

Guidelines for Preparing L^AT_EX Manuscripts for Journal of Geometry and Graphics

Hellmuth Stachel, Johannes Wallner

*Institute for Geometry, Vienna University of Technology
Wiedner Hauptstr. 8-10/113, A-1040 Wien, Austria
email: stachel@geometrie.tuwien.ac.at*

Abstract

In order to achieve high printing quality and at the same time keep printing costs low, *Journal of Geometry and Graphics* accepts articles only if they are written in L^AT_EX, which is more or less standard for professional mathematical typesetting. This document on the one hand describes how to use the language for preparing a manuscript for *Journal of Geometry and Graphics*.

1 L^AT_EX instructions for beginners

This section contains detailed instructions for the beginner how to write a L^AT_EX text. The expert will find here instructions how to use macros provided with the JGG style package, and some conventions on defining macros. For information on how to install and use L^AT_EX at your computer, you have to ask a local expert. It is free software and is widely used at universities.

Note that you will be able to write L^AT_EX texts even if you don't have the software installed, because you need only a text editor. This will be especially useful for authors whose manuscript does not require much mathematical typesetting — it should be easy for them to follow the instructions below.

1.1 Basics

L^AT_EX is something like a programming language for text. This means that there are 'commands' which perform some special tasks. A command is a word which begins with the backslash sign. An article for *Journal of Geometry and Graphics* will have the following shape:

```

\documentclass[12pt,twoside]{article}
\usepackage{a4,jgg,graphicx}
\usepackage{amsfonts,amssymb,amsmath}
\begin{document}
\begin{JGGarticle}
  { ... title of the article ... }
  { ... running head ... }
  { ... the name(s) of the author(s) ...}
  {\JGGaddress{
    ... first line of address ...\\
    ... second line of address ...\\
    ... if wanted, more lines of address ...\\
    ... if wanted, email address}
    if other addresses needed then repeat
    \JGGaddress{ ... } as often as necessary
  }

\begin{JGGabstract}
  ... text of the abstract ...
  if wanted:
  \\\[1mm]{\em Key Words:}
  ... Appropriate keywords and phrases come here ...
  ACM Computing Reviews categories and subject descriptors or
  AMS classification numbers would be helpful.
\end{JGGabstract}

  ... here comes the text ...
\section{ ... title of section ... }
  ... text of section ...
\subsection{ ... title of section, numbered ... }
  ... text of subsection ...
\subsection{ ... title of section, not numbered ... }
  ... text of subsection ...

\end{JGGarticle}
\end{document}

```

For the half-expert: The word `graphicx` in the second line is necessary, if you want to include PostScript figures. If you do not use them, just write

```

\documentclass[12pt,twoside]{article}
\usepackage{a4,jgg,graphicx}

```

instead. An example where the dots are filled in already, can look like this:

```

\documentclass[12pt,twoside]{article}
\usepackage{jgg}
\begin{document}
\begin{JGGarticle}

```

```

{Guidelines for preparing LaTeX manuscripts}
{H.\ Stachel, J.\ Wallner: Guidelines for preparing LaTeX manuscripts}
{Hellmuth Stachel, Johannes Wallner}
{\JGGaddress{Institute for Geometry, Vienna University of Technology\\
             Wiedner Hauptstr.\ 8-10/113, A-1040 Wien, Austria\\
             email: stachel\at dmg.tuwien.ac.at}}
\begin{JGGabstract}
  The aim of this paper is to inform contributors about ...
  \\\[1mm]{\em Key Words:} text processing, LaTeX, TeX
\end{JGGabstract}

\section{Introduction}
  In order to achieve high printing quality and at the
  same time to keep printing costs low, JGG will accept
  articles only if they are written in LaTeX. Additionally,
  authors should follow the instructions which can be found
  below. Authors who have never been using LaTeX are...

\section{Instructions}
\subsection*{Instructions for beginners}
  This section contains detailed instructions for the
  author how to write a LaTeX text. The expert
  will find here instructions how to use macros...
\subsection{Instructions for experts}
...
\end{JGGarticle}
\end{document}

```

The result can be seen on page 4.

These informations should be sufficient for writing an ordinary text. Paragraphs are separated by blank lines — and not by the `\` command. If you want to emphasize a word, indicate this like

... we will call these curves `{\em regular}`.

Then the word “regular” will be emphasized and look like “*regular*”.

