

# How to format an article for DMTCS with the journal's own $\text{\LaTeX}$ -style

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DMTCS is an open access scientific journal that is build on top of public archives. It is implemented by the *episcience* platform, see Berthaud et al., 2014, for an overview of the strategy. One implication of that strategy is that authors have to provide good quality  $\text{\LaTeX}$  for their articles themselves. This paper here is supposed to provide you with the necessary tools to do so. *Please read it carefully.*

**Keywords:** some, well classifying, words

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DMTCS is an open access scientific is implemented by the *episcience* platform, see Berthaud et al. (2014) for an overview of the strategy. It combines high scientific and editorial quality with an open access policy. It is priceless, neither authors nor readers pay money for the access. Access is granted by giving episcience an irrevocable license to publish the articles, the copyright remains with the authors. The platform itself is run by French government services that do their best to warrant continuous access and a high quality of service.

This document describes the use of the `dmtcs-episcience.cls` document class. It has to be used *for all DMTCS publications.*

## 1 Introduction

These pages here show you how to prepare your final version of a manuscript before publication, once you have received the OK from the editorial board. Nevertheless, we encourage you to prepare it already according to these hints here during the submission phase. In fact, what we ask from you isn't really so special. It should even be useful if your paper doesn't make it into DMTCS, and you later submit it to some other scientific journal.

The  $\text{\LaTeX}$ -style for DMTCS is derived straight forward from the usual `article.sty`. Its main purpose is to ensure a common layout policy of all articles in DMTCS and to provide editors, referees

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\*I am fully supported.

†And they are, too!

and readers with the necessary information. If you think you need an introduction to  $\text{\LaTeX}$  or search for pointers to other literature on that, you should consider reference Oetiker et al. (1999) given at the end.

Before you read on to know how to use our style file please ensure that the manuscript fits well into DMTCS.

1. DMTCS covers *Discrete Mathematics* and *Theoretical Computer Science* as domain of interest.
2. DMTCS is a *scientific journal*. This requires that your work is

**original** The main results of your paper must not have appeared elsewhere in a journal, neither by yourself nor by somebody else.

There is no excuse for plagiarism, not even self-plagiarism. We have a good record in tracking such things down, be warned.

**important** Your results must be of importance to a wider public and should be of interest for more readers than just the referees.

**self contained** Other than for conference proceedings, we don't have any restrictions on the number of pages for an article. So there is no excuse to suppress proofs or not to give verbose examples. On the other hand, self containing short notes are highly welcome.

**complete** Your work must relate to the current state of the art of the domain in question. In particular, foreign and own results external to the manuscript must be correctly credited and complete reference to such related work must be given.

**legible** The journal's language is *English*, all conventions for scientific work in that language apply.

**correct** Your work must be mathematical correct *and* its quality of writing must be such that the referees will agree upon this fact.

Your writing must be grammatically correct. Be ensured, that especially authors that are non-native speakers of English will receive all possible help to correct flaws. But also have in mind, that incorrect grammar might be the cause of severe misunderstandings and finally result in a rejection of the paper.

3. DMTCS is

**no** circular letter, and

**no** preprint server.

If you are looking for that, please consider the wide possibilities that the web offers nowadays.

## 2 Providing Information for the first Page

First of all, for a correct submission we need some basic information. Consider this file here itself as an example how this should be done. We need the following type of information:

- The name(s) of the author(s), provided by the `\author` command.

This is about the same as for standard  $\text{\LaTeX}$ . Please refer to your  $\text{\LaTeX}$  book to see how this is usually done, or look at the examples given here in this file.

*Don't put homebrewn  $\text{\LaTeX}$ -commands or special characters here.*

They will disturb the extraction of the meta-data. Please write out everything you may, in particular encode accented characters with  $\text{\LaTeX}$ -commands, e.g `{\ ' e}` for an 'é'.

