \ClassError{\@classname}{An attempt to redefine
3586 \string\subsection\space detected. Please do not do this for
3587 ACM submissions!}\fi}
```

`\ACM@origsubsubsection` We produce an error if the user tries to change `\subsubsection`

```
3588 \let\ACM@origsubsubsection\subsubsection
3589 \AtEndDocument{\ifx\subsubsection\ACM@origsubsubsection\else
3590 \ClassError{\@classname}{An attempt to redefine
3591 \string\subsubsection\space detected. Please do not do this for
3592 ACM submissions!}\fi}
```

```

\ACM@origparagraph We produce an error if the user tries to change \paragraph
3593 \let\ACM@origparagraph\paragraph
3594 \AtEndDocument{\ifx\paragraph\ACM@origparagraph\else
3595   \ClassError{\@classname}{An attempt to redefine
3596     \string\paragraph\space detected. Please do not do this for
3597     ACM submissions!}\fi}

3598 \normalsize\normalfont\frenchspacing
3599 \end{class}

```

References

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Change History

1.48	General: Added prologue option to xcolor	52	\ccsdesc@parse: Added warning for missing concepts	82
	Bib code cleanup (Zack Weinberg)	38	\if@ACM@printacmref: Added warning for longer papers	79
	Documentation update (siggraph) .	38	\keywords: Added warning for missing keywords	78
1.49	General: New journal: DTRAP	38	1.69	\vspace: Added the changed command to avoid grouping . . .
1.53	General: New journals: PACMCGIT, TIOT, TDSCI	38	1.70	General: Name change for TDS
	Rearranged docs	38	1.71	General: Bibliography change: volume for @inproceedings is now in brackets together with series . . .
1.54	General: Moved footnote stuff before hyperref call (Ross Moore)	38		LuaTeX now uses the OTF versions of fonts
1.56	General: Documented \Description	38		Retired sigchi and sigchi-a
1.57	General: Booktabs package is now the default	38	1.75	General: Documentation update . . .
1.58	General: Changes in samples (Enrico Gregorio)	38	1.78	General: Documentation update: Word count
	New journal: HEALTH. TDS is renamed to TDSCI	38	1.79	General: Updated indormation for TAP, TCPS, TEAC
1.60	General: New option: urlbreakonhyphens	38	1.80	General: Added DLT and FAC
	\if@ACM@urlbreakonhyphens: introduced macro	39	1.82	General: Updated abbreviations and codes for several journals
1.62	General: New journal: TELO	38	1.84	General: New journals: JDS, GAMES
1.63	General: New journal: FACMP	38	1.85	General: Added CC licenses
	New journal: TQUANT	38		Added: acmengage
1.63a	General: Move: TQUANT to TQC . .	38		New journal: JRC
1.64	General: Putting abstract after \maketitle now causes an error .	38		\@mkauthors: Added: acmengage . .
1.65	General: New journal: DGOV	38		\@mktitle: Added: acmengage . . .
1.66	General: ACM reference format is now mandatory for papers over one page; CCS concepts and keywords are now mandatory for papers over two pages	38		\@printtopmatter: Added: acmengage
	Authors' addresses are mandatory for journal articles	38		\@specialsection: Added: acmengage
	\@mkauthorsaddresses: Added warning for missing addresses .	102		\@subtitlefont: Added: acmengage
				\@titlefont: Added: acmengage . .
				\ACM@linecountR: Added: acmengage
				format: New format: acmengage . . .
				\parskip: Added: acmengage

1.87	General: New journals: ACMJCSS, JATS, TORS	62	//github.com/borisveytsman/ acmart/issues/1)	38
	format: New format: acmcp	39	Defined ACM colors	38
1.88	General: Added ISSN for ACMJCSS	62	Explicitly put draft option (closes https: //github.com/borisveytsman/ acmart/issues/4)	42
	Added ISSN for GAMES	62	Set headheight to 1pc for all formats (closes https: //github.com/borisveytsman/ acmart/issues/5)	38
	Added PACMNET	62		
1.89	General: Added PACMMOD	62		
	Added TOPML	62		
	\@printtopmatter: Moved badges to top header	92	v1.02 General: Added TOPS and TSC (closes https: //github.com/borisveytsman/ acmart/issues/12)	38
1.90	General: Added TOPML eISSN	62	Documentation changes (closes https: //github.com/borisveytsman/ acmart/issues/13)	38
1.90a	General: Changes in the sample keywords and concepts	38		
1.92	General: Documentation update: use of 'anonymous' throughout	38	v1.03 General: Added anonsuppress environment	38
	Moved hyperxmp again due to kernel update	50	Added authorversion option (closes https: //github.com/borisveytsman/ acmart/issues/9)	38
2.04	General: Deleted loading ifdraft due to the new release of hyperxmp	50	\@formatdoi: Added macro	84
	Explicitly load ifdraft since hyperxmp tries to load it inside a group	50	\if@ACM@authorversion: Added macro	40
2.05	General: New data for TELO	62	\maketitle: Added special case of authorversion	88
2.06	General: Added eISSN for a number of journals	62	v1.04 General: Updated bibliography for siggraph	38
2.07	General: Another change for TELO	62	\acmArticleSeq: Name change by Matthew Fluet	76
2.13	\orcid: Protected orchidcite against uppercasing	75	\acmDOI: Name change by Matthew Fluet	77
2.15	General: Added AILET, TAIS, TAISAP, ACMJDS	62	\acmISBN: Name change by Matthew Fluet	77
2.16	General: Corrected handling of journals in the options	62	v1.05 General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	38
2.17	General: Fixed bug with ACMJDS	62	Patched \setcitestyle command; closes https: //github.com/borisveytsman/ acmart/issues/19	38
v1.00	General: First released version	38	v1.06 \@ACM@badge@skip: Added macro	77
v1.01	General: Changed hyperref colors in screen mode (closes https: //github.com/borisveytsman/ acmart/issues/19)	77	\@ACM@badge@width: Added macro	77
			\@ACM@title@width: Added macro	77

\@mktitle@i: Added processing		\@parfont: Moved to	
badges	94	\section@raggedright	112
Made generic	94	\copyrightpermissionfootnoterule:	
\@mktitle@ii: Now this macro is		Added macro	54
obsolete	95	\descriptionlabel: Redefined	62
\@mktitle@iii: Added processing		\footnoterule: Made shorter	55
badges	95	\if@ACM@natbib@override: Added	
Made more generic	95	macro	41
\@mktitle@iv: Made more generic	95	\if@ACM@newfonts: Added macro	56
\@printtopmatter: Added processing		\maketitle: Moved thankses to	
badges	92	copyrightpermission box	88
\@subtitlefont: Added macro	94	\section@raggedright: Introduced	
\@titlefont: Added macro	93	macro	112
\acmBadgeL: Added macro	78	v1.13	
\acmBadgeR: Added macro	77	General: Font adjustments for	
\if@ACM@badge: Added macro	77	acmsmall	97
v1.07		Increased font size for ACM Large	44
\maketitle: Corrected a bug with		Print bibliographic information by	
abstract footnotes	88	default for the proceedings	79
Corrected a bug with permission		\@mpfootnotetext: Made minipage	
and footnotes order	88	footnotes centered	50
v1.08		\bibliographystyle: Redefined	
General: SIGPLAN reformatting by		macro	51
Matthew Fluet	38	\bibstyle@acmauthoryear: Added	
Typos corrected (Tobias Pape)	38	macro	47
v1.09		\bibstyle@acmnumeric: Added	
General: Revert SIGPLAN caption		macro	47
rules	38	\if@ACM@printfolios: Added macro	79
v1.10		standardpagestyle: Added headers	
General: Changes of		for sigs	106
‘licensedothergov’ wording	82	Expanded headers for sigchi-a	106
\maketitle: Corrected a bug with doi		Suppressed folios if sig	106
in manuscript and author version,		v1.14	
https://github.com/borisveytsman/		General: \citestyle updates	
acmart/issues/36	88	(Matthew Fluet)	38
standardpagestyle: Reversed folios		Patched \citestyle	45
location	106	\bibstyle@acmauthoryear: Moved	
v1.11		def of \bibstyle@acmauthoryear	
General: Customization of ACM		before use	47
theorem styles and proof		\bibstyle@acmnumeric: Moved def of	
environment by Matthew Fluet	38	\bibstyle@numeric before use	47
v1.12		v1.15	
General: Added graceful behavior		\@ACM@addtoaddress: Added macro	95
when libertine fonts are absent	56	\@mkauthors@iii: New authors	
Documentation updates	38	system	99
\@marginfigure: Now centering by		\@shortauthors: Introduced macro	106
default	60	\@typeset@author@bx: Moved to	
\@marginable: Now centering by		separate macro	99
default	60	\acks: Added macro	118
\@mkauthors@i: Removed		\affiliation: Added code for author	
MakeTextUppercase due to a bug		groups	74
with new kernel	98	\author: Added code for author	
		groups	73
		\city: Added macro	95

\country: Added macro	95	v1.19	General: Include 'Abstract', 'Acknowledgements', and 'References' in PDF bookmarks (Matthew Fluet)	38
\department: Added macro	95		Include 'References' in PDF bookmarks (Matthew Fluet)	45
\grantnum: Added macro	118		Tagging code for tables	59
\grantsponsor: Added macro	118		\@mkabstract: Include 'Abstract' in PDF bookmarks (Matthew Fluet)	103
\if@insideauthorgroup: Introduced macro	73		\acks: Include 'Acknowledgements' in PDF bookmarks (Matthew Fluet)	118
\institution: Added macro	95	v1.20	General: Bug fixes for bst	38
\num@authorgroups: Renamed	73		\@mkabstract: Deleted spurious space	103
\orcid: Introduced macro	75	v1.21	\showeprint: Added macro	118
\position: Added macro	95	v1.22	General: More bibliography changes for Aptara	38
\postcode: Added macro	95	v1.23	General: Add PACMPL journal option	38
\state: Added macro	95	v1.24	General: Add IMWUT journal option	62
\streetaddress: Added macro	95	v1.25	General: Updated PACMPL	62
standardpagestyle: Better handling of anonymous mode	106	v1.26	General: Corrected \shortcite bug .	38
v1.16			Documentation typos fixed (thanks to Stephen Spencer)	38
General: Formatting header/footer (Matthew Fluet)	38	v1.27	\if@ACM@printccs: Typo corrected .	79
\@headfootfont: Added macro	106	v1.28	General: Corrected option natbib behavior	47
standardpagestyle: Customize header/footer text font	106		Got rid of warnings in pdf keywords	50
v1.17			\ccsdesc@parse: Change from \to to \textrightarrow (Matteo Riondato)	81
General: Slightly decreased margins for sigs	52	v1.29	General: Increased head to 13pt	52
\@makefnmark: Redefined	50		\@mkabstract: Removed spurious indentation (John Wickerson) . .	103
\@mkauthors: TOG now uses the same authors block as other journals . .	96		\ccsdesc@parse: Add spacing after bullet and around rightarrow; semicolon separators no longer in bold/italic (John Wickerson)	81
\@mkauthors@ii: Deleted	99		standardpagestyle: Corrected printfolios (Matthew Fluet)	106
