

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

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Abstract

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

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1 Introduction

Association for Computing Machinery is the world's largest educational and scientific computing society, which delivers resources that advance computing as a science and a profession¹. It was one of the early adopters of \TeX for its typesetting.

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

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

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

I am grateful to Matthew Fluet, John Owens, Craig Rodkin, Bernard Rous, David Shamma, Stephen Spencer 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

2.1 Installation

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

If you decide to install the package yourself, follow the standard rules:

1. Run `latex on acmart.ins`. This will produce the file `acmart.cls`.
2. Put the file `acmart.cls` and the bibliography files `*.bst` to the places where \LaTeX can find them (see [1] or the documentation for your \TeX system).
3. Update the database of file names. Again, see [1] or the documentation for your \TeX system for the system-specific details.
4. The file `acmart.pdf` provides the documentation for the package (this is the file you are probably 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.

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

- `amscs`, <http://www.ctan.org/pkg/amscs>

¹<http://www.acm.org/>

- *amsfonts*, <http://www.ctan.org/pkg/amsfonts>
- *amsmath*, <http://www.ctan.org/pkg/amsmath>
- *binhex*, <http://www.ctan.org/pkg/binhex>
- *caption*, <http://www.ctan.org/pkg/caption>
- *comment*, <http://www.ctan.org/pkg/comment>
- *environ*, <http://www.ctan.org/pkg/environ>
- *fancyhdr*, <http://www.ctan.org/pkg/fancyhdr>
- *float*, <http://www.ctan.org/pkg/float>
- *fontaxes*, <http://www.ctan.org/pkg/fontaxes>
- *geometry*, <http://www.ctan.org/pkg/geometry>
- *graphics*, <http://www.ctan.org/pkg/graphics>
- *hyperref*, <http://www.ctan.org/pkg/hyperref>
- *ifluatex*, <http://www.ctan.org/pkg/ifluatex>
- *ifxetex*, <http://www.ctan.org/pkg/ifxetex>
- *inconsolata*, <http://www.ctan.org/pkg/inconsolata>
- *latex-tools*, <http://www.ctan.org/pkg/latex-tools>
- *libertine*, <http://www.ctan.org/pkg/libertine>
- *manyfoot*, <http://www.ctan.org/pkg/manyfoot>
- *microtype*, <http://www.ctan.org/pkg/microtype>
- *ms*, <http://www.ctan.org/pkg/ms>
- *mweights*, <http://www.ctan.org/pkg/mweights>
- *natbib*, <http://www.ctan.org/pkg/natbib>
- *nccfoots*, <http://www.ctan.org/pkg/nccfoots>
- *newtx*, <http://www.ctan.org/pkg/newtx>
- *oberdiek*, <http://www.ctan.org/pkg/oberdiek>
- *pdftex-def*, <http://www.ctan.org/pkg/pdftex-def>
- *setspace*, <http://www.ctan.org/pkg/setspace>
- *totpages*, <http://www.ctan.org/pkg/totpages>

- *trimspaces*, <http://www.ctan.org/pkg/trimspaces>
- *upquote*, <http://www.ctan.org/pkg/upquote>
- *url*, <http://www.ctan.org/pkg/url>
- *xcolor*, <http://www.ctan.org/pkg/xcolor>
- *xkeyval*, <http://www.ctan.org/pkg/xkeyval>

2.2 Invocation and options

To use the class put in the preamble of your document

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

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

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

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

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

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

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

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

There are several Boolean options which can take true or false values. They are listed in Table 2. The words `=true` can be omitted when setting the 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 copyeditors.

The option `screen` may in the future involve additional features suitable for on-screen versions of the articles.

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

The option `anonymous` is used for anonymous review process: all author information becomes obscured.

Table 1: The possible values for the format option

Value	Meaning
manuscript	A manuscript. This is the default
acmsmall	Small single column format, used for CIE, CSUR, JACM, JDIQ, JEA, JERIC, JETC, TAAS, TACCESS, TACO, TALG, TALLIP (formerly TALIP), TCPS, TEAC, TECS, TIIS, TISSEC, TIST, TKDD, TMIS, TOCE, TOCHI, TOCL, TOCS, TOCT, TODAES, TODS, TOIS, TOIT, TOMACS, TOMM (formerly TOMCCAP), TOMPECS, TOMS, TOPC, TOPLAS, TOPS, TOS, TOSEM, TOSN, TRET, TSAS, TSC, TSLP, TWEB.
acmlarge	Large single column format, used for IMWUT, JOCCH, PACMPL, TAP
acmtog	Large double column format, used for TOG
sigconf	Proceedings format for most of ACM conferences (with the exceptions listed below)
siggraph	Proceedings format for SIGGRAPH and SIGGRAPH Asia conferences, published in ACM Transactions on Graphics journal issues
sigplan	Proceedings format for SIGPLAN conferences
sigchi	Proceedings format for SIGCHI conferences
sigchi-a	Format for SIGCHI extended abstract

Table 2: Boolean options

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

2.3 Topmatter commands

A number of commands set up *top matter* information, or, in the computer science jargon, *metadata* for the article. They establish the publication name, article title, authors, doi and other data. Some of these commands, like `\title` or `\author`, should be put by the authors. Others, like `\acmVolume` or `\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 the 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`.

The class internally loads `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 3. Note that conference proceedings published in *book* form do not set this macro.

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

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

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

name: the name of the conference *or* the name of the book as set by the editor.

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}
```

Normally this command is entered either by the editor or by the typesetter.

`\title` The command `\title`, as in `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.

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

Abbreviation	Publication
CIE	ACM Computers in Entertainment
CSUR	ACM Computing Surveys
IMWUT	PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
JACM	Journal of the ACM
JDIQ	ACM Journal of Data and Information Quality
JEA	ACM Journal of Experimental Algorithmics
JERIC	ACM Journal of Educational Resources in Computing
JETC	ACM Journal on Emerging Technologies in Computing Systems
JOCCH	ACM Journal on Computing and Cultural Heritage
PACMPL	PACM on Programming Languages
TAAS	ACM Transactions on Autonomous and Adaptive Systems
TACCESS	ACM Transactions on Accessible Computing
TACO	ACM Transactions on Architecture and Code Optimization
TALG	ACM Transactions on Algorithms
TALLIP	ACM Transactions on Asian and Low-Resource Language Information Processing
TAP	ACM Transactions on Applied Perception
TCPS	ACM Transactions on Cyber-Physical Systems
TEAC	ACM Transactions on Economics and Computation
TECS	ACM Transactions on Embedded Computing Systems
TIIS	ACM Transactions on Interactive Intelligent Systems
TISSEC	ACM Transactions on Information and System Security
TIST	ACM Transactions on Intelligent Systems and Technology
TKDD	ACM Transactions on Knowledge Discovery from Data
TMIS	ACM Transactions on Management Information Systems
TOCE	ACM Transactions on Computing Education
TOCHI	ACM Transactions on Computer-Human Interaction
TOCL	ACM Transactions on Computational Logic
TOCS	ACM Transactions on Computer Systems
TOCT	ACM Transactions on Computation Theory
TODAES	ACM Transactions on Design Automation of Electronic Systems
TODS	ACM Transactions on Database Systems
TOG	ACM Transactions on Graphics
TOIS	ACM Transactions on Information Systems
TOIT	ACM Transactions on Internet Technology
TOMACS	ACM Transactions on Modeling and Computer Simulation
TOMM	ACM Transactions on Multimedia Computing, Communications and Applications
TOMPECS	ACM Transactions on Modeling and Performance Evaluation of Computing Systems
TOMS	ACM Transactions on Mathematical Software
TOPC	ACM Transactions on Parallel Computing
TOPLAS	ACM Transactions on Programming Languages and Systems
TOPS	ACM Transactions on Privacy and Security
TOS	ACM Transactions on Storage
TOSEM	ACM Transactions on Software Engineering and Methodology
TOSN	ACM Transactions on Sensor Networks
TRETS	ACM Transactions on Reconfigurable Technology and Systems
TSAS	ACM Transactions on Spatial Algorithms and Systems
TSC	ACM Transactions on Social Computing
TSLP	ACM Transactions on Speech and Language Processing
TWEB	ACM Transactions on the Web

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

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

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

`\orcid`

`\affiliation`

`\email`

```

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

```

Do *not* use \LaTeX `\and` macro! Each author deserves his or her own `\author` command.

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

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

```

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

```

Similarly you can repeat `\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, and author A_3 is affiliated with I_1 and I_3 , ...). 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 may try to save the space using the format

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

However, this format is not generally recommended.

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

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

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

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

`\thanks` Like `amsart` (and unlike standard \TeX), we allow `\thanks` only *outside* of commands `\title` and `\author`. Example:

```
\thanks{This work is supported by the Widget Corporation Grant
\#312-001.\\
Author's address: D. Pineo, Kingsbury Hall, 33 Academic Way, Durham,
N.H. 03824; email: dspineo@comcast.net; Colin Ware, Jere A. Chase
Ocean Engineering Lab, 24 Colovos Road, Durham, NH 03824; email:
cware@ccom.unh.edu;
Sean Fogarty, (Current address) NASA Ames Research Center, Moffett
Field, California 94035.}
```

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

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

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

`\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, including `\acmMonth`, for example,
`\acmMonth`

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

`\acmArticleSeq` The articles in the same issue of a journal have *sequential number*. It is used to
position black blob in same formats. By default it is the same as 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
```

`\acmPrice` The macro `\acmPrice{<price>}` sets the price for the article (by default 15.00), for

example,

```
\acmPrice{25.00}
```

`\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}
```

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

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

It is normally set by the typesetter.

`\acmBadgerR` Some conference articles get special distinction, for example, the artifact evaluation
`\acmBadgerL` for PPOPP 2016 (see <http://ctuning.org/ae/ppopp2016.html>). These articles display special badges supplied by the conference organizers. The class provides commands to add these badges: `\acmBadgerR[<url>]{<graphics>}` and `\acmBadgerL[<url>]{<graphics>}`. The first command puts the badge to the right of the title, and the second one—to the left. The exception is the sigchi-a mode for SIGCHI Extended abstract, which puts the badges on the left margin. The argument 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

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

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

`\terms` The macros `\terms{<term, term,...>}` and `\keywords{<keyword, keyword,...>}` set
`\keywords` the main terms and the additional keywords for the article. Term and keywords must be separated by commas, for example,

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

`CCSXML` ACM publications are classified according to the ACM Computing Classification
`\ccsdesc` Scheme (CCS). CCS codes are used both in the typeset version of the publications *and* in the metadata in the 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 the result 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[100]{Computer systems organization~Robotics}
\ccsdesc[100]{Networks~Network reliability}

```

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

\setcopyright There are several possibilities for the copyright of the papers published by ACM: the authors may transfer the rights to ACM, license them to ACM, some or all authors might be employees of the US or Canada Government, etc. Accordingly the command \setcopyright{...} is introduced. Its argument is the copyright status of the paper, for example, \setcopyright{acmcopyright}. The possible values for this command are listed in Table 4.

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

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

```

\acmYear{2016}
\copyrightyear{2015}

```

There is a special case for a personal copy that the authors may be allowed to generate for their use or a posting on a personal site (check the instructions for the specific journal or conference for the details). The document option authorversion=true produces

Table 4: Parameters for `\setcopyright` command

Parameter	Meaning
<code>none</code>	The copyright and permission information is not typeset (this is the option for some ACM conferences).
<code>acmcopyright</code>	The authors transfer the copyright to ACM (the “traditional” choice).
<code>acmlicensed</code>	The authors retain the copyright but license the publication rights to ACM.
<code>rightsretained</code>	The authors retain the copyright and publication rights to themselves or somebody else.
<code>usgov</code>	All the authors are employees of the US Government.
<code>usgovmixed</code>	Some authors are employees of the US Government.
<code>cagov</code>	All the authors are employees of the Canadian Government.
<code>cagovmixed</code>	Some authors are employees of the Canadian Government.

the 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.

<code>abstract</code>	The environment <code>abstract</code> must <i>precede</i> <code>\maketitle</code> command. Again, this is different from the standard \LaTeX .
<code>teaserfigure</code>	<p>A special kind of figure is used for many two-column conference proceedings. This figure is placed just after the authors, but before the main text. The environment <code>teaserfigure</code> is used for these figures. This environment must be used <i>before</i> <code>\maketitle</code>, for example,</p> <pre> \begin{teaserfigure} \includegraphics[width=\textwidth]{sampleteaser} \caption{This is a teaser} \label{fig:teaser} \end{teaserfigure} </pre>
<code>\settopmatter</code>	<p>Some information in the top matter is printed for certain journals or proceedings and suppressed for others. You may override these defaults using the command <code>\settopmatter{<settings>}</code>. The settings and their meanings are listed in Table 5. For example,</p> <pre> \settopmatter{printacmref=false, printccs=true, printfolios=true} </pre>
<code>\received</code>	The command <code>\received[<stage>]{<date>}</code> sets the history of the publication. The <code>[<stage>]</code> argument is optional; the default is Received for the first date and revised for the subsequent ones. For example

Table 5: Settings for `\settopmatter` command

Parameter	Values	Meaning
<code>printccs</code>	true/false	Whether to print CCS categories
<code>printacmref</code>	true/false	Whether to print ACM bibliographic entry
<code>printfolios</code>	true/false	Whether to print page numbers (folios)

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

`\maketitle` The macro `\maketitle` must be the last command in the top matter group: i.e., 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 may redefine it if the list of author’s name is too long, e.g.,

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

2.4 Algorithms

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

2.5 Figures and tables

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

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

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

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

teaserfigure: a special figure before `\maketitle`.

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

3. Accordingly, when scaling the images, one should use the following sizes:

- (a) For figure in one-column mode, figure* in two-column mode or teaserfigure—`\textwidth` (in the one-column you can also use `\columnwidth`, which coincides with `\textwidth` in this case).
- (b) For figure in two-column mode—`\columnwidth`.
- (c) For marginfigure—`\marginparwidth`.
- (d) For figure* in SIGCHI Extended abstracts—`\fulltextwidth`.

