

GUIDELINES FOR PREPARING ELECTRONIC MANUSCRIPTS

$\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$

ABSTRACT. The American Mathematical Society accepts manuscripts in electronic form that have been prepared using certain macro packages compatible with the $\mathcal{T}\mathcal{E}\mathcal{X}$ typesetting system. This document contains guidelines for preparation and submission to AMS of electronic manuscripts prepared with $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ Version 1.1, and presents to potential authors of such manuscripts other information that should be useful in preparing manuscripts for composition by $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$.

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1. INTRODUCTION

The purpose of these *Guidelines* is to explain to authors the details of electronic manuscript preparation and submission to the AMS and the handling of these papers once they reach the AMS. It is assumed that the reader is familiar with $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX and has access to the items listed in the **References** section, especially *The Joy of \TeX* [Joy] and *$\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX Version 1.1 User's Guide* [ALG]. Both these *Guidelines* and the accompanying examples have been created to help avoid problems before they occur and minimize extra work for all involved in the production of the paper.

Instructions for using specific macros will be given in appropriate sections of these *Guidelines*. Examples of macro use (input and output) can be found in the sample papers that accompany these *Guidelines*.

The AMS book series that are published from author-prepared copy may have additional requirements, which are not included here. For specific instructions on preparing an $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX manuscript for such a series, send an inquiry to the address given in the **How to submit a file** section.

1.1. Classes of manuscripts covered. These *Guidelines* include instructions for preparing both articles and monographs. An article may be intended either for a journal or for a collection such as the proceedings of a conference; where the requirements differ, the differences are explained. A separate section is devoted to monographs, which differ substantially from articles in their requirements. These *Guidelines* do not include instructions for preparation of electronic manuscripts for submission to either *Abstracts of Papers Presented to the AMS* or *Mathematical Reviews*. Instructions for *Abstracts* can be requested from the Society's Publication Division; instructions for *Mathematical Reviews* can be found on the reverse side of the contents page of any MR issue.

2. GENERAL GUIDELINES

All manuscripts submitted to the AMS, whether in paper or electronic form, should contain certain information. When that information is missing, extra time and effort are required to obtain it, and this process may result in delays in publication. The following elements should be included with all manuscripts.

- (1) Identification of the series in which the work is to appear.

- (2) Title, including short form if necessary for running head.
- (3) Author name(s), including shortened form if necessary.
- (4) Address(es) of the author(s) where the research was performed, current address(es), and address(es) for electronic mail if available.
- (5) Subject classification(s) (primary and, if appropriate, secondary) according to the *Mathematical Reviews* Subject Classification.
- (6) Abstract (for a paper to be published in a journal).

Detailed instructions are given later for the form to be used for particular elements, and a checklist is provided to assist authors.

Some basic principles are important for effective handling of electronic submissions in production. Authors should keep these in mind when preparing their files.

- (1) Use the `amsart` or `amsbook` style unless you have been provided with a specific alternative for a particular publication.
- (2) AMS-L^AT_EX contains tags to identify all the important features of mathematical papers and monographs; use them, not tags you define yourself.
- (3) Do not use explicit L^AT_EX coding to control line and page breaks. Lines and pages will break differently in the published paper than they did in the file you submit. This is because AMS publications are set in a font (Times Roman) that prints slightly larger and has a different appearance than the font available for general T_EX distribution (Computer Modern). If L^AT_EX coding were inserted by authors for page and line breaks, it would have to be removed for production. That work could offset any time saved by not having to keyboard the manuscript and errors could be introduced.
- (4) Macro definitions for frequently occurring phrases or mathematical expressions should appear together at the beginning of the file, before the start of the text of the manuscript. Once a macro is created for an expression, it should be used for every occurrence of that expression.
- (5) Do not redefine any plain T_EX, AMS-T_EX, L^AT_EX, or AMS-L^AT_EX control sequences.
- (6) Every file should be able to be processed independently; do not use “input” files, but instead include the contents of any such files in the main source file.
- (7) Use T_EX coding for special fonts (e.g., boldface or italic) only within the text of the manuscript; do not use such coding for any headings.
- (8) Proofread your manuscript thoroughly and carefully.

3. TOP MATTER

The top matter associated with a paper includes everything that would appear in a bibliographic reference to the paper, plus additional information about the author(s), subject classifications, key words, and acknowledgments of support. These elements should be supplied by the author; they will be augmented during production by such things as date received, the publication logo, the copyright notice, and starting page number. These instructions describe only the elements to be provided by the author.

3.1. Summary of tags and elements. The list below includes all the top matter tags associated with the `amsart` style defined for AMS-L^AT_EX Version 1.1. This

style was designed to be compatible with all AMS journals and collections of papers, and the tags provided are a superset of those required for papers in any of those publications. Requirements for monographs are somewhat different and are described later.