\@mkbibcitation: Added \nobreak Changed format for sigs	103	v1.30	General: Added \frenchspacing . . .	120
\acmArticle: The default is now numerical	76		Bibtex style now recognizes https:// in doi	38
\acmMonth: The default must be numerical. Closes #50.	76			
\acmNumber: The default is now numerical	76			
\acmVolume: The default is now numerical	76			
\acmYear: The default is now numerical	76			
\description: Decreased indent . . .	62			
\grantnum: Added url	118			
\grantsponsor: Renamed	118			
\if@ACM@printacmref: Renamed from \if@ACM@printbib	79			
standardpagestyle: Added paper title to sigs	106			
v1.18				
General: Natbib is now the default for all formats	38			
\@mkauthors@i: Now we andify affiliations	98			
\@typeset@author@line: Added macro	97			

Switched to T1: looks like libertine has problems with \l in OT1 . . .	56	\ACM@timestamp: Added current page number	105
Updated IMWUT and PACMPL . .	62	Added macro (Michael D. Adams) .	105
\department: Added optional parameter	95	Added submission id	105
v1.31		\acmSubmissionID: Added macro . .	77
General: Documentation changes . .	38	\city: Added obeypunctuation code	95
\@additionalaffiliation: Added macro	74	\country: Added obeypunctuation code	95
\@mkbibcitation: Disabled linebreak	103	\department: Added obeypunctuation code	95
\@startsection: Added \tochangmeasure	49	\if@ACM@affiliation@obeypunctuation: Added macro	74
\@starttoc: Redefined macro	49	\if@ACM@authordraft: Added macro	41
\@textbottom: Redefined	55	\if@ACM@natbib@override: Deleted macro	41
\acmMonth: The default now is the current month (Matteo Riondato)	76	\if@ACM@timestamp: Added macro (Michael D. Adams)	41
\acmYear: The default now is the current year (Matteo Riondato) . .	76	\institution: Added obeypunctuation code	95
\additionalaffiliation: Added macro	74	firstpagestyle: Added right linecount for two-column formats	108
\l@section: Redefined macro . .	49	Added timestamp (Michael D. Adams)	108
\l@subsubsection: Redefined macro	49	\maketitle: Fixed the bug with figures on top and bottom of the title page, thanks to David Epstein	88
v1.32		\position: Added obeypunctuation code	95
General: Added POMACS journal option	38	\postcode: Added obeypunctuation code	95
Format siggraph is now obsolete .	38	\state: Added obeypunctuation code	95
\@formatdoi: New doi format	84	\streetaddress: Added obeypunctuation code	95
v1.33		standardpagestyle: Added right linecount for two-column formats	106
General: Added acmart-preload-hook	38	Added timestamp (Michael D. Adams)	106
Added cmap and glyphtounicode .	56	v1.34	
BibTeX comma before articleno bug corrected	38	\@mkbibcitation: Deleted DOI from doi numbers	103
BibTeX crossref bug corrected . .	38	\ACM@linecount@bx: Rulers now are continuous	104
BibTeX numpages bug corrected .	38	\ACM@linecountL: Rulers now are continuous	105
Documentation updates	38	\ACM@linecountR: Rulers now are continuous	105
Moved \citename definition for non-natbib bibliography, so a package may redefine it	51	\maketitle: Added date to the bibstrip in conf proceedings	88
Switched to Type 1 fonts for libertine even if OTF-capable engine is used (Kai Mindermann) .	56	Deleted 'DOI' from doi numbers .	88
\@ACM@addtoaddress: Added obeypunctuation code	95	Rearranged bibstrip	88
\@mkauthors@i: Added obeypunctuation code	98	The \terms command is now obsolete	88
\@mkauthors@iii: Added obeypunctuation code	99	\terms: The \terms command now just produces a warning	78
\@mkauthors@iv: Added obeypunctuation code	100		
\@subtitlefont: Added \normalsize	94		
\ACM@linecountL: Renamed macro .	105		
\ACM@linecountR: Added macro . .	105		

v1.35	General: BibTeX bug fixed: et al.	38	\@parfont: Switched to MakeTextUppercase	112
	If the copyright is set to usgov or rightsretained, the price is suppressed	82	\ACM@linecount@bx: Work around a bug in xcolor: looks like cmyk colors in boxes do not work . . .	104
	\bibstyle@acmauthoryear: Square brackets for author-year style . . .	47	\ccdesc@parse@finish: Added macro	82
v1.36	General: Added PACMHCI journal options	62	\city: We now do not print this even in SIG	95
	Added the possibility to adjust number of author boxes per row in conference formats	38	\country: Fixed bugs with extra spaces	95
	\@ACM@authorsperrrow: Added macro	79	\l@section: Redefined macro . .	49
	\@mkauthors@iii: Added authorsperrrow override	99	\postcode: We now do not print this even in SIG	95
	\@mkauthors@iv: Added authorsperrrow override	100	\state: We now do not print this even in SIG	95
	\if@ACM@authordraft: Corrected typo, thanks to bargteil	41	\streetaddress: We now do not print this even in SIG	95
v1.37	General: Reduce list indentation (Matthew Fluet)	61	v1.41 General: Added new badges	38
	Set \normalparindent; Reduce list indentation (Matthew Fluet)	38	v1.42 General: Deleted ACM badges	38
	\description: Reduce list indentation (Matthew Fluet)	62	v1.43 \@starttoc: Added \makeatletter	49
	\descriptionlabel: Reduce list indentation (Matthew Fluet)	62	\country: Added comma before country for journals	95
	\normalparindent: Set \normalparindent (Matthew Fluet)	54	v1.44 General: Added package refcount . . .	38
v1.38	General: Increase default font size for SIGPLAN	38, 44	Deleted package cleveref	38
v1.39	\@@authornotemark: Added macro . .	102	Put theorem defs in a separate style	38
	\authornotemark: Added macro . . .	76	\@acmBooktitle: Added macro	72
v1.40	General: Added 'textcase' package . .	45	\@acmEditors: Added macro	72
	Added heightrounded to geometry	52	\@editorsAbbrev: Added macro . . .	72
	Added new copyright version: licensedcagov	38	\@folioblob: Suppress the blob if acmArticleSeq is empty	108
	Added package cleveref	38	\@mkbibcitation: If the paper has just one page, use 'page' instead of 'pages'	103
	Added Ross Moore code for glyphtounicode	56	\ACM@restore@pagestyle: Added macro	104
	Bibliography changes	38	\acmArticle: The default is now empty	76
	\@copyrightowner: Added new copyright version: licensedcagov .	83	\acmArticleSeq: Now acmArticle might be empty	76
	\@copyrightpermission: Added new copyright version: licensedcagov .	84	\acmBooktitle: Added macro	72
	\@mkauthors@i: Switched to MakeTextUppercase	98	\editor: Added macro	72
			\if@ACM@acmthm: Added macro	39
			\maketitle: Empty DOI or ISBN are not printed (by Michael Ekstrand)	88
			v1.45 \@folioblob: Switched \bfseries\sffamily to \sffamily\bfseries	108

\@parfont: Switched		\@mkabstract: Removed spurious indentation if abstract is followed by an empty line	103
\bfseries\sffamily to		\ACM@timestamp: Formatting change (Michael D. Adams)	105
\sffamily\bfseries	112	\if@ACM@review: Review mode now switches on folios	40
\@titlefont: Switched		\maketitle: Added acmart and version info to pdfcreator tag	88
\bfseries\sffamily to		Added language and doctitle attributes to PDF (Andreas Reichinger)	88
\sffamily\bfseries	93	Suppressed empty DOI (Serguei Mokhov)	88
v1.46		v1.50	
General: Added etoolbox	38	\@copyrightpermission: New copyright statements for iw3c2w3[g]	84
Bst file bug fixes: label width is calculated correctly	38	v1.51	
Delayed hypersetup since journal options may change screen mode	50	General: Corrected the bug with price suppression	82
PACM now set screen to true	62	Suppress price if the copyright is set to iw3c2w3 or iw3c2w3g	82
Restore theorem defs to class file	38	XeTeX now uses OTF fonts (Joachim Breitner)	56
\@mkauthorsaddresses: Introduced macro	101	firstpagestyle: We now use journal abbreviation for footers	108
\@mkbibcitation: Added subtitle	103	standardpagestyle: We now use journal abbreviation for footers	106
\@printendtopmatter: Made it		v1.52	
\par\bigskip uniformly	104	\@copyrightowner: Rewording of licenses	83
\@printtopmatter: Deleted rule	92	\@copyrightpermission: Another rewording of copyright statements for iw3c2w3[g]	84
\@setauthorsaddresses: Introduced macro	104	v1.53	
\ACM@linecount@bx: Rearranged the code to get rid of spurious underfull messages (Benjamin Byholm)	104	General: Added PACMCGIT, TIOT, TDSCI	62
\author: Started counting authors	73	v1.54	
\authorsaddresses: Introduced macro	75	General: Added Ross's patch for sectioning	111
\country: Corrected spacing for institution	95	Deleted indent for subsubsection	111
\if@ACM@acmthm: Modified description	39	XeTeX now uses T1 encoding	56
\liningnums: Workaround for compatibility with fontspec	57	\@mkbibcitation: Bug corrected (Ross Moore)	103
\maketitle: Added authors' addresses	88	\@shortauthors: Added submission id in anonymous mode	106
Thankses go before authors' addresses	88	\ACM@adddotafter: Added macro	111
\num@authors: Introduced macro	73	\ACM@NR@adjustedSectionFormat: Added macro	111
v1.47		\ACM@NRadjust: Added macro	110
General: New journal: THRI	38	\author: Added submission id in anonymous mode	73
v1.48		\if@ACM@nonacm: Added macro	40
General: \citeyear no longer behaves like \citeyearpar	51		
Code prettying (Michael D. Adams)	38		
Initial support for Biblatex (Daniel Thomas)	38		
Misc entries in the bibliography no longer produce a separate date	38		
Typos fixed (Jamie Davis)	38		
\@headfootfont: Deleted unnecessary switch (Michael D. Adams)	106		

v1.55	General: Now we use purple color for links	50	\maketitle: Original \vspace inside \maketitle	88
	Table captions for SIGCHI now use the same font size as figure captions (Luis Leiva)	58	\vspace: Preserved old versions as \vspace@orig and \vspace@orig	119
	Typo corrected (Zack Weinberg)	45	v1.59	
	\@mkbibcitation: Bug corrected	103	\acmConference: Setting \ACM@journal@bibstrip	72
	\maketitle: Fixes topnum	88	\acmJournal: Setting \ACM@journal@bibstrip	71
v1.56	General: Looks like XeTeX requires explicit monotype font declaration	56	\if@ACM@journal@bibstrip: Introduced macro	42
	Make two-column layouts flush (Philip Quinn)	52	firstpagestyle: Added logic for conference papers using journal format	108
	\@marginfigure: Added checking for description	60	Moved page styles to \AtBeginDocument	108
	\@mkteasers: Added check for description	102	standardpagestyle: Added logic for conference papers using journal format	106
	\acksname: Added macro (Philip Quinn)	117	Moved page styles to \AtBeginDocument	106
	\ccsdesc@parse: End the concepts list with a period (Philip Quinn)	81	v1.60	
