

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

Boris Veytsman[†]

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Abstract

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

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[†]borisv@lk.net, boris@varphi.com

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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 BibTeX 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 JOCCH, 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
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
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 rededine 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
`\acmBadgeL` 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 `\acmBadgeL[<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.

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 Typographical niceties

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 [2016/07/12 v1.18 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{\bibfont}{\bibliofont}
162 \renewcommand\setcitestyle[1]{
163 \@for\@tempa:=#1\do
164 {\def\@tempb{round}\ifx\@tempa\@tempb
165 \renewcommand\NAT@open{()\renewcommand\NAT@close{}}\fi
166 \def\@tempb{square}\ifx\@tempa\@tempb
167 \renewcommand\NAT@open{[]\renewcommand\NAT@close{[]}\fi
168 \def\@tempb{angle}\ifx\@tempa\@tempb
169 \renewcommand\NAT@open{<}\renewcommand\NAT@close{>}\fi
170 \def\@tempb{curly}\ifx\@tempa\@tempb
171 \renewcommand\NAT@open{\{}\renewcommand\NAT@close{\}}\fi
172 \def\@tempb{semicolon}\ifx\@tempa\@tempb
173 \renewcommand\NAT@sep{;}\fi
174 \def\@tempb{colon}\ifx\@tempa\@tempb
175 \renewcommand\NAT@sep{:}\fi
176 \def\@tempb{comma}\ifx\@tempa\@tempb
177 \renewcommand\NAT@sep{,}\fi
178 \def\@tempb{authoryear}\ifx\@tempa\@tempb
179 \NAT@numbersfalse\fi
180 \def\@tempb{numbers}\ifx\@tempa\@tempb
181 \NAT@numberstrue\NAT@superfalse\fi
182 \def\@tempb{super}\ifx\@tempa\@tempb
183 \NAT@numberstrue\NAT@supertrue\fi
184 \def\@tempb{nobibstyle}\ifx\@tempa\@tempb
185 \let\bibstyle=\@gobble\fi
186 \def\@tempb{bibstyle}\ifx\@tempa\@tempb
187 \let\bibstyle=\@citestyle\fi
188 \def\@tempb{sort}\ifx\@tempa\@tempb
189 \def\NAT@sort{\@ne}\fi

```



```

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

```

\bibstyle@acmauthoryear The default author-year format:

```

235 \newcommand{\bibstyle@acmauthoryear}{%
236   \setcitestyle{%
237     authoryear,%

```

```

238   open={(),close={}},citesep={;},%
239   aysep={},yysep={},,%
240   notesep={, }}

```

`\bibstyle@acmnumeric` The default numeric format:

```

241 \newcommand{\bibstyle@acmnumeric}{%
242   \setcitestyle{%
243     numbers,sort&compress,%
244     open={[],close={]],citesep={,},%
245     notesep={, }}

```

The default is numeric:

```

246 \citestyle{acmnumeric}

```

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:

```

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

```

```

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

```

```

330 \fi
331 \@xsect{#3}}

And hyperref
332 \let\@footnotemark@nolink\@footnotemark
333 \let\@footnotetext@nolink\@footnotetext
334 \RequirePackage{hyperref}
335 \urlstyle{rm}
336 \ifcase\ACM@format@nr
337 \relax % manuscript
338 \or % acmsmall
339 \or % acmlarge
340 \or % acmtog
341 \or % sigconf
342 \or % siggraph
343 \or % sigplan
344 \urlstyle{sf}
345 \or % sigchi
346 \or % sigchi-a
347 \urlstyle{sf}
348 \fi
349 \if@ACM@screen
350 \hypersetup{colorlinks,
351   linkcolor=ACMRed,
352   citecolor=ACMPurple,
353   urlcolor=ACMDarkBlue,
354   filecolor=ACMDarkBlue}
355 \else
356 \hypersetup{hidelinks}
357 \fi

Bibliography mangling.
358 \if@ACM@natbib
359 \let\citeN\cite
360 \let\cite\citep
361 \let\citeANP\citeauthor
362 \let\citeNN\citeyearpar
363 \let\citeyearNP\citeyear
364 \let\citeyear\citeyearpar
365 \let\citeNP\citealt
366 \def\shortcite#1{\citeyear{#1}}
367 \DeclareRobustCommand\citeA
368   {\begingroup\NAT@swafalse
369     \let\NAT@ctype\@ne\NAT@partrue\NAT@fullfalse\NAT@open\NAT@citetp}%
370 \providecommand\newblock{}%
371 \else
372 \providecommand\citename[1]{#1}
373 \fi

```

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

```

374 \def\bibliographystyle#1{%
375   \ifx\@begindocumenthook\undefined\else
376     \expandafter\AtBeginDocument
377   \fi
378   {\if@filesw
379     \immediate\write\@auxout{\string\bibstyle{#1}}%
380   \fi}}

```

Graphics and color

```

381 \RequirePackage{graphicx, xcolor}

We define ACM colors according to [7]:
382 \definecolor[named]{ACMBlue}{cmyk}{1,0.1,0,0.1}
383 \definecolor[named]{ACMYellow}{cmyk}{0,0.16,1,0}
384 \definecolor[named]{ACMOrange}{cmyk}{0,0.42,1,0.01}
385 \definecolor[named]{ACMRed}{cmyk}{0,0.90,0.86,0}
386 \definecolor[named]{ACMLightBlue}{cmyk}{0.49,0.01,0,0}
387 \definecolor[named]{ACMGreen}{cmyk}{0.20,0,1,0.19}
388 \definecolor[named]{ACMPurple}{cmyk}{0.55,1,0,0.15}
389 \definecolor[named]{ACMDarkBlue}{cmyk}{1,0.58,0,0.21}

```

3.5 Paper size and paragraphing

We use geometry for dimensions

```

390 \RequirePackage{geometry}
391 \ifcase\ACM@format@nr
392 \relax % manuscript
393   \geometry{letterpaper,head=1pc}%
394 \or % acmsmall
395   \geometry{twoside=true,
396     includeheadfoot, head=1pc, foot=2pc,
397     paperwidth=6.75in, paperheight=10in,
398     top=58pt, bottom=44pt, inner=46pt, outer=46pt
399   }%
400 \or % acmlarge
401   \geometry{twoside=true, head=1pc, foot=2pc,
402     paperwidth=8.5in, paperheight=11in,
403     includeheadfoot,
404     top=78pt, bottom=114pt, inner=81pt, outer=81pt
405   }%
406 \or % acmtog
407   \geometry{twoside=true, head=1pc, foot=2pc,
408     paperwidth=8.5in, paperheight=11in,
409     includeheadfoot, columnsep=24pt,
410     top=52pt, bottom=75pt, inner=52pt, outer=52pt
411   }%
412 \or % sigconf
413   \geometry{twoside=true, head=1pc,
414     paperwidth=8.5in, paperheight=11in,
415     includeheadfoot, columnsep=2pc,

```

```

416     top=57pt, bottom=73pt, inner=54pt, outer=54pt
417   }%
418 \or % siggraph
419   \geometry{twoside=true, head=1pc,
420     paperwidth=8.5in, paperheight=11in,
421     includeheadfoot, columnsep=2pc,
422     top=57pt, bottom=73pt, inner=54pt, outer=54pt
423   }%
424 \or % sigplan
425   \geometry{twoside=true, head=1pc,
426     paperwidth=8.5in, paperheight=11in,
427     includeheadfoot=false, columnsep=2pc,
428     top=1in, bottom=1in, inner=0.75in, outer=0.75in
429   }%
430 \or % sigchi
431   \geometry{twoside=true, head=1pc,
432     paperwidth=8.5in, paperheight=11in,
433     includeheadfoot, columnsep=2pc,
434     top=66pt, bottom=73pt, inner=54pt, outer=54pt
435   }%
436 \or % sigchi-a
437   \geometry{twoside=false, head=1pc,
438     paperwidth=11in, paperheight=8.5in,
439     includeheadfoot, marginparsep=72pt,
440     marginparwidth=170pt, columnsep=20pt,
441     top=72pt, bottom=72pt, left=314pt, right=72pt
442   }%
443   \@parswitchfalse
444   \reversemarginpar
445 \fi

\parindent Paragraphing
\parskip
446 \setlength\parindent{10\p@}
447 \setlength\parskip{\z@}
448 \ifcase\ACM@format@nr
449 \relax % manuscript
450 \or % acmsmall
451 \or % acmlarge
452 \or % acmtog
453   \setlength\parindent{9\p@}%
454 \or % sigconf
455 \or % siggraph
456 \or % sigplan
457 \or % sigchi
458 \or % sigchi-a
459 \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.

```
460 \def\copyrightpermissionfootnoterule{\kern-3\p@
461   \hrule \@width \columnwidth \kern 2.6\p@}

462 \RequirePackage{manyfoot}
463 \SelectFootnoteRule[2]{copyrightpermission}
464 \DeclareNewFootnote{copyrightpermission}
```

\footnoterule Tschichold's rules:

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

\endminipage We do not use footnote rules in minipages

```
467 \def\endminipage{%
468   \par
469   \unskip
470   \ifvoid\@mpfootins\else
471     \vskip\skip\@mpfootins
472     \normalcolor
473     \unvbox\@mpfootins
474   \fi
475   \@minipagefalse %% added 24 May 89
476   \color@endgroup
477   \egroup
478   \expandafter\@iiiparbox\@mpargs{\unvbox\@tempboxa}}
```

\@makefnmark We do not use indentation for footnotes

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

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

```
480 \if@ACM@sigchiamode
481 \long\def\@footnotetext#1{\marginpar{%
482   \reset@font\small
483   \interlinepenalty\interfootnotelinepenalty
484   \protected@edef\@currentlabel{%
485     \csname p@footnote\endcsname\@thefnmark
486   }%
487   \color@begingroup
488     \@makefnmark{%
489       \rule{z@footnotesep}{\ignorespaces#1}\@finalstrut\strutbox}%
490   \color@endgroup}}%
491 \fi
```

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

```
492 \long\def\@mpfootnotetext#1{%
493   \global\setbox\@mpfootins\vbox{%
494     \unvbox\@mpfootins
495     \reset@font\footnotesize
496     \hsize\columnwidth
497     \@parboxrestore
498     \protected@edef\@currentlabel
499       {\csname p@mpfootnote\endcsname\@thefnmark}%
500     \color@begingroup\centering
501     \makefnmark{%
502       \rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
503     \color@endgroup}}
```

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

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

3.6 Fonts

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

```
505 \newif\if@ACM@newfonts
506 \@ACM@newfontstrue
507 \IfFileExists{libertine.sty}{\ClassWarning{\@classname}{You do not
508   have libertine package installed. Please upgrade your
509   TeX}\@ACM@newfontsfalse}
510 \IfFileExists{zi4.sty}{\ClassWarning{\@classname}{You do not
511   have zi4 package installed. Please upgrade your TeX}\@ACM@newfontsfalse}
512 \IfFileExists{newtxmath.sty}{\ClassWarning{\@classname}{You do not
513   have newtxmath package installed. Please upgrade your
514   TeX}\@ACM@newfontsfalse}
```

We use Times throughout.

```
515 \if@ACM@newfonts
516 \RequirePackage[tt=false]{libertine}
517 \RequirePackage[varqu]{zi4}
518 \RequirePackage[libertine]{newtxmath}
519 \else
520 \RequirePackage{textcomp}
521 \fi
```

The SIGCHI extended abstracts are sans serif:

```
522 \if@ACM@sigchiamode
523   \renewcommand{\familydefault}{\sfdefault}
524 \fi
```