The style of the typeset output is controlled by the `amsart` style. Every file must begin with the line `\documentstyle{amsart}`. The contents of next section, the preamble, are described in more detail following the list of top matter tags.

```
\documentstyle{amsart}

(preamble commands, such as \{newcommand", etc.)

\begin{document}
\title[...]{...}
\author[...]{...}
\address{...}
\curraddr{...}
\email{...}
\dedicatory{...}
\date{...}
\thanks{...}
\translator{...}
\keywords{...}
\subjclass{...}
\maketitle
\begin{abstract}...\end{abstract}
```

3.2. The preamble. The preamble is the area between the lines `\documentstyle` and `\begin{document}`. If any new control sequences are used in the paper, their definitions should be placed in the preamble. Similarly, instructions to access fonts that are not already defined in \mathcal{AMS} - \LaTeX , such as a new math alphabet (see [ALG, p. 10]), belong here. By placing these general instructions at the very beginning of a paper, they will be available throughout the entire paper. In addition, this placement will also make it easier for the production staff to find and check them for compatibility when the paper is combined with others to produce the complete publication.

When defining new control sequences, always use `\newcommand`; this will let you know if the name you have chosen has already been used. Do not redefine any plain \TeX , \mathcal{AMS} - \TeX , \LaTeX , or \mathcal{AMS} - \LaTeX command, as this could cause problems in AMS production. New definitions may be used to provide shorthand forms for text or mathematical expressions that are used frequently. They should not include any formatting commands.

3.3. Title (required). The title should always be entered in the standard AMS style, which is **caps and lowercase**. Major words should begin with capital letters, and lowercase should be used elsewhere. This is true even if the publication in which the paper appears has a style that requires all caps; that form will be generated automatically when the paper is processed at the AMS. A multi-line title may be left for \TeX to break, or a desired break may be indicated by the author with `\\`.

Unless the title is very short, the author should provide a form of the title suitable for use in running heads. This should be entered **in all caps** in [brackets] between the tag `\title` and the full title.

3.4. Author information (required). The name(s) of the author(s) should be entered in **caps and lowercase** using the tag `\author`. Each author's name should be separately tagged. All caps will be provided automatically if that is the publication style. Author names should be listed in the order in which they are to appear in print; the AMS convention is to list authors in alphabetical order.

If the author name(s) cannot fit in the space available for the running head, a shortened form should be entered for each name in [brackets] between the tag `\author` and the full name. Acceptable shortened forms use initials for all but the surname(s). If there are more than two authors, the running heads must be specified explicitly:

```
\markboth{(name of first author), et al.}{(short title)}
```

For each author one or more addresses should be input. The address where the research was carried out should be tagged as `\address{...}`. The address should be divided by `\\` into segments that correspond to address lines for use on an envelope. If the current address is different from the research address, the current address should be given next, tagged as `\curraddr{...}`. Following these addresses, an address for electronic mail should be given, if one exists, with `\email{...}`. Regular, current, and e-mail addresses must be grouped in that order following the author to which they refer. At-signs in e-mail addresses must be input as “`@@`”, with the symbol doubled.

Note that no abbreviations are to be used in addresses. (Examples are given in the sample article that accompanies these *Guidelines*.) Addresses are considered part of the top matter, but in AMS publications they are ordinarily printed at the end of the paper, following the bibliography. Suitable labels will indicate the current and e-mail addresses, typically “*Current address:*” and “*E-mail address:*” respectively.

AMS style calls for the research address(es) to be set in 8-point caps and small caps; however, the font `cmcsc8` does not come with all standard T_EX distributions (it is part of the AMSFonts package). For this reason, and to allow the T_EXing and printing of this documentation without requiring AMSFonts, the font specifications for AMS-L^AT_EX may substitute `cmcsc10`. In this case, the following warning messages will appear in the transcript file:

```
Warning: Font/shape 'cmr/m/sc' in size <8> not available .
```

```
Warning: Using external font 'cmcsc10' instead .
```

When the file is processed at AMS, the correct font will be supplied automatically.

3.5. Dedication. The tag `\dedicatory` is to be used for such things as “Dedicated to Professor X on the occasion of his eightieth birthday.” A dedication will appear in italics, before the abstract. If this is longer than one line, a break may be indicated by `\\`.

3.6. Acknowledgments of support and other first-page footnotes. `\thanks` is used for footnotes that appear on the first page. Like `\address` and `\email`, `\thanks` should be given for each author as appropriate. Where multiple authors

are supported under the same grant, the acknowledgement should be listed for the first such author, and it should be phrased so as to indicate clearly who is supported. For example, “Research of the second and third authors was supported in part by NSF grant . . .”.

Papers published in proceedings of conferences are often abstracts or preliminary versions. In such a case, include a separate `\thanks` with the statement “The final [detailed] version of this paper will be [has been] submitted for publication elsewhere.” This statement should follow the information for the last author. Papers that are to be considered for review by *Mathematical Reviews* should include the statement: “This paper is in final form and no version of it will be submitted for publication elsewhere.”

As many `\thanks` statements may be included as necessary. Each will appear as a separate footnote at the bottom of the first page.

3.7. Translator. This element is relevant only to translated papers, and should, if it appears, be the name of the translator. This information will ordinarily be printed at the end of the paper, as “Translated by” followed by the translator’s name.

3.8. Subject information (required). Subject classifications and key words, like acknowledgments, are part of the top matter and will appear as footnotes at the bottom of the first page. Subject classifications are **required**.