	\Description: Added macro	57	\@headfootfont: Moved to footnotesize	106
	\if@Description@present: Added macro	57	v1.61	
	\if@undescribed@images: Added macro	57	\@typeset@author@bx: Added \normalbaselines	99
v1.57	\ACM@origbaselinestretch: Added check whether the user changed \baselinestretch	119	v1.64	
	\author: Added warning if \author has comma	73	\ACM@linecount@bx: Bug fix: made the spacing on the left and the right size equal	104
	\email: Added warning if \author has comma	74	\if@ACM@maketitle@typeset: Introduced macro	62
	\if@ACM@balance: Added macro	40	\maketitle: Added a switch setting to show that \maketitle is typeset	88
	\vspace: Added warning	119	v1.65	
v1.58	General: Added HEALTH. TDSCI is renamed to TDS	62	\@mkauthorsaddresses: Deleted cs@addpunct	101
	Suppressed \addtocounter in pdf subject	50	v1.66	
	\@dblfloat: Deleted spurious \vspace warning	60	General: Patching algorithm and algorithm* to prevent spurious space warnings	58
	\@marginfigure: Deleted spurious \vspace warning	60	\@specialsection: Suppress warnings about \vspace	91
	\@margintable: Deleted spurious \vspace warning	60	v1.67	
	\@mkbibcitation: Deleted spurious \vspace warning	103	General: Patching lstlisting and lstlisting* to prevent spurious space warnings	58
	\@printendtopmatter: Deleted spurious \vspace warning	104	\@parfont: Deleted redefinitions of sections	112
	\@sidebar: Deleted spurious \vspace warning	60	\@specialsection: Paragraph inside group does not print its argument. Added a bugfix	91

v1.68	General: New command for unindent paras 111	v1.75	\@ACM@checkaffil: Changed warning to error for country 98
	\@specialsection: Deleted grouping altogether 91		\@beginmaketitlehook: Introduced macro 87
v1.69	General: No dots for unindented paragraphs 111		\AtBeginMaketitle: Introduced macro 87
	\@printendtopmatter: Deleted grouping 104		\maketitle: Added \@beginmaketitlehook 88
	\@specialsection: Changed dot to colon for sigplan 91	v1.76	General: Moved hyperxmp before hyperref, see https://github.com/borisveytsman/ acmart/issues/425 50
	\ACM@linecountR: Do not increase numbers in one column format 105		\author: Added code for orcid links 73
	\ccsdesc@parse: Use math right arrow in text 81		\ifACM@pbalance: Added macro 40
v1.71	\l@subsubsection: Bug fixed (thanks to Andrew Black) 49		\maketitle: Put \par inside group for keywords 88
v1.72	\author: Added \detokenize (Kuldeep S. Meel) 73		\orcid: Added code for orcid links 75
	\maketitle: Do not andify authors for pdf metadata (Scott Pakin) 88		standardpagestyle: Fixed bug with no line numbers for nonacm 106
v1.73	General: Patching minted and minted* to prevent spurious space warnings 58	v1.77	\@mkauthorsaddresses: New separator of institutions 101
	\@ACM@checkaffil: Added macro 98	v1.78	\@mkauthors@i: Unboxing \mktitle@bx 98
	\@ACM@resetaffil: Added macro 98		\@mkauthors@iii: Unboxing \mktitle@bx 99
	\@mkauthors@i: Check the presence of required elements for affiliations 98		\@mkteasers: Unboxing \mktitle@bx 102
	\@mkauthors@iii: Check the presence of required elements for affiliations 99		\@printtopmatter: Added processing the overflowing title box 92
	\@mkauthors@iv: Check the presence of required elements for affiliations 100		\@specialsection: Again suppressed \vspace warning 91
	\city: Check the presence in affil 95	v1.82	\anon: Introduced macro 87
	\country: Check the presence in affil 95	v1.83	General: Use babel for multilanguage papers 47
	\ifACM@citypresent: Added macro 98		\@mkabstract: I13n 103
	\ifACM@countrypresent: Added macro 98		\@mktitle@i: Added \translatedtitle and \translatedsubtitle 94
	\ifACM@instpresent: Added macro 98		\@mktitle@iii: Added \translatedtitle and \translatedsubtitle 95
	\institution: Check the presence in affil 95		\@mktitle@iv: Added \translatedtitle and \translatedsubtitle 95
	\maketitle: Do not check again the presense of address fields 88		\@mktranslatedabstract: Added macro 103
v1.74	General: Changed the order of font loading 56		\@mktranslatedkeywords: Added macro 75

\@translatedabstracts: Added macro	49	\acmDataLink: Introduced macro . .	81
\@translatedkeywords: Added macro	48	Now this is the same as the code link	81
\@translatedsubtitle: Added macro	48	\if@ACM@acmcp: Introduced macro . .	42
\@translatedtitle: Added macro .	48	firstpagestyle: Special treatment for acmcp	108
\ACM@lang@check: Added macro . . .	48	\maketitle: CC license are allowed for non-acm publications	88
\ACM@languages: Introduced macro .	42	\set@ACM@acmcpbox: Added macro .	91
\maketitle: I13n	88	standardpagestyle: Special treatment of ACMCP	106
translatedabstract: Added macro	49	v1.88	
\translatedkeywords: Added macro	48	\@mktitle@i: Moved down title for acmcp	94
\translatedsubtitle: Added macro	48	v1.89	
\translatedtitle: Added macro . .	48	General: Added ‘zref-savepos’ package for acmcp	45
v1.85		\@ACM@acmcp@delta: Added dimen .	45
General: Added CC licenses	82	\@ACM@badge@skip: Redefined macro	77
\@acmengagemetadata: Introduced macro	88	\@ACM@color@frame: Added saving the position of the bottom	80
\@copyrightowner: Added CC licenses	83	\@acmBadgeL: Introduced macro . . .	77
\@copyrightpermission: Added CC licenses	84	\@acmBadgeR: Introduced macro . . .	77
\@parfont: Added: acmengage	112	\@mktitle@i: Moved badges to top header	94
\@typesetengagemetadata: Introduced macro	104	Moved up acmcp title	94
\if@ACM@engage: Introduced macro .	42	\@mktitle@iii: Moved badges to top header	95
\maketitle: acmengage	88	\acmBadge: Added macro	78
\setcctype: Added macro	83	\acmBadgeL: Redefined macro	78
\setengagemetadata: Introduced macro	88	\acmBadgeR: Redefined macro	77
v1.86		\if@ACM@badge: Deleted macro	77
\country: Error if country is empty .	95	firstpagestyle: Moved badges here	108
standardpagestyle: Special treatment of ACM Engage materials	106	\set@ACM@acmcpbox: Added logo . . .	91
v1.87		Added zref position of the bottom	91
General: Added ‘framed’ package for acmcp	45	v1.91	
No numbering sections for ACMCP	113	\acmContributions: Restored the macro	81
\@ACM@color@frame: Introduced macro	80	standardpagestyle: Redesigned ACMP labels	106
\@ACM@copyright@check@cc: Added macro	84	v1.93	
\@copyrightpermission: CC licenses now are allowed only for non-acm or ACM engage publications	84	General: Added PACMSE journal option	38
\@mkauthors@i: Special treatment for acmcp	98	v2.00	
\@mktitle@i: Special treatment for acmcp	94	General: Deleted acmPrice	82
\acmArticleType: Introduced macro	80	\@ACM@copyright@check@cc: Moved to warning	84
\acmCodeDataLink: Added possibility to have several links	81	\@copyrightowner: Changed wording	83
Introduced macro	81	\@folio@ht: Obsoleted macro	108
		\@folio@max: Obsoleted macro	108
		\@folio@voffset: Obsoleted macro .	108
		\@folio@wd: Obsoleted macro	108
		\@folioblob: Obsoleted macro	108
		\@sect@kernel: Added macro	44
		\@sect@kernel: Added macro	44

\@startsection@kernel: Added macro	44	v2.10	General: Added tocindent for paragraphs and subparagraphs . .	113
\@xsect@kernel: Added macro	44			
\acmPrice: Deleted macro	77	v2.11	\@copyrightpermission: Changed URL for CC licenses	84
firstpagestyle: Deleted blobs	108		\maketitle: Deleted conference date from bibstrip	88
\maketitle: Added “ACM” for papers	88			
Deleted acmPrice	88			
v2.01		v2.12	General: Removed ‘textcase’ package	45
General: Documentation update: POMACS uses acmsmall	38		Use unicode-math and libertine for Unicode engines	56
\acmBooktitle: Moved default conference title to conference setting	72	v2.13	General: Added mathcal in unicode mode	56
\acmPrice: Now the macro produces a warning	77		New warnings about lack of descriptions	57
v2.02		v2.14	\ACM@origparagraph: Added check whether the user changed \paragraph	120
\acmConference: Moved here setting the conference title for bibstrip . .	72		\ACM@origsection: Added check whether the user changed \section	119
v2.03			\ACM@origsubsection: Added check whether the user changed \subsection	119
General: Added documentation about samples	38		\ACM@origsubsubsection: Added check whether the user changed \subsubsection	119
\acmConference: Made setting bibstrip overriding journal	72	v2.15	General: Added symbols in unicode mode	56
\if@ACM@journal@bibstrip@or@tog: Introduced macro	42		\@@authornotemark: Suppressed spurious overfull warning	102
firstpagestyle: Special treatment of tog	108		\@authornotemark: Suppressed spurious overfull warning	102
\maketitle: Special processing for conferences in TOG	88	v2.16	\IfDocumentMetadata: Provided stubs for old kernels	38
standardpagestyle: Special treatment of ACM TOG	106	v2.17	General: Added tagging documentation	38
v2.04			Moved tagged code to the main class	44
General: eISSN is printed, rather than pSSN	71		Rearranged documentation	38
\@copyrightowner: Changed wording	83		\@startsection: Moved tagging code to the main class	49
v2.06		v2.18	General: Added pifont	57
\@mkauthorsaddresses: \streetaddress and \postcode now produce warnings	101		Deleted IMS designation	38
\postcode: We now do not collect postal information anymore	95		Keywords are now deprecated. Deleted them from the samples . .	38
\streetaddress: We now do not collect postal information anymore	95		Merged tagged branch	38
v2.08				
\@parfont: Deleted uppercasing . . .	112			
v2.09				
General: Saved the old definitions (Ulrike’s code	44			
\@ACM@copyright@check@cc: Deleted macro	84			
\@copyrightpermission: Deleted checking whether CC licenses are allowed	84			

Moved note before url (suggested by David F. Kotz)	38	\@mkauthors@iv: Email is now clickable	100
New code for captions	59	\@mkauthorsaddresses: Email is now clickable	101
Revised documentation	38	\correspondingauthor: Added macro	76
Rewrote caption code for tagging	58		
Switched off warning in tagged mode	57	v2.19	
\@ACM@addtoaddress: Deleted the cleaders code	95	General: ACM cleared their position about keywords. Re-added them	38
\@correspondingauthormark: Added macro	76	v2.20	
\@mkauthors@iii: Email is now clickable	99	\acmConference: Proceedings headers, footers and folios for acmsmall used for conference proceedings	72

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.