1.2 Figures

In order to leave space for a figure which will be glued in and is 5.4 cm high write

```

\begin{figure}[bht]
  \vskip5.4cm
  \caption{...Here comes the text of the figure caption...}
  \label{..label..}
\end{figure}

```

In order to include a PostScript figure of width 10 cm, ensure that the word `graphicx` is contained in the `documentstyle` line at the beginning of the text (see p. 2) and write the following:

Journal for Geometry and Graphics
Volume VOL (YEAR), No. NO, 1-1.

Guidelines for preparing L^AT_EX manuscripts

Hellmuth Stachel, Johannes Wallner

*Institute for Geometry, Vienna University of Technology
Wiedner Hauptstr. 8-10/113, A-1040 Wien, Austria
email: stachel@dmg.tuwien.ac.at*

Abstract. The aim of this paper is to inform contributors about ...

Key Words: text processing, L^AT_EX, T_EX

1. Introduction

In order to achieve high printing quality and at the same time to keep printing costs low, JGG will accept articles only if they are written in L^AT_EX. Additionally, authors should follow the instructions which can be found below. Authors who have never been using L^AT_EX are...

2. Instructions

Instructions for beginners

This section contains detailed instructions for the author how to write a L^AT_EX text. The expert will find here instructions how to use macros...

2.1. Instructions for experts

...

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Figure 1: sample page

```

\begin{figure}[bht]
\psone{filename.ps}{10cm}
\caption{...Here comes the text for the figure caption...}
\label{..label..}
\end{figure}

```

The command

```

\begin{figure}[bht]
\pstwo{filename1.ps}{10cm}{filename2.ps}{8cm}
\caption{...Here comes the text for the figure caption...}
\label{..label..}
\end{figure}

```

includes two PostScript figures side by side. The label allows a reference to the figure, like the following:

... is shown in Fig.\ \ref{..label..}.

1.3 Lists and Footnotes

A list, numbered or unnumbered, can be generated easily: The command

```

\begin{enumerate}
\item
    first
\item
    second
\end{enumerate}

```

generates the following list:

1. first
2. second

The same command with `itemize` instead of `enumerate` generates a list without numbers. Lists can be nested up to a maximum depth of 3 nested lists.

A footnote is generated by

```

... on this page\footnote{
    ... text of footnote ...}.

```

This example produces the footnote on this page¹.

¹...text of footnote ...

1.4 Mathematical formulae

The typesetting of mathematical formulae is, by its very nature, complicated. However, L^AT_EX provides means to achieve high printing quality with comparably small effort. First, it is important to recognize a mathematical formula as such. If you speak of a point P , then “ P ” is a one-letter mathematical formula and indicated in the manuscript by $\$P\$$. In L^AT_EX, a formula which appears between ordinary text is written like this:

```
... we know that $ a_1 = b^2 + c^2 $ ...
```

This results in “...we know that $a_1 = b^2 + c^2$...”. Here you can already see how to make subscripts and superscripts. A formula printed in a separate line is generated by

```
$$ a_{ij} = a_i^{r_i} + a_j^{r_{j+1}} $$
```

and looks like this:

$$a_{ij} = a_i^{r_i} + a_j^{r_{j+1}}$$

Here you also see how grouping with { and } can be used to generate subscripts and superscripts which consist of more than one character. Equations which have a number are generated by

```
\begin{equation} \label{greek example}
\alpha + \beta = \Gamma - \Delta + x_\Sigma
\end{equation}
```

and look like this:

$$\alpha + \beta = \Gamma - \Delta + x_\Sigma \tag{1}$$

Here you can see how to include greek letters into the text and — if required — how to give names to equations. A named equation, however, can be referred to in the text by the command

```
... from equ. (\ref{greek example}) can be seen ...
```

which gives “...from equ. (1) can be seen ...”. You see that the distance between the dot and (1) is too large. This is because L^AT_EX believes that the dot terminates a sentence. If you want to avoid this, write

```
... from equ.\ (\ref{greek example}) can be seen ...
```

which gives “...from equ. (1) can be seen ...”.