Subject classifications may be primary (the major topic(s) of the paper) or secondary (subject areas covered by ancillary results, motivation or origin of problems discussed, intended or potential field of application, or other significant aspects worthy of notice). One primary subject classification is required; additional primaries and secondaries are optional.

These classifications are entered as

```
\subjclass{Primary <primary classifications>;
Secondary <secondary classifications>}
```

See the sample article that accompanies these *Guidelines* for examples.

To determine the classifications, use the 1980 Mathematics Subject Classification (1985 Revision) that appears in annual indexes of *Mathematical Reviews* beginning in 1984. (The two-digit code from the Contents of MR is **not** sufficient.)

Keywords are not required but may be provided by an author if desired. They should be tagged as `\keywords{. . .}`.

3.9. Abstract (required). The abstract is input with `\begin{abstract} . . . \end{abstract}`. This must be placed immediately after `\maketitle`. It may comprise multiple paragraphs and include displayed material if appropriate. The length of the abstract depends primarily on the length of the paper itself and on the difficulty of summarizing the material, but an upper limit of about 150 words for short papers and 300 words for long papers is suggested.

Though the styles of various publications may differ somewhat, the style of `amsart` is typical. The abstract will be set in eight point type on a narrower measure than the body of the paper, centered on the first page, with the label “ABSTRACT.” provided automatically as the first word of the first paragraph.

4. DOCUMENT BODY

There are two essentially different types of documents that may appear in AMS publications, individual papers (in journals or collections of proceedings) and monographs. This section contains descriptions of those elements that are common to both types of documents.

4.1. Headings. Five levels of headings are provided to permit logical sectioning of a manuscript. These headings are applicable to papers and within chapters of a monograph.

```
\part[...]{...}
\section[...]{...}
\subsection[...]{...}
\subsubsection[...]{...}
\paragraph[...]{...}
```

`\part` is for long articles that need extra divisions (e.g., chapters, parts) at a level above the `\section` level. In the `amsart` style `\part` uses boldface type and is set flush to the left margin on a line by itself, beginning with “Part” and the (automatically-generated) part number. `\section` is small caps, centered; `\subsection` is boldface, flush to the left margin, and run in with the following text; `\subsubsection` is italic, indented as for an ordinary paragraph, and run into the text; and `\paragraph` is treated as an ordinary paragraph preceded by a reference number. The style shown in these *Guidelines* is that of the `amsart` style, which is based on the style of the *Journal of the American Mathematical Society*; `\section` is the highest level used in this document.

Explicit line breaks are obtained by `\\` in all section headings, but its use is discouraged.

Any heading may be given a label to allow references to be made to it, by including a `\label{...}` command with a unique identifier directly after the heading. References are made using the command `\ref{...}` and the same identifier. For example,

```
\section{Monograph formatting}
\label{s:mono}
```

will establish a label for this section that can be referred to with `\ref{s:mono}`, as in the next paragraph. Cross references of this sort will require L^AT_EX to be run at least twice for proper resolution. A warning at the end of the L^AT_EX run, “Cross references may have changed ...” should be heeded in this regard.

If you are preparing a monograph, there are some additional considerations relevant to headings. For details, see **Monograph formatting**, section 6 below.

4.2. Mathematical text. For instructions on preparing mathematical text, the author is referred to the *AMS-L^AT_EX User’s Guide* [ALG], *The Joy of T_EX* [Joy] and the sample article which accompanies these *Guidelines*.

Care should be taken to use math mode for *all* mathematical expressions, no matter how short or insignificant. For example, in the phrase “a group of class 2,” the “2” should be treated as mathematical text and placed between dollar signs: $\$2\$$. One reason for this is that numerals are always roman in mathematical

expressions, whereas in ordinary text environments \TeX sets them in the style of the surrounding text; see also the **Roman type** section below.

The sample paper that accompanies these *Guidelines* contains some mathematical examples, intended to illustrate the recommended manner of input. The input file for the sample paper should be examined to clarify the details of input conventions.

4.3. Theorems, lemmas, and similar structures. Theorems and similar structures are treated as environments in \LaTeX . Three different theorem styles are provided by $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\text{\LaTeX}$: **plain**, **definition**, and **remark**. By referring to these styles and using the `\newtheorem` command, an author can build a complement of theorem environments appropriate for any paper or monograph. The use of these commands is described in the *$\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\text{\LaTeX}$ User's Guide* [ALG, pp. 32–33]. All `\newtheorem` specifications should be included in the preamble.

The following list summarizes the types of structures which are appropriate for use with each style.

plain	Theorem, Lemma, Corollary, Proposition, Criterion, Algorithm, Condition
definition	Definition, Conjecture, Problem, Example
remark	Remark, Note, Notation, Claim, Summary, Acknowledgment, Case, Conclusion

The default heading style for the **plain** and **definition** theorem styles is `\section`. These may be changed if the author creates a `\newtheorem`. For example, in the sample article and monograph which accompany these *Guidelines*, theorem headings have been defined at the subsection level, with the same counter used for theorems and lemmas, as follows:

```
\newtheorem{thm}{Theorem}[subsection]
\newtheorem{lem}[thm]{Lemma}
```

The text of a theorem in the **plain** style will be set in italic type; see the next section for guidelines on dealing with numbers and punctuation within theorems. The **definition** and **remark** styles will be in roman type.