Symbols		
\-	540	\@ACM@instpresenttrue 2557, 2568, 2646
\@	1964, 1967, 1979, 1984, 1989, 2073, 2110	\@ACM@journal@bibstrip@or@to@b@f 472, 3561
\@authornotemark	1685, 2843	\@ACM@journal@bibstrip@or@to@b@f 1529
\@ACM@acmcp@delta	288, 2339, 2343	\@ACM@journal@bibstrip@or@to@b@f 215, 237, 1513
\@ACM@acmcp@box	2326, 2330, 3126, 3211	\@ACM@journal@bibstripfalse 3012, 3015, 3035,
\@ACM@acmcpfalse	174	\@ACM@journal@bibstriptrue 3153, 3163, 3174, 3215
\@ACM@acmcptrue	232	\@ACM@journalfalse 3011, 3029, 3030,
\@ACM@addtoaddress	2542, 2572, 2573, 2574	\@ACM@journaltrue 217, 3039, 3042, 3049, 3053
\@ACM@author@sperrrow	1790, 2718, 2719, 2771, 2772	\@ACM@maketitle@typesetfalse 1032
\@ACM@badge@skip	1715, 1727, 1740	\@ACM@maketitle@typesettrue 1717, 1720, 1721,
\@ACM@badge@width	1712, 1724, 1730, 1737, 1743	\@ACM@manuscriptfalse 203
\@ACM@balancefalse	3463, 3487, 3489, 3491, 3503, 3507	\@ACM@manuscripttrue 201
\@ACM@checkaffil	2297, 2656, 2687, 2692, 2754, 2759, 2799, 2804	\@ACM@newfontsfalse 761, 764, 767
\@ACM@citypresentfalse	2653	\@ACM@newfontstrue 758
\@ACM@citypresenttrue	2559, 2572, 2648	\@ACM@printacmreffalse 99, 233
\@ACM@color@frame	1847, 2323	\@ACM@printfoliostrue 82
\@ACM@commabox	2542	\@ACM@resetaffil 2651, 2686, 2691,
\@ACM@copyright@check@cc	2000	\@ACM@reviewtrue 144
\@ACM@countrypresentfalse	2654	\@ACM@screenttrue 1173, 1224,
\@ACM@countrypresenttrue	2564, 2574, 2650	\@ACM@sigchiamodeffalse 205
\@ACM@engagefalse	172	\@ACM@sigchiamodetrue 226
\@ACM@engagetrue	229	\@ACM@timestamptrue 143
\@ACM@institution@separator	2824, 2825, 2830	\@ACM@title@width 1714,
\@ACM@instpresentfalse	2652	\@ACM@title@width 2515, 2517, 2526, 2527
		\@DeclareACMFormat 42,
		\@Description@presentfalse 824, 827, 933, 2850
		\@Description@presenttrue 800, 803
		\@abstract 1761, 2858, 2865
		\@acmArticle 1692, 1695,
		\@acmArticlePage 2263, 2883, 2884,
		\@acmArticleSeq 3012, 3015, 3035,
		\@acmBadgeL 3045, 3057, 3130,
		\@acmBadgeR 3153, 3163, 3174, 3215
		\@acmBooktitle 1718, 1733, 1734,
		\@acmCodeDataLink 1739, 3144, 3156,
		\@acmContributions 3157, 3168, 3169,
		\@acmDOI 3181, 3184, 3189, 3210
		\@acmEditors 1542, 2230, 2253, 2899
		\@acmISBN 1547, 1550, 2900, 2901
		\@acmMonth 1708, 2266
		\@acmNumber 1698, 1700, 2263
		\@acmPubDate 1690, 2896, 3035,
		\@acmSubmissionID 3045, 3057, 3129,
		\@acmYear 3153, 3163, 3174, 3214

1572, 1591, 1592, 1706, 2992, 2993, 3003	\@authorfont 2604, 2609, 2613, 2616, 2619, 2622, 2625, 2628, 2631, 2634, 2674, 2710	\@copyrightyear 2145, 2237, 2239, 2240
\@acmVolume 1688, 2896, 3034, 3044, 3057, 3129, 3152, 3162, 3174, 3214	\@authornotemark 1670, 1683, 2841	\@correspondingauthor mark 1676, 1678
\@acmYear . . 1696, 1703, 2146, 2230, 2263, 2887	\@authornotes 1667, 1671, 2193	\@currbox . . . 962, 963, 964
\@acmdefinitionbodyfont . . . 3374, 3386, 3400	\@authorsaddresses 1642, 2202, 2355, 2836, 2917	\@current@float@struct 901, 906
\@acmdefinitionheadfont . . . 3376, 3388, 3402	\@auxout . . 576, 2342, 3331	\@currentaffiliation 2711, 2714, 2736, 2743, 2744, 2747, 2750, 2751, 2756, 2783, 2790, 2791, 2793, 2795, 2796, 2801
\@acmdefinitionindent . . . 3375, 3387, 3401	\@begindocumenthook 572	\@currentaffiliations 2640, 2641, 2642, 2644, 2670, 2682, 2683, 2689
\@acmdefinitionnotefont . . . 3377, 3389, 3405	\@beginmaketitlehook . . . 2163, 2166, 2172	\@currentauthors . . . 1678, 2638, 2639, 2669, 2673, 2674, 2676, 2710, 2713, 2735, 2737, 2738, 2740, 2782, 2784, 2785, 2787, 2841, 2843
\@acmengagemetadata . . . 2167, 2169, 2920	\@botnum 2316	\@currentlabel . 490, 504
\@acmownedfalse 1915, 1918, 1921, 1926, 1929, 1932, 1935, 1938, 1944, 1947, 1950, 1953	\@citestyle 322	\@dblfloat 945
\@acmownedtrue 1902, 1911, 1941	\@classname . . . 25, 27, 36, 39, 42, 55, 57, 59, 60, 63, 65, 67, 68, 71, 73, 75, 76, 79, 81, 84, 85, 88, 90, 92, 93, 96, 98, 104, 105, 108, 109, 112, 113, 116, 118, 120, 121, 124, 126, 128, 129, 132, 134, 136, 137, 140, 142, 146, 147, 165, 176, 179, 182, 185, 188, 271, 433, 457, 759, 762, 765, 806, 832, 835, 936, 1174, 1225, 1232, 1249, 1256, 1263, 1507, 1509, 1561, 1616, 1628, 1704, 1748, 1754, 1759, 1766, 1768, 1769, 1772, 1774, 1775, 1778, 1786, 1788, 1789, 1791, 1792, 1840, 1893, 2304, 2549, 2552, 2658, 2661, 2664, 2817, 2820, 2837, 2853, 2880, 3565, 3568, 3575, 3580, 3585, 3590, 3595	\@department . . 1621, 1622
\@acmplainbodyfont 3342, 3354, 3368	\@concepts . 1865, 1877, 1891, 2281, 2283, 2301	\@dotsep 3341
\@acmplainheadfont 3344, 3356, 3370	\@copyrightowner 1961, 2237	\@editorsAbbrev 1544, 1549, 2901
\@acmplainindent 3343, 3355, 3369	\@copyrightpermission . . . 2000, 2213, 2225	\@empty 159, 245, 392, 432, 1524, 1532, 1546, 1568, 1571, 1589, 1591, 1596, 1597, 1603, 1720, 1733, 1751, 1752, 1808, 1809, 1815, 1822, 1854, 1865, 1891, 2164, 2197, 2202, 2239, 2255, 2266, 2267, 2278, 2281, 2287, 2291, 2346, 2349, 2352, 2355, 2391, 2520, 2529, 2538, 2563, 2640, 2673, 2681, 2682, 2737, 2743, 2750, 2784, 2790, 2795, 2836, 2846, 2883, 2888, 2900, 2907, 2992, 3003, 3074, 3076, 3098, 3100, 3130, 3131, 3215, 3216,
\@acmplainnotefont 3345, 3357, 3373		
\@adddotafter 3230, 3231, 3233, 3245, 3263, 3268, 3336		
\@additionalaffiliation 1617, 1618		
\@addpunct . 2828, 2916, 2917, 3336, 3337, 3457		
\@addspaceafter . . . 3337		
\@affiliationfont 2605, 2610, 2614, 2617, 2620, 2623, 2626, 2629, 2632, 2635, 2687, 2710		
\@afterheading 2319		
\@afterindentfalse . 2318		
\@article@string 2883, 2896, 2904		
\@author 1570, 1576, 1583, 2672, 2737, 2784, 2831		

3345, 3377, 3526, 3543	\@journalCode@nr . . .	1469, 1474, 1479,
\@endfloatbox 948	. . . 1033, 1112, 1514	1484, 1489, 1494,
\@endpefalse 3459	\@journalName	1499, 1504, 1516,
\@endwidefloatbox 948, 956	1114, 1119, 1124,	2895, 3034, 3044,
\@finalstrut . . . 495, 508	1129, 1133, 1138,	3056, 3152, 3162, 3173
\@firstofone 32	1143, 1148, 1153,	\@keywords 1750,
\@float 950	1158, 1163, 1168,	1751, 1752, 2287,
\@flushglue 3279	1176, 1181, 1186,	2289, 2302, 2349, 2350
\@fnsymbol 2183	1191, 1196, 1201,	\@latex@error 366
\@folio@ht 3136	1205, 1210, 1215,	\@lempty 1763, 2858
\@folio@max 3136	1220, 1227, 1234,	\@listI 1007, 1011
\@folio@voffset 3136	1239, 1244, 1251,	\@listi 1004, 1011
\@folio@wd 3136	1258, 1265, 1270,	\@listii 1012
\@folioblob 3136	1275, 1280, 1285,	\@listiii 1015
\@footnotemark . 511, 2181	1290, 1295, 1300,	\@listiv 1017
\@footnotemark@nolink	1305, 1310, 1314,	\@listv 1019
. 511, 2181	1319, 1324, 1329,	\@listvi 1021
\@footnotetext	1334, 1339, 1344,	\@makefnmark . . . 485,
. 486, 512, 2182	1348, 1353, 1358,	510, 2185, 2190, 2194
\@footnotetext@nolink	1363, 1368, 1373,	\@makefntext
. 512, 2182	1378, 1383, 1388,	. . 485, 494, 507, 2196
\@for 298, 3323, 3330	1393, 1398, 1403,	\@marginfigure . 928, 929
\@formatdoi 1999,	1408, 1413, 1418,	\@margintable . . 939, 940
2258, 2264, 2267,	1423, 1428, 1433,	\@minipagefalse . 719, 958
2907, 3074, 3076,	1438, 1443, 1448,	\@minus 3251, 3256, 3261,
3098, 3100, 3131, 3216	1453, 1458, 1463,	3266, 3271, 3276,
\@fps 949	1468, 1473, 1478,	3365, 3367, 3397, 3399
\@fpsadddefault 949	1483, 1488, 1493,	\@mkabstract . . 2277, 2857
\@gobble 31, 320, 364	1498, 1503, 1515,	\@mkauthors 2186, 2188, 2576
\@headfont	1516, 2251, 3129, 3214	\@mkauthors@i
. 3005, 3029,	\@journalNameShort .	 2580, 2582,
3030, 3031, 3032,	1115, 1120, 1125,	2584, 2586, 2600, 2668
3038, 3041, 3048,	1130, 1134, 1139,	\@mkauthors@ii 2703
3052, 3066, 3067,	1144, 1149, 1154,	\@mkauthors@iii
3073, 3075, 3079,	1159, 1164, 1170,	 2588, 2590,
3082, 3090, 3091,	1177, 1182, 1187,	2592, 2594, 2598, 2715
3097, 3099, 3103, 3106	1192, 1197, 1202,	\@mkauthors@iv 2596, 2768
\@idxitem 3558	1206, 1211, 1216,	\@mkauthorsaddresses
\@ifnextchar 1621	1221, 1228, 1235,	 1643, 2812
\@ifnotempty 2151	1240, 1245, 1252,	\@mkbibcitation 2312, 2874
\@ifnum 336, 338	1259, 1266, 1271,	\@mkteasers . . . 2186, 2845
\@ifundefined . . 3324,	1276, 1281, 1286,	\@mkttitle 2186, 2435
3410, 3413, 3416,	1291, 1296, 1301,	\@mkttitle@i 2438, 2440,
3419, 3422, 3426, 3429	1306, 1311, 1315,	2442, 2444, 2458, 2511
\@iiiparbox 722	1320, 1325, 1330,	\@mkttitle@ii 2524
\@indextitlestyle . . 3557	1335, 1340, 1345,	\@mkttitle@iii
\@input 474	1349, 1354, 1359,	 2446, 2448,
\@insideauthorgroupfalse	1364, 1369, 1374,	2450, 2452, 2456, 2524
. 1559, 1611	1379, 1384, 1389,	\@mkttitle@iv . . 2454, 2534
\@insideauthorgroupttrue	1394, 1399, 1404,	\@mktranslatedabstract
. 1566	1409, 1414, 1419,	 455, 2867
\@journalCode . . 1033,	1424, 1429, 1434,	\@mktranslatedkeywords
1174, 1225, 1232,	1439, 1444, 1449,	 452, 1644
1249, 1256, 1263, 1507	1454, 1459, 1464,	\@mpargs 722

\@mparswitchfalse ..	668	1308, 1317, 1322,	\@setthanks ...	2199, 2916
\@mpfootins		1327, 1332, 1337,	\@shortauthors	
499, 500, 714, 715, 717		1342, 1351, 1356,	3000, 3023, 3031,	
\@mpfootnotetext ...	498	1361, 1366, 1371,	3039, 3049, 3067, 3091	
\@ne .	324, 328, 332, 334,	1376, 1381, 1386,	\@sidebar	924, 925
562, 2934, 2940, 2944		1391, 1396, 1401,	\@specialsection ...	