Different typefaces for mathematical formulae are listed in the following example:

```
$$ {\cal A}, {\mathbb R}, \mgoth{D}, \mgoth{a}, \mgoth{s:} $$
```

which results in

$$\mathcal{A}, \mathbb{R}, \mathfrak{D}, \mathfrak{a}, \mathfrak{s}.$$

A lot of special symbols are available under special names, for example

<code>\partial</code>	∂	<code>\infty</code>	∞	<code>\%</code>	$\%$
<code>\emptyset</code>	\emptyset	<code>\nabla</code>	∇	<code>\ </code>	$\ $
<code>\triangle</code>	\triangle	<code>\forall</code>	\forall	<code>\exists</code>	\exists
<code>\neg</code>	\neg	<code>\sum</code>	\sum	<code>\prod</code>	\prod
<code>\int</code>	\int	<code>\bigcap</code>	\bigcap	<code>\bigcup</code>	\bigcup
<code>\pm</code>	\pm	<code>\mp</code>	\mp	<code>\setminus</code>	\setminus
<code>\cdot</code>	\cdot	<code>\times</code>	\times	<code>\circ</code>	\circ
<code>\bullet</code>	\bullet	<code>\cap</code>	\cap	<code>\cup</code>	\cup
<code>\vee</code>	\vee	<code>\wedge</code>	\wedge	<code>\oplus</code>	\oplus
<code>\odot</code>	\odot	<code>\dagger</code>	\dagger	<code>\leq</code>	\leq
<code>\geq</code>	\geq	<code>\subset</code>	\subset	<code>\subseteq</code>	\subseteq
<code>\supset</code>	\supset	<code>\supseteq</code>	\supseteq	<code>\not\subset</code>	$\not\subset$
<code>\in</code>	\in	<code>\ni</code>	\ni	<code>\notin</code>	\notin
<code>\equiv</code>	\equiv	<code>\sim</code>	\sim	<code>\approx</code>	\approx
<code>\cong</code>	\cong	<code>\perp</code>	\perp	<code>\neq</code>	\neq
<code>\leftarrow</code>	\leftarrow	<code>\Leftarrow</code>	\Leftarrow	<code>\rightarrow</code>	\rightarrow
<code>\mapsto</code>	\mapsto	<code>\longrightarrow</code>	\longrightarrow	<code>\Longrightarrow</code>	\Longrightarrow
<code>\Leftrightarrow</code>	\Leftrightarrow	<code>\iff</code>	\iff	<code>\langle</code>	\langle
<code>\rangle</code>	\rangle	<code>\}</code>	$\}$		

The following mathematical functions are usually typeset in roman and to be used by their name preceded by a backslash character:

```
\log, \lg, \ln, \lim, \limsup, \liminf, \sin, \arcsin,
\sinh, \cos, \arccos, \cosh, \tan, \arctan, \tanh, \cot,
\coth, \sec, \csc, \max, \min, \sup, \inf, \arg, \ker,
\dim, \hom, \det, \exp, \Pr, \gcd, \deg
```

An example of mathematical text which uses the above symbols is

```
$$ \lim_{x \to \infty} \exp(-x) = 0, \quad \int_{-\infty}^{\infty} e^{-x^2} dx \leq 5 $$
```

which produces output like

$$\lim_{x \rightarrow \infty} \exp(-x) = 0, \quad \int_{x=-\infty}^{\infty} e^{-x^2} dx \leq 5.$$

Here you can also see how subscripts and superscripts are used to denote limit subscripts and integral boundaries. The `\sum` command also works this way.

It remains to show how to generate fractions, square roots, vectors and matrices. The following examples should be sufficient:

```
$$ {x+1 \over x-2} $$
```

generates

$$\frac{x+1}{x-2}.$$

```
$$ \sqrt{x+5} $$
```

generates

$$\sqrt{x+5}.$$

Matrices and vectors (one column-matrices) are a bit tricky: By a string of letters you have to specify where (left, right, center) the entries of the various columns have to be placed. A | in this string designates a vertical rule separating two columns. Horizontal rules separating lines are done by \hline commands. The example

```


$$\begin{array}{rcl|rr}
-1 & & -1 & & -1 & & 3.0 & & & 4 & \\
1 & & 1 & & 1 & & -12.1 & & & 46 & \\
0 & & 0 & & 0 & & 13.2 & & & 48 & \\
\hline
\end{array}$$


```

gives

$$\begin{array}{rcl|rr}
-1 & -1 & -1 & 3.0 & 4 \\
1 & 1 & 1 & -12.1 & 46 \\
\hline
0 & 0 & 0 & 13.2 & 48
\end{array}$$