A related environment **pf** is to be used for proofs. This will produce the heading “Proof” with appropriate spacing and punctuation. An alternative form, **pf***, is provided for situations where different heading text is desired. This is input as

```
\begin{pf*}{(heading text)}
```

A “Q.E.D.” symbol is automatically appended at the end of a proof (see [ALG, p. 34] for details). At present, this symbol will not be on the last line if the proof ends with a display or another environment (such as **enumerate**); the sample monograph that accompanies these *Guidelines* includes an example of the latter using the recommended method for getting around the problem.

4.4. Roman type. Numbers, punctuation, (parentheses), [brackets], {braces}, and symbols used as labels should always be set in roman type. This is true even within the statement of a theorem, which is set in italic type by the **amsart** and **amsbook** styles.

Be careful to distinguish between roman elements that are mathematical in nature (e.g., “a group of class 2”), and those that are part of the text (e.g., a label or a year). Mathematical expressions should, as usual, be enclosed within dollar signs $\$ \dots \$$; roman text elements should be coded as `\rom{...}` in non-roman environments such as theorems.

Abbreviated forms of mathematical terms are also usually set in roman type, to distinguish them from mathematical variables or constants. Use the control sequences for common mathematical functions and operators like `log` and `lim` (see [Joy, Chapter 14]).

The style of reference citations, though publication dependent, is usually roman, and never italic in theorems. In order to ensure consistency, always use `\cite` when citing a reference. Additional information should be placed in [brackets] before the main citation, as illustrated by the coding of the citation in the previous paragraph:

```
\cite[Chapter 14]{Joy}
```

4.5. Figures, tables, and other inserts with captions. Figures, tables, and some other kinds of objects are usually handled as inserts. These objects may be prepared separately from the main document and pasted in, in which case space must be left for them. Sometimes, however, a table or certain kind of figure (e.g. a commutative diagram) can be prepared with AMS-L^AT_EX, but it may be so large that fitting it in at the point of reference may cause problems with paging. In either case, the object should be specified as a floating insert, which can be repositioned automatically as required for good pagination. AMS guidelines provide that such an object should follow as closely as possible its first reference in text, if possible on the same page where it is mentioned. When this is not possible, a reference will be added, “(See Figure *n*, page *m*.)”

An author should use the commands `\begin{figure}[t]... \end{figure}` to specify that an insert is to go at the top of a page. If an insert does not fit on the page where specified, L^AT_EX will automatically shift it to the top of the next page. The final placement of inserts will be determined by the AMS editorial staff, on the basis of the most appropriate page layout.

These floating objects usually have captions; a caption is usually positioned above a table and below a figure.

This is the general structure used to specify a figure insert, with a caption at the bottom.

```
\begin{figure}[t]
\vspace{<dimen>} or <optional code for the insertion body>
\caption{<caption text>}
\label{<reference label>} (optional)
\end{figure}
```

The general structure for a table insert, with a caption at the top, is the following.

```
\begin{table}[t]
\caption{<caption text>}
\label{<reference label>} (optional)
\vspace{<dimen>} or <optional code for the insertion body>
\end{table}
```

The `\vspace{<dimen>}` option should be used to leave blank space for an object to be pasted into place. If a `<dimen>` is specified, its value should be the exact height of the object to be pasted in. Extra space around the object and the caption are dependent on the document style and will be provided automatically.

Caption labels will be supplied automatically, set in caps and small caps. The `<caption text>` is any descriptive text that may be desired. It will be set in roman. A reference label should usually be associated with the caption; a reference in text to the figure or table would be of the form `\ref{<reference label>}`.

If you choose to include the T_EX or L^AT_EX code for a figure, table, or other captioned object in the input, then omit the `\vspace{<dimen>}` line and type the code in the area indicated. The size will be calculated automatically and the caption set in the appropriate location above or below the object.

Separate art work should be drawn in black ink with clean, unbroken lines on nonabsorbent paper. Labels should match those used in the text. Authors' originals are used whenever possible in AMS journals; for articles in a book series, art may be redrawn for consistency of style throughout a volume.

The originals of photographs or computer-generated images should be sent to the AMS as part of the art package. For a color image (whether it will be converted to a black and white image or appear in color), the color negative or transparency is needed. To avoid damage to photographic images, do not use paper clips or staples, and do not tape them to a sheet of paper. A photocopy of such an image can be used to identify it.

5. BIBLIOGRAPHIC REFERENCES

5.1. Using BibT_EX to prepare a bibliography. An author may find it convenient to maintain a file of references in BibT_EX form, as described in the L^AT_EX manual [LM, Appendix B]. Two BibT_EX styles are provided:

- `amsplain.bst`: will produce numeric labels, and
- `amsalpha.bst`: will produce “key”-type labels constructed from the author name(s) and year of publication.

Both will translate references in a BibT_EX input (`.bib`) file to T_EX input in a `.bbl` file in the form appropriate for AMS publications, including all necessary formatting instructions. This method of preparing bibliographies is therefore recommended.

