INSTRUCTIONS FOR AUTHORS
HOW TO PREPARE PAPERS FOR LMCS USING `lmcs.cls` *
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ALICE NAME1 [a], BOB NAME2 [a,b], AND JOSIAH S. CARBERRY [a]

[a] University 1, address1
e-mail address: name1@email1, name2@email1, name3@email1

[b] University 2, address2
e-mail address: name2@email2

ABSTRACT. The abstract has to precede the maketitle command. Be sure not to issue the maketitle command twice! In the abstract, mathematical expressions must be kept to the absolute minimum. Otherwise it should consist of plain ASCII text, without TeX-commands, including explicit references using the `\cite` command. Presently we are not able to automatically extract an abstract containing such data and reliably turn it into html code. If you cannot meet these criteria, it is your responsibility to provide us with an html-version of your abstract. Please keep the abstract fairy short to prevent it from spilling over to the second page!

INTRODUCTION

Logical Methods in Computer Science is a community effort. It is run by scientists like you who devote their time and effort to make this a high-class open access journal that is free of cost for readers as well as authors. To minimize the extra work for the layout editor and to ensure smooth and fast publication of accepted articles, authors are asked to strictly adhere to the instructions for preparing their final version given in this document, which takes the form of a sample paper.

These revised instructions distill the experience of running the Journal for several years. They address the most time-consuming aspects of getting articles into publishable shape. While most articles require only minimal intervention, as the Journal's volume increased, so did the amount of time needed to reformat non-compliant articles.

T_EX-nical matters. Please be aware that the class-file **lmcs.cls** supplied to authors will be replaced by the Journal's master class-file before publication of your article. Hence it is not necessary, and is in fact counterproductive, to emulate the appearance of published articles by means of your personal macros. Submissions not using **lmcs.cls** will be returned to the authors, as the reformatting that usually results from changing the class-file is usually too extensive and requires the original authors' intervention.

What authors *can* do to help the layout editor is to make their T_EX- source compatible with the **hyperref**-package, which is included by the master class-file. In particular, care should be taken to use the `\texorpdfstring` macro for mathematical expressions in section or subsection headings (see the hyperref documentation for details: `https://ctan.org/pkg/hyperref`).

Authors must not (1) use unsupported fonts (like the `times`-package or the `txfonts`-package), (2) change the numbering style for theorems and definitions and the like, *e.g.*, by redefining the already provided proclamation environments for Theorems, Propositions, Lemmata, Corollaries etc. (you can add further environments, but those should comply with the default numbering style), and (3) use the `\sloppy` option globally. If it is impossible to achieve good line breaks by other means once the article is finished (reformulating a sentence, changing the word order, etc.), one can use `\sloppy` as a last resort *locally* in a paragraph.

Using lengthy mathematical expressions inside running text can lead to ugly breaks within formulae, even without producing overfull hboxes. If this is a persistent problem in your paper, please consider using more displayed formulae, or changing your notation.

The use of different macro-packages for the purpose of creating diagrams or other graphical displays is strongly discouraged. In the past that has led to papers that required different ways of processing to display the graphics of one type or the other, but could not easily be made to correctly display both types of graphics simultaneously. As a rule of thumb, as long as **pdflatex** correctly processes your paper, you should be in good shape. (Users of the **pstricks**-package and those used to including external eps-files should transform the resulting PostScript files to pdf.)

Please be aware that the proofs may display different vertical spacing in general, in particular different page breaks than the version originally submitted. If adjustments are deemed to be necessary by the authors, they can be implemented on the basis of the proofs, in collaboration with the layout editor, as a last step before final publication.

Matters of convenience. Please submit **only one file** containing the TeX-source of your paper! It is a major inconvenience when certain changes have to be applied in several files separately. Of course, we understand that separating a TeX source into several files has advantages during the creation of a paper, but please combine all parts into a single file for your submission. You personal macros can of course be contained in a separate file, as can be external graphics. For the latter a dedicated subdirectory is required.