\@nil	343	1406, 1411, 1416,	1646, 2282, 2288, 2360	
\@nobreakfalse	479	1421, 1426, 1431,	\@essect	244, 466
\@pages@word		1436, 1441, 1446,	\@essect@kernel .	244, 466
... 2877, 2897, 2904		1451, 1456, 1461,	\@startPage	1746,
\@par	2199, 2206	1466, 1471, 1476,	2391, 2392, 2394, 2997	
\@parboxrestore	503	1481, 1486, 1491,	\@startsection	
\@parfont		1496, 1501, 1518, 2263	 241, 461,	
\@permissionCodeOne		\@plus	472, 3250, 3255,	
1116, 1121, 1126,		723, 3251, 3256,	3260, 3265, 3270, 3275	
1131, 1135, 1140,		3261, 3266, 3271,	\@startsection@kernel	
1145, 1150, 1155,		3276, 3364, 3366,	 241, 461	
1160, 1165, 1171,		3396, 3398, 3454, 3559	\@starttoc	469
1178, 1183, 1188,		\@printcopyrightfalse	\@subparfont	3308
1193, 1198, 1203,		 1914, 1925	\@subsecfont ..	3258, 3283
1207, 1212, 1217,		\@printcopyrighttrue	\@subsubsecfont	3263, 3283
1222, 1229, 1236,		 1898, 1910	\@subtitle .	1552, 1659,
1241, 1246, 1253,		\@printendtopmatter	2520, 2521, 2529,	
1260, 1267, 1272,		 2317, 2909	2530, 2538, 2539, 2888	
1277, 1282, 1287,		\@printpermissionfalse	\@subtitlefont	
1292, 1297, 1302,		 1913	2486, 2521, 2530, 2539	
1307, 1312, 1316,		\@printpermissiontrue	\@subtitlenotes	
1321, 1326, 1331,		... 1900, 1909, 1924	1657, 1661, 1664, 2192	
1336, 1341, 1346,		\@printtopmatter ...	\@teaser	2149, 2847
1350, 1355, 1360,		 2187, 2390	\@teaserfigures	
1365, 1370, 1375,		\@proofindent	2147, 2149, 2846, 2851	
1380, 1385, 1390,		... 3436, 3446, 3456	\@tempa	298,
1395, 1400, 1405,		\@proofnamefont	299, 301, 303, 305,	
1410, 1415, 1420,		... 3435, 3445, 3457	307, 309, 311, 313,	
1425, 1430, 1435,		\@received .	315, 317, 319, 321,	
1440, 1445, 1450,		1806, 1809,	323, 325, 327, 329,	
1455, 1460, 1465,		1810, 1812, 1815,	331, 333, 335, 337,	
1470, 1475, 1480,		1816, 1818, 1822, 1823	339, 341, 343, 346,	
1485, 1490, 1495,		\@restonecolfalse ..	348, 350, 352, 354,	
1500, 1505, 1517, 1518		... 3555	356, 1595, 1596,	
\@permissionCodeTwo		\@restonecoltrue ...	1807, 1808, 2562,	
..... 1117,		\@rightskip ...	2563, 2681, 3323,	
1122, 1127, 1136,		\@saveabstract	3324, 3325, 3330,	
1141, 1146, 1151,		1757, 1758	3332, 3333, 3526,	
1156, 1161, 1166,		\@saveteaser ..	3542, 3543, 3545, 3549	
1172, 1179, 1184,		2148, 2149	\@tempb	
1189, 1194, 1199,		\@savetranslatedabstract	299, 301, 303, 305,	
1208, 1213, 1218,		 455, 456	307, 309, 311, 313,	
1223, 1230, 1237,		\@seccntformat	315, 317, 319, 321,	
1242, 1247, 1254,		468	323, 325, 327, 329,	
1261, 1268, 1273,		\@secfont	331, 333, 335, 337,	
1278, 1283, 1288,		3253, 3283	339, 341, 346, 348,	
1293, 1298, 1303,		\@secondoftwo	350, 352, 354, 356,	
		30	3544, 3545, 3548, 3549	
		\@sect		
		243, 462		
		\@sect@kernel ..		
		243, 465		
		\@setaddresses		
		2840		
		\@setauthorsaddresses		
		... 2206, 2355, 2917		
		\@setengagemetadata		
		 2170, 2919		

\@tempboxa . 722, 2400, 2402	\@vspace@acm	\ACM@ArticleType . . .
\@tempc . 344, 345, 347,	. . . 2387, 2913, 3571	. . . 1825, 3124, 3209
349, 351, 353, 355, 357	\@vspace@orig . . 825,	\ACM@ArticleType@nr
\@tempdima	828, 836, 838, 840,	1825, 1827, 3122, 3207
2337, 2340, 2341,	842, 844, 846, 848,	\ACM@cc@type . . . 1959,
2343, 2396, 2397,	850, 852, 854, 856,	2128, 2130, 2131,
2398, 2404, 2405, 2406	858, 925, 930,	2134, 2135, 2136,
\@textbottom 723	940, 946, 2179,	2137, 2138, 2139, 2140
\@textsuperscript . .	2361, 2875, 2910, 3563	\ACM@CC@Url
. . . . 510, 2185, 2190	\@vspacer 826,	2129, 2130, 2131, 2132
\@texttop 724	829, 837, 839, 841,	\ACM@cc@version . . .
\@thefnmark . 491, 505,	843, 845, 847, 849,	. . . 1958, 2130, 2141
510, 2185, 2190, 2195	851, 853, 855, 857,	\acm@copyrightinput 1904
\@title . . . 1650, 2300,	859, 926, 931, 941,	\acm@copyrightmode .
2519, 2528, 2537, 2887	947, 2180, 2362,	 1904,
\@titlefont 2461, 2516,	2388, 2876, 2911,	1912, 1917, 1920,
2518, 2525, 2527, 2535	2914, 3564, 3568, 3572	1923, 1928, 1931,
\@titlenotes	\@vspacer@acm	1934, 1937, 1940,
1648, 1652, 1655, 2191	. . . 2388, 2914, 3572	1943, 1946, 1949,
\@tochangemeasure . . . 464	\@vspacer@orig . 826,	1952, 1962, 2001, 2212
\@toclevel . 3249, 3254,	829, 837, 839, 841,	\ACM@fontsize 150, 245,
3259, 3264, 3269, 3274	843, 845, 847, 849,	248, 250, 252, 254,
\@tocline . . . 482, 483, 484	851, 853, 855, 857,	256, 258, 260, 262,
\@topnum 2314	859, 926, 931,	264, 266, 268, 271, 272
\@translatedabstracts	941, 947, 2180,	\ACM@format 36, 165
. 453, 460, 2278, 2279	2362, 2876, 2911, 3564	\ACM@format@nr . . 36,
\@translatedkeywords	\@width 703, 710	165, 175, 181, 187,
. 450, 452, 2291, 2292	\@writetocindents . . 3328	200, 206, 246, 523,
\@translatedsubtitle	\@xp 476, 477, 3325	608, 687, 725, 870,
. 447,	\@xsect 242, 467	966, 1528, 2363,
449, 2521, 2530, 2539	\@xsect@kernel . 242, 467	2410, 2436, 2462,
\@translatedtitle 444,	\ \ 593, 602, 1571,	2487, 2578, 2606,
446, 2519, 2528, 2537	1857, 2131, 2237,	2955, 3019, 3142,
\@typeset@author@bx	2244, 2259, 2263,	3194, 3288, 3346,
. 2707,	2266, 2347, 2879,	3378, 3437, 3464, 3485
2761, 2767, 2806, 2811	2887, 2939, 3131, 3216	\ACM@lang@check . . .
\@typeset@author@line	\{ 306	431, 445, 448, 451, 459
2637, 2671, 2695, 2700	\} 306	\ACM@languages . . .
\@typesetengagemetadata	_ 1535, 1873,	. . . 157, 392, 394, 432
. 2275, 2918	1883, 2237, 2240,	\ACM@linecount
\@undefined 572, 792, 2163	2883, 2884, 2902, 2997	 2933, 2934,
\@undescribed@imagesfalse		2939, 2940, 2943, 2944
. 802		\ACM@linecount@bx . .