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

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

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

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

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

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


sidebar SIGCHI extended abstract extensively uses margin space. The package provides
marginfigure three environments for this with option captions:
margintable

sidebar: textual information on the margin

marginfigure: a figure on the margin

margintable: a table on the margin

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

2.6 Theorems

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

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

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

2.7 Online-only and offline-only material

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

```
\section{Supplementary materials}

\begin{printonly}
  This section is included in the online version of the paper.
\end{printonly}

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

We use *comment* package for typesetting this code, so `\begin` and `\end` should start at the first positions of the lines of their own (no initial spaces etc.).

2.8 Note about anonymous mode

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

```

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

```

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

2.9 Acknowledgments

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

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

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

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

`\grantsponsor` All the financial support *must* be listed using the commands `\grantsponsor` and
`\grantnum` `\grantnum`. These commands tell the postprocessing software about the granting organization and the grant. The format of the command 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 `\sponsorID` of a `\grantsponsor` command. Some awards have their own web pages, which you can include using the optional argument of `\grantnum` command.

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. The work is
  supported by the \grantsponsor{GS501100001809}{National Natural
  Science Foundation of
  China}{http://dx.doi.org/10.13039/501100001809} under Grant
  No.:~\grantnum{GS501100001809}{61273304}
  and~\grantnum[http://www.nnsf.cn/youngscientsts]{GS501100001809}{Young
  Scientists' Support Program}.
\end{acks}

```

2.10 Bibliography

ACM uses *natbib* package for formatting of referencing and the style `ACM-Reference-Format.bst` for Bib_{TEX} processing. You may disable loading of *natbib* by using the option `natbib=false` in `\documentclass`. However, it is not recommended, as well as the use of Bib_{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: the author-year format `acmauthoryear` or the numeric format `acmnumeric` using the command `\citestyle`, for example,

```
\citestyle{acmauthoryear}
```

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

`\setcitestyle` You may further customize *natbib* using `\setcitestyle` command, for example,

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

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 the author-date mode.

There are several customized Bib_{TEX} entries and fields in ACM style `ACM-Reference-Format.bst` you may want to be aware of.

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

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

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

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

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

There are special entries online and game for Web pages and games, for example,

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

For these entries you can use the `lastaccessed` field to add the access date to the URL.

There are two ways to enter video and audio sources in the bibliography corresponding to two different possibilities. For standalone sources available on WWW you can use an online entry, setting there `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 the sources available as attachments to conference proceedings and similar documents, you can use the usual `inproceedings` entry, again setting the `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 = "99.9999/woot07-S422",
  howpublished = "Video"
}
```

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

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

2.11 Colors

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

2.12 Other notable packages and typographic remarks

Several other packages are recommended for specialized tasks.

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

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

3 Implementation

3.1 Identification

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

```
1 <class>\NeedsTeXFormat{LaTeX2e}
2 <*gobble>
3 \ProvidesFile{acmart.dtx}
4 </gobble>
5 <class>\ProvidesClass{acmart}
6 [2017/01/07 v1.28 Typesetting articles for Association of
7 Computing Machinery]
```

And the driver code:

```
8 <*gobble>
9 \documentclass{ltxdoc}
10 \usepackage{array,booktabs,amsmath,graphicx,fancyvrb,tabularx}
11 \usepackage[tt=false]{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 Options

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

```
26 \RequirePackage{xkeyval}
```

format The possible formats

```
27 \define@choicekey*+{acmart.cls}{format}[\ACM@format\ACM@format@nr]{%
28   manuscript, acmsmall, acmlarge, acmtog, sigconf, siggraph,
29   sigplan, sigchi, sigchi-a}[manuscript]{}{%
30   \ClassError{\@classname}{The option format must be manuscript,
31     acmsmall, acmlarge, acmtog, sigconf, siggraph,
32     sigplan, sigchi or sigchi-a}}
33 \def\@DeclareACMFormat#1{\DeclareOptionX{#1}{\setkeys{acmart.cls}{format=#1}}}
34 \@DeclareACMFormat{manuscript}
```

```

35 \DeclareACMFormat{acmsmall}
36 \DeclareACMFormat{acmlarge}
37 \DeclareACMFormat{acmtog}
38 \DeclareACMFormat{sigconf}
39 \DeclareACMFormat{siggraph}
40 \DeclareACMFormat{sigplan}
41 \DeclareACMFormat{sigchi}
42 \DeclareACMFormat{sigchi-a}
43 \ExecuteOptionsX{format}

\if@ACM@screen Whether we use screen mode
44 \define@boolkey+{acmart.cls}[@ACM@]{screen}[true]{%
45   \if@ACM@screen
46     \PackageInfo{\@classname}{Using screen mode}%
47   \else
48     \PackageInfo{\@classname}{Not using screen mode}%
49   \fi}{\PackageError{\@classname}{Option screen can be either true or
50     false}}
51 \ExecuteOptionsX{screen=false}

\if@ACM@review Whether we use review mode
52 \define@boolkey+{acmart.cls}[@ACM@]{review}[true]{%
53   \if@ACM@review
54     \PackageInfo{\@classname}{Using review mode}%
55   \else
56     \PackageInfo{\@classname}{Not using review mode}%
57   \fi}{\PackageError{\@classname}{Option review can be either true or
58     false}}
59 \ExecuteOptionsX{review=false}

\if@ACM@authorversion Whether we use author's version
60 \define@boolkey+{acmart.cls}[@ACM@]{authorversion}[true]{%
61   \if@ACM@authorversion
62     \PackageInfo{\@classname}{Using authorversion mode}%
63   \else
64     \PackageInfo{\@classname}{Not using authorversion mode}%
65   \fi}{\PackageError{\@classname}{Option authorversion can be either true or
66     false}}
67 \ExecuteOptionsX{authorversion=false}

\if@ACM@natbib@override Whether to override the format decision about natbib
68 \newif\if@ACM@natbib@override
69 \@ACM@natbib@overridefalse

\if@ACM@natbib Whether we use natbib mode
70 \define@boolkey+{acmart.cls}[@ACM@]{natbib}[true]{%
71   \@ACM@natbib@override=true
72   \if@ACM@natbib
73     \PackageInfo{\@classname}{Explicitly selecting natbib mode}%

```

```

74 \else
75 \PackageInfo{\@classname}{Explicitly deselecting natbib mode}%
76 \fi}{\PackageError{\@classname}{Option natbib can be either true or
77 false}}

\if@ACM@anonymous Whether we use anonymous mode
78 \define@boolkey+{acmart.cls}[@ACM@]{anonymous}[true]{%
79 \if@ACM@anonymous
80 \PackageInfo{\@classname}{Using anonymous mode}%
81 \else
82 \PackageInfo{\@classname}{Not using anonymous mode}%
83 \fi}{\PackageError{\@classname}{Option anonymous can be either true or
84 false}}
85 \ExecuteOptionsX{anonymous=false}

\ACM@fontsize The font size to pass to the base class
86 \def\ACM@fontsize{
87 \DeclareOptionX{9pt}{\edef\ACM@fontsize{\CurrentOption}}
88 \DeclareOptionX{10pt}{\edef\ACM@fontsize{\CurrentOption}}
89 \DeclareOptionX{11pt}{\edef\ACM@fontsize{\CurrentOption}}
90 \DeclareOptionX{12pt}{\edef\ACM@fontsize{\CurrentOption}}

91 \DeclareOptionX{draft}{\PassOptionsToClass{\CurrentOption}{amsart}}
92 \DeclareOptionX{*}{\PassOptionsToClass{\CurrentOption}{amsart}}
93 \ProcessOptionsX
94 \ClassInfo{\@classname}{Using format \ACM@format, number \ACM@format@nr}

```

3.3 Setting switches

```

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

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

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

Setting up switches
98 \ifnum\ACM@format@nr=0\relax
99 \@ACM@manuscripttrue
100 \else
101 \@ACM@manuscriptfalse
102 \fi
103 \@ACM@sigchiamodefalse
104 \ifcase\ACM@format@nr
105 \relax % manuscript
106 \@ACM@journaltrue

```



```

107 \or % acmsmall
108   \ACM@journaltrue
109 \or % acmlarge
110   \ACM@journaltrue
111 \or % acmtog
112   \ACM@journaltrue
113 \or % sigconf
114   \ACM@journalfalse
115 \or % siggraph
116   \ACM@journalfalse
117 \or % sigplan
118   \ACM@journalfalse
119 \or % sigchi
120   \ACM@journalfalse
121 \or % sigchi-a
122   \ACM@journalfalse
123   \ACM@sigchiamodetrue
124 \fi

```

A format sets up `\if@ACM@natbib` only if `\ACM@natbib@override` is false (i.e. user did *not* override format's selection):

```

125 \if@ACM@natbib@override\else
126   \ACM@natbibtrue
127 \fi

```

3.4 Loading base class and package

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

```

128 \ifx\ACM@fontsize\empty
129   \ifcase\ACM@format@nr
130     \relax % manuscript
131     \def\ACM@fontsize{9pt}%
132   \or % acmsmall
133     \def\ACM@fontsize{10pt}%
134   \or % acmlarge
135     \def\ACM@fontsize{10pt}%
136   \or % acmtog
137     \def\ACM@fontsize{9pt}%
138   \or % sigconf
139     \def\ACM@fontsize{9pt}%
140   \or % siggraph
141     \def\ACM@fontsize{9pt}%
142   \or % sigplan
143     \def\ACM@fontsize{9pt}%
144   \or % sigchi
145     \def\ACM@fontsize{10pt}%
146   \or % sigchi-a
147     \def\ACM@fontsize{10pt}%
148   \fi
149 \fi

```

```

150 \ClassInfo{\@classname}{Using fontsize \ACM@fontsize}
151 \LoadClass[\ACM@fontsize, reqno]{amsart}
152 \RequirePackage{microtype}

```

We need totpages package to calculate the number of pages

```

153 \RequirePackage{totpages}

```

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

```

154 \RequirePackage{environ}

```

We use setspace for doublespacing

```

155 \if@ACM@manuscript
156 \RequirePackage{setspace}
157 \onehalfspacing
158 \fi

```

Citations. We patch \setcitestyle to allow, e.g., \setcitestyle{sort} and \setcitestyle{nosort}. We patch \citestyle to warn about undefined citation styles.

```

159 \if@ACM@natbib
160 \RequirePackage{natbib}
161 \renewcommand{\bibsection}{%
162   \section*{\refname}%
163   \phantomsection\addcontentsline{toc}{section}{\refname}%
164 }
165 \renewcommand{\bibfont}{\bibliofont}
166 \renewcommand\setcitestyle[1]{
167   \@for\@tempa:=#1\do
168   {\def\@tempb{round}\ifx\@tempa\@tempb
169     \renewcommand\NAT@open{(\}\renewcommand\NAT@close{)}\fi
170     \def\@tempb{square}\ifx\@tempa\@tempb
171       \renewcommand\NAT@open{[\}\renewcommand\NAT@close{]}\fi
172     \def\@tempb{angle}\ifx\@tempa\@tempb
173       \renewcommand\NAT@open{$<$}\renewcommand\NAT@close{$>$}\fi
174     \def\@tempb{curly}\ifx\@tempa\@tempb
175       \renewcommand\NAT@open{\{\}\renewcommand\NAT@close{\}}\fi
176     \def\@tempb{semicolon}\ifx\@tempa\@tempb
177       \renewcommand\NAT@sep{;}\fi
178     \def\@tempb{colon}\ifx\@tempa\@tempb
179       \renewcommand\NAT@sep{:}\fi
180     \def\@tempb{comma}\ifx\@tempa\@tempb
181       \renewcommand\NAT@sep{,}\fi
182     \def\@tempb{authoryear}\ifx\@tempa\@tempb
183       \NAT@numbersfalse\fi
184     \def\@tempb{numbers}\ifx\@tempa\@tempb
185       \NAT@numberstrue\NAT@superfalse\fi
186     \def\@tempb{super}\ifx\@tempa\@tempb
187       \NAT@numberstrue\NAT@supertrue\fi
188     \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
189       \let\bibstyle=\gobble\fi

```

```

190 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
191 \let\bibstyle=\@citestyle\fi
192 \def\@tempb{sort}\ifx\@tempa\@tempb
193 \def\NAT@sort{\@ne}\fi
194 \def\@tempb{nosort}\ifx\@tempa\@tempb
195 \def\NAT@sort{\@z}\fi
196 \def\@tempb{compress}\ifx\@tempa\@tempb
197 \def\NAT@cmprs{\@ne}\fi
198 \def\@tempb{nocompress}\ifx\@tempa\@tempb
199 \def\NAT@cmprs{\@z}\fi
200 \def\@tempb{sort&compress}\ifx\@tempa\@tempb
201 \def\NAT@sort{\@ne}\def\NAT@cmprs{\@ne}\fi
202 \def\@tempb{mcite}\ifx\@tempa\@tempb
203 \let\NAT@merge\@ne\fi
204 \def\@tempb{merge}\ifx\@tempa\@tempb
205 \ifnum{\NAT@merge<\tw@}{\let\NAT@merge\tw@}\fi
206 \def\@tempb{elide}\ifx\@tempa\@tempb
207 \ifnum{\NAT@merge<\thr@}{\let\NAT@merge\thr@}\fi
208 \def\@tempb{longnamesfirst}\ifx\@tempa\@tempb
209 \NAT@longnamestrue\fi
210 \def\@tempb{nonamebreak}\ifx\@tempa\@tempb
211 \def\NAT@nmfmt#1{\mbox{\NAT@up#1}}\fi
212 \expandafter\NAT@find@eq\@tempa=\relax\@nil
213 \if\@tempc\relax\else
214 \expandafter\NAT@rem@eq\@tempc
215 \def\@tempb{open}\ifx\@tempa\@tempb
216 \xdef\NAT@open{\@tempc}\fi
217 \def\@tempb{close}\ifx\@tempa\@tempb
218 \xdef\NAT@close{\@tempc}\fi
219 \def\@tempb{aysep}\ifx\@tempa\@tempb
220 \xdef\NAT@aysep{\@tempc}\fi
221 \def\@tempb{yysep}\ifx\@tempa\@tempb
222 \xdef\NAT@yrsep{\@tempc}\fi
223 \def\@tempb{notesep}\ifx\@tempa\@tempb
224 \xdef\NAT@cmt{\@tempc}\fi
225 \def\@tempb{citesep}\ifx\@tempa\@tempb
226 \xdef\NAT@sep{\@tempc}\fi
227 \fi
228 }%
229 \NAT@@setcites
230 }
231 \renewcommand\citestyle[1]{%
232 \ifcsname bibstyle@#1\endcsname%
233 \csname bibstyle@#1\endcsname\let\bibstyle\@gobble%
234 \else%
235 \latexerror{Undefined ‘#1’ citestyle}%
236 \fi
237 }%
238 \fi