Matters of style. Your article should start with an introduction. This is the place to employ mathematical notation and give references, as opposed to the abstract. It is up to the authors to decide, whether to assign a section number to the introduction or not.

1. Multiple authors

In papers with multiple authors several points need to be mentioned. Do not worry about footnote signs that will link author n to address n and the optional thanks n. This will be taken care of by the layout editor. Even if authors share an affiliation and part of an email address, they should follow the strict scheme outlined above and list their data individually. The layout editor will notice duplication of data and can then arrange for more space-efficient formatting. Alternatively, Authors can write "same data as Author n" into some field to alert the layout editor. Unfortunately, so far we have not been able to devise a system that automatically takes care of these issues. But once the layout editor is made aware of some duplication, he can take some fairly simple measures to adjust the format accordingly. Placing the responsibility on the layout editor insures that these formatting issues are handled uniformly in different papers and that the authors do not have to second-guess the Journal's policy.

2. Use of Definitions and Theorems etc.

The numbering scheme for proclamations (Theorems, Definitions, etc.) uses the section number followed by the number of the current proclamation. There are no different "numbering threads" for the various types of proclamations, as then the relative position of, *e.g.*, Theorem 2.7 relative to, *e.g.*, Definition 2.9 would not be clear.

Definition 2.1. This is a definition.

Please use the supplied proclamation environments (as well as LaTeX's cross-referencing facilities), or extend them in the spirit of the given ones, if necessary (*cf.* Satz 2.2 below). Refrain from replacing the Journal's proclamation macros by your own constructs, especially do not change the numbering scheme: all proclamations are to be numbered consecutively!

2.1. **First Subsection.** This is a test of subsectioning. It works like numbering of paragraphs but is not linked with the numbering of theorems.

Satz 2.2. *This is a sample for a proclamation environment that can be added along with your personal macros,* in case the supplied environments do not suffice. *Please refrain from substituting other environments for the supplied ones. We distinguish those*
- *with italicised text:*
  - `\begin{thm}`...`\end{thm}` *for a theorem;*
  - `\begin{lem}`...`\end{lem}` *for a lemma;*
  - `\begin{cor}`...`\end{cor}` *for a corollary;*
  - `\begin{prop}`...`\end{prop}` *for a proposition;*
  - `\begin{asm}`...`\end{asm}` *for an assumption;*
- *and those with normal roman text:*
  - `\begin{defi}`...`\end{defi}` *for a definition;*
  - `\begin{conv}`...`\end{conv}` *for a convention;*
  - `\begin{conj}`...`\end{conj}` *for a conjecture;*
  - `\begin{fact}`...`\end{fact}` *for facts;*
  - `\begin{algo}`...`\end{algo}` *for algorithms;*
  - `\begin{pty}`...`\end{pty}` *for a property;*
  - `\begin{clm}`...`\end{clm}` *for a claim;*

  – \begin{nota}...\end{nota} *for a notation;*
  – \begin{exa}...\end{exa} *for a single example;*
  – \begin{exas}...\end{exas} *for a list of examples;*
  – \begin{rem}...\end{rem} *for single remarks;*
  – \begin{rems}...\end{rems} *for a list of remarks;*
  – \begin{prob}...\end{prob} *for a single problem;*
  – \begin{probs}...\end{probs} *for a list of problems;*
  – \begin{oprob}...\end{oprob} *for a single open problem;*
  – \begin{oprobs}...\end{oprobs} *for a list of open problems;*
  – \begin{obs}...\end{obs} *for a single observation;*
  – \begin{obss}...\end{obss} *for a list of observations;*
  – \begin{qu}...\end{qu} *for a single question;*
  – \begin{qus}...\end{qus} *for a list of questions.*

The present new environment \begin{satz}...\end{satz} *was defined by*

$$\theoremstyle{plain}\newtheorem{satz}[thm]{Satz}$$

Proof. You can use the familiar \begin{proof}...\end{proof} construction. Please do not insert a blank line before \end{proof}, as this moves the box to a new line.