**and** If there is more than one author, the names are separated by `\and` commands. If all fits well on one line, the author names should automatically be spread out equally over that line. If there are too many, place a line terminating `\\` after the last name of an author line. The next line then should start with the next `\and`.

**mark(s)** If authors have different affiliations, put an appropriate `\affiliationmark{i}` *directly* after the last name of an author, where  $i$  corresponds to affiliation number  $i$ . See below, on how to include several affiliations into the affiliation command.

If all authors share one or all affiliations, there is no need to have the `\affiliationmark{i}` since it is redundant. In that case, please add `nomarks` to the options of the document class, see below.

**thanks** If individual authors have to express their gratitude towards a particular grant institution, a `\thanks` command that immediately follows the name is the right place.

- There should only be one `\thanks` per author.
- It should not contain address information such as phone numbers or email addresses.
- If the text concerns all of the paper, then the appropriate place for the `\thanks` is the title, not the author name.

- The title of the manuscript, provided by the `\title` command.

The title command may be given in two different forms. The first is

```
\title{Your title goes here}
```

If done like that, the title that you give is used as running head for the odd numbered pages as well. If your title is too long such that it doesn't fit into the running head you should use the alternative form

```
\title[Formatting a submission for DMTCS]{How to format a submission
for DMTCS with the journal's own \LaTeX-style}
```

Here the string that inside the [ ] is used in the running head.

The same rule as for the author command applies here, don't use avoidable specialties in here.

Use `\thanks` to express gratitude to people or organizations that help the paper as a whole, not only just one particular author.

- The affiliation(s) of the author(s), provided by the `\affiliation` command.

If authors have different affiliations or several of them, put each such affiliation on a line of its own, separate the lines by a `\\` command. For an example, look at the L<sup>A</sup>T<sub>E</sub>X-source of this file here. As you can see I am listed for two different institutions. These appear on separate lines.

The affiliations will appear as numbered lines in the order they are given. These numbers are the ones that you should use for the `\affiliationmark` command for the authors that we have seen above.

The text here should be the way how your institutions is usually cited and identified by others, this is *not* the postal address, nor should it contain cryptic grant numbers, lab counters or anything of that kind.

If you have to refer to such things as grant or lab numbers, that is things that are usually not interesting for your readers by for your controlling or evaluation institutions, put them in a `\thanks` command.

This also isn't a good place to give away your address, be it postal, email or phone number. Addresses change, papers shouldn't. Your episciences account gives you the opportunity to have all your address data up-to-date, always.

- Some keywords that classify your work, provided by the `\keywords` command. This is mandatory. Be careful on the choice of these keywords, you are the author, you should know best what is adequate such that your article can be easily and correctly identified by search engines and alike. Give it in the form

```
\keywords{first item, second, third}
```

So each "*key word*" might consist of several words in the usual sense. To separate several key words use commas.

These keywords must be the same as the ones that are given when you fill out the http-form for submission.

The same rule as for the author command applies here, don't use avoidable specialties in here.

- Most of the editorial details for the paper come with the `\publicationdata` command.<sup>(i)</sup> It has six arguments, for

1. the volume name,
2. the year,

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<sup>(i)</sup> Previous to vol. 25 of DMTCS we used a `publicationdetails` command together with some others that collected submission dates and alike.

3. the number of the paper in the volume,
4. the DOI,
5. a collection of revision dates (in ISO date format `yyyy-mm-dd`) separated by a semicolon and a space, and
6. the date of acceptance (also in ISO format).

You should have received information what to put here when you were notified about the acceptance of your paper. If you are using the DMTCS `.cls` file for a submission, just update the date and otherwise leave it as it is.

- An abstract of your manuscript, provided by the `abstract` environment. This should be no longer than a paragraph and concisely reflect the main contributions of your work.

This abstract should be some brief description of your work and how it advances our science.

**Don't** put complicated mathematical expressions here.

**Don't** use commands you defined yourself here.

**Don't** put `\cite` commands here. If you feel that a reference is important for the overall estimation of your work, spell that reference out by using something like “*This result has been conjectured by Erdős et al. (1931)*”.