```

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

```

239 \newcommand{\bibstyle@acmauthoryear}{%
240   \setcitestyle{%
241     authoryear,%
242     open={()},close={}},citesep={;},%
243     aysep={},yysep={},,%
244     notesep={, }}}
```

`\bibstyle@acmnumeric` The default numeric format:

```

245 \newcommand{\bibstyle@acmnumeric}{%
246   \setcitestyle{%
247     numbers,sort&compress,%
248     open={[]},close={[]},citesep={,},%
249     notesep={, }}}
```

The default is numeric:

```

250 \if@ACM@natbib
251 \citestyle{acmnumeric}
252 \fi
```

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

```

253 \def\@startsection#1#2#3#4#5#6{%
254   \if@noskipsec \leavevmode \fi
255   \par
256   \@tempskipa #4\relax
257   \@afterindenttrue
258   \ifdim \@tempskipa <\z@
259     \@tempskipa -\@tempskipa \@afterindentfalse
260   \fi
261   \if@nobreak
262     \everypar{}%
263   \else
264     \addpenalty\@secpenalty\addvspace\@tempskipa
265   \fi
266   \@ifstar
267     {\@ssect{#3}{#4}{#5}{#6}}%
268     {\@dblarg{\@sect{#1}{#2}{#3}{#4}{#5}{#6}}}
269 \def\@sect#1#2#3#4#5#6[#7]#8{%
270   \ifnum #2>\c@secnumdepth
271     \let\@svsec\@empty
272   \else
273     \refstepcounter{#1}%
274     \protected@edef\@svsec{\@secntformat{#1}\relax}%
275   \fi
276   \@tempskipa #5\relax
277   \ifdim \@tempskipa>\z@
278     \begingroup
279     #6{%
```

```

280     \@hangfrom{\hskip #3\relax\@svsec}%
281     \interlinepenalty \@M #8\@par}%
282 \endgroup
283 \csname #1mark\endcsname{#7}%
284 \addcontentsline{toc}{#1}{%
285     \ifnum #2>\c@secnumdepth \else
286     \protect\numberline{\csname the#1\endcsname}%
287     \fi
288     #7}%
289 \else
290     \def\@svsechd{%
291         #6{\hskip #3\relax
292             \@svsec #8}%
293         \csname #1mark\endcsname{#7}%
294         \addcontentsline{toc}{#1}{%
295             \ifnum #2>\c@secnumdepth \else
296             \protect\numberline{\csname the#1\endcsname}%
297             \fi
298             #7}}%
299 \fi
300 \@xsect{#5}}
301 \def\@xsect#1{%
302     \@tempskipa #1\relax
303     \ifdim \@tempskipa>\z@
304         \par \nobreak
305         \vskip \@tempskipa
306         \@afterheading
307     \else
308         \@nobreakfalse
309         \global\@noskipsectrue
310         \everypar{%
311             \if@noskipsec
312                 \global\@noskipsecfalse
313                 {\setbox\z@\lastbox}%
314                 \clubpenalty\@M
315                 \begingroup \@svsechd \endgroup
316                 \unskip
317                 \@tempskipa #1\relax
318                 \hskip -\@tempskipa
319             \else
320                 \clubpenalty \@clubpenalty
321                 \everypar{}%
322             \fi}%
323     \fi
324     \ignorespaces}
325 \def\@secntformat#1{\csname the#1\endcsname\quad}
326 \def\@essect#1#2#3#4#5{%
327     \@tempskipa #3\relax
328     \ifdim \@tempskipa>\z@
329         \begingroup

```

```

330      #4{%
331          \@hangfrom{\hskip #1}%
332          \interlinepenalty \@M #5\@par}%
333      \endgroup
334      \else
335          \def\@svsechd{#4{\hskip #1\relax #5}}%
336      \fi
337      \@xsect{#3}}

    And hyperref
338 \let\@footnotemark@nolink\@footnotemark
339 \let\@footnotetext@nolink\@footnotetext
340 \RequirePackage[bookmarksnumbered,unicode]{hyperref}
341 \pdfstringdefDisableCommands{%
342     \def\unskip{}
343     \def\textbullet{- }
344     \def\textrightarrow{-> }
345     \def\footnotemark{}
346 }
347 \urlstyle{rm}
348 \ifcase\ACM@format@nr
349 \relax % manuscript
350 \or % acmsmall
351 \or % acmlarge
352 \or % acmtog
353 \or % sigconf
354 \or % siggraph
355 \or % sigplan
356     \urlstyle{sf}
357 \or % sigchi
358 \or % sigchi-a
359     \urlstyle{sf}
360 \fi
361 \if@ACM@screen
362     \hypersetup{colorlinks,
363         linkcolor=ACMRed,
364         citecolor=ACMPurple,
365         urlcolor=ACMDarkBlue,
366         filecolor=ACMDarkBlue}
367 \else
368     \hypersetup{hidelinks}
369 \fi

    Bibliography mangling.
370 \if@ACM@natbib
371     \let\cite\Ncite
372     \let\cite\citep
373     \let\citeANP\citeauthor
374     \let\citeNN\citeyearpar
375     \let\citeyearNP\citeyear
376     \let\citeyear\citeyearpar

```

```

377 \let\citeNP\citealt
378 \DeclareRobustCommand\citeA
379   {\begingroup\NAT@swafalse
380     \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
381   \providecommand\newblock{}%
382 \else
383   \providecommand\citename[1]{#1}
384 \fi
385 \def\shortcite#1{\ifNAT@numbers\cite{#1}\else\citeyear{#1}\fi}

```

`\bibliographystyle` Amsart redefines `\bibliographystyle` since it prefers AMS bibliography. We turn it back to \LaTeX definition:

```

386 \def\bibliographystyle#1{%
387   \ifx\@begindocumenthook\@undefined\else
388     \expandafter\AtBeginDocument
389   \fi
390   {\if@filesw
391     \immediate\write\@auxout{\string\bibstyle{#1}}%
392   \fi}}

```

Graphics and color

```

393 \RequirePackage{graphicx, xcolor}

```

We define ACM colors according to [7]:

```

394 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
395 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
396 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
397 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
398 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
399 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
400 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
401 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

3.5 Paper size and paragraphing

We use geometry for dimensions

```

402 \RequirePackage{geometry}
403 \ifcase\ACM@format@nr
404 \relax % manuscript
405   \geometry{letterpaper,head=1pc}%
406 \or % acmsmall
407   \geometry{twoside=true,
408     includeheadfoot, head=1pc, foot=2pc,
409     paperwidth=6.75in, paperheight=10in,
410     top=58pt, bottom=44pt, inner=46pt, outer=46pt
411   }%
412 \or % acmlarge
413   \geometry{twoside=true, head=1pc, foot=2pc,
414     paperwidth=8.5in, paperheight=11in,

```

```

415     includeheadfoot,
416     top=78pt, bottom=114pt, inner=81pt, outer=81pt
417 }%
418 \or % acmtog
419 \geometry{twoside=true, head=1pc, foot=2pc,
420     paperwidth=8.5in, paperheight=11in,
421     includeheadfoot, columnsep=24pt,
422     top=52pt, bottom=75pt, inner=52pt, outer=52pt
423 }%
424 \or % sigconf
425 \geometry{twoside=true, head=1pc,
426     paperwidth=8.5in, paperheight=11in,
427     includeheadfoot, columnsep=2pc,
428     top=57pt, bottom=73pt, inner=54pt, outer=54pt
429 }%
430 \or % siggraph
431 \geometry{twoside=true, head=1pc,
432     paperwidth=8.5in, paperheight=11in,
433     includeheadfoot, columnsep=2pc,
434     top=57pt, bottom=73pt, inner=54pt, outer=54pt
435 }%
436 \or % sigplan
437 \geometry{twoside=true, head=1pc,
438     paperwidth=8.5in, paperheight=11in,
439     includeheadfoot=false, columnsep=2pc,
440     top=1in, bottom=1in, inner=0.75in, outer=0.75in
441 }%
442 \or % sigchi
443 \geometry{twoside=true, head=1pc,
444     paperwidth=8.5in, paperheight=11in,
445     includeheadfoot, columnsep=2pc,
446     top=66pt, bottom=73pt, inner=54pt, outer=54pt
447 }%
448 \or % sigchi-a
449 \geometry{twoside=false, head=1pc,
450     paperwidth=11in, paperheight=8.5in,
451     includeheadfoot, marginparsep=72pt,
452     marginparwidth=170pt, columnsep=20pt,
453     top=72pt, bottom=72pt, left=314pt, right=72pt
454 }%
455 \@mparswitchfalse
456 \reversemarginpar
457 \fi

```

\parindent Paragraphing

```

\parskip
458 \setlength\parindent{10\p@}
459 \setlength\parskip{\z@}
460 \ifcase\ACM@format@nr
461 \relax % manuscript
462 \or % acmsmall

```



```

463 \or % acmlarge
464 \or % acmtog
465 \setlength\parindent{9\p@}%
466 \or % sigconf
467 \or % siggraph
468 \or % sigplan
469 \or % sigchi
470 \or % sigchi-a
471 \fi

```

Footnotes require some consideration. We have several layers of footnotes: front-matter footnotes, “regular” footnotes and the special insert for bibstrip. In the old ACM classes 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 bibstrip from the rest of the paper. It is a full width rule.

```

472 \def\copyrightpermissionfootnoterule{\kern-3\p@
473 \hrule \@width \columnwidth \kern 2.6\p@}

474 \RequirePackage{manyfoot}
475 \SelectFootnoteRule[2]{copyrightpermission}
476 \DeclareNewFootnote{copyrightpermission}

```

`\footnoterule` Tschichold’s rules:

```

477 \def\footnoterule{\kern-3\p@
478 \hrule \@width 4pc \kern 2.6\p@}

```

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

```

479 \def\endminipage{%
480 \par
481 \unskip
482 \ifvoid\@mpfootins\else
483 \vskip\skip\@mpfootins
484 \normalcolor
485 \unvbox\@mpfootins
486 \fi
487 \@minipagefalse %% added 24 May 89
488 \color@endgroup
489 \egroup
490 \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}

```

`\@makefnmark` We do not use indentation for footnotes

```

491 \def\@makefnmark{\noindent\@makefnmark}

```

`\@footnotetext` In sigchi-a mode our footnotes are on the margins!

```

492 \if@ACM@sigchiamode
493 \long\def\@footnotetext#1{\marginpar{%

```

```

494 \reset@font\small
495 \interlinepenalty\interfootnotelinepenalty
496 \protected@edef\@currentlabel{%
497   \csname p@footnote\endcsname\@thefnmark
498 }%
499 \color@begingroup
500   \makefnmark{%
501     \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
502   \color@endgroup}}%
503 \fi

```

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

```

504 \long\def\@mpfootnotetext#1{%
505   \global\setbox\@mpfootins\vbox{%
506     \unvbox\@mpfootins
507     \reset@font\footnotesize
508     \hsize\columnwidth
509     \@parboxrestore
510     \protected@edef\@currentlabel
511       {\csname p@mpfootnote\endcsname\@thefnmark}%
512     \color@begingroup\centering
513       \makefnmark{%
514         \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
515       \color@endgroup}}

```

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

```

516 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}

```

3.6 Fonts

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

```

517 \newif\if@ACM@newfonts
518 \@ACM@newfontstrue
519 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
520   have libertine package installed. Please upgrade your
521   TeX}\@ACM@newfontsfalse}
522 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
523   have zi4 package installed. Please upgrade your TeX}\@ACM@newfontsfalse}
524 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
525   have newtxmath package installed. Please upgrade your
526   TeX}\@ACM@newfontsfalse}

```

We use Libertine throughout.

```

527 \if@ACM@newfonts
528 \RequirePackage[tt=false]{libertine}
529 \RequirePackage[varqu]{zi4}
530 \RequirePackage[libertine]{newtxmath}
531 \fi

```

The SIGCHI extended abstracts are sans serif:

```
532 \if@ACM@sigchiamode
533   \renewcommand{\familydefault}{\sfdefault}
534 \fi
```

3.7 Floats

We use caption package

```
535 \RequirePackage{caption, float}
536 \captionsetup[table]{position=top}
537 \if@ACM@journal
538   \captionsetup{labelfont={sf, small},
539     textfont={sf, small}, margin=\z@}
540   \captionsetup[figure]{name={Fig.}}
541 \else
542   \captionsetup{labelfont={bf},
543     textfont={bf}, labelsep=colon, margin=\z@}
544   \ifcase\ACM@format@nr
545     \relax % manuscript
546     \or % acmsmall
547     \or % acmlarge
548     \or % acmtog
549     \or % sigconf
550     \or % siggraph
551     \captionsetup{textfont={it}}
552     \or % sigplan
553     \captionsetup{labelfont={bf},
554       textfont={normalfont}, labelsep=period, margin=\z@}
555     \or % sigchi
556     \captionsetup[figure]{labelfont={bf, small},
557       textfont={bf, small}}
558     \or % sigchi-a
559     \captionsetup[figure]{labelfont={bf, small},
560       textfont={bf, small}}
561   \fi
562 \fi
```

sidebar The sidebar environment:

```
563 \newfloat{sidebar}{}{sbar}
564 \floatname{sidebar}{Sidebar}
565 \renewenvironment{sidebar}{\Collect@Body\@sidebar{}}
```

\@sidebar The processing of the saved text

```
566 \long\def\@sidebar#1{\bgroup\captionsetup{type=sidebar}%
567   \marginpar{\small#1}\egroup}
```

marginfigure The marginfigure environment:

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

`\@marginfigure` The processing of the saved text

```

569 \long\def\@marginfigure#1{\bgroup\captionsetup{type=figure}%
570   \marginpar{\centering\small#1}\egroup}

```

`marginable` The marginable environment:

```

571 \newenvironment{marginable}{\Collect@Body\@marginable}{}

```

`\@marginable` The processing of the saved text

```

572 \long\def\@marginable#1{\bgroup\captionsetup{type=table}%
573   \marginpar{\centering\small#1}\egroup}

```

SIGCHI extended abstract provides 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

