Sample Paper and Tutorial on the Nashboro Press Macros

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Abstract. A good abstract should consist of a single paragraph describing the main results of your paper. You can use mathematics in the abstract, but it is better not to put too many symbols in the abstract.

§1. Introduction

In order to create a professional looking proceedings volume it is essential that all contributors follow some set of standards for layout and style. The purpose of this document is to explain how to use the plain TEX macro file `at03.tex` to prepare your contribution. If you are normally a LaTEX user, we hope that by reading this document and comparing it with the accompanying TEX file `tutorial.tex`, you will see how easy it is to use the macros, and we hope that even experienced plain TEX users will learn a trick or two. For information on how to submit your paper, see *Submission Instructions* on the conference web site.

§2. Organization

We recommend that you organize your paper into sections which should be numbered starting with 1. To create section headings, use the `\sect` macro. To see how we got the section headings in this document, look at the TEX file `tutorial.tex`. If your section heading does not fit on one line, use `\sectlong`. Do not leave a blank line between the section heading and the first line of text. This prevents the first paragraph in the section from being indented. Each major word in the section heading (other than words like *a, and, the, to, with*, etc.) should be capitalized. Do not include a period at the end of the section heading.

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Subsections can be created with `\subsect` and `\fsubsect`. The latter is for use immediately after the start of a section and simply leaves a little less space.

§3. Proclamations

Definitions, Lemmas, Theorems, and Propositions are examples of proclamations. You create them using the macro `\proclaim`. This sets the body of the object in a slanted font.

Definition 1. *A set* $\mathcal{T} = \{(\alpha_i, \beta_i, \gamma_i)\}_1^N$ *of triples of integers chosen from* $\{1, \ldots, n\}$ *is called a* triangulation *of* $\mathcal{P}$ *provided that*

1) *for each* $1 \le i \le N$, *the points* $P_{\alpha_i}, P_{\beta_i}, P_{\gamma_i}$ *are the vertices of* T_i;
2) *each triangle contains exactly three points of* $\mathcal{T}$, *and these are precisely the vertices of the triangle.*

Theorem 2. *Given any point set* $\mathcal{P}$, *there always exists at least one optimal triangulation. Moreover, every optimal triangulation is locally optimal provided*

$$n = \begin{cases} 3, & \text{if } m \text{ is odd,} \\ 0, & \text{otherwise.} \end{cases}$$

Proof: The `\proclaim` macro was used to state both the definition and this theorem. If you are not giving a proof, end your theorem with `\nopf`. Otherwise, leave a blank line and use `\pf` to begin the proof. In stating this theorem, we have illustrated the use of the macro `\cases`. The end of the proof is marked with a square box by using the `\eop` macro. If the proof ends with a displayed equation, put `\meop` at the end of the equation. □

§4. Lists

The usual TEX macro for creating lists is called `\item`. However, if you are creating lists within a proclamation, as was done in Def. 1 above, it looks better to use the macro `\ritem` which is defined in `at03.tex`. It sets the numbers in roman rather than slant. Note that we prefer that you number such lists as 1), 2), etc. rather than as 1., 2., etc. If you don't want to number the items in a list, you can use our macro `\bull` in place of `\item` or `\ritem`. For an example, see the list in Sect. 13 below.

§5. Open Face Letters

Use the macros `\RR` and `\CC` for the sets $\mathbb{R}$ and $\mathbb{C}$ of real and complex numbers. You may also want to use the macros `\NN`, `\PP`, and `\ZZ` to get $\mathbb{N}$, $\mathbb{P}$, and $\mathbb{Z}$. If you have to use $\mathbb{R}$ in the title, use the macro `\RRt`. You may also use the macros `\Cbb`, `\Dbb`, `\Kbb`, `\Nbb`, `\Pbb`, `\Qbb`, `\Rbb`, `\Tbb`, and `\Zbb`, to get $\mathbb{C}, \mathbb{D}, \mathbb{K}, \mathbb{N}, \mathbb{P}, \mathbb{Q}, \mathbb{R}, \mathbb{T}, \mathbb{Z}$.