To access a BibT_EX bibliography in a paper or monograph, include these instructions in the appropriate place in the input file:

```
\bibliographystyle{<style>}      amsplain or amsalpha
\bibliography{<name of bibliography .bib file>}
```

Running BibT_EX on the `.bib` file will produce a `.bbl` file. The `.bib` file may have any name the author finds convenient; however, the `.bbl` file must have the same name as the source file for a monograph from which it is input, so it may be necessary for the author to rename it. For an article, after the bibliography has been completed (including processing by BibT_EX), the contents of the `.bbl` file should be inserted into the main article input file, replacing the `\bibliographystyle` and `\bibliography` statements.

Items in the bibliography are usually ordered alphabetically by author. BibT_EX processing may alter this order, especially if the style `amsalpha.bst` is used.

A sample BibT_EX input file, `ams1-bib.bib` appears as Appendix E. This file has been used to prepare the bibliographies for both the sample article and the sample monograph included with these *Guidelines*. As they are identical except for the order and the use of “key”-type labels for the monograph and numeric labels for the article bibliography, the input file for only the monograph bibliography (`ams1-mon.bib`) is included in this documentation.

All categories of bibliographic entries listed in the L^AT_EX manual [LM, section B.2.1] are supported in the two BibT_EX styles. In addition to the fields listed in section B.2.2, a `language` field is provided for use in identifying the original language of an item whose title has been translated. The use of the `language` field is illustrated in the first two entries in the sample BibT_EX input file.

5.2. Preparing a bibliography without BibT_EX. The references section of a paper begins with the command `\begin{thebibliography}{(model label)}` and ends with `\end{thebibliography}`. `\begin{thebibliography}` sets the head for the references, switches to eight-point type and sets the indentation for the labels to a width appropriate for the model given in the second argument. Thus the widest label in the bibliography should be used as the model; for example, `99` will provide space for a 2-digit label. `\end{thebibliography}` restores the body style. This is convenient in documents where small bibliography listings are scattered throughout, as in some survey papers. (This style of bibliography has been used in these *Guidelines*.)

In a monograph, where the bibliography forms a separate chapter, the command `\begin{thebibliography}` will cause a new chapter to begin and the appropriate formatting instructions to be installed. See also the **Monograph formatting** section below.

The elements of a bibliographic reference should be given in the order appropriate for the type of reference. The sample bibliography should be used as a model.

5.2.1. All references. The beginning of each item must be indicated explicitly, with the command `\bibitem{(bibitem label)}`. The L^AT_EX default is for references to be numbered (automatically); however, other labels may be used by inserting an optional key argument in square brackets between the command and the internal label:

```
\bibitem[ABC]{ABC}
```

The item label and the key need not be identical.

All references cited as examples in the remainder of this section are keyed to the bibliography of the sample monograph. The details of punctuation will not be described here, but an author should pay attention to its use in the examples and follow the same style.

A reference should begin with the name(s) of the author(s) (required) (see [Art80], [AVZG82], et al.) or editor(s) (see [C⁺80]). Give at least one full name; initials and last name is an acceptable form. If a subsequent reference is by the same author(s), use `\bysame` instead of the name(s) (see [AVGZ84]). If the reference is to an edited collection, such as the proceedings of a conference, insert “(ed.)” or “(eds.)” following the name(s) as appropriate (see [C⁺80], [HM86]).

The title (required) of the article or book should be enclosed in braces and “emphasized” (`\em`). In a title the first word and any proper names should begin

with capital letters; everything else should be lowercase. (In a German title, all nouns should begin with capital letters (see [Gab72]).) If a title is followed by a part number, the title proper should be terminated by a period, and the part number coded as `\rom{...}` (see [LL83], [Ost78]).

5.2.2. *Journal articles.* The name of the journal (required), in abbreviated form, follows the title (see [BCW82], [Cooar], et al.). Refer to *Abbreviations of Names of Serials Reviewed in Mathematical Reviews* [ASMR], to annual indexes of *Mathematical Reviews*, or to the American Standard for Periodical Title Abbreviations (National Clearing House for Periodical Title Word Abbreviations, Columbus, Ohio, 1969) for standard journal abbreviations. If the journal name is modified by a series name, include that information following the name, in parentheses (see [Slo58, translation journal information]).

The volume number should usually be set in bold (see [BM85], [Mar], et al.).

The issue number, if present, should be preceded by “no.” (see [Mar]); this should be omitted except where to do so would result in an ambiguous reference.

The year of publication (required) is given in parentheses. If the paper has not yet appeared in print, `\toappear` should replace the year (see [Cooar]). For some journals, the volume number is the same as the year of publication (see [Mar]); in such a case, it should be given in bold, not enclosed in parentheses.

The next element is the page reference. If a span is involved, use an en-dash (typed as `--`) to separate the page numbers (see [BCW82], et al.).

If the article is in a language different from that of the title (usually because the title has been translated), or it is not possible to determine the language of the article from the title, include the language information in parentheses (see [Mar], [Slo58]).

Additional relevant information may be included if appropriate, at the end of a reference. In particular, information about a translation follows the same style as the main reference (see [Slo58], et al.)

5.2.3. *Books.* Additional book information should be given following the title. This may include edition (see [Art80], [Spi90]), identification of a conference and its location in the case of a proceedings volume (see [C+80]), etc.