```

574 \newdimen\fulltextwidth
575 \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)

```

576 \if@ACM@sigchiamode
577 \def\@dblfloat{\bgroup\columnwidth=\fulltextwidth
578   \let\@endfloatbox\@endwidefloatbox
579   \def\@fpsaddddefault{\def\@fps{tp}}%
580   \@float}
581 \fi

```

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

```

582 \if@ACM@sigchiamode
583 \def\end@dblfloat{%
584   \end@float\egroup}
585 \fi

```

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

```

586 \def\@endwidefloatbox{%
587   \par\vskip\z@skip
588   \@minipagefalse
589   \outer@nobreak
590   \egroup
591   \color@endbox
592   \global\setbox\@currbox=\vbox{\moveleft
593     \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
594   \wd\@currbox=\textwidth
595 }

```

3.8 Lists

```
596 \ifcase\ACM@format@nr
597 \relax % manuscript
598 \or % acmsmall
599 \or % acmlarge
600 \or % acmtog
601 \or % sigconf
602 \or % siggraph
603 \or % sigplan
604 \def\labelenumi{\theenumi.}
605 \def\labelenumii{\theenumii.}
606 \def\labelenumiii{\theenumiii.}
607 \def\labelenumiv{\theenumiv.}
608 \or % sigchi
609 \or % sigchi-a
610 \fi
```

\descriptionlabel We do not use default colon as \amsart does:

```
611 \renewcommand{\descriptionlabel}[1]{\hspace\labelsep \upshape\bfseries #1}
```

\description AMS uses additional indent of 6pt. Frank recommends dropping it.

```
612 \renewenvironment{description}{\list{}{%
613   \itemindent-12\p@
614   \labelwidth\z@ \let\makelabel\descriptionlabel}%
615 }{
616   \endlist
617 }
618 \let\enddescription=\endlist % for efficiency
```

3.9 Top matter data

We use keyval interface to define journal title and relevant information

```
619 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
620   CIE,%
621   CSUR,%
622   IMWUT,%
623   JACM,%
624   JDIQ,%
625   JEA,%
626   JERIC,%
627   JETC,%
628   JOCCH,%
629   PACMPL,%
630   TAAS,%
631   TACCESS,%
632   TACO,%
633   TALG,%
634   TALLIP,%
635   TAP,%
```

```

636 TCPS,%
637 TEAC,%
638 TECS,%
639 TIIS,%
640 TISSEC,%
641 TIST,%
642 TKDD,%
643 TMIS,%
644 TOCE,%
645 TOCHI,%
646 TOCL,%
647 TOCS,%
648 TOCT,%
649 TODAES,%
650 TODS,%
651 TOG,%
652 TOIS,%
653 TOIT,%
654 TOMACS,%
655 TOMM,%
656 TOMPECS,%
657 TOMS,%
658 TOPC,%
659 TOPS,%
660 TOPLAS,%
661 TOS,%
662 TOSEM,%
663 TOSN,%
664 TRETs,%
665 TSAS,%
666 TSC,%
667 TSLP,%
668 TWEB%
669 }{%
670 \ifcase\@journalCode@nr
671 \relax % CIE
672 \def\@journalName{ACM Computers in Entertainment}%
673 \def\@journalNameShort{ACM Comput. Entertain.}%
674 \def\@permissionCodeOne{1544-3574}%
675 \or % CSUR
676 \def\@journalName{ACM Computing Surveys}%
677 \def\@journalNameShort{ACM Comput. Surv.}%
678 \def\@permissionCodeOne{0360-0300}%
679 \or % IMWUT
680 \def\@journalName{PACM on Interactive, Mobile, Wearable and
681 Ubiquitous Technologies}%
682 \def\@journalNameShort{PACM Interact. Mob. Wearable Ubiquitous Technol.}%
683 \def\@permissionCodeOne{2474-9567}%
684 \or % JACM
685 \def\@journalName{Journal of the ACM}%

```

```

686 \def\@journalNameShort{J. ACM}%
687 \def\@permissionCodeOne{0004-5411}%
688 \or % JDIQ
689 \def\@journalName{ACM Journal of Data and Information Quality}%
690 \def\@journalNameShort{ACM J. Data Inform. Quality}%
691 \def\@permissionCodeOne{1936-1955}%
692 \or % JEA
693 \def\@journalName{ACM Journal of Experimental Algorithmics}%
694 \def\@journalNameShort{ACM J. Exp. Algor.}%
695 \def\@permissionCodeOne{1084-6654}%
696 \or % JERIC
697 \def\@journalName{ACM Journal of Educational Resources in Computing}%
698 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
699 \def\@permissionCodeOne{1073-0516}%
700 \or % JETC
701 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
702 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
703 \def\@permissionCodeOne{1550-4832}%
704 \or % JOCCH
705 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
706 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%
707 \or % PACMPL
708 \def\@journalName{PACM on Programming Languages}%
709 \def\@journalNameShort{PACM Progr. Lang.}%
710 \def\@permissionCodeOne{2475-1421}%
711 \or % TAAS
712 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
713 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
714 \def\@permissionCodeOne{1556-4665}%
715 \or % TACCESS
716 \def\@journalName{ACM Transactions on Accessible Computing}%
717 \def\@journalNameShort{ACM Trans. Access. Comput.}%
718 \def\@permissionCodeOne{1936-7228}%
719 \or % TACO
720 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
721 \or % TALG
722 \def\@journalName{ACM Transactions on Algorithms}%
723 \def\@journalNameShort{ACM Trans. Algor.}%
724 \def\@permissionCodeOne{1549-6325}%
725 \or % TALLIP
726 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
727 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
728 \def\@permissionCodeOne{2375-4699}%
729 \or % TAP
730 \def\@journalName{ACM Transactions on Applied Perception}%
731 \or % TCPS
732 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
733 \or % TEAC
734 \def\@journalName{ACM Transactions on Economics and Computation}%
735 \or % TECS

```

```

736 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
737 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
738 \def\@permissionCodeOne{1539-9087}%
739 \or % TIIS
740 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
741 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
742 \def\@permissionCodeOne{2160-6455}%
743 \or % TISSEC
744 \def\@journalName{ACM Transactions on Information and System Security}%
745 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
746 \def\@permissionCodeOne{1094-9224}%
747 \or % TIST
748 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
749 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
750 \def\@permissionCodeOne{2157-6904}%
751 \or % TKDD
752 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
753 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
754 \def\@permissionCodeOne{1556-4681}%
755 \or % TMIS
756 \def\@journalName{ACM Transactions on Management Information Systems}%
757 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
758 \def\@permissionCodeOne{2158-656X}%
759 \or % TOCE
760 \def\@journalName{ACM Transactions on Computing Education}%
761 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
762 \def\@permissionCodeOne{1946-6226}%
763 \or % TOCHI
764 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
765 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
766 \def\@permissionCodeOne{1073-0516}%
767 \or % TOCL
768 \def\@journalName{ACM Transactions on Computational Logic}%
769 \def\@journalNameShort{ACM Trans. Comput. Logic}%
770 \def\@permissionCodeOne{1529-3785}%
771 \or % TOCS
772 \def\@journalName{ACM Transactions on Computer Systems}%
773 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
774 \def\@permissionCodeOne{0734-2071}%
775 \or % TOCT
776 \def\@journalName{ACM Transactions on Computation Theory}%
777 \def\@journalNameShort{ACM Trans. Comput. Theory}%
778 \def\@permissionCodeOne{1942-3454}%
779 \or % TODAES
780 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
781 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
782 \def\@permissionCodeOne{1084-4309}%
783 \or % TODS
784 \def\@journalName{ACM Transactions on Database Systems}%
785 \def\@journalNameShort{ACM Trans. Datab. Syst.}%

```



```

786 \def\@permissionCodeOne{0362-5915}%
787 \or % TOG
788 \def\@journalName{ACM Transactions on Graphics}%
789 \def\@journalNameShort{ACM Trans. Graph.}%
790 \def\@permissionCodeOne{0730-0301}%
791 \or % TOIS
792 \def\@journalName{ACM Transactions on Information Systems}%
793 \def\@journalName{ACM Transactions on Information Systems}%
794 \def\@permissionCodeOne{1046-8188}%
795 \or % TOIT
796 \def\@journalName{ACM Transactions on Internet Technology}%
797 \def\@journalNameShort{ACM Trans. Internet Technol.}%
798 \def\@permissionCodeOne{1533-5399}%
799 \or % TOMACS
800 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
801 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
802 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
803 \or % TOMM
804 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
805 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
806 \def\@permissionCodeOne{1551-6857}%
807 \def\@permissionCodeTwo{0100}%
808 \or % TOMPECS
809 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
810 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%
811 \def\@permissionCodeOne{2376-3639}%
812 \or % TOMS
813 \def\@journalName{ACM Transactions on Mathematical Software}%
814 \def\@journalNameShort{ACM Trans. Math. Softw.}%
815 \def\@permissionCodeOne{0098-3500}%
816 \or % TOPC
817 \def\@journalName{ACM Transactions on Parallel Computing}%
818 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
819 \def\@permissionCodeOne{1539-9087}%
820 \or % TOPS
821 \def\@journalName{ACM Transactions on Privacy and Security}%
822 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
823 \def\@permissionCodeOne{2471-2566}%
824 \or % TOPLAS
825 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
826 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
827 \def\@permissionCodeOne{0164-0925}%
828 \or % TOS
829 \def\@journalName{ACM Transactions on Storage}%
830 \def\@journalNameShort{ACM Trans. Storage}%
831 \def\@permissionCodeOne{1553-3077}%
832 \or % TOSEM
833 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
834 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
835 \def\@permissionCodeOne{1049-331X}%

```

```

836 \or % TOSN
837 \def\@journalName{ACM Transactions on Sensor Networks}%
838 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
839 \def\@permissionCodeOne{1550-4859}%
840 \or % TRET
841 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
842 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
843 \def\@permissionCodeOne{1936-7406}%
844 \or % TSAS
845 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
846 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
847 \def\@permissionCodeOne{2374-0353}%
848 \or % TSC
849 \def\@journalName{ACM Transactions on Social Computing}%
850 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
851 \def\@permissionCodeOne{2469-7818}%
852 \or % TSLP
853 \def\@journalName{ACM Transactions on Speech and Language Processing}%
854 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
855 \def\@permissionCodeOne{1550-4875}%
856 \or % TWEB
857 \def\@journalName{ACM Transactions on the Web}%
858 \def\@journalNameShort{ACM Trans. Web}%
859 \def\@permissionCodeOne{1559-1131}%
860 \fi
861 \ClassInfo{\@classname}{Using journal code \@journalCode}%
862 }{%
863 \ClassError{\@classname}{Incorrect journal #1}%
864 }%

```

\acmJournal And the syntactic sugar around it

```

865 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}

```

The defaults:

```

866 \def\@journalCode@nr{0}
867 \def\@journalName{}%
868 \def\@journalNameShort{\@journalName}%
869 \def\@permissionCodeOne{XXXX-XXXX}%
870 \def\@permissionCodeTwo{}%

```

\acmConference This is the conference command

```

871 \newcommand\acmConference[4][{}%
872 \gdef\acmConference@shortname{#1}%
873 \gdef\acmConference@name{#2}%
874 \gdef\acmConference@date{#3}%
875 \gdef\acmConference@venue{#4}%
876 \ifx\acmConference@shortname\empty
877 \gdef\acmConference@shortname{#2}%
878 \fi}

```

```

879 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
880   DC, USA}

\subtitle The subtitle macro
881 \def\subtitle#1{\def\@subtitle{#1}}
882 \subtitle{}

\num@authorgroups The total number of “groups”. Each group is several authors with the same affiliations(s)
883 \newcount\num@authorgroups
884 \num@authorgroups=0\relax

\if@insideauthorgroup Whether we are continuing an author group @insideauthorgroup insideauthorgroup-
false

\author Adding an author to the list of authors and addresses
885 \renewcommand\author[2][{}%
886   \if@insideauthorgroup\else
887     \global\advance\num@authorgroups by 1\relax
888     \global\@insideauthorgrouptrue
889   \fi
890   \ifx\addresses\@empty
891     \if@ACM@anonymous
892       \gdef\addresses{\@author{Anonymous Author(s)}}%
893       \gdef\authors{Anonymous Author(s)}%
894     \else
895       \gdef\addresses{\@author{#2}}%
896       \gdef\authors{#2}%
897     \fi
898   \else
899     \if@ACM@anonymous\else
900       \g@addto@macro\addresses{\and\@author{#2}}%
901       \g@addto@macro\authors{\and#2}%
902     \fi
903   \fi
904   \if@ACM@anonymous
905     \ifx\shortauthors\@empty
906       \gdef\shortauthors{Anon.}%
907     \fi
908   \else
909     \def\@tempa{#1}%
910     \ifx\@tempa\@empty
911       \ifx\shortauthors\@empty
912         \gdef\shortauthors{#2}%
913       \else
914         \g@addto@macro\shortauthors{\and#2}%
915       \fi
916     \else
917       \ifx\shortauthors\@empty
918         \gdef\shortauthors{#1}%

```

```

919     \else
920         \g@addto@macro\shortauthors{\and#1}%
921     \fi
922 \fi
923 \fi}

\affiliation The macro \affiliation mimics \address from amsart. Note that it has an optional
argument we do not currently need, but keep for the possible future use.
924 \newcommand{\affiliation}[2][{}]{%
925     \global\@insideauthorgroupfalse
926     \if@ACM@anonymous\else
927         \g@addto@macro\addresses{\affiliation{#1}{#2}}%
928     \fi}

\email The macro \email mimics \email from amsart. Again it has an optional argument we
do not currently need, but keep for the possible future use.
929 \renewcommand{\email}[2][{}]{%
930     \if@ACM@anonymous\else
931         \g@addto@macro\addresses{\email{#1}{#2}}%
932     \fi}

\orcid Right now we do not typeset orcid's gobble

\@titlenotes The titlenotes
933 \def\@titlenotes{}

\titlenote Adding note to the title
934 \def\titlenote#1{%
935     \g@addto@macro\@title{\footnotemark}%
936     \if@ACM@anonymous
937         \g@addto@macro\@titlenotes{%
938             \stepcounter{footnote}\footnotetext{Title note}}%
939     \else
940         \g@addto@macro\@titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
941     \fi}

\@subtitlenotes The subtitlenotes
942 \def\@subtitlenotes{}

\subtitlenote Adding note to the subtitle
943 \def\subtitlenote#1{%
944     \g@addto@macro\@subtitle{\footnotemark}%
945     \if@ACM@anonymous
946         \g@addto@macro\@subtitlenotes{%
947             \stepcounter{footnote}\footnotetext{Subtitle note}}%
948     \else
949         \g@addto@macro\@subtitlenotes{%
950             \stepcounter{footnote}\footnotetext{#1}}%
951     \fi}