The basic rule is that this abstract must be “understandable by its own” and this both for its contents and for its TeXnicities.

Many readers (such as editors) base their selection whether to look at a paper more closely on that abstract. In particular there are high chances that the decision which referees are assigned to your manuscript is mainly based on that abstract. *You have been warned.*

### 3 Hints for the manuscript itself

We suppose in the following that you write a paper since you want to *publish* it, *i.e.*, make it publicly available, and that you want it to be read and understood. Therefore it is imperative that you stay inside the established conventions for mathematical or TCS texts. People are used to these conventions. They help them to easily and quickly access the real contents of your text and to not to be diverted by its appearance.

#### 3.1 Numbering commands

Please use the standard conventions for all commands and environments that provide a numbering such as theoremlike environments or sections. In particular usual counting starts at 1 and not at 0. An introduction is an integral part of a paper and should be counted as one (= 1!).

*Never ever number items, paragraphs, equations, cases theorems or whatsoever manually.*

This is the age of computers, use them before they use you.  $\LaTeX$  automatically produces numbers to put hyperlinks into your text, such that reading a paper in DMTCS becomes a real ‘electronic’ experience.

If you have a case analysis that goes over several pages, the extensions of the `enumerate` package can be interesting. It is as simple as the following

```
% in the preamble
\usepackage{enumerate}
...
...
% in the document itself
\begin{enumerate}[{Case }1:]
\item when all begins ...      Case 1: when all begins ...
\item when it all ends        Case 2: when it all ends
\end{enumerate}
```

### 3.2 Markup commands

Don't use markup of text according to some layout or style, but to stress semantic differences. The correct way to *emphasize* a certain part of your text is `\emph{emphasize}`. Don't use the `\text..` family for that purpose, in particular don't use `\textit` or `\it`. *They have different meanings* and rendering. *E.g.*, observe the word *different* in the previous phrase: this is rendered in an upright font since this is an `\emph` inside another `\emph`. On the other hand `\textit` for the abbreviations “*e.g.*” and “*i.e.*” is appropriate. This is because they are Latin (for *exempli gratia* and *id est*), and all foreign text inside English text has to be put in italics.

If ever you use commands that change the font use the modern form `\text..` for them, such as `\textbf{text}`, `\textit{text}` or `\textsc{text}`. These commands know better what has to be done when they switch back to normal than the ancient commands `{\bf text}`, `{\it text\}` or `{\sc text}`.

### 3.3 Headings

Use the standard heading and structuring commands `\section`, `\subsection` *etc.* to structure your document. For theorems use the corresponding environments that you may define by means of the `\newtheorem` command.

### 3.4 Proper Names

Names of theorems and alike are considered to be proper names. In English (!) proper names are capitalized. So please write something like “*In Section 2 we have seen...*” and “*By the Main Theorem we know...*”. But distinguish properly from the use of the word “theorem” as ordinary noun as it is for example in “*In the following theorem we prove ...*”.

Please also be careful in the writing of personal names. Customs in different countries are different! Be sure to use a standard transcription of names that use a different alphabet than English, and also be sure to use the full capabilities of L<sup>A</sup>T<sub>E</sub>X for accentuated character sets that are based on the Latin alphabet. Be sure to catch the correct concept of “last name” in that language.

### 3.5 Use a Spell Checker

It is considered as being very impolite to leave obvious spelling errors in the manuscript before sending it out. Computers are made for these, *use them*.

You might either use the North American variant for spelling or the British one, but please don't mix them in one paper. The same holds for different possible spellings for the same word as for example “*acknowledg(e)ment*” or “*formulae*” versus “*formulas*”. Be coherent.

### 3.6 Mathematics

Running text must always constitute correct English phrases. An English phrase needs a verb and an ‘=’-sign can not be a replacement for it.