In case a proof ends with an itemization, please issue the command \qedhere at the end of the final item, *before* calling \end{enumerate} (or similar) and \end{proof}. Otherwise the end-of-proof box is put on a separate line following the last item, which looks awkward, unless the last line is too full to accommodate the box.

For options how to handle proofs ending in a displayed multi-line equation or formula, see this discussion. □

Corollary 2.3. *If no proof is given,* `lmcs.cls` *provides Paul Taylor's end-of-proof box* \qed *to conclude a proclamation (Theorem, Proposition, Lemma, Corollary). Please do not redefine* \qed*!* □

3. Itemization

`lmcs.cls` provides the familiar environments

(1) \begin{itemize}...\end{itemize} (see Satz 2.2 above)
(2) \begin{enumerate}...\end{enumerate} (see this listing)
(3) \begin{description}...\end{description}

in a form based on the **enumitem**-package, version 3.5.2 (please update, if you have an earlier version). This offers considerable simplifications, both for authors and the Layout Editor. Modifying the spacing of these environments is strongly discouraged. If you wish to change the labels, please consult the documentation of the **enumitem**-package. A simple example is found at the end of this document.

When proclamations or proofs start with an itemization without preceding text, two possibilities exist:

Theorem 3.1.
(1) *Issuing an* \hfill*-command before the beginning of the list environment will push the first item to a new line, like in this case.*
(2) *This is the second item.*

Proof.

(1) The same behavior occurs in proofs; to start the first item on a new line an explicit \hfill-command is necessary.
(2) The journal's bibliography style is `alphaurl`, as exemplified by this citation [Kos97]. Please use bibtex, i.e. supply a `.bib` file with the references in bibtex format along with your submission. □

We strongly recommend using this variant since it produces rather orderly output. The space-saving variant, in contrast, can look quite awful, *cf.* Theorem 3.2 below. Please notice that this paragraph is not indented, since it is following a proclamation that ended with a list environment. This can be achieved by starting the paragraph directly after the end of that environment, without inserting a blank line, or by explicit use of the noindent-command at the beginning of the paragraph. The effect indentation may have after a list environment is demonstrated after the proof of Theorem 3.2.

Theorem 3.2. (1) *Without the* \hfill*-command the first item starts in the same line as the title for the proclamation.*
(2) *This may be useful when space needs to be conserved, but not in an electronic journal.*

Proof. (1) As you can see, the second option produces a somewhat unpleasant effect.
(2) Hence we would urge authors to use the first variant. Perhaps a TEX-guru can help us to make that the default, without the need for the \hfill-command. □

Here we started a new paragraph without suppressing its indentation. This adds to the rather disorienting appearance produced by not turning off the space-saving measures built into amsart.cls, on which this style is based. Please do issue the \noindent command in such situations, just as after the proof of Theorem 3.1 above.

Acknowledgment

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References

[Kos97] Jürgen Koslowski. Monads and interpolads in bicategories. *Theory Appl. Categ.*, 3(8):182–212, 1997.

Appendix A.

Here is a check-list to be completed before submitting the paper to LMCS:

▷ your submission includes the latest version of lmcs.cls, that is, it does not rely on the version of the class file provided by arXiv
▷ the text of your submission is contained in a single file, except for macros and graphics
▷ your graphics use only one format
▷ you have employed the Journal's original proclamation environments, or suitable extensions thereof
▷ you have loaded the hyperref package
▷ you have *not* loaded the times package
▷ you have not routinely adjusted vertical spacing manually by issuing \vspace or \vskip commands
▷ you have used the command \sloppy only locally and in emergency cases

▷ your displayed equations use the \[...\] construct
▷ your abstract only contains as few math-expressions as possible and no references
▷ your references are supplied in bibtex format in a separate .bib file

This listing also shows how to override the default bullet • of the itemize-envronment by a different symbol, in this case \triangleright.