The name of the publisher should be given in abbreviated form (see [AVGZ82], [C+80], et al.). The publisher’s address should be given as the name of the city and state or the foreign city where the book was published (see [Art80], [For86], et al.).

The year of publication follows the publisher information (see [Art80]).

Language information, if necessary, is included in parentheses following the year (see [AVGZ82]).

Additional information may be included if appropriate (see [AVGZ84]).

5.2.4. *Articles in books.* If the article is part of a collection, the article title should be followed by information which identifies the collection as a whole. This may be the title of a named collection (see [Osh86]), identification of a volume of conference proceedings (see [C+80]), or a series title (see [For86]). In this title, all important words begin with capital letters. If the book is the proceedings of a conference, the location and date of the conference should follow the title in parentheses (see [Lio60]).

For a named collection, the name(s) of the editor(s) should be given in parentheses, with “ed.” or “eds.” following the name(s) as appropriate (see [Osh86]).

Volume information for a book series should be given in the form “vol.” followed by the volume number (see [For86]).

If a collection is published with a dedication, that information may be given in parentheses following the main title and editorial information for the collection (see [Ber70]).

Publisher name and address should be entered in the same manner as for books (see [Ber70], [For86], [Meiar]). This is followed by the year of publication, using “to appear” if the collection has not yet been published (see [Meiar]).

Page information follows the year of publication, preceded by “p.” or “pp.” as appropriate (see [For86]). For a span of pages, use an en-dash (–) to separate them.

Language information, if necessary, follows the same style as for a journal article (see [Ber70]).

Additional information, if necessary, should be treated in a manner similar to that for a journal article or a book.

5.2.5. *Other types of references.* Ph.D. theses are similar to books, but in place of publisher information, the phrase “Ph.D. thesis” and the name of the institution granting the degree should be given (see [Coo88]).

6. MONOGRAPH FORMATTING

A monograph will usually consist of multiple chapters. Several features are available in the `amsbook` style that will set your output as a chapter rather than as an individual paper. For example, the positioning of the title on the first page is different; also the text of a `\head` in a monograph will be boldface instead of caps and small caps; headings of theorems, propositions, definitions, remarks, etc., will be caps and small caps instead of boldface, and indented rather than flush left.

For most AMS book series, authors can obtain style files with instructions for the particular book from the Publications Department. (Write to the address given in the **Getting help** section.)

The second sample that accompanies these *Guidelines* illustrates the format of a monograph prepared with the `amsbook` style.

When the `amsbook` style is used, each chapter should be prepared as a separate file. In addition, there will be a “top-level” file (which inputs all the others) and perhaps a file containing the bibliography. These files should be given meaningful names, so that when they are transmitted to the AMS, there will be no question about which file represents which chapter. For example, a monograph by author Smith might be composed of files named `SMITH.TEX` (the top-level file), `SMI-CH01.TEX`, `SMI-CH02.TEX`, . . . , `SMI-CH12.TEX`, `SMI-APPA.TEX`, etc., and `SMITH.BIB`.

Information that identifies the author(s), the subject matter of the monograph, acknowledgments of support, and so forth, will appear in the front matter of the book. Place this information in the top-level file, and use the tags shown below. Most of these are the same as the tags associated with the top matter of an article; see the **Top matter** section for explanations and an indication of which tags are required.

```

\documentstyle{amsart}

{preamble commands, such as \{newcommand", etc.}

\begin{document}
\pagenumbering{roman}
\title[...]{...}
\author[...]{...}
\address{...}
\curraddr{...}
\email{...}
\dedicatory{...}
\date{...}
\thanks{...}
\translator{...}
\keywords{...}
\subjclass{...}
\maketitle
\begin{abstract}...\end{abstract}
\tableofcontents

```

The table of contents will be produced automatically, from a `.toc` file produced anew in each run of $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$. Since there is no `.toc` before the first run, `\tableofcontents` will have no effect until the second and subsequent runs. Then this file will be read and used to generate the table of contents in the style shown in the attached sample monograph. Entries for all chapter and section heads, through `\subsubsection`, will be included in the `.toc` file. If “short forms” of any of these heads are input using the `[...]` notation, these will be used for the contents in preference to the full text given in braces after the heading command.

6.1. Chapter titles. There are three common variations of the chapter title, of which the form with a chapter number is most common:

```
\chapter{Matrix Algebras}
```

The value of the chapter counter will be converted automatically to roman numerals and the word “CHAPTER” is added.

The second variation is an appendix, where the word “Appendix” replaces the word “Chapter.” Before the first appendix, input `\appendix` before the `\chapter` command:

```
\appendix
\chapter{Poisson Integral}
```

Not only will the “Chapter” word be replaced, but also the counter will produce letters “A”, “B”, “C”, etc., instead of numbers.

The third variation is used for an element such as a preface or introduction, which has no pretitle text at all. For this, use the `\chapter*` command:

```
\chapter*{Preface}
\endtopmatter
```

6.2. Monograph running heads. In a monograph prepared using the `amsbook` style, the chapter title is used for the left running head and the text of section headings (from `\section`) appears as the right running head. It is not uncommon for the text of a heading to be too long to fit in the running head width; in such a case use the square-bracket option to specify a shortened form of the heading for use in the running heads:

```
\section[Fourier coefficients of periodic functions]
  {Fourier coefficients of continuous periodic functions
   of bounded entropy norm}
```

If the chapter title is too long to fit as a running head, a shortened form can be supplied in a similar way. Optional short forms will be used in the table of contents as well as in running heads. See also the **Running Heads** section.