Tables of ordinary text are done with \tabular instead of \array, for example

```


$$\begin{center}
\begin{tabular}{l|r}
left & right \\
top & bottom
\end{tabular}
\end{center}$$


```

produces

$$\begin{array}{l|l}
\text{left} & \text{right} \\
\text{top} & \text{bottom}
\end{array}$$

Matrices are arrays which are enclosed in (and). The code

```


$$\left( \begin{array}{rr}
1 & 2 \\
-3 & 5
\end{array} \right)$$


```

produces

$$\left(\begin{array}{cc} 1 & 2 \\ -3 & 5 \end{array} \right).$$

You can also use \{, \}, [,], or |, instead of (and). The commands \left. or \right. do nothing, but are helpful if you want a bracket/brace/parenthesis/line only at one side of the matrix.

1.5 Cross-references and Literature References

You can give names to numbered objects, such as sections, figures and equations by typing `\label{...name...}` immediately after the command which increments the number, such as `\section{...}`, `\caption{...}` and `\begin{equation}`. They can afterwards be referred to in the text by `\ref{...name...}`.

A list of references to literature can be generated as follows: The input

```

\begin{thebibliography}{99}
\bibitem{Lamport 96}
  {\sc L.\ Lamport}:
  {\it LaTeX, A Document Preparation System, User's
  Guide and Reference Manual}.
  2nd ed., Addison-Wesley, Reading Mass.\ 1996.
\bibitem{Crapo-Whiteley}
  {\sc H.\ Crapo, W.\ Whiteley}:
  {\it Spaces of Stresses, Projections and Parallel
  Drawings for Spherical Polyhedra}.
  Beitr.\ Algebra Geom. {\bf 35}, 259--281 (1994).
\end{thebibliography}

```

generates

References

- [1] L. LAMPORT: *LaTeX, A Document Preparation System, User's Guide and Reference Manual*. 2nd ed., Addison-Wesley, Reading Mass. 1996.
 - [2] H. CRAPO, W. WHITELEY: *Spaces of Stresses, Projections and Parallel Drawings for Spherical Polyhedra*. Beitr. Algebra Geom. **35**, 259–281 (1994).
-

If you are no expert in L^AT_EX, you might wonder what the `\sc`, `\it` and `\bf` commands do. They write the text following the command in SMALL CAPS, in *italics* and in **boldface**, respectively. Note that the text written this way has to be enclosed in `{}` and `}`. A reference to the literature can be referred to in the text by the command `\cite{.name.}`. For example the code `... see \cite{Crapo-Whiteley} ...` produces "...see [2] ...".

1.6 Accents, Umlauts and special characters

The following examples should be enough:

```

i, {\i}, \"o, \'o, \^o, \"{i}, \v c, \u a,
\c c, {\o}, {\aa}, {\AA}, {\oe}, {\AE}, \~n, {\ss}, \. a,
\=o, \H o, \t oo, \d o, \b o, {\l}, {\L}, {\j}, \~{\j}

```

gives

i, ı, ö, ó, ò, ô, î, ċ, ă, ç, ø, å, Å, œ, Æ, ñ, ß, à, ò, ó, ô, õ, ȝ, ȕ, ł, Ł, J, ĵ

Accents in a mathematical formula are invoked by the following commands

```

 $\hat{a}$ ,  $\widehat{mn}$ ,  $\tilde{a}$ ,  $\widetilde{a}$ ,  $\grave{a}$ ,  $\ddot{a}$ ,
 $\bar{a}$ ,  $\check{a}$ ,  $\acute{a}$ ,  $\dot{a}$ ,  $\breve{a}$ ,  $\vec{a}$ ,
 $\overline{ab}$ ,  $\overline{\overline{ab}}$ ,  $\overrightarrow{ab}$ 

```

which give

$$\hat{a}, \widehat{mn}, \tilde{a}, \widetilde{a}, \grave{a}, \ddot{a}, \bar{a}, \check{a}, \acute{a}, \dot{a}, \breve{a}, \vec{a}, \overline{ab}, \overline{\overline{ab}}, \overrightarrow{ab}.$$

1.7 Defining your own commands

If you use a sequence of characters very often, you can abbreviate this sequence by defining a *macro*. This feature of TeX is a very powerful tool and the following example will give you only a very limited insight.