3.7 Floats

We use caption package

```
525 \RequirePackage{caption, float}
```



```

526 \captionsetup[table]{position=top}
527 \if@ACM@journal
528   \captionsetup{labelfont={sf, small},
529     textfont={sf, small}, margin=\z@}
530   \captionsetup[figure]{name={Fig.}}
531 \else
532   \captionsetup{labelfont={bf},
533     textfont={bf}, labelsep=colon, margin=\z@}
534   \ifcase\ACM@format@nr
535     \relax % manuscript
536     \or % acmsmall
537     \or % acmlarge
538     \or % acmtog
539     \or % sigconf
540     \or % siggraph
541     \captionsetup{textfont={it}}
542     \or % sigplan
543     \captionsetup{labelfont={bf},
544       textfont={normalfont}, labelsep=period, margin=\z@}
545     \or % sigchi
546     \captionsetup[figure]{labelfont={bf, small},
547       textfont={bf, small}}
548     \or % sigchi-a
549     \captionsetup[figure]{labelfont={bf, small},
550       textfont={bf, small}}
551   \fi
552 \fi

```

sidebar The sidebar environment:

```

553 \newfloat{sidebar}{}{sbar}
554 \floatname{sidebar}{Sidebar}
555 \renewenvironment{sidebar}{}{\Collect@Body\@sidebar}{}

```

\@sidebar The processing of the saved text

```

556 \long\def\@sidebar#1{\bgroup\captionsetup{type=sidebar}%
557   \marginpar{\small#1}\egroup}

```

marginfigure The marginfigure environment:

```

558 \newenvironment{marginfigure}{}{\Collect@Body\@marginfigure}{}

```

\@marginfigure The processing of the saved text

```

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

```

marginable The marginable environment:

```

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

```

\@marginable The processing of the saved text

```

562 \long\def\@marginable#1{\bgroup\captionsetup{type=table}%
563   \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
564 \newdimen\fulltextwidth
565 \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)
566 \if@ACM@sigchiamode
567 \def\@dblfloat{\bgroup\columnwidth=\fulltextwidth
568 \let\@endfloatbox\@endwidefloatbox
569 \def\@fpsaddddefault{\def\@fps{tp}}}%
570 \@float}
571 \fi

\end@dblfloat And the end. Just adding a \bgroup.
572 \if@ACM@sigchiamode
573 \def\end@dblfloat{%
574 \end@float\egroup}
575 \fi

\@endwidefloatbox This is the end of a wide box - we basically move everything to the left
576 \def\@endwidefloatbox{%
577 \par\vskip\z@skip
578 \@minipagefalse
579 \outer@nobreak
580 \egroup
581 \color@endbox
582 \global\setbox\@currbox=\vbox{\moveleft
583 \dimexpr(\fulltextwidth-\textwidth)\box\@currbox}%
584 \wd\@currbox=\textwidth
585 }
```

3.8 Lists

```
586 \ifcase\ACM@format@nr
587 \relax % manuscript
588 \or % acmsmall
589 \or % acmlarge
590 \or % acmtog
591 \or % sigconf
592 \or % siggraph
593 \or % sigplan
594 \def\labelenumi{\theenumi.}
595 \def\labelenumii{\theenumii.}
596 \def\labelenumiii{\theenumiii.}
597 \def\labelenumiv{\theenumiv.}
598 \or % sigchi
```

```

599 \or % sigchi-a
600 \fi

\descriptionlabel We do not use default colon as \amsart does:
601 \renewcommand{\descriptionlabel}[1]{\hspace\labelsep \upshape\bfseries #1}

\description AMS uses additional indent of 6pt. Frank recommends dropping it.
602 \renewenvironment{description}{\list{}{%
603   \itemindent-12\p@
604   \labelwidth\z@ \let\makelabel\descriptionlabel}%
605 }{
606   \endlist
607 }
608 \let\enddescription=\endlist % for efficiency

```

3.9 Top matter data

We use keyval interface to define journal title and relevant information

```

609 \define@choicekey*+{ACM}{acmJournal}[\@journalCode\@journalCode@nr]{%
610   CIE,%
611   CSUR,%
612   JACM,%
613   JDIQ,%
614   JEA,%
615   JERIC,%
616   JETC,%
617   JOCCH,%
618   TAAS,%
619   TACCESS,%
620   TACO,%
621   TALG,%
622   TALLIP,%
623   TAP,%
624   TCPS,%
625   TEAC,%
626   TECS,%
627   TIIS,%
628   TISSEC,%
629   TIST,%
630   TKDD,%
631   TMIS,%
632   TOCE,%
633   TOCHI,%
634   TOCL,%
635   TOCS,%
636   TOCT,%
637   TODAES,%
638   TODS,%
639   TOG,%

```

```

640 TOIS,%
641 TOIT,%
642 TOMACS,%
643 TOMM,%
644 TOMPECS,%
645 TOMS,%
646 TOPC,%
647 TOPS,%
648 TOPLAS,%
649 TOS,%
650 TOSEM,%
651 TOSN,%
652 TRETS,%
653 TSAS,%
654 TSC,%
655 TSLP,%
656 TWEB%
657 }{%
658 \ifcase\@journalCode@nr
659 \relax % CIE
660 \def\@journalName{ACM Computers in Entertainment}%
661 \def\@journalNameShort{ACM Comput. Entertain.}%
662 \def\@permissionCodeOne{1544-3574}%
663 \or % CSUR
664 \def\@journalName{ACM Computing Surveys}%
665 \def\@journalNameShort{ACM Comput. Surv.}%
666 \def\@permissionCodeOne{0360-0300}%
667 \or % JACM
668 \def\@journalName{Journal of the ACM}%
669 \def\@journalNameShort{J. ACM}%
670 \def\@permissionCodeOne{0004-5411}%
671 \or % JDIQ
672 \def\@journalName{ACM Journal of Data and Information Quality}%
673 \def\@journalNameShort{ACM J. Data Inform. Quality}%
674 \def\@permissionCodeOne{1936-1955}%
675 \or % JEA
676 \def\@journalName{ACM Journal of Experimental Algorithmics}%
677 \def\@journalNameShort{ACM J. Exp. Algor.}%
678 \def\@permissionCodeOne{1084-6654}%
679 \or % JERIC
680 \def\@journalName{ACM Journal of Educational Resources in Computing}%
681 \def\@journalNameShort{ACM J. Edu. Resources in Comput.}%
682 \def\@permissionCodeOne{1073-0516}%
683 \or % JETC
684 \def\@journalName{ACM Journal on Emerging Technologies in Computing Systems}%
685 \def\@journalNameShort{ACM J. Emerg. Technol. Comput. Syst.}%
686 \def\@permissionCodeOne{1550-4832}%
687 \or % JOCCH
688 \def\@journalName{ACM Journal on Computing and Cultural Heritage}%
689 \def\@journalNameShort{ACM J. Comput. Cult. Herit.}%

```

```

690 \or % TAAS
691 \def\@journalName{ACM Transactions on Autonomous and Adaptive Systems}%
692 \def\@journalNameShort{ACM Trans. Autonom. Adapt. Syst.}%
693 \def\@permissionCodeOne{1556-4665}%
694 \or % TACCESS
695 \def\@journalName{ACM Transactions on Accessible Computing}%
696 \def\@journalNameShort{ACM Trans. Access. Comput.}%
697 \def\@permissionCodeOne{1936-7228}%
698 \or % TACO
699 \def\@journalName{ACM Transactions on Architecture and Code Optimization}%
700 \or % TALG
701 \def\@journalName{ACM Transactions on Algorithms}%
702 \def\@journalNameShort{ACM Trans. Algor.}%
703 \def\@permissionCodeOne{1549-6325}%
704 \or % TALLIP
705 \def\@journalName{ACM Transactions on Asian and Low-Resource Language Information Processing}%
706 \def\@journalNameShort{ACM Trans. Asian Low-Resour. Lang. Inf. Process.}%
707 \def\@permissionCodeOne{2375-4699}%
708 \or % TAP
709 \def\@journalName{ACM Transactions on Applied Perception}%
710 \or % TCPS
711 \def\@journalName{ACM Transactions on Cyber-Physical Systems}%
712 \or % TEAC
713 \def\@journalName{ACM Transactions on Economics and Computation}%
714 \or % TECS
715 \def\@journalName{ACM Transactions on Embedded Computing Systems}%
716 \def\@journalNameShort{ACM Trans. Embedd. Comput. Syst.}%
717 \def\@permissionCodeOne{1539-9087}%
718 \or % TIIS
719 \def\@journalName{ACM Transactions on Interactive Intelligent Systems}%
720 \def\@journalNameShort{ACM Trans. Interact. Intell. Syst.}%
721 \def\@permissionCodeOne{2160-6455}%
722 \or % TISSEC
723 \def\@journalName{ACM Transactions on Information and System Security}%
724 \def\@journalNameShort{ACM Trans. Info. Syst. Sec.}%
725 \def\@permissionCodeOne{1094-9224}%
726 \or % TIST
727 \def\@journalName{ACM Transactions on Intelligent Systems and Technology}%
728 \def\@journalNameShort{ACM Trans. Intell. Syst. Technol.}%
729 \def\@permissionCodeOne{2157-6904}%
730 \or % TKDD
731 \def\@journalName{ACM Transactions on Knowledge Discovery from Data}%
732 \def\@journalNameShort{ACM Trans. Knowl. Discov. Data.}%
733 \def\@permissionCodeOne{1556-4681}%
734 \or % TMIS
735 \def\@journalName{ACM Transactions on Management Information Systems}%
736 \def\@journalNameShort{ACM Trans. Manag. Inform. Syst.}%
737 \def\@permissionCodeOne{2158-656X}%
738 \or % TOCE
739 \def\@journalName{ACM Transactions on Computing Education}%

```

```

740 \def\@journalNameShort{ACM Trans. Comput. Educ.}%
741 \def\@permissionCodeOne{1946-6226}%
742 \or % TOCHI
743 \def\@journalName{ACM Transactions on Computer-Human Interaction}%
744 \def\@journalNameShort{ACM Trans. Comput.-Hum. Interact.}%
745 \def\@permissionCodeOne{1073-0516}%
746 \or % TOCL
747 \def\@journalName{ACM Transactions on Computational Logic}%
748 \def\@journalNameShort{ACM Trans. Comput. Logic}%
749 \def\@permissionCodeOne{1529-3785}%
750 \or % TOCS
751 \def\@journalName{ACM Transactions on Computer Systems}%
752 \def\@journalNameShort{ACM Trans. Comput. Syst.}%
753 \def\@permissionCodeOne{0734-2071}%
754 \or % TOCT
755 \def\@journalName{ACM Transactions on Computation Theory}%
756 \def\@journalNameShort{ACM Trans. Comput. Theory}%
757 \def\@permissionCodeOne{1942-3454}%
758 \or % TODAES
759 \def\@journalName{ACM Transactions on Design Automation of Electronic Systems}%
760 \def\@journalNameShort{ACM Trans. Des. Autom. Electron. Syst.}%
761 \def\@permissionCodeOne{1084-4309}%
762 \or % TODS
763 \def\@journalName{ACM Transactions on Database Systems}%
764 \def\@journalNameShort{ACM Trans. Datab. Syst.}%
765 \def\@permissionCodeOne{0362-5915}%
766 \or % TOG
767 \def\@journalName{ACM Transactions on Graphics}%
768 \def\@journalNameShort{ACM Trans. Graph.}%
769 \def\@permissionCodeOne{0730-0301}%
770 \or % TOIS
771 \def\@journalName{ACM Transactions on Information Systems}%
772 \def\@journalName{ACM Transactions on Information Systems}%
773 \def\@permissionCodeOne{1046-8188}%
774 \or % TOIT
775 \def\@journalName{ACM Transactions on Internet Technology}%
776 \def\@journalNameShort{ACM Trans. Internet Technol.}%
777 \def\@permissionCodeOne{1533-5399}%
778 \or % TOMACS
779 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
780 \def\@journalName{ACM Transactions on Modeling and Computer Simulation}%
781 \def\@journalNameShort{ACM Trans. Model. Comput. Simul.}%
782 \or % TOMM
783 \def\@journalName{ACM Transactions on Multimedia Computing, Communications and Applications}%
784 \def\@journalNameShort{ACM Trans. Multimedia Comput. Commun. Appl.}%
785 \def\@permissionCodeOne{1551-6857}%
786 \def\@permissionCodeTwo{0100}%
787 \or % TOMPECS
788 \def\@journalName{ACM Transactions on Modeling and Performance Evaluation of Computing Systems}%
789 \def\@journalNameShort{ACM Trans. Model. Perform. Eval. Comput. Syst.}%