§6. Bold Faced Characters

To create bold-faced mathematical symbols, you can use `\bfm`. Thus, to get $\boldsymbol{n}$ you type `\bfm{n}`. For non-mathematical letters, it is better to use the usual bold face command, i.e., to get **n** you type `{\bf n}`. If you need a bold-faced symbol in a subscript or superscript, use `\bfs`. For a subsubscript or supersuperscript, use `\bfss`. For example to get $n_{\boldsymbol{b}}$ you type `$n_\bfs{b}$`.

§7. Displayed Equations

Equations can be numbered or not numbered as you like. However, if you use them, we want equation numbers to appear on the right. The appropriate macro is `\eqno`. For these short papers, we suggest numbering sequentially starting with (1).

If a sentence ends within a displayed formula, the period should be inserted in the formula after the last symbol. If the sentence continues, but a comma is appropriate at the end of the displayed formula, put it there. *Do not* insert any extra space in front of such punctuation.

To line up displayed equations you can use `\eqalign` or `\eqalignno`. Here is an example

$$\begin{aligned} N &= 2n - \boldsymbol{n}_b - 2, \qquad 1 \le n \le 16, \\ e &= 3n - \boldsymbol{n}_b - 3, \qquad 1 \le n \le 4. \end{aligned} \tag{1}$$

To see how this was achieved, study the TEX file `tutorial.tex` which generated this document. The idea is simple – you use the symbol & to mark the alignment points, and you end each line with `\cr`. This is one of the few things that LaTEX users have to learn to become plain TEX users.

To line up equations while giving each of them its own number, you use `\eqalignno`. Here is an example:

$$N = 2n - \mathbf{n}_b - 2, \qquad 1 \le n \le 16, \tag{2}$$

$$e = 3n - \mathbf{n}_b - 3, \qquad 1 \le n \le 4. \tag{3}$$

§8. Figures

Almost everyone these days creates figures in postscript. These can be integrated into your manuscript by inserting some simple commands into your TEX files. For details, see the document *Inserting Postscript Figures Using the Nashboro Press Macros*, available on the conference web page.

No matter how you generate figures, and regardless of whether they are ps files or eps files, it would help greatly if you would name your figure files in the form `name1.fig`, `name2a.fig`, `name2b.fig`, etc., where `name` is the name of the first author, or some abbreviation of it.

Figure captions should be created with the macro `\figcap`. If your caption does not fit on one line, use the macro `\figcaplong`.

§9. Tables

Tables can be created with standard TEX commands. If you prefer, you can also create your table with LATEX, convert it to postscript, and then treat it like a figure. Table captions should be created with the macro `\tabcap`. If your caption does not fit on one line, use the macro `\tabcaplong`.

§10. Using Labels and Automatic Numbering

Many people seem to think that TEX is inferior to LATEX because LATEX can do automatic numbering. Nothing could be further from the truth. Automatic numbering and labelling of equations, formal statements (Lemmas, Theorems, etc.), figures, Tables, and references is easy to do in TEX using the numbering macros (due to Carl de Boor) which are included in the macro file `nash03.tex`. For more details, see the document *Automatic Numbering Using the Nashboro Press Macros* which corresponds to the TEX file `autonumber.tex`.

§11. Emphasizing Words

It can be useful to a reader to be able to find key words in your text (and in particular, words that you may be defining in your paper). For this purpose, we have defined a macro called `\dword` which can be used to typeset such words (or phrases) in a special typeface. This macro is simple to use. For example, instead of using `{\it triangulation}` to emphasize the word being defined in Def. 1 above, type `\dword {triangulation}`.

The macro `\dword` should *not* be used for words that you merely want to emphasize, such as the word "not" in this sentence. For this we have another macro called `\eword`. To emphasize the word not, you simply type `\eword{not}`. Mnemonically, the d stands for "define", and the e stands for "emphasize".

§12. A Few Other Macros

The macros in `at03.tex` are grouped according to function, and are in alphabetical order within the groups. Besides the ones mentioned above, I have included a few others which you may find useful. For example, you may want to use `\sm` for `\smallskip`, `\ms` for `\medskip`, and `\bs` for `\bigskip`. Also, `\noin` for `\noindent`. To get $\frac{a}{b}$, you can type `$\frac{a}{b}$`. I have added a macro `\boxit` which can be used to draw a box around some block of material.