```

`\@authornotes` The authornotes
952 `\def\@authornotes{}`

`\authornote` Adding note to the author
953 `\def\authornote#1{%`
954 `\if@ACM@anonymous\else`
955 `\g@addto@macro\addresses{\@authornotemark}`
956 `\g@addto@macro\@authornotes{%`
957 `\stepcounter{footnote}\footnotetext{#1}}%`
958 `\fi}`

`\acmVolume` The current volume
959 `\def\acmVolume#1{\def\@acmVolume{#1}}`
960 `\acmVolume{1}`

`\acmNumber` The current number
961 `\def\acmNumber#1{\def\@acmNumber{#1}}`
962 `\acmNumber{1}`

`\acmArticle` The current article
963 `\def\acmArticle#1{\def\@acmArticle{#1}}`
964 `\acmArticle{1}`

`\acmArticleSeq` The sequence number
965 `\def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}`
966 `\acmArticleSeq{\@acmArticle}`

`\acmYear` The current year
967 `\def\acmYear#1{\def\@acmYear{#1}}`
968 `\acmYear{2016}`

`\acmMonth` The current month
969 `\def\acmMonth#1{\def\@acmMonth{#1}}`
970 `\acmMonth{1}`

`\@acmPubDate` The publication date
971 `\def\@acmPubDate{\ifcase\@acmMonth\or`
972 `January\or February\or March\or April\or May\or June\or`
973 `July\or August\or September\or October\or November\or`
974 `December\fi~\@acmYear}`

`\acmPrice` The price
975 `\def\acmPrice#1{\def\@acmPrice{#1}}`
976 `\acmPrice{15.00}`

`\acmISBN` The book isbn
977 `\def\acmISBN#1{\def\@acmISBN{#1}}`
978 `\acmISBN{978-x-xxxx-xxxx-x/YY/MM}`

<code>\acmDOI</code>	<p>The paper doi</p> <pre> 979 \def\acmDOI#1{\def\@acmDOI{#1}} 980 \acmDOI{10.1145/nnnnnnn.nnnnnnn} </pre>
<code>\if@ACM@badge</code>	<p>Whether to print badge. Note that either left or right badge triggers it:</p> <pre> 981 \newif\if@ACM@badge 982 \@ACM@badgefalse </pre>
<code>\@ACM@badge@width</code>	<p>The width of the badge</p> <pre> 983 \newlength\@ACM@badge@width 984 \setlength\@ACM@badge@width{5pc} </pre>
<code>\@ACM@title@width</code>	<p>The width of the badge</p> <pre> 985 \newlength\@ACM@title@width </pre>
<code>\@ACM@badge@skip</code>	<p>The space between the badge and the title</p> <pre> 986 \newlength\@ACM@badge@skip 987 \setlength\@ACM@badge@skip{1pc} </pre>
<code>\acmBadgeR</code>	<p>Setting the right badge</p> <pre> 988 \newcommand\acmBadgeR[2][\@ACM@badgetrue 989 \def\@acmBadgeR@url{#1}% 990 \def\@acmBadgeR@image{#2}} 991 \def\@acmBadgeR@url{} 992 \def\@acmBadgeR@image{} </pre>
<code>\acmBadgeL</code>	<p>Setting the left badge</p> <pre> 993 \newcommand\acmBadgeL[2][\@ACM@badgetrue 994 \def\@acmBadgeL@url{#1}% 995 \def\@acmBadgeL@image{#2}} 996 \def\@acmBadgeL@url{} 997 \def\@acmBadgeL@image{} </pre>
<code>\startPage</code>	<p>The start page of the paper</p> <pre> 998 \def\startPage#1{\def\@startPage{#1}} 999 \startPage{} </pre>
<code>\terms</code>	<p>Terms are mostly obsolete, we use CCS now. Still it makes sense to keep them for compatibility.</p> <pre> 1000 \def\terms#1{\def\@terms{#1}} 1001 \terms{} </pre>
<code>\keywords</code>	<p>Keywords are mostly obsolete, we use CCS now. Still it makes sense to keep them for compatibility.</p> <pre> 1002 \def\keywords#1{\def\@keywords{#1}} 1003 \keywords{} </pre>

abstract Amsart puts abstract in the box. Since we do not know whether we will use two column mode, we prefer to save the text

```
1004 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
```

\@saveabstract And saving the abstract

```
1005 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
1006 \@saveabstract{}
```

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

```
1007 \long\def\@empty{}
```

\if@ACM@printccs Whether to print CCS

```
1008 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printccs}[true]{%
1009   \if@ACM@printccs
1010     \ClassInfo{\@classname}{Printing CCS}%
1011   \else
1012     \ClassInfo{\@classname}{Suppressing CCS}%
1013   \fi}{\ClassError{\@classname}{printccs must be true or false}}
```

\if@ACM@printacmref Whether to print ACM bib

```
1014 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printacmref}[true]{%
1015   \if@ACM@printacmref
1016     \ClassInfo{\@classname}{Printing bibformat}%
1017   \else
1018     \ClassInfo{\@classname}{Suppressing bibformat}%
1019   \fi}{\ClassError{\@classname}{printacmref must be true or false}}
```

\if@ACM@printfolios Whether to print folios

```
1020 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1021   \if@ACM@printfolios
1022     \ClassInfo{\@classname}{Printing folios}%
1023   \else
1024     \ClassInfo{\@classname}{Suppressing folios}%
1025   \fi}{\ClassError{\@classname}{printfolios must be true or false}}
```

\settopmatter The usual syntactic sugar

```
1026 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}
```

Now the settings

```
1027 \settopmatter{printccs=true, printacmref=true}
1028 \if@ACM@manuscript
1029   \settopmatter{printfolios=true}
1030 \else
1031   \if@ACM@journal
1032     \settopmatter{printfolios=true}
1033   \else
1034     \settopmatter{printfolios=false}
1035   \fi
1036 \fi
```

\@received The container for the paper history

```
1037 \def\@received{}
```

\received The \received command

```
1038 \newcommand\received[2][\def\@tempa{#1}%
1039 \ifx\@tempa\empty
1040 \ifx\@received\empty
1041 \gdef\@received{Received #2}%
1042 \else
1043 \g@addto@macro{\@received}{; revised #2}%
1044 \fi
1045 \else
1046 \ifx\@received\empty
1047 \gdef\@received{#1 #2}%
1048 \else
1049 \g@addto@macro{\@received}{; #1 #2}%
1050 \fi
1051 \fi}
1052 \AtEndDocument{%
1053 \ifx\@received\empty\else
1054 \par\bigskip\noindent\small\normalfont\@received\par
1055 \fi}
```

3.10 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```
1056 \RequirePackage{comment}
1057 \excludecomment{CCSXML}
```

\@concepts This is the storage macro for concepts

```
1058 \let\@concepts\empty
```

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

```
1059 \newcommand\ccsdesc[2][100]{%
1060 \ccsdesc@parse#1~#2~}
```

\ccsdesc@parse The parser of the expression Significance~General~Specific (we need textcomp for \textrightarrow):

```
1061 \RequirePackage{textcomp}
1062 \def\ccsdesc@parse#1~#2~#3~{%
1063 \expandafter\ifx\csname CCS@#2\endcsname\relax
1064 \expandafter\gdef\csname CCS@#2\endcsname{\textbullet\textbf{#2} \textrightarrow }%
1065 \g@addto@macro{\@concepts}{\csname CCS@#2\endcsname}\fi
1066 \expandafter\g@addto@macro\expandafter{\csname CCS@#2\endcsname}{%
1067 \ifnum#1>499\textbf{#3; } \else
1068 \ifnum#1>299\textit{#3; } \else
1069 #3; \fi\fi}}
```


3.11 Copyright system

This is from acmcopyright.sty

`\if@printcopyright` A flag whether to print copyright symbol
1070 `\newif\if@printcopyright`
1071 `\@printcopyrighttrue`

`\if@printpermission` Whether to print permission block
1072 `\newif\if@printpermission`
1073 `\@printpermissiontrue`

`\if@acmowned` Whether ACM owns the rights to the paper
1074 `\newif\if@acmowned`
1075 `\@acmownedtrue`

Keys:

```
1076 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1077   \acm@copyrightinput\acm@copyrightmode]{none,acmcopyright,acmlicensed,%
1078   rightsretained,usgov,usgovmixed,cagov,cagovmixed,%
1079   licensedusgovmixed,licensedcagovmixed,othergov,licensedothergov}{%
1080   \@printpermissiontrue
1081   \@printcopyrighttrue
1082   \@acmownedtrue
1083   \ifnum\acm@copyrightmode=0\relax % none
1084     \@printpermissionfalse
1085     \@printcopyrightfalse
1086     \@acmownedfalse
1087   \fi
1088   \ifnum\acm@copyrightmode=2\relax % acmlicensed
1089     \@acmownedfalse
1090   \fi
1091   \ifnum\acm@copyrightmode=3\relax % rightsretained
1092     \@acmownedfalse
1093   \fi
1094   \ifnum\acm@copyrightmode=4\relax % usgov
1095     \@printpermissiontrue
1096     \@printcopyrightfalse
1097     \@acmownedfalse
1098   \fi
1099   \ifnum\acm@copyrightmode=6\relax % cagov
1100     \@acmownedfalse
1101   \fi
1102   \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1103     \@acmownedfalse
1104   \fi
1105   \ifnum\acm@copyrightmode=9\relax % licensedcagovmixed
1106     \@acmownedfalse
1107   \fi
1108   \ifnum\acm@copyrightmode=10\relax % othergov
```

```

1109 \acmownedtrue
1110 \fi
1111 \ifnum\acm@copyrightmode=11\relax % licensedothergov
1112 \acmownedfalse
1113 \fi}

\setcopyright This is the syntactic sugar around setting keys.
1114 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1115 \setcopyright{acmcopyright}

\@copyrightowner Here is the owner of the copyright
1116 \def\@copyrightowner{%
1117 \ifcase\acm@copyrightmode\relax % none
1118 \or % acmcopyright
1119 ACM\@.
1120 \or % acmlicensed
1121 Copyright held by the owner/author(s). Publication rights licensed to
1122 ACM\@.
1123 \or % rightsretained
1124 Copyright held by the owner/author(s).
1125 \or % usgov
1126 \or % usgovmixed
1127 ACM\@.
1128 \or % cagov
1129 Crown in Right of Canada.
1130 \or %cagovmixed
1131 ACM\@.
1132 \or %licensedusgovmixed
1133 Copyright held by the owner/author(s). Publication rights licensed to
1134 ACM\@.
1135 \or %licensedcagovmixed
1136 Copyright held by the owner/author(s). Publication rights licensed to
1137 ACM\@.
1138 \or % othergov
1139 ACM\@.
1140 \or % licensedothergov
1141 Copyright held by the owner/author(s). Publication rights licensed to
1142 ACM\@.
1143 \fi}

\@formatdoi Print a clickable doi
1144 \def\@formatdoi#1{\url{http://dx.doi.org/#1}}

\@copyrightpermission The canned permission block.
1145 \def\@copyrightpermission{%
1146 \ifcase\acm@copyrightmode\relax % none
1147 \or % acmcopyright
1148 Permission to make digital or hard copies of all or part of this
1149 work for personal or classroom use is granted without fee provided

```

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1176 owner\hspace*{.5pt}/author(s).

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1183 \or % usgovmixed

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1195 \or % cagov

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 1203 use is granted. Copies must bear this notice and the full citation
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 1206 otherwise, distribute, republish, or post, requires prior specific
 1207 permission and\hspace*{.5pt}/or a fee. Request permissions from
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 1209 \or % cagovmixed
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 1246 this article, or to allow others to do so, for Government purposes
 1247 only.
 1248 \fi}

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

```

1249 \def\copyrightyear#1{\def\@copyrightyear{#1}}
1250 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container
1251 \def\@teaserfigures{}

teaserfigure The teaser figure
1252 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
1253 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}}

\thanks We redefine amsart \thanks, so the anonymous key works
1254 \renewcommand{\thanks}[1]{%
1255   \ifnotempty{#1}{%
1256     \if@ACM@anonymous
1257       \g@addto@macro\thankses{\thanks{A note}}}%
1258   \else
1259     \g@addto@macro\thankses{\thanks{#1}}}%
1260   \fi}}
```

3.12 Typesetting top matter

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

```

1261 \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
thankses. The latter 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.
1262 \def\maketitle{%
1263   \if@ACM@anonymous
1264     % Anonymize omission of \author-s
1265     \ifnum\num@authorgroups=0\author{}\fi
1266   \fi
1267   \begingroup
1268   \let\@footnotemark\@footnotemark@nolink
1269   \let\@footnotetext\@footnotetext@nolink
1270   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1271   \@topnum\z@ % this prevents figures from falling at the top of page
1272               % 1
1273   \hsize=\textwidth
1274   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}%
1275   \mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1276   \@printtopmatter}
```

```

1277 \if@ACM@sigchiamode\mkauthors\fi
1278 \setcounter{footnote}{0}%
1279 \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}%
1280 \@titlenotes
1281 \@subtitlenotes
1282 \@authornotes
1283 \let\@makefnmark\relax \let\@thefnmark\relax
1284 \let\@makefntext\noindent
1285 \ifx\@empty\thankses\else
1286   \footnotetextcopyrightpermission{%
1287     \def\par{\let\par\@par}\parindent\z@\setthanks}%
1288   \fi
1289   \footnotetextcopyrightpermission{\parindent\z@\parskip0.1\baselineskip
1290   \if@ACM@authorversion\else
1291     \if@printpermission\@copyrightpermission\par\fi
1292   \fi
1293   \if@ACM@manuscript\else
1294     \if@ACM@journal\else % Print the conference short name
1295       {\itshape \acmConference@shortname, \acmConference@venue}\par
1296     \fi
1297   \fi
1298   \if@printcopyright
1299     \copyright\ \@copyrightyear\ \@copyrightowner\
1300   \else
1301     \@copyrightyear.\
1302   \fi
1303   \if@ACM@manuscript
1304     Manuscript submitted to ACM\
1305   \else
1306     \if@ACM@authorversion
1307       This is the author's version of the work. It is posted here for
1308       your personal use. Not for redistribution. The definitive Version
1309       of Record was published in
1310       \if@ACM@journal
1311         \emph{\@journalName}%
1312       \else
1313         \emph{Proceedings of \acmConference@name, \acmConference@date}%
1314       \fi
1315       \ifx\@acmDOI\@empty
1316         .
1317       \else
1318         , \@formatdoi{\@acmDOI}.
1319       \fi\
1320     \else
1321       \if@ACM@journal
1322         \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle\
1323         \$\@acmPrice\
1324         DOI: \nolinkurl{\@acmDOI}%
1325       \else % Conference
1326         \@acmISBN

```