```

```

790 \def\@permissionCodeOne{2376-3639}%
791 \or % TOMS
792 \def\@journalName{ACM Transactions on Mathematical Software}%
793 \def\@journalNameShort{ACM Trans. Math. Softw.}%
794 \def\@permissionCodeOne{0098-3500}%
795 \or % TOPC
796 \def\@journalName{ACM Transactions on Parallel Computing}%
797 \def\@journalNameShort{ACM Trans. Parallel Comput.}%
798 \def\@permissionCodeOne{1539-9087}%
799 \or % TOPS
800 \def\@journalName{ACM Transactions on Privacy and Security}%
801 \def\@journalNameShort{ACM Trans. Priv. Sec.}%
802 \def\@permissionCodeOne{2471-2566}%
803 \or % TOPLAS
804 \def\@journalName{ACM Transactions on Programming Languages and Systems}%
805 \def\@journalNameShort{ACM Trans. Program. Lang. Syst.}%
806 \def\@permissionCodeOne{0164-0925}%
807 \or % TOS
808 \def\@journalName{ACM Transactions on Storage}%
809 \def\@journalNameShort{ACM Trans. Storage}%
810 \def\@permissionCodeOne{1553-3077}%
811 \or % TOSEM
812 \def\@journalName{ACM Transactions on Software Engineering and Methodology}%
813 \def\@journalNameShort{ACM Trans. Softw. Eng. Methodol.}%
814 \def\@permissionCodeOne{1049-331X}%
815 \or % TOSN
816 \def\@journalName{ACM Transactions on Sensor Networks}%
817 \def\@journalNameShort{ACM Trans. Sensor Netw.}%
818 \def\@permissionCodeOne{1550-4859}%
819 \or % TRET
820 \def\@journalName{ACM Transactions on Reconfigurable Technology and Systems}%
821 \def\@journalNameShort{ACM Trans. Reconfig. Technol. Syst.}%
822 \def\@permissionCodeOne{1936-7406}%
823 \or % TSAS
824 \def\@journalName{ACM Transactions on Spatial Algorithms and Systems}%
825 \def\@journalNameShort{ACM Trans. Spatial Algorithms Syst.}%
826 \def\@permissionCodeOne{2374-0353}%
827 \or % TSC
828 \def\@journalName{ACM Transactions on Social Computing}%
829 \def\@journalNameShort{ACM Trans. Soc. Comput.}%
830 \def\@permissionCodeOne{2469-7818}%
831 \or % TSLP
832 \def\@journalName{ACM Transactions on Speech and Language Processing}%
833 \def\@journalNameShort{ACM Trans. Speech Lang. Process.}%
834 \def\@permissionCodeOne{1550-4875}%
835 \or % TWEB
836 \def\@journalName{ACM Transactions on the Web}%
837 \def\@journalNameShort{ACM Trans. Web}%
838 \def\@permissionCodeOne{1559-1131}%
839 \fi

```

```

840 \ClassInfo{\@classname}{Using journal code \@journalCode}%
841 }{%
842 \ClassError{\@classname}{Incorrect journal #1}%
843 }%

\acmJournal And the syntactic sugar around it
844 \def\acmJournal#1{\setkeys{ACM}{acmJournal=#1}}

The defaults:
845 \def\@journalCode@nr{0}
846 \def\@journalName{}%
847 \def\@journalNameShort{\@journalName}%
848 \def\@permissionCodeOne{XXXX-XX}%
849 \def\@permissionCodeTwo{}%

\acmConference This is the conference command
850 \newcommand\acmConference[4][{}]{%
851 \gdef\acmConference@shortname{#1}%
852 \gdef\acmConference@name{#2}%
853 \gdef\acmConference@date{#3}%
854 \gdef\acmConference@venue{#4}%
855 \ifx\acmConference@shortname\@empty
856 \gdef\acmConference@shortname{#2}%
857 \fi}
858 \acmConference[Conference'17]{ACM Conference}{July 2017}{Washington,
859 DC, USA}

\subtitle The subtitle macro
860 \def\subtitle#1{\def\@subtitle{#1}}
861 \subtitle{}

\num@authorgroups The total number of “groups”. Each group is several authors with the same affiliations(s)
862 \newcount\num@authorgroups
863 \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
864 \renewcommand\author[2][{}]{%
865 \if@insideauthorgroup\else
866 \global\advance\num@authorgroups by 1\relax
867 \global\@insideauthorgrouptrue
868 \fi
869 \ifx\addresses\@empty
870 \if@ACM@anonymous
871 \gdef\addresses{\@author{Anonymous Author(s)}}%
872 \gdef\authors{Anonymous Author(s)}%
873 \else

```



```

874     \gdef\addresses{\@author{#2}}%
875     \gdef\authors{#2}%
876   \fi
877 \else
878   \if@ACM@anonymous\else
879     \g@addto@macro\addresses{\and\@author{#2}}%
880     \g@addto@macro\authors{\and#2}%
881   \fi
882 \fi
883 \if@ACM@anonymous
884   \ifx\shortauthors\@empty
885     \gdef\shortauthors{Anon.}%
886   \fi
887 \else
888   \def\@tempa{#1}%
889   \ifx\@tempa\@empty
890     \ifx\shortauthors\@empty
891       \gdef\shortauthors{#2}%
892     \else
893       \g@addto@macro\shortauthors{\and#2}%
894     \fi
895   \else
896     \ifx\shortauthors\@empty
897       \gdef\shortauthors{#1}%
898     \else
899       \g@addto@macro\shortauthors{\and#1}%
900     \fi
901   \fi
902 \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.

```

903 \newcommand{\affiliation}[2][{}]{%
904   \global\@insideauthorgroupfalse
905   \if@ACM@anonymous\else
906     \g@addto@macro\addresses{\affiliation{#1}{#2}}%
907   \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.

```

908 \renewcommand{\email}[2][{}]{%
909   \if@ACM@anonymous\else
910     \g@addto@macro\addresses{\email{#1}{#2}}%
911   \fi}

```

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

`\@titlenotes` The titlenotes

```

912 \def\@titlenotes{}

```

```

\titlenote Adding note to the title
913 \def\titlenote#1{%
914   \g@addto@macro\@title{\footnotemark}%
915   \if@ACM@anonymous
916     \g@addto@macro\titlenotes{%
917       \stepcounter{footnote}\footnotetext{Title note}}%
918   \else
919     \g@addto@macro\titlenotes{\stepcounter{footnote}\footnotetext{#1}}%
920   \fi}

\@subtitlenotes The subtitlenotes
921 \def\@subtitlenotes{}

\subtitlenote Adding note to the subtitle
922 \def\subtitlenote#1{%
923   \g@addto@macro\@subtitle{\footnotemark}%
924   \if@ACM@anonymous
925     \g@addto@macro\@subtitlenotes{%
926       \stepcounter{footnote}\footnotetext{Subtitle note}}%
927   \else
928     \g@addto@macro\@subtitlenotes{%
929       \stepcounter{footnote}\footnotetext{#1}}%
930   \fi}

\@authornotes The authornotes
931 \def\@authornotes{}

\authornote Adding note to the author
932 \def\authornote#1{%
933   \if@ACM@anonymous\else
934     \g@addto@macro\addresses{\@authornotemark}
935     \g@addto@macro\@authornotes{%
936       \stepcounter{footnote}\footnotetext{#1}}%
937   \fi}

\acmVolume The current volume
938 \def\acmVolume#1{\def\@acmVolume{#1}}
939 \acmVolume{1}

\acmNumber The current number
940 \def\acmNumber#1{\def\@acmNumber{#1}}
941 \acmNumber{1}

\acmArticle The current article
942 \def\acmArticle#1{\def\@acmArticle{#1}}
943 \acmArticle{1}

\acmArticleSeq The sequence number
944 \def\acmArticleSeq#1{\def\@acmArticleSeq{#1}}
945 \acmArticleSeq{\@acmArticle}

```

<code>\acmYear</code>	<p>The current year</p> <pre> 946 \def\acmYear#1{\def\@acmYear{#1}} 947 \acmYear{2016} </pre>
<code>\acmMonth</code>	<p>The current month</p> <pre> 948 \def\acmMonth#1{\def\@acmMonth{#1}} 949 \acmMonth{1} </pre>
<code>\@acmPubDate</code>	<p>The publication date</p> <pre> 950 \def\@acmPubDate{\ifcase\@acmMonth\or 951 January\or February\or March\or April\or May\or June\or 952 July\or August\or September\or October\or November\or 953 December\fi~\@acmYear} </pre>
<code>\acmPrice</code>	<p>The price</p> <pre> 954 \def\acmPrice#1{\def\@acmPrice{#1}} 955 \acmPrice{15.00} </pre>
<code>\acmISBN</code>	<p>The book isbn</p> <pre> 956 \def\acmISBN#1{\def\@acmISBN{#1}} 957 \acmISBN{978-x-xxxx-xxxx-x/YY/MM} </pre>
<code>\acmDOI</code>	<p>The paper doi</p> <pre> 958 \def\acmDOI#1{\def\@acmDOI{#1}} 959 \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> 960 \newif\if@ACM@badge 961 \@ACM@badgefalse </pre>
<code>\@ACM@badge@width</code>	<p>The width of the badge</p> <pre> 962 \newlength\@ACM@badge@width 963 \setlength\@ACM@badge@width{5pc} </pre>
<code>\@ACM@title@width</code>	<p>The width of the badge</p> <pre> 964 \newlength\@ACM@title@width </pre>
<code>\@ACM@badge@skip</code>	<p>The space between the badge and the title</p> <pre> 965 \newlength\@ACM@badge@skip 966 \setlength\@ACM@badge@skip{1pc} </pre>
<code>\acmBadgeR</code>	<p>Setting the right badge</p> <pre> 967 \newcommand\acmBadgeR[2][\@ACM@badgetrue 968 \def\@acmBadgeR@url{#1}% 969 \def\@acmBadgeR@image{#2}} 970 \def\@acmBadgeR@url{} 971 \def\@acmBadgeR@image{} </pre>

`\acmBadgeL` Setting the left badge

```

972 \newcommand\acmBadgeL[2][\@ACM@badgetrue
973   \def\@acmBadgeL@url{#1}%
974   \def\@acmBadgeL@image{#2}}
975 \def\@acmBadgeL@url{}
976 \def\@acmBadgeL@image{}

```

`\startPage` The start page of the paper

```

977 \def\startPage#1{\def\@startPage{#1}}
978 \startPage{}

```

`\terms` Terms are mostly obsolete, we use CCS now. Still it makes sense to keep them for compatibility.

```

979 \def\terms#1{\def\@terms{#1}}
980 \terms{}

```

`\keywords` Keywords are mostly obsolete, we use CCS now. Still it makes sense to keep them for compatibility.

```

981 \def\keywords#1{\def\@keywords{#1}}
982 \keywords{}

```

`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

```

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