Suppose you want to abbreviate the sequences $\{\backslash\text{cal F}\}$ and **Journal of Geometry and Graphics**. Then write the following two lines immediately after the $\backslash\text{begin}\{\text{document}\}$ command:

```

 $\newcommand{\F}\{\backslash\text{cal F}\}$ 
 $\newcommand{\Jgg}\{\text{Journal of Geometry and Graphics}\}$ 

```

Now the commands $\backslash\text{F}$ and $\backslash\text{Jgg}$ can be used in the text. It is best if all your private macros begin with a capital letter. Do not use the $\backslash\text{def}$ command, because it does not warn you (and us), if an equally named macro has already been defined.

2 L^AT_EX instructions for regular plain TeX or AmSTeX users

Please read the section on L^AT_EX instructions for beginners in order to become familiar with the peculiar L^AT_EX way to use environments and some macros which may be unknown to you. Feel free to use all standard plain TeX and AmSTeX commands, except those connected with page numbering, fonts and text layout. Do not use $\backslash\text{def}$, but use $\backslash\text{newcommand}$, and let all your macro names begin with a capital letter.

3 Instructions for the regular L^AT_EX user

Please read the section of L^AT_EX instructions for beginners, in order to make yourself familiar with the JGG style package. Feel free to make excessive use of L^AT_EX, but do not include .sty -files of your own or any other document styles other than **article**. You may however use the files of the AmSTeX package. Include your private macros at top of your text. Do not use the $\backslash\text{def}$ command, use $\backslash\text{newcommand}$ instead. Let your all macro names begin with a capital letter.

4 General Guidelines

The *abstract* should summarize adequately, but briefly, the contents of the paper. After the title the complete address and affiliation of all authors should be given. If the address is not the same for all authors, use `\JGGaddress` repeatedly², or mark one author with an asterisk and include only one address:

```
...
{Author 1, Author2}
{ \JGGaddress{...}
  \JGGaddress{...}
}
```

or

```
...
{Author 1, Author2 (*), Author3}
{\JGGaddress{
  (*) ... first line of address... \\
}}
}
```

Sections and sub-sections are numbered automatically, and so are equations if you use the `\begin{equation}` command. If you want an unnumbered section, you can use `section*{...}` instead of `\section{...}`. If an equation is given a label, it should be referred to by

```
(\ref{...name of equation...})
```

Figures must be high-quality originals or a non-proprietary graphics file format, preferably PostScript. Line and plotter drawings, photographs (glossy black and white prints), computer listings, artwork, etc. on separate sheets are acceptable.

A very limited number of colour figures (photographs, printer or plotter output, etc) may be included at the editor's discretion.

Acknowledgements should be placed at the end of the text, right before the references and without any number (`\section*{...}` command). References should be listed in alphabetic order. They should follow the examples given above on page 9.

When absolutely necessary, appendices can be included after the references and designated by a capital letter, e. g. `\section*{Appendix A: ...title...}`.

The style file *jgg.sty* can be downloaded from <http://www.geometrie.tuwien.ac.at/jgg> also. This text (in pdf or PostScript) is available in the same way as well as the sample file displayed on page 2.

²For each article published in JGG, 40 reprints are sent free of charge to the address listed first. Also for this reason it is important to write complete postal addresses.

5 Things not to do

Listed here are several things which makes the editor's job difficult.

1. Do not use characters with an ASCII code number greater than 127, such as German umlauts, French accents, of Czech hačeks. They will be *ignored* by the typesetting software.
2. Do not use proprietary formats (such as Autocad drawings) if you send figures. It is most likely that we don't have a licence for that particular software you had been using. As all figures will be converted to PostScript, it is best if you send PostScript files. If your PostScript files are very large then perhaps it is better to send your figures in another format.
3. Do not send text as figures (some authors send tables which contain only text in a graphics file format). If you feel unable to create the table with L^AT_EX, send the text without proper formatting so we can do it for you.
4. Do not use commands which set font sizes and distances between lines or characters (except in tables), because we have to search for them and delete them. Especially do not try to insert small spaces in mathematical formulas.
5. Do not use the `\bf` command or underlining for emphasizing text.
6. Do not use units other than those of the SI (metric) system, because you will not be understood outside your country. This request is especially for our American authors.
7. Do not send text typeset with another text processing software via electronic mail, because we may be unable to read it.