```

1327         \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\\
1328         DOI: \nolinkurl{\@acmDOI}%
1329     \fi
1330 \fi
1331 \fi}%
1332 \endgroup
1333 \setcounter{footnote}{0}%
1334 \@mkabstract
1335 \if@ACM@printccs
1336     \ifx\@concepts\@empty\else\bgroup
1337         {\@specialsection{CCS Concepts}%
1338         \@concepts\par}\egroup
1339     \fi
1340 \fi
1341 \if\@terms\@empty\else\bgroup
1342     {\@specialsection{General Terms}%
1343     \@terms\par}\egroup
1344 \fi
1345 \ifx\@keywords\@empty\else\bgroup
1346     {\if@ACM@journal
1347         \@specialsection{Additional Key Words and Phrases}%
1348         \else
1349         \@specialsection{Keywords}%
1350     \fi
1351     \@keywords}\par\egroup
1352 \fi
1353 \andify\authors
1354 \andify\shortauthors
1355 \global\let\authors=\authors
1356 \global\let\shortauthors=\shortauthors
1357 \if@ACM@printacmref
1358     \@mkbibcitation
1359 \fi
1360 \hypersetup{pdfauthor={\authors},
1361     pdftitle={\@title}, pdfkeywords={\@concepts}}%
1362 \@printendtopmatter
1363 \@afterindentfalse
1364 \@afterheading
1365 }

```

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

```

1366 \def\@specialsection#1{%
1367     \ifcase\ACM@format@nr
1368     \relax % manuscript
1369     \par\medskip\small\noindent#1: %
1370     \or % acmsmall
1371     \par\medskip\small\noindent#1: %
1372     \or % acmlarge
1373     \par\medskip\small\noindent#1: %
1374     \or % acmtog

```

```

1375 \par\medskip\small\noindent#1: %
1376 \or % sigconf
1377 \section*{#1}%
1378 \or % siggraph
1379 \section*{#1}%
1380 \or % sigplan
1381 \paragraph*{#1}%
1382 \or % sigchi
1383 \section*{#1}%
1384 \or % sigchi-a
1385 \section*{#1}%
1386 \fi}

```

\@printtopmatter The printing of top matter starts the new page, and uses the given title box. Note that for sigchi-a we print badges here rather than in \mktitle since we want them on the margins.

```

1387 \def\@printtopmatter{%
1388 \ifx\@startPage\@empty
1389 \gdef\@startPage{1}%
1390 \else
1391 \setcounter{page}{\@startPage}%
1392 \fi
1393 \thispagestyle{firstpagestyle}%
1394 \noindent
1395 \ifcase\ACM@format@nr
1396 \relax % manuscript
1397 \box\mktitle@bx\par
1398 \noindent\hrulefill\par
1399 \or % acmsmall
1400 \box\mktitle@bx\par
1401 \noindent\hrulefill\par
1402 \or % acmlarge
1403 \box\mktitle@bx\par
1404 \noindent\hrulefill\par
1405 \or % acmtog
1406 \twocolumn[\box\mktitle@bx]%
1407 \or % sigconf
1408 \twocolumn[\box\mktitle@bx]%
1409 \or % siggraph
1410 \twocolumn[\box\mktitle@bx]%
1411 \or % sigplan
1412 \twocolumn[\box\mktitle@bx]%
1413 \or % sigchi
1414 \twocolumn[\box\mktitle@bx]%
1415 \or % sigchi-a
1416 \par\box\mktitle@bx\par\bigskip
1417 \if@ACM@badge
1418 \marginpar{\noindent
1419 \ifx\@acmBadgeL@image\@empty\else
1420 \href{\@acmBadgeL@url}{%

```



```

1421         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1422         \hskip\@ACM@badge@skip
1423     \fi
1424     \ifx\@acmBadgeR@image\@empty\else
1425         \href{\@acmBadgeR@url}{%
1426             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1427         \fi}%
1428 \fi
1429 \fi
1430 }

\@mktitle The title of the article
1431 \def\@mktitle{%
1432     \ifcase\ACM@format@nr
1433     \relax % manuscript
1434     \@mktitle@i
1435     \or % acmsmall
1436     \@mktitle@i
1437     \or % acmlarge
1438     \@mktitle@i
1439     \or % acmtog
1440     \@mktitle@i
1441     \or % sigconf
1442     \@mktitle@iii
1443     \or % siggraph
1444     \@mktitle@iii
1445     \or % sigplan
1446     \@mktitle@iii
1447     \or % sigchi
1448     \@mktitle@iii
1449     \or % sigchi-a
1450     \@mktitle@iv
1451     \fi
1452 }

\@titlefont The font to typeset title
1453 \def\@titlefont{%
1454     \ifcase\ACM@format@nr
1455     \relax % manuscript
1456     \LARGE\bfseries\sffamily
1457     \or % acmsmall
1458     \LARGE\bfseries\sffamily
1459     \or % acmlarge
1460     \LARGE\bfseries\sffamily
1461     \or % acmtog
1462     \Huge\sffamily
1463     \or % sigconf
1464     \Huge\sffamily\bfseries
1465     \or % siggraph
1466     \Huge\sffamily\bfseries

```

```

1467 \or % sigplan
1468 \Huge\bfseries
1469 \or % sigchi
1470 \Huge\sffamily\bfseries
1471 \or % sigchi-a
1472 \Huge\bfseries
1473 \fi}

\@subtitlefont The font to typeset title
1474 \def\@subtitlefont{%
1475 \ifcase\ACM@format@nr
1476 \relax % manuscript
1477 \mdseries
1478 \or % acmsmall
1479 \mdseries
1480 \or % acmlarge
1481 \mdseries
1482 \or % acmtog
1483 \LARGE
1484 \or % sigconf
1485 \LARGE\mdseries
1486 \or % siggraph
1487 \LARGE\mdseries
1488 \or % sigplan
1489 \LARGE\mdseries
1490 \or % sigchi
1491 \LARGE\mdseries
1492 \or % sigchi-a
1493 \mdseries
1494 \fi}

\@mktitle@i The version of \mktitle for most journals
1495 \def\@mktitle@i{\hsize=\textwidth
1496 \ACM@title@width=\hsize
1497 \ifx\@acmBadgeL@image\@empty\else
1498 \advance\ACM@title@width by -\ACM@badge@width
1499 \advance\ACM@title@width by -\ACM@badge@skip
1500 \fi
1501 \ifx\@acmBadgeR@image\@empty\else
1502 \advance\ACM@title@width by -\ACM@badge@width
1503 \advance\ACM@title@width by -\ACM@badge@skip
1504 \fi
1505 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
1506 \ifx\@acmBadgeL@image\@empty\else
1507 \raisebox{-.5\baselineskip}{\z@\z@}{\href{\@acmBadgeL@url}{%
1508 \includegraphics[width=\ACM@badge@width]{\@acmBadgeL@image}}}%
1509 \hskip\ACM@badge@skip
1510 \fi
1511 \parbox[t]{\ACM@title@width}{\raggedright
1512 \@titlefont\noindent

```

```

1513     \@title
1514     \ifx\@subtitle\@empty\else
1515         \par\noindent{\@subtitlefont\@subtitle}
1516     \fi}%
1517     \ifx\@acmBadgeR@image\@empty\else
1518         \hskip\@ACM@badge@skip
1519         \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1520             \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1521     \fi
1522     \par\bigskip}}%

\@mktitle@ii The version of \mktitle for TOG. Since v1.06 is subsumed by the \mktitle@i macro

\@mktitle@iii The version of \@mktitle for sigproc. Note that since the title is centered, we leave the
space for the left badge even if only the right badge is defined.
1523 \def\@mktitle@iii{\hsize=\textwidth
1524     \setbox\mktitle@bx=\vbox{\@titlefont\centering
1525         \@ACM@title@width=\hsize
1526         \if@ACM@badge
1527             \advance\@ACM@title@width by -2\@ACM@badge@width
1528             \advance\@ACM@title@width by -2\@ACM@badge@skip
1529             \parbox[b]{\@ACM@badge@width}{\strut
1530                 \ifx\@acmBadgeL@image\@empty\else
1531                     \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeL@url}{%
1532                         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}}%
1533                 \fi}%
1534             \hskip\@ACM@badge@skip
1535         \fi
1536         \parbox[t]{\@ACM@title@width}{\centering\@titlefont
1537             \@title
1538             \ifx\@subtitle\@empty\else
1539                 \par\noindent{\@subtitlefont\@subtitle}
1540             \fi
1541         }%
1542         \if@ACM@badge
1543             \hskip\@ACM@badge@skip
1544             \parbox[b]{\@ACM@badge@width}{\strut
1545                 \ifx\@acmBadgeR@image\@empty\else
1546                     \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1547                         \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1548                 \fi}%
1549             \fi
1550             \par\bigskip}}%

\@mktitle@iv The version of \@mktitle for sigchi-a
1551 \def\@mktitle@iv{\hsize=\textwidth
1552     \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1553         \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1554         \noindent\@title
1555         \ifx\@subtitle\@empty\else

```

```

1556     \par\noindent\@subtitlefont\@subtitle
1557     \fi
1558     \par\bigskip}}%

```

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

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

```

1559 \newbox\@ACM@commabox
1560 \def\@ACM@addtoaddress#1{%
1561     \ifvmode\else
1562         \setbox\@ACM@commabox=\hbox{, }%
1563         \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1564     \fi
1565     #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 We follow the strange American tradition of no comma before zip code.

```

\city 1566 \if@ACM@journal
\state 1567 \let\position\@gobble
\postcode 1568 \def\institution#1{#1\ignorespaces}%
\country 1569 \let\department\@gobble
1570 \let\streetaddress\@gobble
1571 \let\city\@gobble
1572 \let\state\@gobble
1573 \let\postcode\@gobble
1574 \let\country\@gobble
1575 \else
1576 \def\position#1{#1\par}%
1577 \def\institution#1{#1\par}%
1578 \def\department#1{#1\par}%
1579 \def\streetaddress#1{#1\par}%
1580 \let\city\@ACM@addtoaddress
1581 \let\state\@ACM@addtoaddress
1582 \def\postcode#1{\unskip\space#1}%
1583 \let\country\@ACM@addtoaddress
1584 \fi

```

\@mkauthors Typesetting authors

```

1585 \def\@mkauthors{\begingroup
1586     \hsize=\textwidth
1587     \ifcase\ACM@format@nr
1588     \relax % manuscript

```

```

1589 \mkauthors@i
1590 \or % acmsmall
1591 \mkauthors@i
1592 \or % acmlarge
1593 \mkauthors@i
1594 \or % acmtog
1595 \mkauthors@i
1596 \or % sigconf
1597 \mkauthors@iii
1598 \or % siggraph
1599 \mkauthors@iii
1600 \or % sigplan
1601 \mkauthors@iii
1602 \or % sigchi
1603 \mkauthors@iii
1604 \or % sigchi-a
1605 \mkauthors@iv
1606 \fi
1607 \endgroup
1608 }

```

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

```

1609 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont Font for affiliations

```

1610 \def\@affiliationfont{\normalsize\normalfont}

```

Adjusting fonts for different formats

```

1611 \ifcase\ACM@format@nr
1612 \relax % manuscript
1613 \or % acmsmall
1614 \def\@authorfont{\large\sffamily}
1615 \def\@affiliationfont{\small\normalfont}
1616 \or % acmlarge
1617 \or % acmtog
1618 \def\@authorfont{\LARGE\sffamily}
1619 \def\@affiliationfont{\large}
1620 \or % sigconf
1621 \def\@authorfont{\LARGE}
1622 \def\@affiliationfont{\large}
1623 \or % siggraph
1624 \def\@authorfont{\normalsize\normalfont}
1625 \def\@affiliationfont{\normalsize\normalfont}
1626 \or % sigplan
1627 \def\@authorfont{\Large\normalfont}
1628 \def\@affiliationfont{\normalsize\normalfont}
1629 \or % sigchi
1630 \def\@authorfont{\bfseries}
1631 \def\@affiliationfont{\mdseries}

```

```

1632 \or % sigchi-a
1633 \def\@authorfont{\bfseries}
1634 \def\@affiliationfont{\mdseries}
1635 \fi

```

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

```

1636 \def\@typeset@author@line{%
1637 \andify\@currentauthors\par\noindent
1638 \@currentauthors\def\@currentauthors{}%
1639 \ifx\@currentaffiliations\@empty\else
1640 \andify\@currentaffiliations
1641 \unskip, {\@currentaffiliations}\par
1642 \fi
1643 \def\@currentaffiliations{}}

```

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

```

1644 \def\@mkauthors@i{%
1645 \def\@currentauthors{}%
1646 \def\@currentaffiliations{}%
1647 \global\let\and\@typeset@author@line
1648 \def\@author##1{%
1649 \ifx\@currentauthors\@empty
1650 \gdef\@currentauthors{\@authorfont\MakeUppercase{##1}}%
1651 \else
1652 \g@addto@macro{\@currentauthors}{\and\MakeUppercase{##1}}%
1653 \fi
1654 \gdef\and{}}%
1655 \def\email##1##2{%
1656 \def\affiliation##1##2{%
1657 \def\@tempa{##2}\ifx\@tempa\@empty\else
1658 \ifx\@currentaffiliations\@empty
1659 \gdef\@currentaffiliations{\@affiliationfont##2}%
1660 \else
1661 \g@addto@macro{\@currentaffiliations}{\and##2}%
1662 \fi
1663 \fi
1664 \global\let\and\@typeset@author@line}
1665 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
1666 \noindent\addresses\@typeset@author@line
1667 \par\medskip}%
1668 }

```

\@mkauthors@ii \@mkauthors@ii was version used in acmtog. No longer necessary

\author@bx The box to put individual author to