```

`\@saveabstract` And saving the abstract

```

984 \long\def\@saveabstract#1{\long\gdef\@abstract{#1}}
985 \@saveabstract{}

```

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

```

986 \long\def\@empty{}

```

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

```

987 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printcss}[true]{%
988   \if@ACM@printcss
989     \ClassInfo{\@classname}{Printing CSS}%
990   \else
991     \ClassInfo{\@classname}{Suppressing CSS}%
992   \fi}{\ClassError{\@classname}{printcss must be true or false}}

```

`\if@ACM@printacmref` Whether to print ACM bib

```

993 \define@boolkey+{@ACM@topmatter@}{@ACM@}{printacmref}[true]{%
994   \if@ACM@printacmref
995     \ClassInfo{\@classname}{Printing bibformat}%
996   \else
997     \ClassInfo{\@classname}{Suppressing bibformat}%
998   \fi}{\ClassError{\@classname}{printacmref must be true or false}}

```

```

\if@ACM@printfolios Whether to print folios
999 \define@boolkey+{@ACM@topmatter@}[@ACM@]{printfolios}[true]{%
1000 \if@ACM@printfolios
1001 \ClassInfo{\@classname}{Printing folios}%
1002 \else
1003 \ClassInfo{\@classname}{Suppressing folios}%
1004 \fi}{\ClassError{\@classname}{printfolios must be true or false}}

\settopmatter The usual syntactic sugar
1005 \def\settopmatter#1{\setkeys{@ACM@topmatter@}{#1}}

Now the settings
1006 \settopmatter{printcss=true, printacmref=true}
1007 \if@ACM@manuscript
1008 \settopmatter{printfolios=true}
1009 \else
1010 \if@ACM@journal
1011 \settopmatter{printfolios=true}
1012 \else
1013 \settopmatter{printfolios=false}
1014 \fi
1015 \fi

\@received The container for the paper history
1016 \def\@received{}

\received The \received command
1017 \newcommand\received[2][\def\@tempa{#1}%
1018 \ifx\@tempa\@empty
1019 \ifx\@received\@empty
1020 \gdef\@received{Received #2}%
1021 \else
1022 \g@addto@macro{\@received}{; revised #2}%
1023 \fi
1024 \else
1025 \ifx\@received\@empty
1026 \gdef\@received{#1 #2}%
1027 \else
1028 \g@addto@macro{\@received}{; #1 #2}%
1029 \fi
1030 \fi}
1031 \AtEndDocument{%
1032 \ifx\@received\@empty\else
1033 \par\bigskip\noindent\small\normalfont\@received\par
1034 \fi}

```

3.10 Concepts system

We exclude CCSXML stuff generated by the ACM system:

```

1035 \RequirePackage{comment}
1036 \excludecomment{CCSXML}

\@concepts This is the storage macro for concepts
1037 \let\@concepts\@empty

\ccsdesc The first argument is the significance, the second is the concept(s)
1038 \newcommand\ccsdesc[2][100]{%
1039   \ccsdesc@parse#1~#2~}

\ccsdesc@parse The parser of the expression Significance~General~Specific:
1040 \def\ccsdesc@parse#1~#2~#3~{%
1041   \expandafter\ifx\csname CCS@#2\endcsname\relax
1042     \expandafter\gdef\csname CCS@#2\endcsname{\textbullet\textbf{#2} $\to$ }%
1043     \g@addto@macro{\@concepts}{\csname CCS@#2\endcsname}\fi
1044     \expandafter\g@addto@macro\expandafter{\csname CCS@#2\endcsname}{%
1045       \ifnum#1>499\textbf{#3; }else
1046       \ifnum#1>299\textit{#3; }\else
1047       #3; \fi\fi}}

```

3.11 Copyright system

This is from acmcopyright.sty

```

\if@printcopyright A flag whether to print copyright symbol
1048 \newif\if@printcopyright
1049 \@printcopyrighttrue

\if@printpermission Whether to print permission block
1050 \newif\if@printpermission
1051 \@printpermissiontrue

\if@acmowned Whether ACM owns the rights to the paper
1052 \newif\if@acmowned
1053 \@acmownedtrue

Keys:
1054 \define@choicekey*{ACM@}{acmcopyrightmode}[%
1055   \acm@copyrightinput\acm@copyrightmode]{none,acmcopyright,acmlicensed,%
1056   rightsretained,usgov,usgovmixed,cagov,cagovmixed,%
1057   licensedusgovmixed,licensedcagovmixed,othergov,licensedothergov}{%
1058   \@printpermissiontrue
1059   \@printcopyrighttrue
1060   \@acmownedtrue
1061   \ifnum\acm@copyrightmode=0\relax % none
1062   \@printpermissionfalse
1063   \@printcopyrightfalse
1064   \@acmownedfalse
1065   \fi

```

```

1066 \ifnum\acm@copyrightmode=2\relax % acmlicensed
1067 \@acmownedfalse
1068 \fi
1069 \ifnum\acm@copyrightmode=3\relax % rightsretained
1070 \@acmownedfalse
1071 \fi
1072 \ifnum\acm@copyrightmode=4\relax % usgov
1073 \@printpermissiontrue
1074 \@printcopyrightfalse
1075 \@acmownedfalse
1076 \fi
1077 \ifnum\acm@copyrightmode=6\relax % cagov
1078 \@acmownedfalse
1079 \fi
1080 \ifnum\acm@copyrightmode=8\relax % licensedusgovmixed
1081 \@acmownedfalse
1082 \fi
1083 \ifnum\acm@copyrightmode=9\relax % licensedcagovmixed
1084 \@acmownedfalse
1085 \fi
1086 \ifnum\acm@copyrightmode=10\relax % othergov
1087 \@acmownedtrue
1088 \fi
1089 \ifnum\acm@copyrightmode=11\relax % licensedothergov
1090 \@acmownedfalse
1091 \fi}

```

\setcopyright This is the syntactic sugar around setting keys.

```

1092 \def\setcopyright#1{\setkeys{ACM@}{acmcopyrightmode=#1}}
1093 \setcopyright{acmcopyright}

```

\@copyrightowner Here is the owner of the copyright

```

1094 \def\@copyrightowner{%
1095 \ifcase\acm@copyrightmode\relax % none
1096 \or % acmcopyright
1097 ACM\@.
1098 \or % acmlicensed
1099 Copyright held by the owner/author(s). Publication rights licensed to
1100 ACM\@.
1101 \or % rightsretained
1102 Copyright held by the owner/author(s).
1103 \or % usgov
1104 \or % usgovmixed
1105 ACM\@.
1106 \or % cagov
1107 Crown in Right of Canada.
1108 \or %cagovmixed
1109 ACM\@.
1110 \or %licensedusgovmixed
1111 Copyright held by the owner/author(s). Publication rights licensed to

```

```

1112 ACM\@.
1113 \or %licensedcagovmixed
1114 Copyright held by the owner/author(s). Publication rights licensed to
1115 ACM\@.
1116 \or % othergov
1117 ACM\@.
1118 \or % licensedothergov
1119 Copyright held by the owner/author(s). Publication rights licensed to
1120 ACM\@.
1121 \fi}

```

\@formatdoi Print a clickable doi

```

1122 \def\@formatdoi#1{\url{http://dx.doi.org/#1}}

```

\@copyrightpermission The canned permission block.

```

1123 \def\@copyrightpermission{%
1124   \ifcase\acm@copyrightmode\relax % none
1125   \or % acmcopyright
1126     Permission to make digital or hard copies of all or part of this
1127     work for personal or classroom use is granted without fee provided
1128     that copies are not made or distributed for profit or commercial
1129     advantage and that copies bear this notice and the full citation on
1130     the first page. Copyrights for components of this work owned by
1131     others than ACM must be honored. Abstracting with credit is
1132     permitted. To copy otherwise, or republish, to post on servers or to
1133     redistribute to lists, requires prior specific permission
1134     and\hspace*{.5pt}/or a fee. Request permissions from
1135     permissions@acm.org.
1136   \or % acmlicensed
1137     Permission to make digital or hard copies of all or part of this
1138     work for personal or classroom use is granted without fee provided
1139     that copies are not made or distributed for profit or commercial
1140     advantage and that copies bear this notice and the full citation on
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1142     others than the author(s) must be honored. Abstracting with credit
1143     is permitted. To copy otherwise, or republish, to post on servers
1144     or to redistribute to lists, requires prior specific permission
1145     and\hspace*{.5pt}/or a fee. Request permissions from
1146     permissions@acm.org.
1147   \or % rightsretained
1148     Permission to make digital or hard copies of part or all of this work
1149     for personal or classroom use is granted without fee provided that
1150     copies are not made or distributed for profit or commercial advantage
1151     and that copies bear this notice and the full citation on the first
1152     page. Copyrights for third-party components of this work must be
1153     honored. For all other uses, contact the
1154     owner\hspace*{.5pt}/author(s).
1155   \or % usgov
1156     This paper is authored by an employee(s) of the United States
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```


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1160 source.

1161 \or % usgovmixed

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1173 \or % cagov

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```

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1222 or affiliate of a national government. As such, the Government
1223 retains a nonexclusive, royalty-free right to publish or reproduce
1224 this article, or to allow others to do so, for Government purposes
1225 only.
1226 \fi}

\copyrightyear By default, the copyright year is the same as \acmYear, but one can override this:
1227 \def\copyrightyear#1{\def\@copyrightyear{#1}}
1228 \copyrightyear{\@acmYear}

\@teaserfigures The teaser figures container
1229 \def\@teaserfigures{}

teaserfigure The teaser figure
1230 \newenvironment{teaserfigure}{\Collect@Body\@saveteaser}{}

\@saveteaser Saving the teaser
1231 \long\def\@saveteaser#1{\g@addto@macro\@teaserfigures{\@teaser{#1}}}

\thanks We redefine amsart \thanks, so the anonymous key works
1232 \renewcommand{\thanks}[1]{%
1233   \@ifnotempty{#1}{%
1234     \if@ACM@anonymous
1235       \g@addto@macro\thankses{\thanks{A note}}%
1236     \else
1237       \g@addto@macro\thankses{\thanks{#1}}%
1238     \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>].
1239 \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 copyright/permission block. By the way, this was the default behavior of the old ACM classes.