§13. Some Things Not to Do

Here is a short list of some things you should **not** do:

- Do not use LaTeX or AMS TeX .
- Do not type your TeX file using any special characters you may have on your keyboard or in your editor. This applies especially to editors that have keys for letters with diacritical marks like ä, ü, á, à, ñ, etc.
- Do not change anything in the macro files `at03.tex` of `nash03.tex`.
- Do not redefine any of the standard macros of TeX or any of the macros in `at03.tex` or `nash03.tex`. Thus, before you define a macro for yourself, you should check to make sure that it has not already been defined.
- Do not try to squeeze more into your paper by changing `\hsize`, `\vsize`, `\baselineskip`, `\magstep`, or by using different fonts.
- Do not add extra space between paragraphs.
- Do not add spaces before punctuation. TeX does a very good job of spacing, and we just have to edit all such extra space out.
- Do not use footnotes. Simply put what you want to say in the text at the appropriate place (possibly in parentheses).
- Do not put a colon before every displayed equation. The only correct time to use a colon there is if you are saying something like ... *the following equation:*
- Do not simply copy references from some file you may have on hand. We have a specific reference style which is spelled out in Sect. 15 below. Please follow it.
- Do not use `\sl`, `\it`, or `\bf` to emphasize words. Instead, use `\dword` and `\eword` as explained in Sect. 11.
- When typing your TeX file, break your sentences into short pieces by hitting the *return* or *enter* key. TeX does not care about blanks, and it makes your file a lot easier to read and edit.

§14. References

As in all good books and journals, we would like to have a uniform way of listing references. This means different styles for journal papers, proceedings papers, books, unpublished reports or preprints, and dissertations. You can save us all a lot of trouble if you prepare your reference list carefully according to the following rules:

- Arrange your references in alphabetical order.
- Use the `\ref` macro; it automatically numbers your references. To see how to use it, look at the file `tutorial.tex` which generated this document).
- For uniformity, please follow the style for journals, proceedings, books, and preprints illustrated in the references listed below.

- Insert spaces between the initials of author names. Thus, you should type I. J. Schoenberg and not I.J. Schoenberg.
- The references below show how to handle multiple authors.
- Capitalize each word in the title of a book, but only the first word in the titles of articles, etc.
- Use regular roman fonts for everything except for the titles of books, which should be set in slant font using `\sl`.
- Type two dashes between page numbers to get 55–89.
- We would like to have the volume numbers of journals typeset in bold face as illustrated in the first item in the references below.
- You can save typing while using the official AMS abbreviations for journals by using macros included in `at03.tex`. For example, for the journal Computer Aided Geometric Design, you type `\CAGD`; see the first reference below. Note, to insert a space after such a macro, type the symbol $\sim$. Thus, the reference [1] below is typed as follows:

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\CAGD~{\bf 4} (1987), 105--123.
```

- The file `at03.tex` also contains macros for a variety of proceedings of recent approximation meetings, including `\advances`, `\biri`, `\chamonixI`, `\chamonixIIa`, `\chamonixIIb`, `\chamonixIIIa`, `\chamonixIIIb`, `\karlin`, `\lillehammer`, `\oslo`, `\osloII`, `\stmalod`, `\stmalof`, `\stmaloIId`, `\stmaloIIf`, `\taormina`, `\texasI`, `\texasII`, `\texasIII`, `\texasIV`, `\texasV`, `\texasVI`, `\texasVII`, `\texasVIIIa`, `\texasVIIIw`, `\texasIXt`, `\texasIXc`, `\texasXa`, `\texasXs`, and `\trends`, and `\ulvik`. As an example, reference [2] below was typed using `\oslo`. We have also created `\advances` to use for cross references to papers in this proceedings, see reference [3] below.

To cite references listed in the References section, write their numbers in square brackets as [4] and [1,2,3].

References

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2. Dæhlen, M., On the evaluation of box splines, in *Mathematical Methods in Computer Aided Geometric Design*, T. Lyche and L. L. Schumaker (eds.), Academic Press, New York, 1989, 167–179.
3. Author, A., and B. Author, Some paper to be cross-referenced in this proceedings, in *Advances in Constructive Approximation*, XXX (eds.), Nashboro Press, Brentwood, 2004, xxx–xxx.

4. Schumaker, L. L., *Spline Functions: Basic Theory*, Wiley, New York, 1981.

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