```

1669 \newbox\author@bx

```

`\author@bx@wd` The width of the author box
1670 `\newdimen\author@bx@wd`

`\author@bx@sep` The separation between the author boxes
1671 `\newskip\author@bx@sep`
1672 `\author@bx@sep=1pc\relax`

`\@typeset@author@bx` Typesetting the box with authors. Note that in SIGCHI-A the box is not centered.
1673 `\def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%`
1674 `\global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi`
1675 `\@authorfont\@currentauthors\par\@affiliationfont`
1676 `\@currentaffiliation}\egroup`
1677 `\box\author@bx\hspace{\author@bx@sep}%`
1678 `\gdef\@currentauthors{}}%`
1679 `\gdef\@currentaffiliation{}}%`

`\@mkauthors@iii` The sigconf version. Here we use centered design with each author in a separate box.
1680 `\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.
1681 `\author@bx@wd=\textwidth\relax`
1682 `\advance\author@bx@wd by -\author@bx@sep\relax`
1683 `\ifcase\num@authorgroups`
1684 `\relax % 0?`
1685 `\or % 1=one author per row`
1686 `\or % 2=two authors per row`
1687 `\divide\author@bx@wd by \num@authorgroups\relax`
1688 `\or % 3=three authors per row`
1689 `\divide\author@bx@wd by \num@authorgroups\relax`
1690 `\or % 4=two authors per row (!)`
1691 `\divide\author@bx@wd by 2\relax`
1692 `\else % three authors per row`
1693 `\divide\author@bx@wd by 3\relax`
1694 `\fi`
1695 `\advance\author@bx@wd by -\author@bx@sep\relax`
Now, parsing of `\addresses`:
1696 `\gdef\@currentauthors{}}%`
1697 `\gdef\@currentaffiliation{}}%`
1698 `\def\@author##1{\ifx\@currentauthors\@empty`
1699 `\gdef\@currentauthors{\par##1}%`
1700 `\else`
1701 `\g@addto@macro\@currentauthors{\par##1}%`
1702 `\fi`
1703 `\gdef\and{}}%`
1704 `\def\@email##1##2{\ifx\@currentaffiliation\@empty`
1705 `\gdef\@currentaffiliation{\nolinkurl{##2}}%`

```

1706 \else
1707   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
1708 \fi}%
1709 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
1710   \gdef\@currentaffiliation{##2}%
1711 \else
1712   \g@addto@macro\@currentaffiliation{\par##2}%
1713 \fi
1714 \global\let\and\@typeset@author@bx
1715 }%

```

Actual typesetting is done by \and macro:

```

1716 \hsize=\textwidth
1717 \global\setbox\mktitle@bx=\vbox{\noindent
1718   \box\mktitle@bx\par\medskip\leavevmode
1719   \lineskip=1pc\relax\centering\hspace*{-1em}%
1720   \addresses\let\and\@typeset@author@bx\and\par\bigskip}}

```

\@mkauthors@iv The sigchia version. Now we put authors in the main text, and no more than 2 authors per line.

```

1721 \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 $(\text{columnwidth} - \text{author@bx@sep})/N - \text{author@bx@sep}$, where N is the number of boxes per row.

```

1722 \author@bx@wd=\columnwidth\relax
1723 \advance\author@bx@wd by -\author@bx@sep\relax
1724 \ifcase\num@authorgroups
1725 \relax % 0?
1726 \or % 1=one author per row
1727 \else % 2=two authors per row
1728   \divide\author@bx@wd by 2\relax
1729 \fi
1730 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

1731 \gdef\@currentauthors{}%
1732 \gdef\@currentaffiliation{}%
1733 \def\@author##1{\ifx\@currentauthors\@empty
1734   \gdef\@currentauthors{\par##1}%
1735 \else
1736   \g@addto@macro\@currentauthors{\par##1}%
1737 \fi
1738 \gdef\and{}}%
1739 \def\email##1##2{\ifx\@currentaffiliation\@empty
1740   \gdef\@currentaffiliation{\par\nolinkurl{##2}}%
1741 \else
1742   \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
1743 \fi}%

```



```

1744 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
1745 \gdef\@currentaffiliation{##2}%
1746 \else
1747 \g@addto@macro\@currentaffiliation{\par##2}%
1748 \fi
1749 \global\let\and\@typeset@author@bx}%
1750 %
Actual typesetting is done by \and macro
1751 \bgroup\hsize=\columnwidth
1752 \par\raggedright\leftskip=\z@
1753 \lineskip=1pc\noindent
1754 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

\@authornotemark Adding footnotemark to authors
1755 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark}}

\@mkteasers Typesetting teasers
1756 \def\@mkteasers{%
1757 \ifx\@teaserfigures\@empty\else
1758 \def\@teaser##1{\par\bigskip\bgroup
1759 \captionsetup{type=figure}##1\egroup\par}
1760 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
1761 \noindent\@teaserfigures\par\medskip}%
1762 \fi}

\@setaddresses This is an amsart macro, which we do not need.
1763 \def\@setaddresses{}

\@mkabstract Typesetting abstract
1764 \def\@mkabstract{\bgroup
1765 \ifx\@abstract\@empty\else
1766 {\if@ACM@journal
1767 \small\noindent
1768 \else
1769 \section*{Abstract}%
1770 \fi
1771 \phantomsection\addcontentsline{toc}{section}{Abstract}%
1772 \ignorespaces\@abstract\par}%
1773 \fi\egroup}

\@mkbibcitation Print bibcitation format
1774 \def\@mkbibcitation{\bgroup
1775 \def\footnotemark{}%
1776 \par\medskip\small\noindent{\bfseries ACM Reference format:}\par\nobreak
1777 \noindent\authors. \@acmYear. \@title.
1778 \if@ACM@journal
1779 \textit{\@journalNameShort}
1780 \@acmVolume, \@acmNumber, Article~\@acmArticle\ (\@acmPubDate),

```

```

1781 \ref{TotPages}~pages.
1782 \else
1783   In \textit{Proceedings of \acmConference@name, \acmConference@venue,
1784     \acmConference@date
1785     \ifx\acmConference@name\acmConference@shortname\else
1786       \ (\acmConference@shortname)\fi
1787     ,} \ref{TotPages}~pages.
1788 \fi\par
1789 \noindent DOI: \nolinkurl{\@acmDOI}
1790 \par\egroup}

```

\@printendtopmatter End the top matter

```

1791 \def\@printendtopmatter{\par\medskip
1792   \ifcase\ACM@format@nr
1793   \relax % manuscript
1794   \noindent\hrulefill\par\medskip
1795   \or % acmsmall
1796   \noindent\hrulefill\par\medskip
1797   \or % acmlarge
1798   \noindent\hrulefill\par\medskip
1799   \or % acmtog
1800   \par\bigskip
1801   \or % sigconf
1802   \par\bigskip
1803   \or % siggraph
1804   \par\bigskip
1805   \or % sigplan
1806   \par\bigskip
1807   \or % sigchi
1808   \par\bigskip
1809   \or % sigchi-a
1810   \fi
1811 }

```

\@setthanks We redefine \setthanks using \long

```

1812 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

3.13 Headers and Footers

We use fancyhdr for our headers and footers:

```

1813 \RequirePackage{fancyhdr}

```

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

```

1814 \if@ACM@review
1815   \newsavebox{\ACM@linecount@bx}
1816   \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
1817     \newlength\ACM@linecount@bxht\setlength{\ACM@linecount@bxht}{-\baselineskip}
1818     \@tempcnta\@ne\relax
1819     \loop{\color{ACMRed}\scriptsize\the\@tempcnta}\@tempcnta\@ne\relax

```

```

1820      \advance\@tempcnta by \@ne
1821      \addtolength{\ACM@linecount@bxht}{\baselineskip}
1822      \ifdim\ACM@linecount@bxht<\textheight\repeat}}
1823 \fi

\ACM@linecount  How to display the box
1824 \def\ACM@linecount{%
1825   \if@ACM@review
1826   \begin{picture}(0,0)%
1827     \put(-26,-22){\usebox{\ACM@linecount@bx}}}%
1828   \end{picture}%
1829   \fi}

\@shortauthors  Even if the author redefined \shortauthors, we do not print them in the anonymous
mode in the headers:
1830 \def\@shortauthors{\if@ACM@anonymous Anon.\else\shortauthors\fi}

\@headfootfont  The font to typeset header and footer text.
1831 \def\@headfootfont{%
1832   \ifcase\ACM@format@nr
1833   \relax % manuscript
1834   \sffamily
1835   \or % acmsmall
1836   \sffamily
1837   \or % acmlarge
1838   \sffamily
1839   \or % acmtog
1840   \sffamily
1841   \or % sigconf
1842   \sffamily
1843   \or % siggraph
1844   \sffamily
1845   \or % sigplan
1846   \sffamily
1847   \or % sigchi
1848   \sffamily
1849   \or % sigchi-a
1850   \sffamily
1851   \fi}

standardpagestyle  The pagestyle for all pages but the first one
1852 \fancypagestyle{standardpagestyle}{%
1853   \fancyhf{}%
1854   \renewcommand{\headrulewidth}{\z@}%
1855   \renewcommand{\footrulewidth}{\z@}%
1856   \ifcase\ACM@format@nr
1857   \relax % manuscript
1858   \fancyhead[LE]{\ACM@linecount\if@ACM@printfolios\thepage\fi}%
1859   \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%

```

```

1860 \fancyhead[RE]{\@shortauthors}%
1861 \fancyhead[LO]{\ACM@linecount\shorttitle}%
1862 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
1863 \or % acmsmall
1864 \fancyhead[LE]{\ACM@linecount\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1865 \fancyhead[RO]{\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1866 \fancyhead[RE]{\@headfootfont\@shortauthors}%
1867 \fancyhead[LO]{\ACM@linecount\@headfootfont\shorttitle}%
1868 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1869 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1870 \or % acmlarge
1871 \fancyhead[LE]{\ACM@linecount\@headfootfont
1872 \@acmArticle:\if@ACM@printfolios\thepage\quad\textbullet\quad\fi\@shortauthors}%
1873 \fancyhead[LO]{\ACM@linecount}%
1874 \fancyhead[RO]{\@headfootfont
1875 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1876 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1877 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1878 \or % acmtog
1879 \fancyhead[LE]{\ACM@linecount\@headfootfont
1880 \@acmArticle:\if@ACM@printfolios\thepage\quad\textbullet\quad\fi\@shortauthors}%
1881 \fancyhead[LO]{\ACM@linecount}%
1882 \fancyhead[RO]{\@headfootfont
1883 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1884 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1885 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1886 \else % Proceedings
1887 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
1888 \fancyhead[LO]{\ACM@linecount\@headfootfont\shorttitle}%
1889 \fancyhead[RE]{\@headfootfont\@shortauthors}%
1890 \fancyhead[LE]{\ACM@linecount\@headfootfont\acmConference@shortname,
1891 \acmConference@date, \acmConference@venue}%
1892 \fancyhead[RO]{\@headfootfont\acmConference@shortname,
1893 \acmConference@date, \acmConference@venue}%
1894 \fi
1895 \if@ACM@sigchiamode
1896 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
1897 \fi
1898 }
1899 \pagestyle{standardpagestyle}

```

```

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht 1900 \newdimen\@folio@wd
\@folio@voffset 1901 \@folio@wd=\z@
\@folio@max 1902 \newdimen\@folio@ht
1903 \@folio@ht=\z@
1904 \newdimen\@folio@voffset
1905 \@folio@voffset=\z@
1906 \def\@folio@max{1}
1907 \ifcase\ACM@format@nr

```

```

1908 \relax % manuscript
1909 \or % acmsmall
1910   \@folio@wd=45.75pt\relax
1911   \@folio@ht=1.25in\relax
1912   \@folio@voffset=.2in\relax
1913   \def\@folio@max{8}
1914 \or % acmlarge
1915   \@folio@wd=43.25pt\relax
1916   \@folio@ht=79pt\relax
1917   \@folio@voffset=.55in\relax
1918   \def\@folio@max{10}
1919 \fi

```

\@folioblob The macro to typeset the folio blob.

```

1920 \def\@folioblob{\@tempcnta=\@acmArticleSeq\relax
First, we calculate \@acmArticleSeq modulo \@folio@max
1921   \loop
1922     \ifnum\@tempcnta>\@folio@max\relax
1923     \advance\@tempcnta by - \@folio@max
1924   \repeat
1925   \advance\@tempcnta by -1\relax
1926   \@tempdima=\@folio@ht\relax
1927   \multiply\@tempdima by \the\@tempcnta\relax
1928   \advance\@tempdima by -\@folio@voffset\relax
1929   \begin{picture}(0,0)
1930     \makebox[\z@]{\raisebox{-\@tempdima}{%
1931       \rlap{%
1932         \raisebox{-0.45\@folio@ht}{\z@}\z@}{%
1933           \rule{\@folio@wd}{\@folio@ht}}}%
1934       \parbox{\@folio@wd}{%
1935         \centering
1936         \textcolor{white}{\LARGE\bfseries\sffamily\@acmArticle}}}}
1937   \end{picture}}
1938

```

firstpagestyle The pagestyle for the first page only.