```

1240 \def\maketitle{%
1241   \if@ACM@anonymous
1242     % Anonymize omission of \author-s
1243     \ifnum\num@authorgroups=0\author{}\fi
1244   \fi
1245   \begingroup
1246   \let\@footnotemark\@footnotemark@nolink
1247   \let\@footnotetext\@footnotetext@nolink
1248   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
1249   \@topnum\z@ % this prevents figures from falling at the top of page
1250               % 1
1251   \hsize=\textwidth
1252   \def\@makefnmark{\hbox{\@textsuperscript{\@thefnmark}}}
1253   \mktitle\if@ACM@sigchiamode\else\mkauthors\fi\mkteasers
1254   \@printtopmatter
1255   \if@ACM@sigchiamode\mkauthors\fi
1256   \setcounter{footnote}{0}%
1257   \def\@makefnmark{\hbox{\@textsuperscript{\normalfont\@thefnmark}}}
1258   \@titlenotes
1259   \@subtitlenotes
1260   \@authornotes
1261   \let\@makefnmark\relax \let\@thefnmark\relax
1262   \let\@makefntext\@noindent
1263   \ifx\@empty\thankses\else
1264     \footnotetextcopyrightpermission{%
1265       \def\par{\let\par\@par}\parindent\z@\@setthanks}%
1266   \fi
1267   \footnotetextcopyrightpermission{\parindent\z@\parskip0.1\baselineskip
1268   \if@ACM@authorversion\else
1269     \ifprintpermission\@copyrightpermission\par\fi
1270   \fi
1271   \if@ACM@manuscript\else
1272     \if@ACM@journal\else % Print the conference short name
1273       {\itshape \acmConference@shortname, \acmConference@venue}\par
1274     \fi
1275   \fi
1276   \ifprintcopyright
1277     \copyright\ @copyrightyear\ \@copyrightowner\
1278   \else
1279     \@copyrightyear.\
1280   \fi
1281   \if@ACM@manuscript
1282     Manuscript submitted to ACM\
1283   \else
1284     \if@ACM@authorversion

```

```

1285     This is the author's version of the work. It is posted here for
1286     your personal use. Not for redistribution. The definitive Version
1287     of Record was published in
1288     \if@ACM@journal
1289         \emph{\@journalName}%
1290     \else
1291         \emph{Proceedings of \acmConference@name, \acmConference@date}%
1292     \fi
1293     \ifx\@acmDOI\@empty
1294         .
1295     \else
1296         , \@formatdoi{\@acmDOI}.
1297     \fi\
1298 \else
1299     \if@ACM@journal
1300         \@permissionCodeOne/\@acmYear/\@acmMonth-ART\@acmArticle\
1301         \$\@acmPrice\
1302         DOI: \nolinkurl{\@acmDOI}%
1303     \else % Conference
1304         \@acmISBN
1305         \ifx\@acmPrice\@empty.\else\dots\$\@acmPrice\fi\
1306         DOI: \nolinkurl{\@acmDOI}%
1307     \fi
1308 \fi
1309 \fi}%
1310 \endgroup
1311 \setcounter{footnote}{0}%
1312 \@mkabstract
1313 \if@ACM@printcss
1314     \ifx\@concepts\@empty\else\bgroup
1315         {\@specialsection{CCS Concepts}%
1316         \@concepts\par}\egroup
1317     \fi
1318 \fi
1319 \if\@terms\@empty\else\bgroup
1320     {\@specialsection{General Terms}%
1321     \@terms\par}\egroup
1322 \fi
1323 \ifx\@keywords\@empty\else\bgroup
1324     {\if@ACM@journal
1325         \@specialsection{Additional Key Words and Phrases}%
1326     \else
1327         \@specialsection{Keywords}%
1328     \fi
1329     \@keywords}\par\egroup
1330 \fi
1331 \andify\authors
1332 \andify\shortauthors
1333 \global\let\authors=\authors
1334 \global\let\shortauthors=\shortauthors

```

```

1335 \if@ACM@printacmref
1336   \@mkbibcitation
1337 \fi
1338 \hypersetup{pdfauthor={\authors},
1339   pdftitle={\@title}, pdfkeywords={\@concepts}}%
1340 \@printendtopmatter
1341 \@afterindentfalse
1342 \@afterheading
1343 }

```

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

```

1344 \def\@specialsection#1{%
1345   \ifcase\ACM@format@nr
1346   \relax % manuscript
1347   \par\medskip\small\noindent#1: %
1348   \or % acmsmall
1349   \par\medskip\small\noindent#1: %
1350   \or % acmlarge
1351   \par\medskip\small\noindent#1: %
1352   \or % acmtog
1353   \par\medskip\small\noindent#1: %
1354   \or % sigconf
1355   \section*{#1}%
1356   \or % siggraph
1357   \section*{#1}%
1358   \or % sigplan
1359   \paragraph*{#1}%
1360   \or % sigchi
1361   \section*{#1}%
1362   \or % sigchi-a
1363   \section*{#1}%
1364   \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 `\mkttitle` since we want them on the margins.

```

1365 \def\@printtopmatter{%
1366   \ifx\@startPage\@empty
1367     \gdef\@startPage{1}%
1368   \else
1369     \setcounter{page}{\@startPage}%
1370   \fi
1371   \thispagestyle{firstpagestyle}%
1372   \noindent
1373   \ifcase\ACM@format@nr
1374   \relax % manuscript
1375   \box\mkttitle@bx\par
1376   \noindent\hrulefill\par
1377   \or % acmsmall

```

```

1378 \box\mktitle@bx\par
1379 \noindent\hrulefill\par
1380 \or % acmlarge
1381 \box\mktitle@bx\par
1382 \noindent\hrulefill\par
1383 \or % acmtog
1384 \twocolumn[\box\mktitle@bx]%
1385 \or % sigconf
1386 \twocolumn[\box\mktitle@bx]%
1387 \or % siggraph
1388 \twocolumn[\box\mktitle@bx]%
1389 \or % sigplan
1390 \twocolumn[\box\mktitle@bx]%
1391 \or % sigchi
1392 \twocolumn[\box\mktitle@bx]%
1393 \or % sigchi-a
1394 \par\box\mktitle@bx\par\bigskip
1395 \if@ACM@badge
1396 \marginpar{\noindent
1397 \ifx\@acmBadgeL@image\empty\else
1398 \href{\@acmBadgeL@url}{%
1399 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeL@image}}%
1400 \hskip\@ACM@badge@skip
1401 \fi
1402 \ifx\@acmBadgeR@image\empty\else
1403 \href{\@acmBadgeR@url}{%
1404 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}%
1405 \fi}%
1406 \fi
1407 \fi
1408 }

```

\@mktitle The title of the article

```

1409 \def\@mktitle{%
1410 \ifcase\ACM@format@nr
1411 \relax % manuscript
1412 \@mktitle@i
1413 \or % acmsmall
1414 \@mktitle@i
1415 \or % acmlarge
1416 \@mktitle@i
1417 \or % acmtog
1418 \@mktitle@i
1419 \or % sigconf
1420 \@mktitle@iii
1421 \or % siggraph
1422 \@mktitle@iii
1423 \or % sigplan
1424 \@mktitle@iii
1425 \or % sigchi

```

```

1426     \@mktitle@iii
1427     \or % sigchi-a
1428     \@mktitle@iv
1429     \fi
1430 }

\@titlefont The font to typeset title
1431 \def\@titlefont{%
1432   \ifcase\ACM@format@nr
1433   \relax % manuscript
1434   \LARGE\bfseries\sffamily
1435   \or % acmsmall
1436   \LARGE\bfseries\sffamily
1437   \or % acmlarge
1438   \LARGE\bfseries\sffamily
1439   \or % acmtog
1440   \Huge\sffamily
1441   \or % sigconf
1442   \Huge\sffamily\bfseries
1443   \or % siggraph
1444   \Huge\sffamily\bfseries
1445   \or % sigplan
1446   \Huge\bfseries
1447   \or % sigchi
1448   \Huge\sffamily\bfseries
1449   \or % sigchi-a
1450   \Huge\bfseries
1451   \fi}

\@subtitlefont The font to typeset title
1452 \def\@subtitlefont{%
1453   \ifcase\ACM@format@nr
1454   \relax % manuscript
1455   \mdseries
1456   \or % acmsmall
1457   \mdseries
1458   \or % acmlarge
1459   \mdseries
1460   \or % acmtog
1461   \LARGE
1462   \or % sigconf
1463   \LARGE\mdseries
1464   \or % siggraph
1465   \LARGE\mdseries
1466   \or % sigplan
1467   \LARGE\mdseries
1468   \or % sigchi
1469   \LARGE\mdseries
1470   \or % sigchi-a
1471   \mdseries

```

```

1472 \fi}

\mktitle@i The version of \mktitle for most journals
1473 \def\mktitle@i{\hsize=\textwidth
1474 \ACM@title@width=\hsize
1475 \ifx\acmBadgeL@image\empty\else
1476 \advance\ACM@title@width by -\ACM@badge@width
1477 \advance\ACM@title@width by -\ACM@badge@skip
1478 \fi
1479 \ifx\acmBadgeR@image\empty\else
1480 \advance\ACM@title@width by -\ACM@badge@width
1481 \advance\ACM@title@width by -\ACM@badge@skip
1482 \fi
1483 \setbox\mktitle@bx=\vbox{\noindent\@titlefont
1484 \ifx\acmBadgeL@image\empty\else
1485 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeL@url}{%
1486 \includegraphics[width=\ACM@badge@width]{\acmBadgeL@image}}}%
1487 \hskip\ACM@badge@skip
1488 \fi
1489 \parbox[t]{\ACM@title@width}{\raggedright
1490 \@titlefont\noindent
1491 \@title
1492 \ifx\@subtitle\empty\else
1493 \par\noindent{\@subtitlefont\@subtitle}
1494 \fi}%
1495 \ifx\acmBadgeR@image\empty\else
1496 \hskip\ACM@badge@skip
1497 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeR@url}{%
1498 \includegraphics[width=\ACM@badge@width]{\acmBadgeR@image}}}%
1499 \fi
1500 \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.
1501 \def\mktitle@iii{\hsize=\textwidth
1502 \setbox\mktitle@bx=\vbox{\@titlefont\centering
1503 \ACM@title@width=\hsize
1504 \if\ACM@badge
1505 \advance\ACM@title@width by -2\ACM@badge@width
1506 \advance\ACM@title@width by -2\ACM@badge@skip
1507 \parbox[b]{\ACM@badge@width}{\strut
1508 \ifx\acmBadgeL@image\empty\else
1509 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\acmBadgeL@url}{%
1510 \includegraphics[width=\ACM@badge@width]{\acmBadgeL@image}}}%
1511 \fi}%
1512 \hskip\ACM@badge@skip
1513 \fi
1514 \parbox[t]{\ACM@title@width}{\centering\@titlefont

```



```

1515 \title
1516 \ifx\@subtitle\empty\else
1517 \par\noindent{\@subtitlefont\@subtitle}
1518 \fi
1519 }%
1520 \if@ACM@badge
1521 \hskip\@ACM@badge@skip
1522 \parbox[b]{\@ACM@badge@width}{\strut
1523 \ifx\@acmBadgeR@image\empty\else
1524 \raisebox{-.5\baselineskip}[\z@][\z@]{\href{\@acmBadgeR@url}{%
1525 \includegraphics[width=\@ACM@badge@width]{\@acmBadgeR@image}}}%
1526 \fi}%
1527 \fi
1528 \par\bigskip}}%

```

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

```

1529 \def\@mktitle@iv{\hsize=\textwidth
1530 \setbox\mktitle@bx=\vbox{\raggedright\leftskip5pc\@titlefont
1531 \noindent\leavevmode\leaders\hrule height 2pt\hfill\kern0pt\par
1532 \noindent\@title
1533 \ifx\@subtitle\empty\else
1534 \par\noindent\@subtitlefont\@subtitle
1535 \fi
1536 \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.