\@undescribed@imagetrue		. . . 2930, 2950, 2980
. . 831, 834, 935, 2852	\abstract 1757	\ACM@linecount@bxht
\@vspace 825,	abstract (env.) 17	2932, 2938, 2941, 2942
828, 836, 838, 840,	\abstractname . . 390,	\ACM@linecountL
842, 844, 846, 848,	403, 2859, 2863, 2871	 2946, 3021,
850, 852, 854, 856,	\acks 3517	3024, 3029, 3032,
858, 925, 930, 940,	acks (env.) 24	3038, 3040, 3048,
946, 2179, 2361,	\ackname 401, 412, 420,	3050, 3066, 3069,
2387, 2875, 2910,	428, 3516, 3519, 3520	3073, 3079, 3090,
2913, 3563, 3565, 3571	\ACM@adddotafter . . .	3093, 3097, 3103,
	 3231, 3248	3125, 3144, 3156,

3157, 3168, 3169, 3181, 3184, 3189, 3210	\acmConference@shortname 1520, 1524, 1525, 1534, 1535, 2232, 3060, 3080, 3083, 3104, 3107, 3177	\anon 24, 2157 anonsuppress (env.) ... 24 \apptocmd 3565, 3568 \AssignSocketPlug 915, 916 \AtBeginDocument . 82, 99, 233, 565, 573, 984, 2929, 3006, 3136, 3243, 3322
\ACM@linecountR . 2953, 3051, 3053, 3067, 3070, 3077, 3084, 3091, 3094, 3101, 3108, 3182, 3185, 3190	\acmConference@venue 1523, 2232, 3061, 3081, 3084, 3105, 3108, 3178	\AtBeginEnvironment 824, 827, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858
\ACM@mk@linecount 2935, 2948, 2963, 2965, 2967, 2969, 2971, 2973, 2975	\acmContributions .. 1860 \acmDataLink ... 19, 1862 \acmdefinition 3395 \acmDOI 14, 1710 \acmISBN 14, 1708 \acmJournal 9, 1511 \acmMonth 14, 1698 \acmNumber 14, 1690 \acmplain 3363 \acmPrice 1704 \acmSubmissionID 14, 1706 \acmVolume 14, 1688 \acmYear 14, 1696	\AtBeginMaketitle 33, 2166 \AtEndDocument 805, 1752, 1776, 1821, 1891, 2322, 2835, 3511, 3574, 3579, 3584, 3589, 3594
\ACM@NRadjustedSectionFormat 3228, 3237	\addcontentsline 294, 2859, 3520	\AtEndEnvironment 830, 833 \AtEndPreamble . 538, 793, 3407, 3461, 3527
\ACM@NRadjust 3219, 3253, 3258, 3263, 3268, 3273, 3278	\additionalaffiliation 11, 1617	\author 10, 1560, 2175, 2176, 2881
\ACM@origbaselinestretch 3573	\addresses 1568, 1570, 1575, 1582, 1613, 1631, 1670, 1676, 1683, 1685, 2700, 2767, 2811, 2833	\author@bx 2703, 2709, 2712 \author@bx@sep 2705, 2712, 2717, 2734, 2770, 2781
\ACM@origparagraph . 3593	\addto .. 395, 406, 414, 422	\author@bx@wd 2704, 2707, 2716, 2717, 2719, 2725, 2727, 2729, 2731, 2734, 2769, 2770, 2772, 2778, 2781
\ACM@origsubsection 3583	\addtocounter .. 516, 1885	\authornote 13, 1617, 1668, 2882
\ACM@origsubsubsection 3588	\addtolength ... 992, 993, 994, 998, 999, 2941	\authornotemark . 13, 1680
\ACM@ps@headings 2924, 2928	\addvspace 480	\authors 1573, 1578, 1585, 2295, 2307, 2309, 2887
\ACM@ps@myheadings 2923, 2927	\advance 1008, 1013, 1016, 1018, 1020, 1022, 1563, 1565, 1679, 1850, 2397, 2405, 2513, 2697, 2717, 2734, 2770, 2781, 2842, 2844, 2940, 2944	\authorsaddresses 13, 1642
\ACM@ps@plain . 2922, 2926	\affiliation 10, 1610, 2680, 2750, 2795	
\ACM@restore@pagestyle 2922	\and 1550, 1583, 1585, 1600, 1606, 2671, 2676, 2678, 2689, 2695, 2708, 2742, 2761, 2767, 2789, 2806, 2811, 2830	
\ACM@sect@format 3238, 3240	\andify 2307, 2308, 2638, 2641, 2901	
\ACM@sect@format@ 3227, 3240, 3242		
\ACM@sect@format@null 3241, 3242		
\ACM@timestamp 2983, 3116, 3195, 3200		
\acmArticle 14, 1692		
\acmArticleSeq . 14, 1694		
\acmArticleType . 19, 1825		
\acmBadge 14, 1745		
\acmBadgeL 1732		
\acmBadgeR 1719, 1745		
\acmBooktitle 9, 1533, 1542		
\acmCodeDataLink ... 1853		
\acmCodeLink 19, 1853, 1862		
\acmConference .. 9, 1519		
\acmConference@date 1522, 3061, 3081, 3084, 3105, 3108, 3178		
\acmConference@name ... 1521, 1533, 1534		

B

\balance 3514
\baselineskip .. 2223, 2941, 3251, 3252, 3256, 3257, 3261, 3266, 3271, 3364, 3365, 3366, 3367, 3396, 3397, 3398, 3399
\baselinestretch 3573, 3574, 3576
\begin 20, 2949, 2979

<code>\beginngroup</code>	<code>\ccsdesc@parse@end</code>	<code>\colorbox</code> . 1849, 3123, 3208
469, 561, 2178,	1868, 1896	<code>\colorlet</code> 1829,
2576, 3220, 3329, 3518	<code>\ccsdesc@parse@finish</code>	1831, 1833, 1835, 1837
<code>\bfseries</code> .. 1023, 2219,	1890, 1896	<code>\columnsep</code> 3556
2464, 2466, 2468,	<code>CCSXML (env.)</code> 15	<code>\columnseprule</code> 3556
2472, 2474, 2476,	<code>\centering</code> .. 473, 506,	<code>\columnwidth</code> ... 502,
2478, 2480, 2482,	592, 601, 933, 942,	703, 947, 2769, 2808
2484, 2625, 2628,	2525, 2527, 2709, 2766	<code>\contentsnamefont</code> .. 473
2885, 3283, 3284,	<code>\changes</code> 150	<code>\copyright</code> 2237
3298, 3299, 3301,	<code>\cite</code> ... 554, 555, 566, 570	<code>\copyrightpermissionfootnoterule</code>
3302, 3304, 3305,	<code>\citeA</code> 560	702
3306, 3307, 3311,	<code>\citealt</code> 559	<code>\copyrightyear</code> . 17, 2145
3312, 3315, 3316,	<code>\citeANP</code> 556	<code>\correspondingauthor</code>
3318, 3319, 3356, 3388	<code>\citeauthor</code> 556	13, 1674
<code>\bgroup</code> . 460, 925, 929,	<code>\citeN</code> 554	<code>\country</code> 11, 1625, 2549, 2829
940, 946, 1618,	<code>\citename</code> 567	<code>\csname</code> . 364, 464, 468,
1644, 2281, 2287,	<code>\citeNN</code> 557	476, 477, 491, 505,
2328, 2707, 2744,	<code>\citeNP</code> 559	1577, 1584, 1636,
2747, 2808, 2816,	<code>\citep</code> 555	1639, 1872, 1873,
2847, 2857, 2874, 2886	<code>\citestyle</code> ... 25, 362, 382	1875, 1876, 1877,
<code>\bibfont</code> 296	<code>\citeyear</code> 558	1878, 1879, 1882,
<code>\bibfont</code> 296	<code>\citeyearNP</code> 558	1884, 2304, 2306,
<code>\bibliographystyle</code> . 571	<code>\citeyearpar</code> ... 557, 570	3221, 3244, 3325, 3333
<code>\bibsection</code> 292	<code>\city</code> .. 11, 1623, 2549, 2826	<code>\CurrentOption</code>
<code>\bibstyle</code> 320, 322, 364, 576	<code>\ClassError</code>	152, 153,
<code>\bibstyle@acmauthoryear</code>	39, 433, 457, 1509,	154, 155, 156, 162, 163
370	1616, 1759, 1769,	
<code>\bibstyle@acmnumeric</code> 376	1775, 1789, 1840,	D
<code>\bigskip</code> 1823,	2664, 2880, 3575,	<code>\day</code> 2995
2346, 2347, 2349,	3580, 3585, 3590, 3595	<code>\DeclareNewFootnote</code>
2352, 2355, 2428,	<code>\ClassInfo</code>	706, 708
2523, 2533, 2541,	.. 165, 271, 1507,	<code>\DeclareOptionX</code>
2767, 2811, 2847, 2912	1766, 1768, 1772,	42, 152, 153, 154,
<code>\box</code> 963, 2412,	1774, 1786, 1788, 1791	155, 156, 158, 162, 163
2414, 2416, 2418,	<code>\ClassWarning</code> ... 27,	<code>\DeclareRobustCommand</code>
2420, 2422, 2424,	176, 182, 188, 759,	560, 3240
2426, 2428, 2430,	762, 765, 832, 835,	<code>\DeclareTextFontCommand</code>
2432, 2712, 3126, 3211	936, 1561, 1628,	794
	1704, 1748, 1792,	<code>\def</code> 25, 42,
C	2549, 2552, 2817,	151, 157, 248, 250,
<code>\c@footnote</code> 2183	2820, 2853, 3565, 3568	252, 254, 256, 258,
<code>\c@secnumdepth</code> 463	<code>\ClassWarningNoLine</code> ..	260, 262, 264, 266,
<code>\caption@beginex@hook</code> 913	806, 1754, 1778,	268, 299, 301, 303,
<code>\captionsenglish</code> ... 395	1893, 2658, 2661, 2837	305, 307, 309, 311,
<code>\captionsetup</code> .. 862,	<code>\clearpage</code> 2403	313, 315, 317, 319,
864, 866, 868, 877,	<code>\CodelineIndex</code> 17	321, 323, 324, 325,
879, 882, 884, 887,	<code>\Collect@Body</code> 454, 924,	326, 327, 328, 329,
889, 926, 932, 941, 2848	928, 939, 1757, 2148	330, 331, 332, 333,
<code>\captionsfrench</code> 406	<code>\color</code> 2159, 2221,	335, 337, 339, 341,
<code>\captionsgerman</code> 414	2939, 2943, 3123, 3208	342, 346, 348, 350,
<code>\captionsspanish</code> ... 422	<code>\color@beginngroup</code> 493, 506	352, 354, 356, 444,
<code>\ccdesc@parse@finish</code> 1896	<code>\color@endbox</code> 961	447, 450, 453, 456,
<code>\ccdesc</code> 15, 1867	<code>\color@endgroup</code>	462, 468, 469, 482,
<code>\ccdesc@parse</code> 1868, 1869	496, 509, 720	483, 484, 485, 487,

498, 510, 516, 517,	1300, 1301, 1302,	1503, 1504, 1505,
518, 519, 520, 540,	1303, 1305, 1306,	1511, 1514, 1515,
571, 702, 709, 711,	1307, 1308, 1310,	1516, 1517, 1518,
723, 925, 929, 940,	1311, 1312, 1314,	1542, 1544, 1545,
946, 949, 953, 956,	1315, 1316, 1317,	1546, 1552, 1595,
974, 975, 976, 977,	1319, 1320, 1321,	1617, 1618, 1619,
1007, 1012, 1015,	1322, 1324, 1325,	1620, 1621, 1622,
1017, 1019, 1021,	1326, 1327, 1329,	1633, 1634, 1642,
1114, 1115, 1116,	1330, 1331, 1332,	1648, 1649, 1657,
1117, 1119, 1120,	1334, 1335, 1336,	1658, 1667, 1668,
1121, 1122, 1124,	1337, 1339, 1340,	1678, 1688, 1690,
1125, 1126, 1127,	1341, 1342, 1344,	1692, 1694, 1696,
1129, 1130, 1131,	1345, 1346, 1348,	1698, 1700, 1704,
1133, 1134, 1135,	1349, 1350, 1351,	1706, 1708, 1710,
1136, 1138, 1139,	1353, 1354, 1355,	1717, 1718, 1746,