All complicated mathematical formulas should be given on separate lines and should not be spread out into the running text. Never use the `$` form of the math environment for these. Human or automatic taggers have a hard time to recognize which is an opening or a closing `$`. Use

```
\begin{math}...\end{math}
```

for all formulas that spread over several words and

```
\begin{displaymath}...\end{displaymath}
```

(or *equation etc.*) that should be rendered on a line of their own. Using the old fashioned double-dollar environment

```
$$ some complicated formula $$
```

is frowned upon.

You should use  $\LaTeX$  environments that provide a numbering for all formulas that are rendered on line of their own. Use environments such as `equation` or `eqnarray`. Such numbers ease the referee process very much, and after eventual publication easily allow readers to refer to in their own work.

The quantifiers “ $\exists$ ” and “ $\forall$ ” don't stand as abbreviations of the partial phrases “*there is*” and “*for all*”. They are reserved for logical formulas as *such*, that is for work that talks itself of logical formulas as a subject.

The equal sign “=” has different meanings in parts of the two communities that DMTCS addresses.

1. It might stand for mathematical identity that is discovered *a posteriori*. As an example take the following phrase:

*An easy computation shows that  $4! = 24$ .*

2. It might stand for a *definition*, as in

*For convenience, set  $0! = 1$ .*

For the later use of “=” Computer Scientist often tend to use “:=”. Referees should be tolerant to these different customs.

### 3.7 Proofs

Put all proofs that you provide in your article in a `proof` environment, such as this

```
\begin{proof}
  Use this for proofs ...
\end{proof}
```

**Proof:** Use this for proofs. This helps the reader to understand the general structure of your paper easily. In particular, we easily see where the proof ends.  $\square$

**Proof of Main Theorem:** Use this form, if the proof doesn't follow directly after the theorem so you have to refer it by name or number.  $\square$

### 3.8 Cross-references and citations

Use cross-references throughout your whole paper. Use `\label` and `\ref` for that and don't do the work of the computer by yourself. Not only that it is easier (*believe me!*) but also it helps to insert hyperlinks across the final document in the pdf version, see Section 4.

The same holds for citations.

*Never ever number citations by hand.*

This only can go wrong and it will. Use  $\LaTeX$ ' `\cite` command. Again, in the pdf version this will have the advantage of a hyperlink that lets you jump directly to the bibliography item.

Use `bibtex` to produce your bibliography. With a little bit of initial overhead it lets you easily maintain your references. This pays off when you will write more than one article in your life... Have a look into Oetiker et al. (1999) and to the `.bib`-file of DMTCS to see how this works.

I personally prefer the so-called *natural* citation style as it is used herein (via `natbib`). It has the advantage that the author names of the work that is cited appear properly. Papers are to the merits of people. In addition, such a citation by name has the advantage of being easily recognizable without looking in the bibliography.

## 4 PDF Files

PDF has become the de-facto standard for scientific documents in our domains. To produce that format with our style supports PDF you would typically use `pdflatex` as the formatting command. If you are viewing this document in its pdf form you may see some of the advantages this has: in particular pdf documents produced in that way have included *hyperlinks*. If you want to know more about these features please refer to <http://xxx.lanl.gov/hypertext/>.

The switching between pdf or the traditional dvi format should be done automatically on whether you process your file with `pdflatex` or `latex`. If this doesn't work for you you could try to add the option `pdflatex` to the `\documentclass` right at the start of the document.

Only very old  $\LaTeX$  installations don't support the package `hyperref` these days. If you have such an old installation you should seriously think of switching to a newer one. It will pay off.





**Fig. 1:** The logo of DMTCS.

## 5 Graphics

Please use the (standard) packages `graphics` or `graphicx` to include graphical data and not `epsf` or similar. Something like the PostScript picture in the title of this document can be produced as simple as this `\includegraphics[width=0.13\textwidth]{dmtcs}`. Note that in this command the width is given in relation to the width of the text and not in an absolute measure and that the file name is given without extension.