```

1939 \fancypagestyle{firstpagestyle}{%
1940   \fancyhf{}%
1941   \renewcommand{\headrulewidth}{\z@}%
1942   \renewcommand{\footrulewidth}{\z@}%
1943   \ifcase\ACM@format@nr
1944   \relax % manuscript
1945     \fancyhead[L]{\ACM@linecount}%
1946     \fancyfoot[R0,LE]{\if@ACM@printfolios\small\thepage\fi}%
1947     \fancyfoot[RE,L0]{\footnotesize Manuscript submitted to ACM}%
1948   \or % acmsmall
1949     \fancyfoot[R0,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1950       \@acmNumber, Article \@acmArticle. Publication date:
1951       \@acmPubDate.}%

```

```

1952 \fancyhead[LE]{\ACM@linecount\@folioblob}%
1953 \fancyhead[LO]{\ACM@linecount}%
1954 \fancyhead[RO]{\@folioblob}%
1955 \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
1956 \or % acmlarge
1957 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1958 \@acmNumber, Article \@acmArticle. Publication date:
1959 \@acmPubDate.}%
1960 \fancyhead[RO]{\@folioblob}%
1961 \fancyhead[LE]{\ACM@linecount\@folioblob}%
1962 \fancyhead[LO]{\ACM@linecount}%
1963 \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
1964 \or % acmtog
1965 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1966 \@acmNumber, Article \@acmArticle. Publication date:
1967 \@acmPubDate.}%
1968 \fancyhead[L]{\ACM@linecount}%
1969 \else % Conference proceedings
1970 \fancyhead[L]{\ACM@linecount}%
1971 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
1972 \fi
1973 }

```

3.14 Sectioning

Sectioning is different for different levels

```

1974 \renewcommand\section{\@startsection{section}{1}{\z@}%
1975 {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1976 {0.25\baselineskip}%
1977 {\@secfont}}
1978 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
1979 {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1980 {0.25\baselineskip}%
1981 {\@subsecfont}}
1982 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{10pt}%
1983 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1984 {-3.5\p@}%
1985 {\@subsubsecfont\@adddotafter}}
1986 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
1987 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1988 {-3.5\p@}%
1989 {\@parfont\@adddotafter}}
1990 \renewcommand\part{\@startsection{part}{9}{\z@}%
1991 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
1992 {4\p@}%
1993 {\@parfont}}

```

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

```

1994 \def\section@raggedright{\@rightskip\@flushglue

```

```

1995 \rightskip\@rightskip
1996 \leftskip\z@skip
1997 \parindent\z@}

\@secfont Fonts for sections etc. are different for different formats.
\@subsecfont 1998 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeUppercase}
\@subsubsecfont 1999 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
\@parfont 2000 \def\@subsubsecfont{\sffamily\itshape}
2001 \def\@parfont{\itshape}
2002 \setcounter{secnumdepth}{3}
2003 \ifcase\ACM@format@nr
2004 \relax % manuscript
2005 \or % acmsmall
2006 \or % acmlarge
2007 \def\@secfont{\sffamily\large\section@raggedright\MakeUppercase}
2008 \def\@subsecfont{\sffamily\large\section@raggedright}
2009 \or % acmtog
2010 \def\@secfont{\sffamily\large\section@raggedright\MakeUppercase}
2011 \def\@subsecfont{\sffamily\large\section@raggedright}
2012 \or % sigconf
2013 \def\@secfont{\bfseries\Large\section@raggedright\MakeUppercase}
2014 \def\@subsecfont{\bfseries\Large\section@raggedright}
2015 \or % siggraph
2016 \def\@secfont{\bfseries\sffamily\Large\section@raggedright\MakeUppercase}
2017 \def\@subsecfont{\bfseries\sffamily\Large\section@raggedright}
2018 \or % sigplan
2019 \def\@secfont{\bfseries\Large\section@raggedright}
2020 \def\@subsecfont{\bfseries\section@raggedright}
2021 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
2022 {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2023 {0.25\baselineskip}%
2024 {\@subsubsecfont}}
2025 \def\@subsubsecfont{\bfseries\section@raggedright}
2026 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2027 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2028 {-3.5\p@}%
2029 {\@parfont\@addspaceafter}}
2030 \def\@parfont{\bfseries\itshape}
2031 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2032 {-0.5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2033 {-3.5\p@}%
2034 {\@subparfont\@addspaceafter}}
2035 \def\@subparfont{\itshape}
2036 \or % sigchi
2037 \setcounter{secnumdepth}{1}
2038 \def\@secfont{\bfseries\sffamily\section@raggedright\MakeUppercase}
2039 \def\@subsecfont{\bfseries\sffamily\section@raggedright}
2040 \or % sigchi-a
2041 \setcounter{secnumdepth}{0}
2042 \def\@secfont{\bfseries\sffamily\section@raggedright\MakeUppercase}

```

```

2043 \def\@subsecfont{\bfseries\sffamily\section@raggedright}
2044 \fi

```

\@adddotafter Add punctuation after the command

```

2045 \def\@adddotafter#1{#1\@addpunct{.}}

```

\@addspaceafter Add space after the command

```

2046 \def\@addspaceafter#1{#1\@addpunct{\enspace}}

```

3.15 Theorems

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

```

2047 \def\@acmplainbodyfont{\itshape}

```

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

```

2048 \def\@acmplainindent{\parindent}

```

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

```

2049 \def\@acmplainheadfont{\scshape}

```

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

```

2050 \def\@acmplainnotefont{\@empty}

```

Customization of acmplain theorem style:

```

2051 \ifcase\ACM@format@nr
2052 \relax % manuscript
2053 \or % acmsmall
2054 \or % acmlarge
2055 \or % acmtog
2056 \or % sigconf
2057 \or % siggraph
2058 \or % sigplan
2059 \def\@acmplainbodyfont{\itshape}
2060 \def\@acmplainindent{\z@}
2061 \def\@acmplainheadfont{\bfseries}
2062 \def\@acmplainnotefont{\normalfont}
2063 \or % sigchi
2064 \or % sigchi-a
2065 \fi

```

acmplain The acmplain theorem style

```

2066 \newtheoremstyle{acmplain}%
2067 { .5\baselineskip\@plus.2\baselineskip
2068 \@minus.2\baselineskip}% space above
2069 { .5\baselineskip\@plus.2\baselineskip
2070 \@minus.2\baselineskip}% space below
2071 {\@acmplainbodyfont}% body font
2072 {\@acmplainindent}% indent amount

```



```

2073 {\@acmplainheadfont}% head font
2074 {.}% punctuation after head
2075 {.5em}% spacing after head
2076 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont{#3}}}% head spec

\@acmdefinitionbodyfont The font to typeset the acmdefinition theorem style body.
2077 \def\@acmdefinitionbodyfont{\normalfont}

\@acmdefinitionindent The amount to indent the acmdefinition theorem style.
2078 \def\@acmdefinitionindent{\parindent}

\@acmdefinitionheadfont The font to typeset the acmdefinition theorem style head.
2079 \def\@acmdefinitionheadfont{\itshape}

\@acmdefinitionnotefont The font to typeset the acmdefinition theorem style note.
2080 \def\@acmdefinitionnotefont{\@empty}

```

Customization of acmdefinition theorem style:

```

2081 \ifcase\ACM@format@nr
2082 \relax % manuscript
2083 \or % acmsmall
2084 \or % acmlarge
2085 \or % acmtog
2086 \or % sigconf
2087 \or % siggraph
2088 \or % sigplan
2089 \def\@acmdefinitionbodyfont{\normalfont}
2090 \def\@acmdefinitionindent{\z@}
2091 \def\@acmdefinitionheadfont{\bfseries}
2092 \def\@acmdefinitionnotefont{\normalfont}
2093 \or % sigchi
2094 \or % sigchi-a
2095 \fi

```

acmdefinition The acmdefinition theorem style

```

2096 \newtheoremstyle{acmdefinition}%
2097 {.5\baselineskip\@plus.2\baselineskip
2098 \@minus.2\baselineskip}% space above
2099 {.5\baselineskip\@plus.2\baselineskip
2100 \@minus.2\baselineskip}% space below
2101 {\@acmdefinitionbodyfont}% body font
2102 {\@acmdefinitionindent}% indent amount
2103 {\@acmdefinitionheadfont}% head font
2104 {.}% punctuation after head
2105 {.5em}% spacing after head
2106 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont{#3}}}% head spec

```

The definitions for theorems:

```

2107 \theoremstyle{acmplain}

```

```

2108 \newtheorem{theorem}{Theorem}[section]
2109 \newtheorem{conjecture}[theorem]{Conjecture}
2110 \newtheorem{proposition}[theorem]{Proposition}
2111 \newtheorem{lemma}[theorem]{Lemma}
2112 \newtheorem{corollary}[theorem]{Corollary}
2113 \theoremstyle{acmdefinition}
2114 \newtheorem{example}[theorem]{Example}
2115 \newtheorem{definition}[theorem]{Definition}
2116 \theoremstyle{acmplain}

\@proofnamefont The font to typeset the proof name.
2117 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
2118 \def\@proofindent{\indent}

Customization of proof environment.
2119 \ifcase\ACM@format@nr
2120 \relax % manuscript
2121 \or % acmsmall
2122 \or % acmlarge
2123 \or % acmtog
2124 \or % sigconf
2125 \or % siggraph
2126 \or % sigplan
2127 \def\@proofnamefont{\itshape}
2128 \def\@proofindent{\noindent}
2129 \or % sigchi
2130 \or % sigchi-a
2131 \fi

proof We want some customization of proof environment.
2132 \renewenvironment{proof}[1][\proofname]{\par
2133 \pushQED{\qed}%
2134 \normalfont \topsep6\p@\@plus6\p@\relax
2135 \trivlist
2136 \item[\@proofindent\hskip\labelsep
2137 {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2138 }{%
2139 \popQED\endtrivlist\endpfalse
2140 }

```

3.16 Acknowledgments

```

\acks This is a comment-like structure
2141 \specialcomment{acks}{%
2142 \begingroup
2143 \section*{Acknowledgments}
2144 \phantomsection\addcontentsline{toc}{section}{Acknowledgments}

```

```

2145 }{%
2146   \endgroup
2147 }

```

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

```

2148 \def\grantsponsor#1#2#3{#2}

```

`\grantnum`

```

2149 \newcommand\grantnum[3][\]{#3%
2150   \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}

```

3.17 Conditional typesetting

We use the comment package for conditional typesetting:

```

2151 \if@ACM@screen
2152   \includecomment{screenonly}
2153   \excludecomment{printonly}
2154 \else
2155   \excludecomment{screenonly}
2156   \includecomment{printonly}
2157 \fi
2158 \if@ACM@anonymous
2159   \excludecomment{anonsuppress}
2160   \excludecomment{acks}
2161 \else
2162   \includecomment{anonsuppress}
2163 \fi

```

3.18 Additional bibliography commands

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

```

2164 \newcommand\showeprint[2][arxiv]{%
2165   \def\@tempa{#1}%
2166   \ifx\@tempa\@empty\def\@tempa{arxiv}\fi
2167   \def\@tempb{arxiv}%
2168   \ifx\@tempa\@tempb
2169     arXiv:\href{http://arxiv.org/abs/#2}{#2}\else arXiv:#2%
2170   \fi}

```

3.19 End of Class

```

2171 \normalsize\normalfont
2172 </class>

```

References

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Change History

v1.00	General: First released version	22	v1.05	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	22
v1.01	General: Changed hyperref colors in screen mode (closes https://github.com/borisveytsman/acmart/issues/1)	22		Patched \setcitestyle command; closes https://github.com/borisveytsman/acmart/issues/19	22
	Defined ACM colors	22	v1.06	\@ACM@badge@skip: Added macro . .	46
	Explicitly put draft option (closes https://github.com/borisveytsman/acmart/issues/4)	24		\@ACM@badge@width: Added macro .	46
	Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/acmart/issues/5)	22		\@ACM@title@width: Added macro .	46
v1.02	General: Added TOPS and TSC (closes https://github.com/borisveytsman/acmart/issues/12)	22		\@mktitle@i: Added processing badges	58
	Documentation changes (closes https://github.com/borisveytsman/acmart/issues/13)	22		Made generic	58
v1.03	\@formatdoi: Added macro	50		\@mktitle@ii: Now this macro is obsolete	59
	General: Added anonsuppress environment	22		\@mktitle@iii: Added processing badges	59
	Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	22		Made more generic	59
	\if@ACM@authorversion: Added macro	23		\@mktitle@iv: Made more generic .	59
	\maketitle: Added special case of authorversion	53		\@printtopmatter: Added processing badges	56
v1.04	General: Updated bibliography for siggraph	22		\@subtitlefont: Added macro	58
	\acmArticleSeq: Name change by Matthew Fluet	45		\@titlefont: Added macro	57
	\acmDOI: Name change by Matthew Fluet	46		\acmBadgeL: Added macro	46
	\acmISBN: Name change by Matthew Fluet	45		\acmBadgeR: Added macro	46
				\if@ACM@badge: Added macro	46
			v1.07	\maketitle: Corrected a bug with abstract footnotes	53
				Corrected a bug with permission and footnotes order	53
			v1.08	General: SIGPLAN reformatting by Matthew Fluet	22
				Typos corrected (Tobias Pape) . . .	22
			v1.09	General: Revert SIGPLAN caption rules	22
			v1.10	General: Changes of 'licensedothergov' wording	49
				\maketitle: Corrected a bug with doi in manuscript and author version, https://github.com/	

borisveytsman/acmart/issues/			
36	53		
standardpagestyle: Reversed folios			
location	67		
v1.11			
General: Customization of ACM theorem styles and proof environment by Matthew Fluet	22		
v1.12			
\@marginfigure: Now centering by default	36		
\@marginable: Now centering by default	36		
\@parfont: Moved to \section@raggedright	71		
General: Added graceful behavior when libertine fonts are absent	34		
Documentation updates	22		
\copyrightpermissionfootnoterule: Added macro	33		
\descriptionlabel: Redefined	37		
\footnoterule: Made shorter	33		
\if@ACM@natbib@override: Added macro	23		
\if@ACM@newfonts: Added macro	34		
\maketitle: Moved thankses to copyrightpermission box	53		
\section@raggedright: Introduced macro	70		
v1.13			
\@mpfootnotetext: Made minipage footnotes centered	34		
General: Font adjustments for acmsmall	61		
Increased font size for ACM Large	25		
Print bibliographic information by default for the proceedings	47		
\bibliographystyle: Redefined macro	31		
\bibstyle@acmauthoryear: Added macro	27		
\bibstyle@acmnumeric: Added macro	28		
\if@ACM@printfolios: Added macro	47		
standardpagestyle: Added headers for sigs	67		
Expanded headers for sigchi-a	67		
Suppressed folios if sig	67		
v1.14			
General: \citestyle updates (Matthew Fluet)	22		
Patched \citestyle	26		
\bibstyle@acmauthoryear: Moved def of \bibstyle@acmauthoryear before use	27		
\bibstyle@acmnumeric: Moved def of \bibstyle@numeric before use	28		
v1.15			
\@ACM@addtoaddress: Added macro	60		
\@mkauthors@iii: New authors system	63		
\@shortauthors: Introduced macro	67		
\@typeset@author@bx: Moved to separate macro	63		
\acks: Added macro	74		
\affiliation: Added code for author groups	44		
\author: Added code for author groups	43		
\city: Added macro	60		
\country: Added macro	60		
\department: Added macro	60		
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\grantsponsor: Added macro	75		
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