7. HOW TO SUBMIT A FILE

First send two proof copies of the manuscript to the appropriate journal or book series editor. You should state your intention to submit the manuscript electronically, but the electronic version should not accompany the proof copy. Upon acceptance of the paper, the source file should be sent to the Providence office.

Before sending the source file, be sure to proofread your article or monograph carefully, as if you were preparing it for publication yourself—you are! The files that you send must be the ones used to prepare the proof copy that was accepted for publication.

The source file may be submitted either by electronic mail or on diskette. Whichever method is used, a few simple guidelines apply.

- (1) An AMS-L^AT_EX manuscript should be prepared using the `amsart` or `amsbook` style according to the guidelines given above, plus whatever additional guidelines may have been given in instructions for a particular journal or book series.
- (2) Two printed copies of the manuscript, including art, should be sent to
 Publications Department
 American Mathematical Society
 201 Charles St.
 P. O. Box 6248
 Providence, RI 02940-6248

A covering letter accompanying the printed manuscript should indicate that the article was prepared and submitted electronically.

- (3) The file(s) should be complete, including your personal macro set if one was used. If the manuscript is a single paper, personal macros should be installed in the preamble, and the bibliography should also be incorporated, so that only one file is needed. The file(s) should be the same version(s) used to prepare the printed copy.
- (4) Only one `.tex` file should be sent for an article; for a monograph, send all necessary `.tex` and `.bib` files. Do not send `.dvi` or transcript files; one of the first steps in processing is to process the files you have sent using the Society's L^AT_EX production style files.
- (5) Use meaningful file names, and include the file name in a comment at the top of the file. (See the sample paper input for an example.)

- (6) A covering letter (electronic, if the files are sent by electronic mail) should identify the author(s) and title of the paper or monograph, the publication or series in which it is to appear, and include a list of the file being sent, stating the significance of each. If there is only one file and it is being sent by electronic mail, the file should be appended to the letter and both sent in a single message.

Only files for articles or monographs that have been accepted for publication will be processed. Files for which no approval has been transmitted by the journal or book series editor will be held until approval is received.

7.1. Submitting files by electronic mail. Files sent by electronic mail should be addressed to the Internet address

pub-submit@Math.AMS.com

Only one file should be submitted for an article. If it is so long that it exceeds mail system limits, it may be broken as described below.

If the manuscript comprises more than one file, each file (or part of a file) should be sent in a separate message. The subject line of the message should identify the file by name; if one file has been broken into parts on account of its large size, also identify the part—"part n of m "—in the subject line.

Files received by electronic mail will be acknowledged within five business days. If you do not receive an acknowledgment within that time, please inquire; see the **Getting help** section below.

7.2. Submitting files on diskette. Files may be sent on diskettes in any standard format and density appropriate for either IBM PC-compatible or Macintosh. Label diskettes with your name, the title of your paper or monograph, and the publication for which it is intended. Diskettes and covering letters should be sent to the Publications Department at the address shown above.

As diskettes are reusable, please make sure that all irrelevant files that may remain from other work have been deleted. Time spent by the production staff in trying to identify extra files will delay processing of your paper.

A package containing a diskette should be clearly marked "Floppy disk. Do not fold or bend. Do not expose to electric motors or other magnetic fields." Mailers designed for diskette shipment are available from many sources; if you do not use a special mailer, cardboard or some other stiffener should be enclosed in the package for protection.

Files received on diskette will be acknowledged as soon as possible after they are received. If you have not received an acknowledgment within a reasonable amount of time (two weeks if you are located in the North America, three weeks if in Europe, Australia, Japan, or South America, a month if you are in Eastern Europe or Asia), please inquire, writing to the same address to which you sent the diskette.

8. WHAT HAPPENS TO A FILE ONCE IT REACHES THE AMS

When an electronic manuscript is received, the files are logged in for tracking through the production process and matched with the paper copy of the manuscript if that was sent separately. Once it has been determined that everything has been received, the files are sent to the Composition Department for preliminary processing. At this stage, only those steps are taken that are necessary to ensure

that the files will run successfully with the production headers. These steps include the following.

- (1) Make additions or changes necessary to conform to the production requirements; this may include adding journal volume and issue numbers, for example.
- (2) Scan the preamble and remove any definitions that conflict with definitions in the production versions of the style files.
- (3) Remove hard-coded spacing that is intended only for formatting; this includes `\vskip`, `\bigskip`, control spaces, and the like. Some spacing commands will be retained, in particular those that leave space for insertion of figures or tables or those included for the sense of mathematical expressions, for example the `thinspace` in $dx dy$ (`\,dx\,dy`).
- (4) Run the files through $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX using the production versions of the style files. Make adjustments as necessary until this $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX run is error-free.

The AMS production style files will be different in several respects from those used by the author.