*Don't include the extension of the graphic file in the command!*

Please, leave the choice of the desired format to the `graphicx` package.

For a realistic graphic of your paper you should chose a `figure` environment as is done with the following for Figure 1

```
\begin{figure}%[htbp]
  \begin{center}
    %% Don't use epsfile!
    \includegraphics{dmtcs}
    \caption{The logo of DMTCS.}
    \label{fig:logo}
  \end{center}
\end{figure}
```

If you have several (small) figures that are related to each other you may place them inside one figure environment. As you may see in Figure 2 how this may look like and consider the source of this description here on how to refer to each part (that is Figure 2(a) and 2(b)) individually.



(a) height of 1 cm



(b) width of 3 cm

**Fig. 2:** The scaled logo of DMTCS.

## 6 Summary of Options

option	description
submission final	whether or not this is considered as a submission or being the final document for journal papers
nomarks	if all authors have the same affiliation(s)
pdftex	force production of pdf, if <code>pdflatex</code> doesn't work
nohyperref	switch reference to <code>hyperref</code> off
notimes	switch selection of the <code>times</code> package off

## 7 Summary of Relevant Commands

command	description
<code>\affiliation</code>	the affiliation of the authors
<code>\affiliationmark</code>	to number different affiliations for different authors
<code>\publicationdata{V}{Y}{N}{DOI}{DATES}{A}</code>	In the final version: the information to identify your paper
<code>\publicationdetails{V}{Y}{I}{N}{ID}</code>	In the final version: the information to identify your paper (obsolete)
<code>\received{YYYY-MM-DD}</code>	In the final version: the date of submission to DMTCS (obsolete).
<code>\revised{YYYY-MM-DD}</code>	In the final version: the date(s) of revisions (obsolete).
<code>\accepted{YYYY-MM-DD}</code>	In the final version: the date of acceptance by the editorial board (obsolete).
<code>\keywords</code>	a comma separated list of keywords
<code>\qed</code>	produces $\square$ . See <code>proof-environment</code> below
<code>\acknowledgements</code>	put an acknowledgment section at the end
	Use the following commands only for the indicated purpose. If, e.g., you want to use a $\mathbb{P}$ that does not denote the set of prime numbers use <code>\mathbb{P}</code>
<code>\naturals</code>	the positive integers or 'naturals', $\mathbb{N}$
<code>\integers</code>	the ring of the integers, $\mathbb{Z}$
<code>\rationals</code>	the field of the rational numbers, $\mathbb{Q}$
<code>\reals</code>	the field of the real numbers, $\mathbb{R}$
<code>\complexes</code>	the field of the complex numbers, $\mathbb{C}$
<code>\primes</code>	the set of prime numbers, $\mathbb{P}$

## 8 Summary of Relevant Environments

<code>abstract</code>	The abstract of your paper, see Section 2.
<code>proof</code>	Use this for proofs, see Section 3.7

## Acknowledgements

At the end of the manuscript, right before the bibliography you might want to place an acknowledgment. This can be easily done by using the command `\acknowledgements` as you can see here.

## References

- C. Berthaud, L. Capelli, J. Gustedt, C. Kirchner, K. Loiseau, A. Magron, M. Medves, A. Monteil, G. Riverieux, and L. Romary. EPISCIENCES - an overlay publication platform. In D. P. Polydoratos, editor, *ELPUB2014 - International Conference on Electronic Publishing*, pages 78–87, Thessalonique, Greece, June 2014. Alexander Technological Education Institute of Thessaloniki, IOS Press. doi: 10.3233/978-1-61499-409-1-78. URL <https://hal.inria.fr/hal-01002815>.
- T. Oetiker, H. Partl, I. Hyna, and E. Schlegl. *The Not So Short Introduction to L<sup>A</sup>T<sub>E</sub>X2<sub>ε</sub>*, 3.3 edition, 1999. available at <http://www.loria.fr/services/tex/general/lshort2e.pdf>.