1140, 1141, 1143,	1356, 1358, 1359,	1748, 1750, 1758,
1144, 1145, 1146,	1360, 1361, 1363,	1763, 1794, 1806,
1148, 1149, 1150,	1364, 1365, 1366,	1807, 1842, 1848,
1151, 1153, 1154,	1368, 1369, 1370,	1853, 1859, 1860,
1155, 1156, 1158,	1371, 1373, 1374,	1869, 1870, 1896,
1159, 1160, 1161,	1375, 1376, 1378,	1955, 1958, 1959,
1163, 1164, 1165,	1379, 1380, 1381,	1961, 1999, 2000,
1166, 1168, 1170,	1383, 1384, 1385,	2129, 2145, 2147,
1171, 1172, 1176,	1386, 1388, 1389,	2149, 2166, 2167,
1177, 1178, 1179,	1390, 1391, 1393,	2168, 2172, 2185,
1181, 1182, 1183,	1394, 1395, 1396,	2190, 2199, 2206,
1184, 1186, 1187,	1398, 1399, 1400,	2297, 2327, 2360,
1188, 1189, 1191,	1401, 1403, 1404,	2390, 2435, 2461,
1192, 1193, 1194,	1405, 1406, 1408,	2486, 2511, 2524,
1196, 1197, 1198,	1409, 1410, 1411,	2534, 2543, 2549,
1199, 1201, 1202,	1413, 1414, 1415,	2552, 2556, 2557,
1203, 1205, 1206,	1416, 1418, 1419,	2559, 2560, 2562,
1207, 1208, 1210,	1420, 1421, 1423,	2567, 2568, 2572,
1211, 1212, 1213,	1424, 1425, 1426,	2574, 2576, 2604,
1215, 1216, 1217,	1428, 1429, 1430,	2605, 2609, 2610,
1218, 1220, 1221,	1431, 1433, 1434,	2613, 2614, 2616,
1222, 1223, 1227,	1435, 1436, 1438,	2617, 2619, 2620,
1228, 1229, 1230,	1439, 1440, 1441,	2622, 2623, 2625,
1234, 1235, 1236,	1443, 1444, 1445,	2626, 2628, 2629,
1237, 1239, 1240,	1446, 1448, 1449,	2631, 2632, 2634,
1241, 1242, 1244,	1450, 1451, 1453,	2635, 2637, 2639,
1245, 1246, 1247,	1454, 1455, 1456,	2644, 2651, 2656,
1251, 1252, 1253,	1458, 1459, 1460,	2668, 2669, 2670,
1254, 1258, 1259,	1461, 1463, 1464,	2672, 2679, 2680,
1260, 1261, 1265,	1465, 1466, 1468,	2681, 2707, 2708,
1266, 1267, 1268,	1469, 1470, 1471,	2715, 2737, 2743,
1270, 1271, 1272,	1473, 1474, 1475,	2750, 2768, 2784,
1273, 1275, 1276,	1476, 1478, 1479,	2790, 2795, 2812,
1277, 1278, 1280,	1480, 1481, 1483,	2817, 2820, 2823,
1281, 1282, 1283,	1484, 1485, 1486,	2825, 2826, 2827,
1285, 1286, 1287,	1488, 1489, 1490,	2829, 2830, 2831,
1288, 1290, 1291,	1491, 1493, 1494,	2832, 2840, 2841,
1292, 1293, 1295,	1495, 1496, 1498,	2843, 2845, 2847,
1296, 1297, 1298,	1499, 1500, 1501,	2857, 2867, 2874,

2877, 2878, 2879,	\documentclass	9, 438, 440	2730, 2739, 2746,
2880, 2883, 2887,	\dp	2397, 2405	2755, 2773, 2777,
2909, 2916, 2917,			2786, 2792, 2800,
2918, 2919, 2925,			2814, 2835, 2846,
2935, 2946, 2953,			2851, 2858, 2862,
3000, 3005, 3011,			2870, 2877, 2883,
3219, 3223, 3225,			2888, 2889, 2898,
3227, 3237, 3241,			2900, 2907, 2992,
3248, 3249, 3254,			3003, 3004, 3014,
3259, 3264, 3269,			3025, 3033, 3043,
3274, 3279, 3283,			3054, 3059, 3064,
3284, 3285, 3286,			3071, 3074, 3076,
3292, 3293, 3295,			3078, 3088, 3095,
3296, 3298, 3299,			3098, 3100, 3102,
3301, 3302, 3304,			3130, 3131, 3147,
3305, 3306, 3307,			3151, 3161, 3171,
3308, 3311, 3312,			3176, 3183, 3188,
3315, 3316, 3318,			3196, 3199, 3215,
3319, 3328, 3336,			3216, 3224, 3248,
3337, 3342, 3343,			3526, 3531, 3538,
3344, 3345, 3354,			3547, 3551, 3574,
3355, 3356, 3357,			3579, 3584, 3589, 3594
3374, 3375, 3376,			\email
3377, 3386, 3387,			10, 1627,
3388, 3389, 3435,			2679, 2743, 2790, 2832
3436, 3445, 3446,			\emph
3524, 3526, 3542,			2251, 2253
3543, 3544, 3548, 3555			\empty
\define@boolkey			3012
... 55, 63, 71, 79,			\EnableCrossrefs
88, 96, 108, 112,			19
116, 124, 132, 140,			\end
1615, 1764, 1770, 1784			22, 2951, 2981
\define@choicekey			\end@ACM@color@frame
. 36, 1033, 1825, 1903			2322
\define@cmdkey			\end@dblfloating
... 1790			952
\define@color			\end@floating
... 580, 581, 582,			954
583, 584, 585, 586, 587			\endcsname
\department			363, 364, 464, 468,
. 11, 1621, 2549, 2828			476, 477, 491, 505,
\Description			1577, 1584, 1637,
... 22, 803			1640, 1872, 1873,
\description			1875, 1876, 1877,
... 1024			1878, 1879, 1882,
\descriptionlabel			1884, 2304, 2306,
... 1023, 1026			3221, 3244, 3325, 3333
\detokenize			\enddescription
... 1561			1030
\dimexpr			\endgroup
... 944, 963,			479, 2274, 2602,
2337, 3113, 3122, 3207			3223, 3225, 3335, 3522
\ding			\endlist
... 1679			1028, 1030
\divide			\endMakeFramed
2719, 2725, 2727,			1852
2729, 2731, 2772, 2778			\endminipage
\do			711
... 298, 540, 3323, 3330			\endtrivlist
\do@url@hyp			3459
... 540			\enspace
\DocInput			3337
... 21			environments:
			abstract
			17
			acks
			24
			anonsuppress
			24
			CCSXML
			15

[illegible]

<code>\if@ACM@maketitle@typeset</code>	870, 966, 1112,	1891, 2163, 2197,
.... 456, 1031, 1758	1700, 1827, 1962,	2202, 2239, 2255,
<code>\if@ACM@manuscript</code> .	2001, 2363, 2410,	2266, 2267, 2278,
..... 166,	2436, 2462, 2487,	2281, 2287, 2291,
279, 1796, 2227, 2243	2578, 2606, 2721,	2346, 2349, 2352,
<code>\if@ACM@natbib</code>	2774, 2955, 3019,	2355, 2391, 2520,
... 116, 290, 381, 553	3142, 3288, 3346,	2529, 2538, 2563,
<code>\if@ACM@natbib@override</code>	3378, 3437, 3464, 3485	2640, 2673, 2681,
..... 116	<code>\ifcsname</code> 363	2682, 2737, 2743,
<code>\if@ACM@newfonts</code> 757, 768	<code>\ifdim</code> 2340, 2398, 2406, 2942	2750, 2784, 2790,
<code>\if@ACM@nonacm</code> .. 96,	<code>\IfDocumentMetadata</code> . 30	2795, 2836, 2846,
597, 1752, 1776,	<code>\IfDocumentMetadataF</code>	2858, 2883, 2888,
1891, 2211, 2261,	 32, 804	2900, 2907, 2992,
2835, 2889, 3025,	<code>\IfDocumentMetadataT</code>	3003, 3012, 3074,
3033, 3043, 3054,	 31, 896, 919	3076, 3098, 3100,
3068, 3092, 3147,	<code>\IfDocumentMetadataTF</code> 30	3130, 3131, 3215,
3151, 3161, 3171, 3196	<code>\IfEq</code> 2128, 2134,	3216, 3221, 3244,
<code>\if@ACM@pbalance</code> 112, 3462	2135, 2136, 2137,	3248, 3526, 3543,
<code>\if@ACM@printacmref</code>	2138, 2139, 2140, 2141	3545, 3549, 3574,
..... 1770, 2311	<code>\IfFileExists</code> 759, 762, 765	3579, 3584, 3589, 3594
<code>\if@ACM@printccs</code> ...	<code>\IfInteger</code> 1791	<code>\ifxetex</code> 769
..... 1764, 2280	<code>\ifluatex</code> 777	<code>\ignorespaces</code> .. 495,
<code>\if@ACM@printfolios</code>	<code>\ifNAT@numbers</code> 570	508, 803, 1619,
1784, 3013, 3015,	<code>\ifnum</code> 175,	1620, 1622, 1633,
3021, 3022, 3065,	181, 187, 200, 463,	2551, 2554, 2556,
3089, 3146, 3186, 3191	1528, 1753, 1777,	2558, 2559, 2560,
<code>\if@ACM@review</code>	1886, 1887, 1888,	2561, 2565, 2819,
. 79, 2930, 2947, 2954	1892, 1912, 1917,	2822, 2823, 2865,
<code>\if@ACM@screen</code> 55, 542, 3528	1920, 1923, 1928,	2873, 2879, 2887, 3457
<code>\if@ACM@sigchiamode</code>	1931, 1934, 1937,	<code>\immediate</code> . 477, 576, 3331
..... 170, 486,	1940, 1943, 1946,	<code>\includecomment</code>
596, 795, 945, 952,	1949, 1952, 2176,	... 3529, 3533, 3539
2186, 2188, 2709, 3112	2212, 2334, 2718,	<code>\includegraphics</code> ...
<code>\if@ACM@timestamp</code> ..	2771, 2813, 2877, 3194	 1724, 1730,
132, 2983, 3115, 3193	<code>\ifPDFTeX</code> 745	1737, 1743, 2131, 2332
<code>\if@ACM@urlbreakonhyphens</code>	<code>\IfSubStr</code> 1561, 1628	<code>\indent</code> 3436
..... 63, 539	<code>\ifvmode</code> 2544	<code>\input</code> 746
<code>\if@acmowned</code> 1901	<code>\ifvoid</code> 714	<code>\InputIfFileExists</code> .. 26
<code>\if@Description@present</code>	<code>\ifx</code> 159, 245, 299,	<code>\institution</code>
..... 799,	301, 303, 305, 307,	. 11, 1620, 2549, 2825
830, 833, 934, 2851	309, 311, 313, 315,	<code>\interfootnotelinepenalty</code>
<code>\if@files</code> 475, 575	317, 319, 321, 323,	 489
<code>\if@insideauthorgroup</code>	325, 327, 329, 331,	<code>\interlinepenalty</code> .. 489
..... 1558, 1564	333, 335, 337, 339,	<code>\item</code> 3456, 3558
<code>\if@printcopyright</code> .	341, 346, 348, 350,	<code>\itshape</code>
..... 1897, 2236	352, 354, 356, 392,	2230, 2232, 3285,
<code>\if@printpermission</code>	432, 572, 1524,	3286, 3307, 3308,
..... 1899, 2225	1532, 1534, 1546,	3342, 3354, 3376, 3445
<code>\if@twocolumn</code> . 3513, 3555	1568, 1571, 1589,	
<code>\if@undescribed@images</code>	1591, 1596, 1597,	
..... 801, 805	1603, 1682, 1720,	
<code>\IfBeginWith</code> 1635	1733, 1752, 1808,	
<code>\ifcase</code> 206, 246,	1809, 1815, 1822,	
523, 608, 687, 725,	1854, 1872, 1881,	

J

`\jobname` 474, 477

K

`\kern` 702, 703, 709, 710, 2536

\NAT@open	300,	2537, 2539, 2638,	1167, 1175, 1180,
	302, 304, 306, 347, 562	2699, 2700, 2764,	1185, 1190, 1195,
\NAT@partrue	562	2810, 2849, 2850,	1200, 1204, 1209,
\NAT@rem@eq	345	2885, 2886, 2919, 3446	1214, 1219, 1226,
\NAT@sep 308, 310, 312, 357		\noindentparagraph .	1233, 1238, 1243,
\NAT@sort . . . 324, 326, 332		 2377, 3269	1250, 1257, 1264,
\NAT@superfalse 316		\normalbaselines . . . 2708	1269, 1274, 1279,