```

1537 \newbox\@ACM@commabox
1538 \def\@ACM@addtoaddress#1{%
1539 \ifvmode\else
1540 \setbox\@ACM@commabox=\hbox{, }%
1541 \unskip\cleaders\copy\@ACM@commabox\hskip\wd\@ACM@commabox
1542 \fi
1543 #1}

```

\institution Theoretically we can define the macros for \@affiliation inside the \@mkauthors-style commands. However, this would lead to a strange error if an author uses them outside
\position
\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 1544 \if@ACM@journal
\state 1545 \let\position\@gobble
\postcode 1546 \def\institution#1{#1\ignorespaces}%
\country 1547 \let\department\@gobble

```

```

1548 \let\streetaddress\@gobble
1549 \let\city\@gobble
1550 \let\state\@gobble
1551 \let\postcode\@gobble
1552 \let\country\@gobble
1553 \else
1554 \def\position#1{#1\par}%
1555 \def\institution#1{#1\par}%
1556 \def\department#1{#1\par}%
1557 \def\streetaddress#1{#1\par}%
1558 \let\city\@ACM@addtoaddress
1559 \let\state\@ACM@addtoaddress
1560 \def\postcode#1{\unskip\space#1}%
1561 \let\country\@ACM@addtoaddress
1562 \fi

```

\@mkauthors Typesetting authors

```

1563 \def\@mkauthors{\begingroup
1564   \hsize=\textwidth
1565   \ifcase\ACM@format@nr
1566   \relax % manuscript
1567     \@mkauthors@i
1568   \or % acmsmall
1569     \@mkauthors@i
1570   \or % acmlarge
1571     \@mkauthors@i
1572   \or % acmtog
1573     \@mkauthors@i
1574   \or % sigconf
1575     \@mkauthors@iii
1576   \or % siggraph
1577     \@mkauthors@iii
1578   \or % sigplan
1579     \@mkauthors@iii
1580   \or % sigchi
1581     \@mkauthors@iii
1582   \or % sigchi-a
1583     \@mkauthors@iv
1584   \fi
1585 \endgroup
1586 }

```

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

```

1587 \def\@authorfont{\Large\sffamily}

```

\@affiliationfont Font for affiliations

```

1588 \def\@affiliationfont{\normalsize\normalfont}

```

Adjusting fonts for different formats

```

1589 \ifcase\ACM@format@nr
1590 \relax % manuscript
1591 \or % acmsmall
1592   \def\@authorfont{\large\sffamily}
1593   \def\@affiliationfont{\small\normalfont}
1594 \or % acmlarge
1595 \or % acmtog
1596   \def\@authorfont{\LARGE\sffamily}
1597   \def\@affiliationfont{\large}
1598 \or % sigconf
1599   \def\@authorfont{\LARGE}
1600   \def\@affiliationfont{\large}
1601 \or % siggraph
1602   \def\@authorfont{\normalsize\normalfont}
1603   \def\@affiliationfont{\normalsize\normalfont}
1604 \or % sigplan
1605   \def\@authorfont{\Large\normalfont}
1606   \def\@affiliationfont{\normalsize\normalfont}
1607 \or % sigchi
1608   \def\@authorfont{\bfseries}
1609   \def\@affiliationfont{\mdseries}
1610 \or % sigchi-a
1611   \def\@authorfont{\bfseries}
1612   \def\@affiliationfont{\mdseries}
1613 \fi

```

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

```

1614 \def\@typeset@author@line{%
1615   \andify\@currentauthors\par\noindent
1616   \@currentauthors\def\@currentauthors{}%
1617   \ifx\@currentaffiliations\@empty\else
1618     \andify\@currentaffiliations
1619     \unskip, {\@currentaffiliations}\par
1620   \fi
1621   \def\@currentaffiliations{}}

```

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

```

1622 \def\@mkauthors@i{%
1623   \def\@currentauthors{}%
1624   \def\@currentaffiliations{}%
1625   \global\let\and\@typeset@author@line
1626   \def\@author##1{%
1627     \ifx\@currentauthors\@empty
1628       \gdef\@currentauthors{\@authorfont\MakeUppercase{##1}}%
1629     \else
1630       \g@addto@macro{\@currentauthors}{\and\MakeUppercase{##1}}%
1631     \fi

```

```

1632 \gdef\and{}}%
1633 \def\email##1##2{%
1634 \def\affiliation##1##2{%
1635 \def\@tempa{##2}\ifx\@tempa\@empty\else
1636 \ifx\@currentaffiliations\@empty
1637 \gdef\@currentaffiliations{\@affiliationfont##2}%
1638 \else
1639 \g@addto@macro{\@currentaffiliations}{\and##2}%
1640 \fi
1641 \fi
1642 \global\let\and\@typeset@author@line}
1643 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par\medskip
1644 \noindent\addresses\@typeset@author@line
1645 \par\medskip}%
1646 }

```

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

\author@bx The box to put individual author to
1647 \newbox\author@bx

\author@bx@wd The width of the author box
1648 \newdimen\author@bx@wd

\author@bx@sep The separation between the author boxes
1649 \newskip\author@bx@sep
1650 \author@bx@sep=1pc\relax

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

```

1651 \def\@typeset@author@bx{\bgroup\hsize=\author@bx@wd\def\and{\par}%
1652 \global\setbox\author@bx=\vtop{\if@ACM@sigchiamode\else\centering\fi
1653 \@authorfont\@currentauthors\par\@affiliationfont
1654 \@currentaffiliation}\egroup
1655 \box\author@bx\hspace{\author@bx@sep}%
1656 \gdef\@currentauthors{}}%
1657 \gdef\@currentaffiliation{}}

```

\mkauthors@iii The sigconf version. Here we use centered design with each author in a separate box.
1658 \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.

```

1659 \author@bx@wd=\textwidth\relax
1660 \advance\author@bx@wd by -\author@bx@sep\relax
1661 \ifcase\num@authorgroups
1662 \relax % 0?
1663 \or % 1=one author per row

```

```

1664 \or % 2=two authors per row
1665     \divide\author@bx@wd by \num@authorgroups\relax
1666 \or % 3=three authors per row
1667     \divide\author@bx@wd by \num@authorgroups\relax
1668 \or % 4=two authors per row (!)
1669     \divide\author@bx@wd by 2\relax
1670 \else % three authors per row
1671     \divide\author@bx@wd by 3\relax
1672 \fi
1673 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

1674 \gdef\@currentauthors{}%
1675 \gdef\@currentaffiliation{}%
1676 \def\@author##1{\ifx\@currentauthors\@empty
1677     \gdef\@currentauthors{\par##1}%
1678 \else
1679     \g@addto@macro\@currentauthors{\par##1}%
1680 \fi
1681 \gdef\and{}}%
1682 \def\email##1##2{\ifx\@currentaffiliation\@empty
1683     \gdef\@currentaffiliation{\nolinkurl{##2}}%
1684 \else
1685     \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
1686 \fi}%
1687 \def\affiliation##1##2{\ifx\@currentaffiliation\@empty
1688     \gdef\@currentaffiliation{##2}%
1689 \else
1690     \g@addto@macro\@currentaffiliation{\par##2}%
1691 \fi
1692 \global\let\and\@typeset@author@bx
1693 }%

```

Actual typesetting is done by \and macro:

```

1694 \hsize=\textwidth
1695 \global\setbox\mktitle@bx=\vbox{\noindent
1696     \box\mktitle@bx\par\medskip\leavevmode
1697     \lineskip=1pc\relax\centering\hspace*{-1em}%
1698     \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.

```

1699 \def\@mkauthors@iv{%

```

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

```

1700 \author@bx@wd=\columnwidth\relax
1701 \advance\author@bx@wd by -\author@bx@sep\relax

```

```

1702 \ifcase\num@authorgroups
1703 \relax % 0?
1704 \or % 1=one author per row
1705 \else % 2=two authors per row
1706 \divide\author@bx@wd by 2\relax
1707 \fi
1708 \advance\author@bx@wd by -\author@bx@sep\relax

```

Now, parsing of \addresses:

```

1709 \gdef\@currentauthors{}%
1710 \gdef\@currentaffiliation{}%
1711 \def\author##1{\ifx\@currentauthors\empty
1712 \gdef\@currentauthors{\par##1}%
1713 \else
1714 \g@addto@macro\@currentauthors{\par##1}%
1715 \fi
1716 \gdef\and{}}%
1717 \def\email##1##2{\ifx\@currentaffiliation\empty
1718 \gdef\@currentaffiliation{\nolinkurl{##2}}%
1719 \else
1720 \g@addto@macro\@currentaffiliation{\par\nolinkurl{##2}}%
1721 \fi}%
1722 \def\affiliation##1##2{\ifx\@currentaffiliation\empty
1723 \gdef\@currentaffiliation{##2}%
1724 \else
1725 \g@addto@macro\@currentaffiliation{\par##2}%
1726 \fi
1727 \global\let\and\@typeset@author@bx}%
1728 %

```

Actual typesetting is done by \and macro

```

1729 \bgroup\hsize=\columnwidth
1730 \par\raggedright\leftskip=\z@
1731 \lineskip=1pc\noindent
1732 \addresses\let\and\@typeset@author@bx\and\par\bigskip\egroup}

```

\@authornotemark Adding footnotemark to authors

```

1733 \def\@authornotemark{\g@addto@macro\@currentauthors{\footnotemark}}

```

\@mkteasers Typesetting teasers

```

1734 \def\@mkteasers{%
1735 \ifx\@teaserfigures\empty\else
1736 \def\@teaser##1{\par\bigskip\bgroup
1737 \captionsetup{type=figure}##1\egroup\par}
1738 \global\setbox\mktitle@bx=\vbox{\noindent\box\mktitle@bx\par
1739 \noindent\@teaserfigures\par\medskip}%
1740 \fi}

```

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

```

1741 \def\@setaddresses{}

```

\@mkabstract Typesetting abstract

```
1742 \def\@mkabstract{\bgroup
1743   \ifx\@abstract\@empty\else
1744   {\if@ACM@journal
1745     \small\noindent
1746     \else
1747     \section*{Abstract}%
1748     \fi
1749     \@abstract\par}%
1750   \fi\egroup}
```

\@mkbibcitation Print bibcitation format

```
1751 \def\@mkbibcitation{\bgroup
1752   \def\footnotemark{}%
1753   \par\medskip\small\noindent{\bfseries ACM Reference format:}\par\nobreak
1754   \noindent\authors. \@acmYear. \@title.
1755   \if@ACM@journal
1756     \textit{\@journalNameShort}
1757     \@acmVolume, \@acmNumber, Article~\@acmArticle\ (\@acmPubDate),
1758     \ref{TotPages}~pages.
1759   \else
1760     In \textit{Proceedings of \@acmConference@name, \@acmConference@venue,
1761       \@acmConference@date
1762       \ifx\@acmConference@name\@acmConference@shortname\else
1763         \ (\@acmConference@shortname)\fi
1764       ,} \ref{TotPages}~pages.
1765   \fi\par
1766   \noindent DOI: \nolinkurl{\@acmDOI}
1767 \par\egroup}
```

\@printendtopmatter End the top matter

```
1768 \def\@printendtopmatter{\par\medskip
1769   \ifcase\ACM@format@nr
1770   \relax % manuscript
1771   \noindent\hrulefill\par\medskip
1772   \or % acmsmall
1773   \noindent\hrulefill\par\medskip
1774   \or % acmlarge
1775   \noindent\hrulefill\par\medskip
1776   \or % acmtog
1777   \par\bigskip
1778   \or % sigconf
1779   \par\bigskip
1780   \or % siggraph
1781   \par\bigskip
1782   \or % sigplan
1783   \par\bigskip
1784   \or % sigchi
1785   \par\bigskip
```

```

1786 \or % sigchi-a
1787 \fi
1788 }

```

\@setthanks We redefine \@setthanks using \long

```

1789 \def\@setthanks{\long\def\thanks##1{\par##1\@addpunct.}\thankses}

```

3.13 Headers and Footers

We use fancyhdr for our headers and footers:

```

1790 \RequirePackage{fancyhdr}

```

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

```

1791 \if@ACM@review
1792 \newsavebox{\ACM@linecount@bx}
1793 \savebox{\ACM@linecount@bx}[4em][t]{\parbox[t]{4em}{%
1794 \newlength\ACM@linecount@bxht\setlength{\ACM@linecount@bxht}{-\baselineskip}
1795 \@tempcnta\@ne\relax
1796 \loop{\color{ACMRed}\scriptsize\the\@tempcnta}\@ne
1797 \advance\@tempcnta by \@ne
1798 \addtolength{\ACM@linecount@bxht}{\baselineskip}
1799 \ifdim\ACM@linecount@bxht<\textheight\repeat}}
1800 \fi

```

\ACM@linecount How to display the box

```

1801 \def\ACM@linecount{%
1802 \if@ACM@review
1803 \begin{picture}(0,0)%
1804 \put(-26,-22){\usebox{\ACM@linecount@bx}}%
1805 \end{picture}%
1806 \fi}

```

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