- (1) Times Roman fonts will be used, rather than the Computer Modern used for the `amsart`, `amsbook`, and other styles distributed to authors.
- (2) Page dimensions may be changed, depending on the publication. The style and formatting of the top matter may also differ.
- (3) The publication logo and copyright notice will be present.

The output of this $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX run is delivered to the Editorial Department, where it is assigned to a production editor. This proof is marked to note changes that must be made so that it will conform to the style of the journal or book series.

The proof is returned to the Composition Department, where the marked corrections are made in the files. It is usually this stage that is most sensitive to inconsistencies in the input coding. For example, assume that a control sequence has been defined to replace a frequently used expression, but some instances of that expression in the text are spelled out rather than input with the control sequence. If the expression needs to be changed corrections are marked on occurrences of the expression in the proof text. When making corrections the keyboarder will find the corresponding control sequence in the file text and will change the definition, but will then assume that the definition has been used throughout and will not look for exceptions. It is for this reason you must use the control sequence for every occurrence of the expression.

After corrections, the file is rerun through $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX , and the output returned to the Editorial Department. The corrections are checked, and anything that does not conform to the previous markings is marked again. This marked proof is then returned to the author for approval.

Any minor changes or corrections the author wishes to make after receiving the marked proof should be submitted on paper. Extensive revision is not allowed at this stage. Changes will be copymarked and keyed by the Providence staff as for a non-electronic manuscript. Electronic corrections or completely new submissions are not accepted.

9. CHECKLIST

Please use the following list in your final check as you package your files to be sent to the AMS.

- (1) Top matter is complete. Title, author(s), address(es), including current and e-mail addresses, subject classification(s), and (for a journal paper except in the *Journal of the American Mathematical Society*) abstract are required. If appropriate, the `\thanks` footnote states whether the manuscript is preliminary or in final form. For a monograph, a separate top-level file includes the overall top matter and `\input` statements for every chapter.
- (2) Author-defined macros have been used throughout, for every occurrence of the strings or expressions that they define.
- (3) All author-defined macros are isolated in the preamble. For a monograph, this is in only the top-level file.
- (4) No `\TeX`, `\AMS-TeX`, `\LaTeX`, or `\AMS-LaTeX` commands intended for formatting; you have used only the tags provided in the `amsart` or `amsbook` style.
- (5) You have proofread the manuscript carefully and thoroughly.
- (6) All files referred to in the job are included, and they have meaningful names.
 - (a) If files are being sent on diskette, no unnecessary files are present.
 - (b) If files are being sent by electronic mail, only one file is sent for an article, and an explanatory message has been included at the top of the file. For a monograph comprising multiple files, each file is sent in a separate message with a subject line that identifies it clearly. If any large file must be broken into pieces, the subject line also identifies which part of how many.
- (7) The files that are being sent are the same ones that produced the proof output.
- (8) A covering letter or explanatory message identifies the author(s), title, intended publication (journal or series), and list of files.
- (9) The covering letter or explanatory message also tells how you can be reached throughout the publication process. Be sure to notify us if your address changes during this period.

10. GETTING HELP

If you encounter difficulties in preparing or submitting an `\AMS-LaTeX` manuscript in electronic form after it has been accepted for publication by the appropriate editorial board, you can ask for help from:

Technical Support Group
 American Mathematical Society
 201 Charles Street
 P. O. Box 6248
 Providence, RI 02940-6248
 Phone: 800-321-4AMS (321-4267) or 401-455-4080
 Internet: tech-support@Math.AMS.com

11. REFERENCES

- [ALG] *AMS-L^AT_EX version 1.1 user's guide*, Amer. Math. Soc., Providence, R. I., 1990.
- [ASMR] *Abbreviations of names of serials reviewed in Mathematical Reviews*, Amer. Math. Soc., Providence, R. I., revised annually.
- [MFA] *Manual for authors of mathematical papers*, Amer. Math. Soc., Providence, R. I., 1990.
- [TB] Donald E. Knuth, *The T_EXbook*, Addison-Wesley, Reading, Mass., 1984.
- [LM] Leslie Lamport, *L^AT_EX: A document preparation system*, Addison-Wesley, Reading, Mass., 1985.
- [Joy] M. D. Spivak, *The joy of T_EX*, 2nd revised ed., Amer. Math. Soc., Providence, R. I., 1990.
- [MIT] Ellen E. Swanson, *Mathematics into type*, Amer. Math. Soc., Providence, R. I., 1979.

12. APPENDIXES

Five appendixes accompany these *Guidelines*. These comprise three samples, the first two in two forms each (output and input), and the third only as input.

- A. The first sample represents a paper suitable for publication in a journal or in a collection such as a volume of conference proceedings.
- B. The input corresponding to the sample paper; the input file is named **amsl-art.tex**.
- C. The second sample represents a monograph, with front matter, one chapter, and a bibliography.
- D. The monograph input consists of three parts:
 - (a) Top-level file; the input file is named **amsl-mon.tex**.
 - (b) Chapter; the input file is named **amsl-mch.tex**.
 - (c) Monograph bibliography; the input file is named **amsl-mon.bbl**.
- E. Bibliography; the BibT_EX input file is named **amsl-bib.bib**.