\NAT@supertrue 318		\normalcolor 716	1284, 1289, 1294,
\NAT@swafalse 561		\normalfont 510,	1299, 1304, 1309,
\NAT@up 342		1823, 2190, 2605,	1313, 1318, 1323,
\NAT@yrsep 353		2610, 2619, 2620,	1328, 1333, 1338,
\NeedsTeXFormat 1		2622, 2623, 2635,	1343, 1347, 1352,
\newblock 563		2936, 3357, 3374,	1357, 1362, 1367,
\newbox		3386, 3389, 3454, 3598	1372, 1377, 1382,
2171, 2326, 2542, 2703		\normalparindent . . . 701	1387, 1392, 1397,
\newcommand		\normalsize	1402, 1407, 1412,
. . . 370, 376, 431,		2486, 2605, 2619,	1417, 1422, 1427,
445, 448, 451, 569,		2620, 2623, 2937, 3598	1432, 1437, 1442,
803, 1519, 1610,		\num@authorgroups . .	1447, 1452, 1457,
1644, 1674, 1680,		1554, 1565, 2176,	1462, 1467, 1472,
1719, 1732, 1807,		2721, 2725, 2727, 2774	1477, 1482, 1487,
1867, 1957, 2157,		\num@authors	1492, 1497, 1700,
2561, 2570, 2990,		1556, 1563, 1577,	1701, 1702, 1830,
3269, 3516, 3525, 3541		1584, 1637, 1640, 2813	1832, 1834, 1836,
\newcount . 1554, 1556, 2933		\numexpr . 2985, 2987, 2989	1963, 1965, 1968,
\newcounter 1866, 2986, 2988		\nxandlist 2296	1970, 1971, 1973,
\newdimen 288, 943, 983, 2704			1975, 1977, 1980,
\newenvironment . 454,			1982, 1985, 1987,
928, 939, 1847, 2148			1990, 1993, 1996,
\newfloat 922			2002, 2013, 2024,
\newif 166, 167, 168, 169,			2032, 2039, 2046,
170, 171, 173, 757,			2060, 2072, 2080,
799, 801, 1031,			2094, 2102, 2109,
1558, 1897, 1899,			2116, 2121, 2127,
1901, 2645, 2647, 2649			2366, 2368, 2370,
\newlabel 3332			2372, 2374, 2376,
\newlength			2378, 2380, 2382,
1712, 1714, 1715, 2932			2384, 2413, 2415,
\newsavebox 2931			2417, 2419, 2421,
\newskip 1005, 2705			2423, 2425, 2427,
\newtheorem			2429, 2431, 2439,
3411, 3414, 3417,			2441, 2443, 2445,
3420, 3423, 3427, 3430			2447, 2449, 2451,
\newtheoremstyle . . .			2453, 2455, 2457,
. 3363, 3395			2465, 2467, 2469,
\newwrite 476			2471, 2473, 2475,
\next 3223, 3225, 3235			2477, 2479, 2481,
\nobreak 2885			2483, 2490, 2492,
\noindent . . 485, 1647,			2494, 2496, 2498,
1823, 2196, 2283,			2500, 2502, 2504,
2289, 2365, 2367,			2506, 2508, 2581,
2369, 2371, 2402,			2583, 2585, 2587,
2409, 2516, 2518,			2589, 2591, 2593,
2521, 2530, 2536,			2595, 2597, 2599,

2608, 2611, 2612, 2615, 2618, 2621, 2624, 2627, 2630, 2633, 2723, 2724, 2726, 2728, 2776, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 3028, 3037, 3047, 3150, 3160, 3170, 3290, 3291, 3294, 3297, 3300, 3303, 3309, 3313, 3317, 3320, 3348, 3349, 3350, 3351, 3352, 3353, 3358, 3359, 3360, 3361, 3380, 3381, 3382, 3383, 3384, 3385, 3390, 3391, 3392, 3393, 3439, 3440, 3441, 3442, 3443, 3444, 3447, 3448, 3449, 3450, 3466, 3467, 3468, 3470, 3472, 3474, 3476, 3478, 3479, 3481, 3488, 3490, 3492, 3494, 3496, 3498, 3500, 3502, 3504, 3506	\orcid 10, 1633 \orcid site 1634, 1641 \outer@nobreak 959		
P			
\p@ 480, 685, 692, 702, 703, 709, 710, 3119, 3204, 3251, 3256, 3261, 3262, 3266, 3267, 3271, 3272, 3276, 3277, 3454, 3556, 3559	\PackageError 60, 68, 76, 85, 93, 105, 109, 113, 121, 129, 137, 147	\PackageInfo 57, 59, 65, 67, 73, 75, 81, 84, 90, 92, 98, 104, 118, 120, 126, 128, 134, 136, 142, 146, 1174, 1225, 1232, 1249, 1256, 1263	\PageIndex 16 \pageref 2997
\pagestyle 3134 \par . 446, 449, 471, 712, 957, 1647, 1823, 2199, 2206, 2225, 2230, 2232, 2283, 2289, 2332, 2347, 2350, 2353, 2357, 2365, 2367, 2369, 2371, 2412, 2414, 2416, 2428, 2432, 2521, 2523, 2530, 2533, 2536, 2539, 2541, 2567, 2569, 2571, 2638, 2642, 2699, 2701, 2708, 2710, 2711, 2738, 2740, 2747, 2756, 2765, 2767, 2785, 2787, 2793, 2801, 2809, 2811, 2847, 2848, 2849, 2851, 2865, 2885, 2908, 2912, 2916, 2919, 3452	\paragraph 3264, 3593, 3594, 3596 \parbox 592, 601, 2517, 2527, 2936 \parindent .. 685, 701, 992, 2199, 2206, 2223, 2331, 3265, 3282, 3343, 3375, 3559 \parskip .. 685, 2223, 3559 \part 3274 \PassOptionsToClass 162, 163 \pdfgentounicode ... 754 \pdfglyptounicode 747, 748, 749, 750, 751, 752, 753 \pdfstringdefDisableCommands 515 \phantomsection 294, 2859, 3520 \popQED 3459 \position 11, 1619, 1623, 1624, 1625, 2549, 2823 \postcode 2549, 2820 prionly (env.) 24 \ProcessOptionsX ... 164 \proof 3452 \proofname 3452 \protected 1634 \protected@edef . 490, 504 \protected@write ... 2342	\providecommand .. 30, 31, 32, 563, 567, 3341 \ProvidesClass 5, 6 \ProvidesFile 3 \ps@headings .. 2924, 2928 \ps@myheadings 2923, 2927 \ps@plain 2922, 2926 \pushQED 3453 \put 2950, 2980	
Q			
\qed 3453 \quad 468, 3039, 3042, 3049, 3053, 3195			
R			
\raggedright 2517, 2535, 2809, 3560 \raisebox 1723, 1729, 1736, 1742, 2219, 3122, 3207 \real@adddotafter 3230, 3233 \realSectionformat 3226, 3238, 3239 \received 17, 1807 \RecordChanges 18 \ref 2897, 2904 \refname 293, 294 \relax 175, 181, 187, 200, 207, 247, 289, 343, 344, 432, 477, 524, 609, 688, 724, 726, 871, 967, 1113, 1528, 1532, 1555, 1557, 1563, 1565, 1679, 1680, 1682, 1753, 1777, 1828, 1851, 1872, 1881, 1891, 1892, 1912, 1917, 1920, 1923, 1928, 1931, 1934, 1937, 1940, 1943, 1946, 1949, 1952, 1962, 2001, 2194, 2195, 2212, 2339, 2340, 2343, 2364, 2411, 2437, 2463, 2488, 2579, 2607, 2706, 2716, 2717, 2718, 2719, 2722, 2725, 2727, 2729, 2731, 2734, 2766, 2769, 2770,			

2771, 2772, 2775, 2778, 2781, 2813, 2842, 2844, 2877, 2934, 2956, 2957, 2959, 2961, 2977, 2987, 2989, 2992, 3020, 3143, 3194, 3221, 3244, 3248, 3289, 3347, 3379, 3438, 3454, 3465, 3486, 3545, 3549, 3559	\RemoveFromHook 897	\scshape 3344, 3435	\SetWatermarkColor 591, 600
\removelastskip 471		\section 293, 2373, 2375, 2379, 2381, 2383, 2385, 2863, 2871, 3249, 3519, 3578, 3579, 3581	\SetWatermarkFontSize 590, 599
\renewcommand 292, 296, 297, 300, 302, 304, 306, 308, 310, 312, 362, 385, 387, 390, 397, 399, 401, 403, 408, 410, 412, 416, 418, 420, 424, 426, 428, 796, 1023, 1560, 1627, 2150, 2183, 2828, 3009, 3010, 3119, 3139, 3140, 3204, 3249, 3254, 3259, 3264, 3274	\renewenvironment 924, 1024, 1757, 3452	\section@raggedright 3279, 3283, 3284, 3292, 3293, 3295, 3296, 3298, 3299, 3301, 3302, 3304, 3305, 3306, 3311, 3312, 3315, 3316, 3318, 3319	\SetWatermarkText 592, 601
\repeat 2406, 2942		\Sectionformat 3222, 3226, 3228, 3239	\sfdefault 796
\RequirePackage 33, 34, 35, 273, 274, 275, 276, 277, 278, 280, 283, 285, 286, 291, 394, 513, 514, 578, 579, 589, 598, 607, 704, 755, 770, 771, 774, 778, 779, 782, 785, 786, 787, 788, 798, 861, 1863, 2921, 3469, 3471, 3473, 3475, 3477, 3480, 3493, 3495, 3497, 3499, 3501, 3505	\RequirePackage 33, 34, 35, 273, 274, 275, 276, 277, 278, 280, 283, 285, 286, 291, 394, 513, 514, 578, 579, 589, 598, 607, 704, 755, 770, 771, 774, 778, 779, 782, 785, 786, 787, 788, 798, 861, 1863, 2921, 3469, 3471, 3473, 3475, 3477, 3480, 3493, 3495, 3497, 3499, 3501, 3505	\selectlanguage 1645, 2867	\sffamily . . 2464, 2466, 2468, 2470, 2472, 2474, 2478, 2482, 2484, 2604, 2609, 2613, 2634, 3005, 3283, 3284, 3285, 3292, 3293, 3295, 3296, 3301, 3302, 3311, 3312, 3315, 3316
\reset@font 488, 501		\set@ACM@acmcpbox 2321, 2326	\shortauthors 18, 1589, 1590, 1597, 1598, 1600, 1603, 1604, 1606, 2308, 2310, 3004
\reversemarginpar . . 669		\setbox 499, 962, 2330, 2400, 2516, 2525, 2535, 2699, 2709, 2764, 2849, 2861, 2869	\shortcite 566, 569
\rightarrow 1869		\setcctype 16, 1957	\shorttitle 3024, 3032, 3042, 3053, 3066, 3090
\rightskip 3280		\setcitestyle 26, 297, 371, 377	\showeprint 3541
\rotatebox 3123, 3208		\setcopyright . . 15, 1955	\sidebar 922
\rule 495, 508		\setcounter 2189, 2276, 2394, 2987, 2989, 3287, 3310, 3314, 3339	sidebar (env.) 36
		\setengagemetadata 18, 2168	\skip 715
		\setkeys . 42, 179, 185, 1511, 1794, 1842, 1955, 2684, 2685, 2690, 2691, 2752, 2753, 2757, 2758, 2797, 2798, 2802, 2803	\small 488, 927, 934, 942, 1823, 2365, 2367, 2369, 2371, 2610, 2635, 2861, 2869, 2885, 3146
		\setlength . . 685, 686, 692, 701, 985, 986, 991, 997, 1000, 1001, 1002, 1003, 1713, 1716, 2331, 2938	\smallskipamount . . . 1006
		\setmathfont 772, 773, 780, 781	\smash 1722, 1728, 1735, 1741
		\setmonofont . . . 775, 783	\socket 898, 909
		\settopmatter . . . 17, 102, 1530, 1782, 1794, 1795, 1797, 1800, 1802, 1805, 2893	\space 1562, 1629, 1782, 2304, 3130, 3215, 3526, 3565, 3568, 3576, 3581, 3586, 3591, 3596
		\setTrue 470	\specialcomment 3517
			\standardpagestyle . 3006
			\startPage 15, 1746
			\state . 11, 1624, 2549, 2827
			\stepcounter 1653, 1655, 1662, 1665, 1672, 1871
			\StrDel 2562
			\streetaddress 2549, 2817
			\string 434, 435, 438, 440, 576, 1562, 1629, 1704, 1748, 1782, 2343, 2881, 2882, 3332, 3565, 3568, 3576, 3581, 3586, 3591, 3596
S			
\savebox 2936			
screenonly (env.) 24			
\scriptsize 2333, 2939, 2943			