```

1807 \def\@shortauthors{\if@ACM@anonymous Anon.\else\shortauthors\fi}

```

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

```

1808 \def\@headfootfont{%
1809 \ifcase\ACM@format@nr
1810 \relax % manuscript
1811 \sffamily
1812 \or % acmsmall
1813 \sffamily
1814 \or % acmlarge
1815 \sffamily
1816 \or % acmtog
1817 \sffamily
1818 \or % sigconf

```



```

1819 \sffamily
1820 \or % siggraph
1821 \sffamily
1822 \or % sigplan
1823 \sffamily
1824 \or % sigchi
1825 \sffamily
1826 \or % sigchi-a
1827 \sffamily
1828 \fi}

```

standardpagestyle The pagestyle for all pages but the first one

```

1829 \fancypagestyle{standardpagestyle}{%
1830 \fancyhf{}%
1831 \renewcommand{\headrulewidth}{\z@}%
1832 \renewcommand{\footrulewidth}{\z@}%
1833 \ifcase\ACM@format@nr
1834 \relax % manuscript
1835 \fancyhead[LE]{\ACM@linecount\if@ACM@printfolios\thepage\fi}%
1836 \fancyhead[RO]{\if@ACM@printfolios\thepage\fi}%
1837 \fancyhead[RE]{\@shortauthors}%
1838 \fancyhead[LO]{\ACM@linecount\shorttitle}%
1839 \fancyfoot[RO,LE]{\footnotesize Manuscript submitted to ACM}%
1840 \or % acmsmall
1841 \fancyhead[LE]{\ACM@linecount\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1842 \fancyhead[RO]{\@headfootfont\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1843 \fancyhead[RE]{\@headfootfont\@shortauthors}%
1844 \fancyhead[LO]{\ACM@linecount\@headfootfont\shorttitle}%
1845 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1846 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1847 \or % acmlarge
1848 \fancyhead[LE]{\ACM@linecount\@headfootfont
1849 \@acmArticle:\if@ACM@printfolios\thepage\quad\textbullet\quad\fi\@shortauthors}%
1850 \fancyhead[LO]{\ACM@linecount}%
1851 \fancyhead[RO]{\@headfootfont
1852 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1853 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1854 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1855 \or % acmtog
1856 \fancyhead[LE]{\ACM@linecount\@headfootfont
1857 \@acmArticle:\if@ACM@printfolios\thepage\quad\textbullet\quad\fi\@shortauthors}%
1858 \fancyhead[LO]{\ACM@linecount}%
1859 \fancyhead[RO]{\@headfootfont
1860 \shorttitle\quad\textbullet\quad\@acmArticle\if@ACM@printfolios:\thepage\fi}%
1861 \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1862 \@acmNumber, Article \@acmArticle. Publication date: \@acmPubDate.}%
1863 \else % Proceedings
1864 \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
1865 \fancyhead[LO]{\ACM@linecount\@headfootfont\shorttitle}%
1866 \fancyhead[RE]{\@headfootfont\@shortauthors}%

```

```

1867 \fancyhead[LE]{\ACM@linecount\@headfootfont\acmConference@shortname,
1868 \acmConference@date, \acmConference@venue}%
1869 \fancyhead[RO]{\@headfootfont\acmConference@shortname,
1870 \acmConference@date, \acmConference@venue}%
1871 \fi
1872 \if@ACM@sigchiamode
1873 \fancyheadoffset[L]{\dimexpr(\marginparsep+\marginparwidth)}%
1874 \fi
1875 }
1876 \pagestyle{standardpagestyle}

\@folio@wd Folio blob width, height, offsets and max number
\@folio@ht
\@folio@voffset
\@folio@max
1877 \newdimen\@folio@wd
1878 \@folio@wd=\z@
1879 \newdimen\@folio@ht
1880 \@folio@ht=\z@
1881 \newdimen\@folio@voffset
1882 \@folio@voffset=\z@
1883 \def\@folio@max{1}
1884 \ifcase\ACM@format@nr
1885 \relax % manuscript
1886 \or % acmsmall
1887 \@folio@wd=45.75pt\relax
1888 \@folio@ht=1.25in\relax
1889 \@folio@voffset=.2in\relax
1890 \def\@folio@max{8}
1891 \or % acmlarge
1892 \@folio@wd=43.25pt\relax
1893 \@folio@ht=79pt\relax
1894 \@folio@voffset=.55in\relax
1895 \def\@folio@max{10}
1896 \fi

\@folioblob The macro to typeset the folio blob.
1897 \def\@folioblob{\@tempcnta=\@acmArticleSeq\relax
First, we calculate \@acmArticleSeq modulo \@folio@max
1898 \loop
1899 \ifnum\@tempcnta>\@folio@max\relax
1900 \advance\@tempcnta by - \@folio@max
1901 \repeat
1902 \advance\@tempcnta by -1\relax
1903 \@tempdima=\@folio@ht\relax
1904 \multiply\@tempdima by \the\@tempcnta\relax
1905 \advance\@tempdima by -\@folio@voffset\relax
1906 \begin{picture}(0,0)
1907 \makebox[\z@]{\raisebox{-\@tempdima}{%
1908 \rlap{%
1909 \raisebox{-0.45\@folio@ht}{\z@}\z@}{%
1910 \rule{\@folio@wd}{\@folio@ht}}}%

```

```

1911      \parbox{\@folio@wd}{%
1912      \centering
1913      \textcolor{white}{\LARGE\bfseries\sffamily\@acmArticle}}}}
1914 \end{picture}}
1915

```

firstpagestyle The pagestyle for the first page only.

```

1916 \fancypagestyle{firstpagestyle}{%
1917   \fancyhf{}%
1918   \renewcommand{\headrulewidth}{\z@}%
1919   \renewcommand{\footrulewidth}{\z@}%
1920   \ifcase\ACM@format@nr
1921   \relax % manuscript
1922     \fancyhead[L]{\ACM@linecount}%
1923     \fancyfoot[RO,LE]{\if@ACM@printfolios\small\thepage\fi}%
1924     \fancyfoot[RE,LO]{\footnotesize Manuscript submitted to ACM}%
1925   \or % acmsmall
1926     \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1927     \@acmNumber, Article \@acmArticle. Publication date:
1928     \@acmPubDate.}%
1929     \fancyhead[LE]{\ACM@linecount\@folioblob}%
1930     \fancyhead[LO]{\ACM@linecount}%
1931     \fancyhead[RO]{\@folioblob}%
1932     \fancyheadoffset[RO,LE]{0.6\@folio@wd}%
1933   \or % acmlarge
1934     \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1935     \@acmNumber, Article \@acmArticle. Publication date:
1936     \@acmPubDate.}%
1937     \fancyhead[RO]{\@folioblob}%
1938     \fancyhead[LE]{\ACM@linecount\@folioblob}%
1939     \fancyhead[LO]{\ACM@linecount}%
1940     \fancyheadoffset[RO,LE]{1.4\@folio@wd}%
1941   \or % acmtog
1942     \fancyfoot[RO,LE]{\footnotesize \@journalName, Vol. \@acmVolume, No.
1943     \@acmNumber, Article \@acmArticle. Publication date:
1944     \@acmPubDate.}%
1945     \fancyhead[L]{\ACM@linecount}%
1946   \else % Conference proceedings
1947     \fancyhead[L]{\ACM@linecount}%
1948     \fancyfoot[C]{\if@ACM@printfolios\footnotesize\thepage\fi}%
1949   \fi
1950 }

```

3.14 Sectioning

Sectioning is different for different levels

```

1951 \renewcommand\section{\@startsection{section}{1}{\z@}%
1952 {-0.75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1953 {.25\baselineskip}%

```

```

1954 {\@secfont}}
1955 \renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
1956 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1957 {.25\baselineskip}%
1958 {\@subsecfont}}
1959 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{10pt}%
1960 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1961 {-3.5\p@}%
1962 {\@subsubsecfont\@adddotafter}}
1963 \renewcommand\paragraph{\@startsection{paragraph}{4}{\parindent}%
1964 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
1965 {-3.5\p@}%
1966 {\@parfont\@adddotafter}}
1967 \renewcommand\part{\@startsection{part}{9}{\z@}%
1968 {-10\p@ \@plus -4\p@ \@minus -2\p@}%
1969 {4\p@}%
1970 {\@parfont}}

\section@raggedright Special version of \raggedright compatible with \MakeUppercase
1971 \def\section@raggedright{\@rightskip\@flushglue
1972 \rightskip\@rightskip
1973 \leftskip\z@skip
1974 \parindent\z@}

\@secfont Fonts for sections etc. are different for different formats.
\@subsecfont
\@subsubsecfont
\@parfont
1975 \def\@secfont{\sffamily\bfseries\section@raggedright\MakeUppercase}
1976 \def\@subsecfont{\sffamily\bfseries\section@raggedright}
1977 \def\@subsubsecfont{\sffamily\itshape}
1978 \def\@parfont{\itshape}
1979 \setcounter{secnumdepth}{3}
1980 \ifcase\ACM@format@nr
1981 \relax % manuscript
1982 \or % acmsmall
1983 \or % acmlarge
1984 \def\@secfont{\sffamily\large\section@raggedright\MakeUppercase}
1985 \def\@subsecfont{\sffamily\large\section@raggedright}
1986 \or % acmtog
1987 \def\@secfont{\sffamily\large\section@raggedright\MakeUppercase}
1988 \def\@subsecfont{\sffamily\large\section@raggedright}
1989 \or % sigconf
1990 \def\@secfont{\bfseries\Large\section@raggedright\MakeUppercase}
1991 \def\@subsecfont{\bfseries\Large\section@raggedright}
1992 \or % siggraph
1993 \def\@secfont{\bfseries\sffamily\Large\section@raggedright\MakeUppercase}
1994 \def\@subsecfont{\bfseries\sffamily\Large\section@raggedright}
1995 \or % sigplan
1996 \def\@secfont{\bfseries\Large\section@raggedright}
1997 \def\@subsecfont{\bfseries\section@raggedright}
1998 \renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
1999 {- .75\baselineskip \@plus -2\p@ \@minus -.2\p@}%

```

```

2000 { .25\baselineskip}%
2001 {\@subsubsecfont}}
2002 \def\@subsubsecfont{\bfseries\section@raggedright}
2003 \renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
2004 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2005 {-3.5\p@}%
2006 {\@parfont\@addspaceafter}}
2007 \def\@parfont{\bfseries\itshape}
2008 \renewcommand\subparagraph{\@startsection{subparagraph}{5}{\z@}%
2009 {- .5\baselineskip \@plus -2\p@ \@minus -.2\p@}%
2010 {-3.5\p@}%
2011 {\@subparfont\@addspaceafter}}
2012 \def\@subparfont{\itshape}
2013 \or % sigchi
2014 \setcounter{secnumdepth}{1}
2015 \def\@secfont{\bfseries\sffamily\section@raggedright\MakeUppercase}
2016 \def\@subsecfont{\bfseries\sffamily\section@raggedright}
2017 \or % sigchi-a
2018 \setcounter{secnumdepth}{0}
2019 \def\@secfont{\bfseries\sffamily\section@raggedright\MakeUppercase}
2020 \def\@subsecfont{\bfseries\sffamily\section@raggedright}
2021 \fi

```

\@adddotafter Add punctuation after the command
2022 \def\@adddotafter#1{#1\@addpunct{.}}

\@addspaceafter Add space after the command
2023 \def\@addspaceafter#1{#1\@addpunct{\enspace}}

3.15 Theorems

\@acmplainbodyfont The font to typeset the acmplain theorem style body.
2024 \def\@acmplainbodyfont{\itshape}

\@acmplainindent The amount to indent the acmplain theorem style.
2025 \def\@acmplainindent{\parindent}

\@acmplainheadfont The font to typeset the acmplain theorem style head.
2026 \def\@acmplainheadfont{\scshape}

\@acmplainnotefont The font to typeset the acmplain theorem style note.
2027 \def\@acmplainnotefont{\@empty}

Customization of acmplain theorem style:

```

2028 \ifcase\ACM@format@nr
2029 \relax % manuscript
2030 \or % acmsmall
2031 \or % acmlarge

```

```

2032 \or % acmtog
2033 \or % sigconf
2034 \or % siggraph
2035 \or % sigplan
2036 \def\acmplainbodyfont{\itshape}
2037 \def\acmplainindent{\z@}
2038 \def\acmplainheadfont{\bfseries}
2039 \def\acmplainnotefont{\normalfont}
2040 \or % sigchi
2041 \or % sigchi-a
2042 \fi

```

acmplain The acmplain theorem style

```

2043 \newtheoremstyle{acmplain}%
2044 { .5\baselineskip \@plus.2\baselineskip
2045 \@minus.2\baselineskip}% space above
2046 { .5\baselineskip \@plus.2\baselineskip
2047 \@minus.2\baselineskip}% space below
2048 {\@acmplainbodyfont}% body font
2049 {\@acmplainindent}% indent amount
2050 {\@acmplainheadfont}% head font
2051 { .}% punctuation after head
2052 { .5em}% spacing after head
2053 {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmplainnotefont{#3}}}}% head spec

```

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

```

2054 \def\acmdefinitionbodyfont{\normalfont}

```

\acmdefinitionindent The amount to indent the acmdefinition theorem style.

```

2055 \def\acmdefinitionindent{\parindent}

```

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

```

2056 \def\acmdefinitionheadfont{\itshape}

```

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

```

2057 \def\acmdefinitionnotefont{\@empty}

```

Customization of acmdefinition theorem style:

```

2058 \ifcase\ACM@format@nr
2059 \relax % manuscript
2060 \or % acmsmall
2061 \or % acmlarge
2062 \or % acmtog
2063 \or % sigconf
2064 \or % siggraph
2065 \or % sigplan
2066 \def\acmdefinitionbodyfont{\normalfont}
2067 \def\acmdefinitionindent{\z@}
2068 \def\acmdefinitionheadfont{\bfseries}

```

```

2069 \def\acmdefinitionnotefont{\normalfont}
2070 \or % sigchi
2071 \or % sigchi-a
2072 \fi

acmdefinition The acmdefinition theorem style
2073 \newtheoremstyle{acmdefinition}%
2074   {.5\baselineskip\@plus.2\baselineskip
2075     \@minus.2\baselineskip}% space above
2076   {.5\baselineskip\@plus.2\baselineskip
2077     \@minus.2\baselineskip}% space below
2078   {\@acmdefinitionbodyfont}% body font
2079   {\@acmdefinitionindent}% indent amount
2080   {\@acmdefinitionheadfont}% head font
2081   {.}% punctuation after head
2082   {.5em}% spacing after head
2083   {\thmname{#1}\thmnumber{ #2}\thmnote{ {\@acmdefinitionnotefont{#3}}}}% head spec

    The definitions for theorems:
2084 \theoremstyle{acmplain}
2085 \newtheorem{theorem}{Theorem}[section]
2086 \newtheorem{conjecture}[theorem]{Conjecture}
2087 \newtheorem{proposition}[theorem]{Proposition}
2088 \newtheorem{lemma}[theorem]{Lemma}
2089 \newtheorem{corollary}[theorem]{Corollary}
2090 \theoremstyle{acmdefinition}
2091 \newtheorem{example}[theorem]{Example}
2092 \newtheorem{definition}[theorem]{Definition}
2093 \theoremstyle{acmplain}

\@proofnamefont The font to typeset the proof name.
2094 \def\@proofnamefont{\scshape}

\@proofindent Whether or not to indent proofs.
2095 \def\@proofindent{\indent}

    Customization of proof environment.
2096 \ifcase\ACM@format@nr
2097 \relax % manuscript
2098 \or % acmsmall
2099 \or % acmlarge
2100 \or % acmtog
2101 \or % sigconf
2102 \or % siggraph
2103 \or % sigplan
2104 \def\@proofnamefont{\itshape}
2105 \def\@proofindent{\noindent}
2106 \or % sigchi
2107 \or % sigchi-a
2108 \fi

```

proof We want some customization of proof environment.

```
2109 \renewenvironment{proof}[1][\proofname]{\par
2110   \pushQED{\qed}%
2111   \normalfont \topsep6\p@\@plus6\p@\relax
2112   \trivlist
2113   \item[\@proofindent\hskip\labelsep
2114         {\@proofnamefont #1\@addpunct{.}}]\ignorespaces
2115 }{%
2116   \popQED\endtrivlist\@endpfalse
2117 }
```

3.16 Acknowledgments

\acks This is a comment-like structure

```
2118 \specialcomment{acks}
2119 {\begingroup\section*{Acknowledgments}}{\endgroup}
```

\grantsponsor We just typeset the name of the sponsor

```
2120 \def\grantsponsor#1#2#3{#2}
```

\grantnum

```
2121 \newcommand\grantnum[3][\#3%
2122   \def\@tempa{#1}\ifx\@tempa\@empty\else\space(\url{#1})\fi}
```

3.17 Conditional typesetting

We use the comment package for conditional typesetting:

```
2123 \if@ACM@screen
2124   \includecomment{screenonly}
2125   \excludecomment{printonly}
2126 \else
2127   \excludecomment{screenonly}
2128   \includecomment{printonly}
2129 \fi
2130 \if@ACM@anonymous
2131   \excludecomment{anonsuppress}
2132   \excludecomment{acks}
2133 \else
2134   \includecomment{anonsuppress}
2135 \fi
```

3.18 End of Class

```
2136 \normalsize\normalfont
2137 </class>
```


References

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- [2] Michael Downes and Barbara Beeton. *The amsart, amsproc, and amsbook document classes*. American Mathematical Society, August 2004. <http://www.ctan.org/pkg/amslatex>.
- [3] Cristophe Fiorio. *algorithm2e.sty—package for algorithms*, October 2015.
- [4] Rogério Brito. *The algorithms bundle*, August 2009.
- [5] Carsten Heinz, Brooks Moses, and Jobst Hoffmann. *The Listings Package*, June 2015. <http://www.ctan.org/pkg/listings>.
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Change History

v1.00		v1.05	
General: First released version	20	General: Added processing doi numbers for acmsiggraph and doi numbers for sigproc.bib	20
v1.01		Patched \setcitestyle command; closes https://github.com/borisveytsman/acmart/issues/19	20
General: Changed hyperref colors in screen mode (closes https://github.com/borisveytsman/acmart/issues/1)	20		
Defined ACM colors	20	v1.06	
Explicitly put draft option (closes https://github.com/borisveytsman/acmart/issues/4)	22	\@ACM@badge@skip: Added macro	43
Set headheight to 1pc for all formats (closes https://github.com/borisveytsman/acmart/issues/5)	20	\@ACM@badge@width: Added macro	43
v1.02		\@ACM@title@width: Added macro	43
General: Added TOPS and TSC (closes https://github.com/borisveytsman/acmart/issues/12)	20	\@mktitle@i: Added processing badges	56
Documentation changes (closes https://github.com/borisveytsman/acmart/issues/13)	20	Made generic	56
v1.03		\@mktitle@ii: Now this macro is obsolete	56
\@formatdoi: Added macro	48	\@mktitle@iii: Added processing badges	56
\if@ACM@authorversion: Added macro	21	Made more generic	56
\maketitle: Added special case of authorversion	51	\@mktitle@iv: Made more generic	57
General: Added anon suppress environment	20	\@printtopmatter: Added processing badges	53
Added authorversion option (closes https://github.com/borisveytsman/acmart/issues/9)	20	\@subtitlefont: Added macro	55
v1.04		\@titlefont: Added macro	55
\acmArticleSeq: Name change by Matthew Fluet	42	\acmBadgeL: Added macro	44
\acmDOI: Name change by Matthew Fluet	43	\acmBadgeR: Added macro	43
\acmISBN: Name change by Matthew Fluet	43	\if@ACM@badge: Added macro	43
General: Updated bibliography for siggraph	20	v1.07	
		\maketitle: Corrected a bug with abstract footnotes	51
		Corrected a bug with permission and footnotes order	51
		v1.08	
		General: SIGPLAN reformatting by Matthew Fluet	20
		Typos corrected (Tobias Pape)	20
		v1.09	
		General: Revert SIGPLAN caption rules	20
		v1.10	
		\maketitle: Corrected a bug with doi in manuscript and author version, https://github.com/borisveytsman/acmart/issues/36	51

General: Changes of	v1.14	
‘licensedothergov’ wording	46	\bibstyle@acmauthoryear: Moved
standardpagestyle: Reversed folios		def of \bibstyle@acmauthoryear
location	65	before use
v1.11		25
General: Customization of ACM		\bibstyle@acmnumeric: Moved def of
theorem styles and proof		\bibstyle@numeric before use . .
environment by Matthew Fluet . .	20	26
v1.12		General: \citestyle updates
\@marginfigure: Now centering by		(Matthew Fluet)
default	33	Patched \citestyle
\@marginfigure: Now centering by		24
default	33	v1.15
\@parfont: Moved to		\@ACM@addtoaddress: Added macro
\section@raggedright	68	57
\copyrightpermissionfootnoterule:		\@mkauthors@iii: New authors
Added macro	31	system
\descriptionlabel: Redefined . . .	35	60
\footnoterule: Made shorter	31	\@shortauthors: Introduced macro .
\if@ACM@natbib@override: Added		64
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\if@ACM@newfonts: Added macro . .	32	separate macro
\maketitle: Moved thanks to		60
copyrightpermission box	51	\acks: Added macro
\section@raggedright: Introduced		72
macro	68	\affiliation: Added code for author
General: Added graceful behavior		groups
when libertine fonts are absent . .	32	41
Documentation updates	20	\author: Added code for author
v1.13		groups
\@mpfootnotetext: Made minipage		40
footnotes centered	32	\city: Added macro
\bibliographystyle: Redefined		57
macro	28	\country: Added macro
\bibstyle@acmauthoryear: Added		57
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\bibstyle@acmnumeric: Added		72
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standardpagestyle: Added headers		\num@authorgroups: Renamed . . .
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Expanded headers for sigchi-a . . .	65	\orcid: Introduced macro
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		\position: Added macro
		57
		\postcode: Added macro
		57
		\state: Added macro
		57
		\streetaddress: Added macro . . .
		57
		standardpagestyle: Better handling
		of anonymous mode
		65
		v1.16
		\@headfootfont: Added macro . . .
		64
		General: Formatting header/footer
		(Matthew Fluet)
		20
		standardpagestyle: Customize
		header/footer text font
		65
		v1.17
		\@makefnmark: Redefined
		32
		\@mkauthors: TOG now uses the same
		authors block as other journals . .
		58
		\@mkauthors@ii: Deleted
		60
		\@mkbibcitation: Added \nobreak
		63
		Changed format for sigs
		63

\acmArticle: The default is now numerical	42	\if@ACM@printacmref: Renamed from \if@ACM@printbib	44
\acmMonth: The default must be numerical. Closes #50.	43	General: Slightly decreased margins for sigs	29
\acmNumber: The default is now numerical	42	standardpagestyle: Added paper title to sigs	65
\acmVolume: The default is now numerical	42	v1.18	
\acmYear: The default is now numerical	43	\@mkauthors@i: Now we andify affiliations	59
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\grantnum: Added url	72	General: Natbib is now the default for all formats	20
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Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

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